M60/M62/M66 Simister Island Interchange

TR010064

ENVIRONMENTAL STATEMENT APPENDICES

APPENDIX 13.1 WATER FRAMEWORK DIRECTIVE COMPLIANCE ASSESSMENT REPORT

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

VOLUME 6.3

April 2024

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M60/M62/M66 Simister Island Interchange

Development Consent Order 202[ ]

ENVIRONMENTAL STATEMENT APPENDICES

APPENDIX 13.1 WATER FRAMEWORK DIRECTIVE COMPLIANCE ASSESSMENT REPORT

Regulation Reference	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010064
Application Document Reference	TR010064/APP/6.3
Author	M60/M62/M66 Simister Island Interchange Costain Jacobs Partnership Project Team & National Highways

Version	**Date**	**Status of Version**
P01	April 2024	FOR DCO APPLICATION

CONTENTS

LIST OF TABLES

Appendix 13.1 Water Framework Directive compliance assessment report

1 Introduction

1.1 Purpose of the report

1.1.1 This detailed compliance assessment has been prepared for the M60/M62/M66 Simister Island Interchange (the 'Scheme') to comply with the requirements of the Water Environment (Water Framework Directive (WFD)) (England and Wales) Regulations 2017 (the 'WFD Regulations').

1.1.2 The purpose of this assessment is to determine the Scheme's compliance with the WFD Regulations.

1.1.3 Compliance with the provisions of the legislation needs to be taken into account in the planning of all new activities in the water environment. The Environment Agency, as competent authority in England, must exercise its relevant functions so as to secure compliance with the WFD Regulations (including determining any authorisation for an environmental permit or a licence to abstract or impound water), and so as best to secure the achievement of the following environmental objectives:

- Measures would be put in place to prevent deterioration of the surface water status or groundwater status of a body of water (subject to the application of Regulations 18 and 19).
- Measures would otherwise support the achievement of the environmental objectives set for a body of water (subject to the application of Regulations 16 to 19).

1.1.4 Regulations 16 to 19 set out the conditions relevant to extended deadlines for environmental objectives (Regulation 16), setting less stringent environmental objectives (Regulation 17), natural causes of change (Regulation 18) and modifications to physical characteristics of water bodies (Regulation 19).

1.2 Background

Preventing deterioration in ecological status or potential

1.2.1 All water bodies should meet good ecological status (GES), or if an artificial or heavily modified water body (A/HMWB), good ecological potential (GEP), within a set timeframe. Overall ecological status (or potential) is made up of a number of biological, hydromorphological and chemical quality characteristics called elements. The overall status is determined by the lowest element status.

1.2.2 Any activity which has the potential to have an impact on ecology would need consideration in terms of whether it could cause deterioration in the status or potential of each individual water body quality element. It is, therefore, necessary to consider the possible changes associated with the Scheme.

1.2.3 Where there are sites protected under transposed and adopted regulations, WFD Regulations aim for compliance with any relevant standards or objectives for these sites, including nature conservation and water quality (these are known as linked protected areas).

1.2.4 For those water bodies that are not already in 'good' condition, specific mitigation measures have been set for each River Basin District to achieve the environmental objectives of the WFD Regulations. These measures are to mitigate impacts that have been or are being caused by human activity and to enhance and restore the quality of the existing environment. These mitigation measures would be delivered through the River Basin Management Plan (RBMP) which also identifies the different organisations responsible for their delivery. One of the aims of this assessment is to identify whether the Scheme undermines a mitigation measure for any identified water body.

1.3 The Scheme

1.3.1 The Scheme comprises improvements to the M60 Junction (J) 18 interchange (also known as Simister Island) and also widening of the M60 to five lanes between J17 and J18 to improve the traffic flow on the M60. Figure 2.2: Scheme Design of the Environmental Statement Figures (TR010064/APP/6.2) shows the location of the different elements of the Scheme that are described below (see Chapter 2: The Scheme of the Environmental Statement (TR010064/APP/6.1) for further details):

- Widening of the existing M60 northbound to M60 westbound link road from one lane to two lanes
- Construction of a new loop road (the 'Northern Loop') providing a free flow link from the M60 eastbound to M60 southbound
- Widening of the M66 southbound through J18 from two lanes to four lanes
- Realignment of the M66 southbound diverge slip road to M60 J18 to accommodate the Northern Loop structure including a new overbridge where the slip road crosses the Northern Loop and realignment of the left turn lane to the M62 eastbound
- Widening of the M60 carriageway between J17 and J18 from four lanes to five lanes in both directions and installation of a hard shoulder
- New alignment on the approach to the M60 eastbound to M66 northbound free flow link
- Realignment of the existing M62 westbound to M60 southbound free flow link
- New lane alignments on the M60 J18 roundabout

2 Methodology

2.1 Overview

2.1.1 There are three stages to undertaking compliance, outlined below. These include screening and scoping stages followed by an impact assessment. The methodology for this is based on both guidance provided by the Environment Agency (Environment Agency, 2016) and the Planning Inspectorate (Planning Inspectorate, 2017).

2.2 Screening

2.2.1 Screening provides an initial overview of the Scheme, outlining the Scheme's activities in the construction and operation phases. These are either screened in for further assessment or screened out. To note, screening was undertaken as part of the preliminary assessment; screening in this assessment is based on any new changes to the design since publication of the Preliminary Environmental Information Report (PEIR) (Annex L of the Consultation Report Annexes (TR010064/APP/5.2).

2.3 Scoping

2.3.1 Scoping identifies the relevant RBMPs and designated water bodies within the study area. As part of this, the potential generic impacts are identified in order to establish the risks from the Scheme activities to the water bodies and their quality elements, with a view to later scoping out those activities and water bodies that do not require further assessment. To note, this has previously been undertaken in the preliminary assessment. Any scoping in this document is due to changes following design revision since publication of the Preliminary Environmental Information Report (PEIR) (Annex L of the Consultation Report Annexes (TR010064/APP/5.2).

2.3.2 A study area has been defined for the compliance assessment as a 1km buffer around all activities for the Scheme, capturing any designated water bodies within and immediately upstream or downstream of an activity.

2.4 Assessment of the Scheme

2.4.1 The assessment follows five steps for the designated water bodies and activities carried forward from the screening and scoping stages, including the following:

- Site-specific assessment of the Scheme against quality elements.
- Assessment of the Scheme against RBMP mitigation measures.
- Cumulative impact assessment with other developments planned on the designated water body.
- Assessment of the Scheme against other linked legislation (protected areas).

- Assessment of the Scheme against status objectives of the relevant water bodies.

2.5 Data collection

2.5.1 A desk-based study has been carried out to inform this assessment, reviewing existing information for the study area to develop an initial baseline for the designated water bodies. The following are the key data sources:

- Environment Agency Catchment Data Explorer (CDE) (Environment Agency, 2023)
- North West River Basin District RBMP (Environment Agency, 2022)
- Multi-Agency Geographic Information for Countryside (MAGIC) Map (Department for Environment, Food and Rural Affairs (Defra), 2023).

2.5.2 Regarding Groundwater Dependent Terrestrial Ecosystems (GWDTEs), ecological datasets and information have also been obtained and assessed. This report should be read in conjunction with Appendix 13.5: GWDTE Assessment Report of the Environmental Statement Appendices (TR010064/APP/6.3), which identifies, prioritises, and assesses the impacts of the Scheme on GWDTEs located within the study area.

3 Identification of WFD Regulations water bodies

3.1.1 The parameters for the relevant WFD Regulations water bodies are shown in Table 3.1. These include Roch (Spodden to Irwell), Whittle Brook (Irwell) and Irk (Wince to Irwell) WFD Regulations surface water bodies.

3.1.2 The Scheme is within the Northern Manchester Carboniferous Aquifers and Manchester and East Cheshire Permo-Triassic Sandstone Aquifers WFD Regulations groundwater bodies (the superficial deposits are not classified under the WFD). The parameters for the relevant WFD Regulations groundwater bodies are shown in Table 3.2. Figure 13.1.1 (Annex A) shows the location of the WFD water bodies and the non-WFD water bodies.

Table 3.1 Water body parameters for surface water bodies (Environment Agency, 2023)

Water body name	Roch (Spodden to Irwell)	Whittle Brook (Irwell)	Irk (Wince to Irwell)
Water body ID	GB112069064600	GB112069061250	GB112069061131
National Grid Reference (NGR)	SD8611011308	SD8500506952	SD8388703156
Catchment area (km^2)	42.574	15.766	30.975
Length (km)	21.658	8.25	17.854
Type	River	River	River
Hydromorphological designation	Heavily modified	Not designated artificial or heavily modified	Heavily modified
Current overall status	Moderate	Moderate	Moderate
Status objective (overall)	Moderate by 2015	Good by 2027	Moderate by 2015
Reasons for not achieving good status **(Water management issue. Activity. Sector. Impacted quality elements).**	• Diffuse source. Urbanisation - urban development. Urban and transport. Invertebrates, Macrophytes and Phytobenthos Combined and Phosphate. • Physical modification. Other (not in list, must add details in comments). Sector under investigation. Mitigation Measures Assessment. • Point source. Sewage discharge (continuous). Water Industry. Macrophytes and Phytobenthos Combined, Ammonia (Physico-Chemical) and Phosphate.	• Diffuse source. Poor soil, Livestock and nutrient management. Agriculture and rural land management. Phosphate and Macrophytes and Phytobenthos Combined. • Diffuse source. Urbanisation - urban development. Urban and transport. Phosphate and Macrophytes and Phytobenthos Combined. • Diffuse source. Riparian/in-river activities (inc. bankside erosion). Agriculture and rural land management. Phosphate and Macrophytes and Phytobenthos Combined. • Unknown (pending investigation). Unknown (pending investigation). Sector under investigation. Invertebrates.	• Point source. Misconnections. Domestic General Public. Invertebrates. • Point source. Sewage discharge (continuous). Water Industry. Phosphate, Invertebrates and Ammonia (Physico-Chemical). • Diffuse source. Urbanisation - urban development. Urban and transport. Phosphate, Ammonia (Phys-Chem) and Invertebrates. • Diffuse source. Poor Livestock Management. Agriculture and rural land management. Ammonia (Physico-Chemical). • Diffuse source. Contaminated land. Urban and transport. Ammonia (Physico-Chemical). • Diffuse source. Transport Drainage. Urban and transport. Ammonia (Physico-Chemical). • Point source. Sewage discharge (intermittent). Water Industry. Invertebrates and Ammonia (Physico-Chemical. • Diffuse source. Riparian/in-river activities (inc. bankside erosion). Agriculture and rural land management. Ammonia (Physico-Chemical). • Point source. Landfill leaching. Urban and transport. Invertebrates. • Diffuse source. Poor nutrient management. Agriculture and rural land management. Ammonia (Physico-Chemical). • Diffuse source. Poor soil management. Agriculture and rural land management. Ammonia (Physico-Chemical).

Water body name	Roch (Spodden to Irwell)	Whittle Brook (Irwell)	Irk (Wince to Irwell)
Protected area designation and list of protected areas	• Nitrate Vulnerable Zones: • Irwell / Man. Ship Canal (Kearsley to Irlam Locks) S643 • River Irk (Moston Brook to River Irwell) S638	• Nitrate Vulnerable Zone: • River Irk (Moston Brook to River Irwell) S638	• Nitrate Vulnerable Zones: • Irwell / Man. Ship Canal (Kearsley to Irlam Locks) S643 • River Irk (Moston Brook to River Irwell) S638
Ecological status (status objective)	Moderate (Moderate by 2015)	Moderate (Good by 2027)	Moderate (Moderate by 2015)
Biological quality elements (status objective)	Moderate (Good by 2027) • Invertebrates: Moderate (Good by 2027) • Macrophytes: Poor (Not assessed)	Moderate (Good by 2027) • Macrophytes and Phytobenthos Combined: Moderate (Good by 2027) • Invertebrates: Moderate (Good by 2027)	Poor (Moderate by 2021) • Invertebrates: Poor (Moderate by 2021)
Hydromorphological supporting elements (status objective)	Not assessed	Supports Good (Supports Good by 2015) • Hydrological Regime: Supports good • Morphology: Supports good	Not assessed
Physico-chemical quality elements (status objective)	Good • Acid Neutralising Capacity: High • Ammonia (Phys-Chem): High • Dissolved oxygen: High • pH: High • Phosphate: Good (Moderate by 2027) • Temperature: High	Moderate (Good by 2027) • Ammonia (Phys-Chem): Good • Dissolved oxygen: High • pH: High • Phosphate: Moderate (Good by 2027) • Temperature: High	Moderate (Moderate by 2015) • Acid Neutralising Capacity: High • Ammonia (Phys-Chem): Good • Biochemical Oxygen Demand (BOD): High • Dissolved oxygen: High • pH: High (Good by 2015) • Phosphate: Moderate • Temperature: High
Chemical quality elements (status objective)	Fail • Priority substances: Fail • Other Pollutants: Does not require assessment • Priority hazardous substances: Fail	Fail (Good by 2015) • Priority substances: Good • Other Pollutants: Does not require assessment • Priority hazardous substances: Fail	Fail (Good by 2015) • Priority substances: Fail • Other Pollutants: Does not require assessment • Priority hazardous substances: Fail

Table 3.2 Water body parameters for groundwater bodies (Environment Agency, 2023)

Water body name	Northern Manchester Carboniferous Aquifers	Manchester and East Cheshire Permo-Triassic Sandstone Aquifers
Water body ID	GB41202G101800	GB41201G101100
NGR	SD8194613828	SD7965206300
Catchment area (km^2)	629.2	367.3
Overall status	Poor	Poor
Quantitative status	Good	Poor
Quantitative dependent surface water body status	Good	Good
Quantitative GWDTEs test	Good	Good
Quantitative saline intrusion	Good	Poor
Quantitative water balance	Good	Good
Chemical status	Poor	Poor
Chemical dependent surface water body status	Poor	Good
Chemical drinking water protected area	Good	Good
Chemical GWDTEs test	Good	Good
Chemical saline intrusion	Good	Poor
General chemical test	Good	Good
Reasons for not achieving good status	Not achieved good chemical status due to point source pollution from mining and quarrying (abandoned mine), and an activity that is yet to be identified by the Environment Agency.	Not achieved good chemical status or quantitative status due to confirmed saline or other intrusion (no sector responsible), and an activity that is yet to be identified by the Environment Agency.

Water body name	Northern Manchester Carboniferous Aquifers	Manchester and East Cheshire Permo-Triassic Sandstone Aquifers
Other	Seven GWDTEs have been identified within the Northern Manchester Carboniferous Aquifers groundwater body (Parts of Philips Park and North Wood LNR and SBI, Hollins Vale LNR, SBI, and Hollins Plantation SBI, The Hills South, Castle Brook South, Egypt Lane South, parts of Cowl Gate Farm and Simister Allotment Gardens).	Four GWDTEs have been identified within the Manchester and East Cheshire Permo-Triassic Sandstone Aquifers groundwater body (Hazlitt Wood SBI and parts of Philips Park and North Wood LNR and SBI, Parkwood Cottages South and parts of Cowl Gate Farm).

4 Screening of water bodies and activities

4.1.1 Table 4.1 summarises the WFD surface water bodies, the impacted watercourses and the activities that would likely have an impact on individual quality and supporting elements.

4.1.2 The key design elements of the Scheme in relation to WFD surface water bodies are three new outfall structures on Parr Brook, Tributary of Parr Brook 2 and Castle Brook. Those along Parr Brook and its tributary will be located along an existing culverted channel and would not require removal of natural bank material. Drainage of routine road runoff will utilise the outfalls as well those that already exist, where attenuation features (i.e., ponds and swales) will work to regulate flows to match either existing greenfield runoff rates or existing road drainage. An increase in impermeable surfaces will impact catchment drainage and flow, but these are to be captured in the road drainage networks. Excavations for attenuation features and any road cuttings will also have an impact on surface water bodies. During construction, haul roads and compounds are likely to require draining. The details of construction drainage are not known and will be incorporated into the Second Iteration Environmental Management Plan (EMP) (to be developed from the First Iteration EMP (TR010064/APP/6.5)). As a precaution, this assessment evaluates the impact of drainage from haul roads and compounds.

4.1.3 Construction activities are largely associated with the highway structure and earthworks (i.e., piling, excavations and embankment construction). Additionally, other construction activities that are likely to impact surface water body elements include: outfall construction, the construction and use of haul road and compounds (including construction drainage from them), and enabling works such as vegetation clearance.

4.1.4 Given the depth of the WFD groundwater bodies beneath the study area (estimated to be approximately 25-30 metres below ground level (mbgl)) most activities can be scoped out on the basis that they would only impact shallow groundwater, which is does not contain a WFD designation. This includes the GWDTE, none of which are nationally designated, and are unlikely to be fed by the WFD groundwater bodies (i.e. bedrock). Therefore, Table 4.2 below only contains activities with the potential to impact WFD groundwater bodies.

4.1.5 Table 4.1 and Table 4.2 provide a summary of activities screened in for assessment. With respect to Table 4.2, with the possible exception of piling, none of the activities will impact the WFD groundwater bodies.

Table 4.1 Screening of activities on surface water bodies

WFD surface water body	Watercourse	Scheme activities	
		Construction	Operation
Roch (Spodden to Irwell)	Parr Brook Tributary of Parr Brook 2	• Haul roads/Compounds • Excavations (piling and cutting) • Outfall construction • Vegetation clearance	• Outfall structure • Drainage of routine runoff • Impermeable surfaces • Excavations (piling and cutting)
Whittle Brook (Irwell)	Castle Brook Castle Brook Tributary Tributary of Castle Brook Tributary	• Haul roads/Compounds • Embankments • Excavations • Outfall construction • Vegetation clearance	• Outfall structure • Drainage of routine runoff • Impermeable surfaces • Excavations
Irk (Wince to Irwell)	Blackfish	• Haul roads/Compounds • Excavations	• Drainage of routine runoff • Impermeable surfaces • Excavations

Table 4.2 Screening of activities on groundwater bodies

WFD groundwater body	Scheme activities	
	Construction	Operation
Northern Manchester Carboniferous Aquifers Manchester and East Cheshire Permo-Triassic Sandstone Aquifers	• Bored piles associated with the bridge abutments for Simister Pike Fold Bridge and Simister Pike Fold Viaduct. The maximum depth of bored piles is estimated to be approximately 30mbgl and may intersect bedrock.	• Bored piles associated with the bridge abutments for Simister Pike Fold Bridge and Simister Pike Fold Viaduct. The maximum depth of bored piles is estimated to be approximately 30mbgl and may intersect bedrock.

5 Scoping of water body elements

5.1.1 Table 5.1 summarises the quality elements scoped into further assessment for surface water bodies, with each scoped in activity listed. Table 5.2 summarises the quality elements scoped into further assessment for groundwater bodies.

Table 5.1 Surface water body elements for further consideration

Note: Text in bold highlights both the scoped in water bodies, their elements and the activities which could lead to an impact.

WFD quality/supporting element	Sub-element	Scoped in or out	
		Construction	Operation
Biological	Fish	In – Due to potential loss of habitat for all quality elements caused by **all screened in activities** on **all screened in water bodies.**	In – Due to potential loss of habitat and/or displacement of species by the **discharge of routine runoff** combined with **impermeable surfaces could impact all screened in water bodies. Cuttings, piling** and **excavations** could impact **Roch (Spodden to Irwell)** and **Whittle Brook.** Out – The **outfall structure** at Parr Brook and its unnamed tributary will operate within an existing culvert. Thus, no habitat is present. **Embankments** are, at their closest, over 10m away from Castle Brook Tributary. Any fine sediment is likely to be trapped by vegetation prior to reaching the watercourse. Other Embankments are either over 20m away (Castle Brook, Tributary of Castle Brook Tributary) or have no interaction with watercourses (Parr Brook and Blackfish).
	Benthic invertebrates		
	Macrophytes and phytobenthos combined		

WFD quality/supporting element	Sub-element	Scoped in or out	
		Construction	**Operation**
Hydromorphological	Quantity and dynamics of flow	In – Potential impacts on baseflows, flow regimes and flow dynamics during construction as a result of **haul roads, compounds, excavations, outfall construction** and **cuttings** at **all screened in water bodies**. Out – **Embankments** are, at their closest, over 10m away from Castle Brook Tributary. Any fine sediment is likely to be trapped by vegetation prior to reaching the watercourse. Other Embankments are either over 20m away (Castle Brook, Tributary of Castle Brook Tributary) or have no interaction with watercourses (Parr Brook and Blackfish).	In – The **discharge of routine runoff, impermeable surfaces** could impact **all screened in water bodies. Cutting, excavation** and **piling** will have a combined impact on flow regimes as drainage discharges into receiving watercourses of **all screened in water bodies.** Out – **Embankments** are, at their closest, over 10m away from Castle Brook Tributary. Other Embankments are either over 20m away (Castle Brook, Tributary of Castle Brook Tributary) or have no interaction with watercourses (Parr Brook and Blackfish). **Outfall structures** on the **Roch (Spodden to Irwell)** are in existing culverts and would therefore have no impact on flow dynamics or flow regime.
	Connection to groundwater	In – Potential changes in baseflow and ground water pathways draining at watercourses as a result of **excavations** on **all screened in water bodies** for their respective activities. Out – No impacts are anticipated on groundwater connectivity as a result of **haul roads**, **compounds**, **embankments, cuttings** and **vegetation clearance** due to the distance between such activities and watercourses.	In – Indirect impact as a result of **excavations, cuttings and piling** potentially altering groundwater flow paths for all screened in water bodies. Localised impacts arising from the presence of **outfall structures** at **all screened in water bodies.**

WFD quality/supporting element	Sub-element	Scoped in or out	
		Construction	**Operation**
			Out – No impacts to groundwater connectivity as a result of the **embankments** for **all screened in water bodies,** given the distance between them and watercourses. No impacts anticipated as a result of the **discharge of routine runoff** and **impermeable surfaces,** as both activities would not influence such a connectivity for **all screened in water bodies**.
	River continuity	In – Lateral connectivity could be impacted by bankside working associated with the new **outfall structure** on Castle Brook (**Whittle Brook**). Out – **Embankments**, **excavations**, **and impermeable surfaces** do not require bankside working and would not impact this element. The **outfall structures** on Parr Brook and the Tributary of Parr Brook (**Roch (Spodden to Irwell))** would involve bankside working, but such works would take place along culverted channels and would be unlikely to impact lateral connectivity as the channels are underneath ground level.	In – **Outfall structures** would lead to impacts to lateral connectivity between watercourses and their riparian corridors on Whittle Brook. Out – All other remaining activities as they are not located adjacent to the watercourses or along their banks. The **outfall structures** on **Roch (Spodden to Irwell))** have also been scoped out due to their location being within culverting reaches. The culvert will already have impacted lateral connectivity and longitudinal continuity.
	River depth and width variation	In – Impacts associated with scour of bed and bank material, as well as fine sediment release would remain localised to **haul roads and compounds, vegetation clearance** and **outfall construction**. **Excavations**, construction of **impermeable surfaces** and	In – Impacts associated with scour of bed and bank material, as well as fine sediment release would remain localised to **outfall structure** at **Whittle Brook**, **piling, cuttings** and **excavations at Roch (Spodden to Irwell) and Whittle Brook. Impermeable surfaces**,
	Structure and substrate of the river bed		

WFD quality/supporting element	Sub-element	Scoped in or out	
		Construction	**Operation**
		embankments, despite their distance from watercourses, could also lead to silt-laden pathways releasing fine sediment into them.	**discharge of routine runoff** are scoped in for **all screened in water bodies.** Out – **Excavations, cutting, piling and embankments** are all away from the watercourses and would have no impact on channel cross-section or bed substrate. The **outfall structures** on **Roch (Spodden to Irwell))** have also been scoped out due to their location being within culverting reaches. The culvert will already have impacted the river bed by replacing it with concrete.
	Structure of riparian zone	In – **Vegetation clearance** would lead to localised impacts on riparian vegetation on **Whittle Brook**. Construction of the **outfall structure** would also lead to changes in riparian zone. Out – **Haul roads/compounds, impermeable surfaces, excavations** and **embankments** at **all screened in water bodies** are unlikely to impact the riparian structure due to their proximity to adjacent watercourses.	In – The new outfall structure on castle brook could impact the functionality of the riparian zone in **Whittle Brook**. Out – **Embankments**, **excavations** and **impermeable surfaces** are all away from the riparian corridors of watercourses of **all screened in water bodies**. Therefore, are unlikely to have an impact on riparian structure. The discharge of routine runoff would not have an impact on riparian structure, as impacts would occur within the channel. **Outfall structures** on Parr Brook and the Tributary of Parr Brook (**Spodden to Irwell**)) will sit within culverts, where riparian corridors are not present.

WFD quality/supporting element	Sub-element	Scoped in or out	
		Construction	**Operation**
Physico-chemical	Thermal conditions	In – Localised impacts as a result of vegetation clearance would occur as a result of **vegetation clearance** and construction discharge from **haul roads** and **compounds**. Out – The **outfall structure**, **impermeable surfaces**, **embankments**, **excavations** and **piling** would not lead to any changes in temperature due to the distance from each watercourse. This is the case for **all screened in water bodies.**	In – **Discharge of routine runoff** could impact local temperature due to a change in flow dynamics. This would impact **all screened in water bodies**. Out – The **outfall structure**, **impermeable surfaces**, **embankments**, **excavations** and **piling** would not lead to any changes in temperature due to the distance from each watercourse. This is the case for **all screened in water bodies.**
	Dissolved oxygen	In – Input of additional fine sediment would likely lead to changes along receiving watercourses as a result of **all screened in activities** on **all screened in water bodies**. Whilst construction activities and material could also cause change in sediment loading and physico-chemical quality elements.	In – Input of additional fine sediment would likely lead to changes along receiving watercourses because of **all screened in activities** on **all screened in water bodies**.
	pH		
	Nutrient conditions		
	Acid neutralising capacity		
	Biological Oxygen Demand (BOD)		
	Phosphate	Out (No arable agriculture or sewage treatment works are present in the vicinity of the Scheme).	
	Ammonia	In – Impacts from changes in plant coverage as a result of **vegetation clearance** at **each screened in water body**.	Out – No impacts anticipated as a result of **all screened in activities**. Any plant matter or organic matter entering the drainage network would likely remain within the attenuation ponds and not propagate to the designated channels of **each screened in water body**.

WFD quality/supporting element	Sub-element	Scoped in or out	
		Construction	**Operation**
		Out – **Haul roads/compounds, embankments, excavations, piling, impermeable surfaces** and **outfall structures** are all unlikely to be sources of ammonia.	
Chemical	Specific and other pollutants	In – Pollutants either accidently released via spillages or bound by accidently released sediment could impact on water bodies. Such pollutants are known to be transported for ~2km so **all screened in activities** are scoped in for each **screened in water body**.	In – Pollutants released via the **discharge of routine runoff/impermeable surfaces** could be washed directly from vehicles using the carriageway and cause indirect impact to **all screened in water bodies**. Out – No impacts are anticipated as a result of the **outfall structure, cuttings, piling, embankments or excavations**.
Invasive Non-Native Species (INNS)		In – **All screened in activities** could either accidently transpose or release INNS into all receptors which may spread to the designation channels of **each screened in water body**.	In – **Discharge of routine runoff** could accidently release INNS into each watercourse causing indirect impacts to the designated channels of **all screened in water bodies**.
Protected areas		In – Assessment of the impact to protected areas is a requirement of WFD regulations objectives.	In – Assessment of the impact to protected areas is a requirement of WFD regulations objectives.

Table 5.2 Groundwater body elements for further consideration

Element	Scoped in or out
Quantitative status	
Saline intrusion	In – whilst there are no local coastal sources, there is naturally occurring saline groundwaters
Water balance	In – potential impacts from groundwater flow disturbance on groundwater bodies
GWDTEs test	Out – there are no statutory GWDTEs with national or international designations
Dependent surface water body status	In – potential for groundwater flows to be altered, impacting on surface water baseflows and ecology
Chemical status	
Drinking water protected area	Out – impacts on water quality are unlikely to cause deterioration in water quality such that additional treatment is required for human consumption
General chemical test	In – potential groundwater quality impacts, such as creation of vertical pathways for contaminated groundwater, and/or mixing of different aquifer chemistries that potentially could impact the quality of the groundwater body as a whole.
GWDTEs test	Out – there are no statutory GWDTEs with national or international designations
Dependent surface water body status	In – potential for groundwater quality to be altered, impacting on surface water baseflows
Saline intrusion	In – whilst there are no local coastal sources, there is naturally occurring saline groundwaters

6 Impact assessment

6.1 Site-specific assessment against WFD Regulation quality and supporting elements

6.1.1 This section provides a comprehensive site-specific assessment of the scoped-in Scheme activities and their potential impacts on the quality elements at water body scale (see Tables 6.1, 6.2, 6.3 and 6.4). The assessment uses baseline information provided in Appendix 13.3: Hydromorphology Baseline Report of the Environmental Statement Appendices (TR010064/APP/6.3) to compare with.

6.1.2 Impacts are assessed in terms of risk of deterioration to elements following the implementation of embedded and essential mitigation (see Section 13.9 of Chapter 13: Road Drainage and the Water Environment of the Environmental Statement (TR010064/APP/6.1) for more details) using the following:

- Red (x) – Negative change. Negative changes are defined as a noticeable change in the quality element but may not be extensive or significant on a designated water body scale. These changes highlight a potential need for further mitigation to limit deterioration of the water body element. A negative change could, however, be one that is of a localised nature and would not lead to deterioration in quality element status. The specific impacts tables (Tables 6.1, 6.2, 6.3 and 6.4) details whether such a change poses a risk of deterioration.
- Blue (-) – Negligible change. This presents a low risk of change of status with localised impacts anticipated (impacts managed by best practice measures). Mitigation may not be necessary as the impacts are small scale, and only slightly noticeable.
- Green (✓) – Positive change. Potential improvement in status.
- Grey – No change from the existing situation.

6.1.3 Tables 6.1 to 6.4 include identified mitigation to reduce the potential impacts of the Scheme. The last column of Tables 6.1 to 6.4 outlines whether there is a risk of deterioration when all impacts and aspects of mitigation are considered. Impacts and risk are outlined for each water quality and supporting element. Importantly, if there is a risk of an element status change, this could lead to water body deterioration, and therefore non-compliance is a risk.

Table 6.1 Assessment of the Scheme against status objectives and elements for all scoped in surface water bodies during the construction phase

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change

Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**	**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk to quality element**
Haul roads and compounds	All scoped in biological quality elements	The quantity of sediment entering the watercourses of Castle Brook, Castle Brook Tributary, Tributary of Castle Brook Tributary, Parr Brook and Blackfish would be negligible following the implementation of mitigation. Therefore, it is unlikely that any habitats would be smothered, or species become displaced or killed as a result of the construction and use of haul roads and compounds. As such, this activity would have a negligible impact on the quality element.	Whittle Brook (-) Roch (Spodden to Irwell) (-) Irk (Wince to Irwell) (-)	None required	No risk of deterioration to quality elements.
	Hydromorphological supporting elements (Quantity and dynamics of flow)	Following the implementation of mitigation, there is unlikely to be any changes in the flow regime of Castle Brook, Castle Brook Tributary, Tributary of Castle Brook, Parr Brook or Blackfish. Furthermore, any discharges are assumed to match greenfield run off rates, which further work to mitigate impacts to flow regime. Flow dynamics are likely to change as construction drainage discharges into the receiving watercourses. However, such changes are unlikely to propagate along the watercourses and remain localised to any construction drainage outfall. As such, this would lead to negligible changes along each screened in water body.	Whittle Brook (-) Roch (Spodden to Irwell) (-) Irk (Wince to Irwell) (-)	None required	No risk of deterioration to supporting elements.
	Hydromorphological supporting elements (structure and substrate of channel bed)	The quantity of sediment entering the watercourses of Castle Brook, Castle Brook Tributary, Tributary of Castle Brook Tributary, Parr Brook and Blackfish would be negligible following the implementation of mitigation. Upon entry, negligible quantities of fine sediment will deposit on top of the existing silt channel beds of Castle Brook, Castle Brook Tributary, Tributary of Castle Brook Tributary, Parr Brook and Blackfish. As such, negligible changes are anticipated for each screened in water body.	All screened in water bodies (-)	None required	No risk of deterioration to supporting elements.
	Scoped in physico-chemical quality elements (Dissolved oxygen; pH, nutrient conditions, BOD, Acid neutralising capacity)	The quantity of sediment and pollutants entering the watercourse during the construction and use of haul roads would be negligible, following the implementation of mitigation. Furthermore, if carried downstream, the negligible quantities of sediment and pollutants would become increasingly diluted or deposited. Therefore, on a water body scale, such impacts would also be negligible.	All screened in water bodies (-)	None required.	No risk of deterioration to quality elements.
	Chemical status quality elements	Fine sediment released from the construction and operation of haul roads, could be bound by pollutants including zinc, copper, cadmium and hydrocarbons. Such pollutants would enter the watercourse via silt-laden runoff, or be accidently washed into the channels via construction drainage. However, the quantity of fine sediment and pollutants would be negligible following the implementation of mitigation. Therefore, changes either screened in water body would be negligible.	All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change

Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**	**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk to quality element**
Excavations (including pilings and cuttings)	Scoped in biological quality elements (fish; macro-invertebrates; Phytobenthos and Macrophytes)	Dewatering arising from cuttings and excavations could potentially lead to reduced baseflow along Castle Brook. If unmitigated, Castle Brook Tributary could potentially dry out during construction. Consequently, this could lead to displacement of fish, macro-invertebrates and macrophytes. However, given the lack of fish species along Castle Brook and Castle Brook Tributary and the implementation of mitigation (development of a compensation strategy for Castle Brook Tributary to retain flow in the channel), such impacts are likely to remain negligible. Furthermore, fine sediment entering the channel, as a result of earthworks associated with excavations, could smother any habitats present along the receiving watercourses of. However, given the distance from any watercourses (in excess of 10m) and the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5)), any such impacts would be, at most, negligible on a water body scale.	All screened in water bodies (-)	None required.	No risk of deterioration to quality elements.
	Hydromorphology (Quantity and Dynamics of Flow; connection to ground water body)	Dewatering associated with excavations adjacent to Castle Brook could lead to reduced baseflow along the watercourse as groundwater connectivity between surrounding aquifers and local watercourses (i.e., Castle Brook Tributary). Castle Brook Tributary, if unmitigated, could dry out during construction. However, through the implementation of mitigation, in this case developing a compensation strategy to retain flows in Castle Brook Tributary (commitment W25 in the REAC, contained within the First Iteration EMP (TR010064/APP/6.5)), such change would be negligible on a water body scale.	All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.
	Structure and substrate of river bed	Excavations typically release fine sediment which, if transported via silt-laden runoff, will smother substrate material of a river and potentially alter the structure of a river bed. However, given the distance from any watercourses (in excess of 10m) and the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5), any such impacts would be, at most, negligible.	All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.
	Scoped in physico-chemical quality elements (Dissolved oxygen; pH, nutrient conditions, BOD; acid-neutralising capacity)	Dewatering to enable cuttings, excavations and piling will reduce baseflow of Parr Brook, Castle Brook, Castle Brook Tributary and Blackfish. As a result, the reduced flow will lead to changes in the availability of dissolved oxygen and acid-neutralising capacity along each watercourse. Any fine sediment that enters the channel will also lead to increases in BOD, whilst potentially changing pH levels, depending on baseline pH, and nutrient conditions. It is likely, however, that with the increasing flow capacity of the drainage network of each screened in water body would naturally mitigate the impacts. Furthermore, through the implementation of mitigation, such impacts would be negligible on a water body scale.	All screened in water bodies (-)	None required.	No risk of deterioration to quality elements.
	Chemical status quality elements	Dewatering will reduce baseflows and flow capacity of watercourses. This will consequently impact the rate in which pollutants can be diluted along the course of the channel. However, impacts are only likely to impact the mentioned watercourses with the drainage network of each screened in water body naturally mitigating any localised changes, downstream. Furthermore, the implementation of mitigation would also work to mitigate such impacts. Therefore, any changes would be negligible for each water body.	All screened in water bodies (-)	None required.	No risk of deterioration to quality elements.
Embankments	Scoped in biological quality elements (fish; macro-invertebrates; Phytobenthos and Macrophytes)	Fine sediment entering the channel, as a result of earthworks associated with embankments could smother any habitats present along the receiving watercourses of. However, given the distance from any watercourses (in excess of 10m) and the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5)), any such impacts would be, at most, negligible.	All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change

Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**	**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk to quality element**
	Structure and substrate of river bed	Excavations typically release fine sediment which, if transported via silt-laden runoff, will smother substrate material of a river and potentially alter the structure of a river bed. However, given the distance from any watercourses (in excess of 10m) and the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5), any such impacts would be, at most, negligible on a water body scale.	All screened in water bodies	None required	No risk of deterioration to supporting elements.
	Scoped in physico-chemical quality elements (Dissolved oxygen; pH, nutrient conditions, BOD; acid-neutralising capacity)	Generally, fine sediment could become released during construction works and enter adjacent watercourses, via silt laden runoff. This typically will lead to increases in BOD, whilst potentially changing pH levels, depending on baseline pH, and nutrient conditions. However, given the distance from any watercourses (in excess of 10m) and the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5), any such impacts would be, at most, negligible on a water body scale.	All screened in water bodies	None required	No risk of deterioration to supporting elements.
	Chemical status quality elements	Embankments will likely lead to fine sediment release, which if bounded by pollutants will likely reduce water quality of any receiving watercourses. However, given the distance from any watercourses (in excess of 10m) and the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5), any such impacts would be, at most, negligible on a water body scale.	All screened in water bodies	None required	No risk of deterioration to supporting elements.
Outfall construction	Scoped in Biological quality elements (fish; macro-invertebrates; Phytobenthos and Macrophytes)	Commitment W15 in the REAC, contained within the First Iteration EMP (TR010064/APP/6.5)) states that construction of outfalls will incorporate good practice, as per Construction Industry Research and Information Association (CIRIA) guidance. Whilst the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5)) would prevent sediment and pollutants entering the watercourses as a result. Furthermore, no records of fish, invertebrates or macrophytes are logged in either watercourse. Therefore, localised impacts associated with noise would have no impact on the quality element.	Whittle Brook Roch (Spodden to Irwell)	None required	No risk of deterioration to supporting elements.
	Scoped in Hydromorphological quality elements (flow regime and Flow dynamics, river width and depth)	Commitment W16 in the REAC, contained within the First Iteration EMP (TR010064/APP/6.5)) states that outfalls will be installed to reduce impacts on the bed and banks. However, upon tying in the outfall to Castle Brook and Castle Brook Tributary, flow dynamics during excavations may change. These impacts would largely be concentrated at Castle Brook with Castle Brook Tributary being largely dry, exhibiting a flow regime typical of a drainage ditch at a golf course (i.e., ephemeral). As such, impacts would likely remain negligible.	Whittle Brook (-)	None required	No risk of deterioration to supporting elements.
		Outfalls at Parr Brook and the Tributary of Parr Brook 2 will be constructed on artificially reinforced and culverted reaches. Therefore, flow dynamics will likely see some localised changes, but such changes would not remain localised in the culvert.	Roch (Spodden to Irwell)	None required	
	Scoped in Hydromorphological quality elements (river width and depth)	Commitment W16 in the REAC, contained within the First Iteration EMP (TR010064/APP/6.5)) states that outfalls will be installed to reduce impacts on the bed and banks. However, upon tying in the outfall to Castle Brook and Castle Brook Tributary, natural bank material would be disturbed during excavations. Such disturbance could lead to localised erosion of bank material. These impacts would largely be concentrated at Castle Brook with Castle Brook Tributary being largely dry exhibiting a flow regime typical of a drainage ditch at a golf course (i.e., ephemeral). As such, any impacts, albeit permanent and noticeable, are likely remained localised and won't propagate enough to cause water body scale impacts.	Whittle Brook (x)	None required	No risk to supporting element, given the localised nature of the change.

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change

Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**	**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk to quality element**
	Scoped in Hydromorphological quality elements (structure and substrate of river bed)	Commitment W16 in the REAC, contained within the First Iteration EMP (TR010064/APP/6.5)) states that outfalls will be installed to reduce impacts on the bed and banks. Whilst the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5) would prevent sediment entering watercourses as a result. If any do reach the watercourses, they would be of negligible quantity and only deposit on the bed comprising of silt. Therefore, no change is anticipated.	Whittle Brook	None required	No risk of deterioration to supporting elements
	Scoped in Hydromorphological supporting element (structure of riparian zone)	Construction would lead to permanent changes to the riparian zone where one outfall at Castle Brook and two at Castle Brook Tributary. As such, permanently altering the functionality of the riparian zone and further influencing the erodibility of bank material that will have been disturbed. However, such impacts would largely be concentrated at Castle Brook with Castle Brook Tributary being largely dry exhibiting a flow regime typical of a drainage ditch at a golf course (i.e., ephemeral). Therefore, any impacts are likely remained localised and propagate enough to cause water body scale impacts.	Whittle Brook (x)	None required	No risk to supporting element, given the localised nature of the change.
	Scoped in physico-chemical quality elements (Dissolved oxygen; pH)	Commitment W15 in the REAC, contained within the First Iteration EMP (TR010064/APP/6.5)) states that construction of outfalls will incorporate good practice, as per CIRIA guidance, whilst the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5)) would prevent sediment and pollutants entering the watercourses. As such, only negligible quantities of sediment and pollutants would enter the Castle Brook, Castle Brook Tributary or Parr Brook causing localised impacts. These would likely become diluted or deposited as they are transported downstream and pose a negligible change to the screened in water bodies.	Whittle Brook	None required	No risk of deterioration to supporting elements.
			Roch (Spodden to Irwell) (-)	None required	No risk of deterioration to supporting elements.
	Chemical status quality elements	Commitment W15 in the REAC, contained within the First Iteration EMP (TR010064/APP/6.5)) states that construction of outfalls will incorporate good practice, as per CIRIA guidance, whilst the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5)) would prevent sediment and pollutants entering the watercourses. As such, only negligible quantities of sediment, and pollutants bound to them, would enter the Castle Brook, Castle Brook Tributary or Parr Brook, causing localised impacts. These would likely become diluted or deposited as they are transported downstream and pose a negligible change to the screened in water bodies.	Whittle Brook (-)	None required.	No risk of deterioration to supporting elements.
		Fine sediment released from the construction and operation of haul roads, could be bound by pollutants. Such pollutants enter the watercourse via silt-laden runoff. However, the quantity of fine sediment would be negligible following the implementation of mitigation. Furthermore, the distance between the activity and the designated channel of Whittle Brook is approximately 2km, so such pollutants would likely become diluted by increases in flow capacity. Therefore, any impacts would likely be negligible on a waterbody scale.	Roch (Spodden to Irwell) (-)	None required.	No risk of deterioration to supporting elements.
Vegetation clearance	Scoped in Biological quality elements	Vegetation clearance at the Castle Brook Tributary would be unlikely lead to any changes on the water body, given the largely dry nature of the channel and a lack of fauna or flora in the channel. The channel bed comprises of silt already, therefore any fine sediment entrained when flows are active would not alter existing conditions along Castle Brook or Whittle Brook.	Whittle Brook	None required.	No risk of deterioration to supporting elements.

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change

Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**	**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk to quality element**
		Vegetation clearance along the right bank would expose fine sediment, which could enter the watercourse via silt-laden runoff. Parr Brook here is already heavily poached where fine sediment is available in large quantities already. Furthermore, the implementation of mitigation will also work to mitigate any impacts to fauna or flora using the watercourse. Therefore, the impact of vegetation clearance would be negligible.	Roch (Spodden to Irwell) (-)	None required.	No risk of deterioration to supporting elements.
	Scoped in hydromorphological supporting elements (river width and depth, structure and substrate of river bed, structure of riparian zone)	Commitment W14 in the REAC, contained within the First Iteration EMP (TR010064/APP/6.5) states that vegetation clearance will be limited along riparian corridors and floodplains. The temporary loss of riparian vegetation will change riparian functionality; however, this is likely to return to existing conditions once construction is complete. Whilst cleared, the lack of vegetation will expose bank material along Castle Brook and Castle Brook Tributary to erosion, whilst fine sediment would be exposed to entrainment by surface runoff. However, Castle Brook Tributary is largely dry, and any erosion would be dependent on flows being present, whilst the bed comprises of silt. Furthermore, the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5), will mitigate impacts associated with cleared vegetation during construction. Therefore, any changes would be negligible.	Whittle Brook (-)	None required	No risk of deterioration to supporting elements.
		Commitment W14 in the REAC, contained within the First Iteration EMP (TR010064/APP/6.5) states that vegetation clearance will be limited along riparian corridors and floodplains. The temporary loss of riparian vegetation will change functionality; however, this is likely to return to existing conditions once construction is complete. Whilst cleared, the lack of vegetation will expose bank material to erosion and fine sediment to entrainment. However, the banks of Parr Brook here are heavily poached where fine sediment readily supplied. Furthermore, the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5), will mitigate impacts associated with cleared vegetation during construction. Furthermore, the channel here lacks varied riparian vegetation due to livestock, therefore erosion is unlikely to be noticeable and any changes would be negligible.	Roch (Spodden to Irwell) (-)	None required	No risk of deterioration to supporting elements.
	Scoped in physico-chemical quality elements	The clearance of vegetation is unlikely to have an impact great enough to change the status of this quality element. Where cleared, Castle Brook and Castle Brook Tributary is already exposed to sunlight and temperature is unlikely to change. Fine sediment entering the channel could reduce dissolved oxygen, acid neutralising capacity and increase BOD and ammonia at Parr Brook, as it comprises a perennial flow regime. However, Castle Brook Tributary is largely dry for much of the year, therefore such changes are unlikely to have any impact on the water body. Furthermore, the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5), will mitigate impacts associated with cleared vegetation during construction. Therefore, any impacts are likely to be negligible on a water body scale.	Whittle Brook (-)	None required	No risk of deterioration to supporting elements.

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change

Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**	**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk to quality element**
		The clearance of vegetation is unlikely to have an impact great enough to change the status of this quality element. Where cleared, Parr Brook is already exposed to sunlight and temperature is unlikely to change. Fine sediment entering the channel could reduce dissolved oxygen, acid neutralising capacity and increase BOD at Parr Brook, as it comprises a perennial flow regime. However, Parr Brook is already a recipient of unnaturally high quantities of sediment locally, as a result of livestock heavily poaching the banks. Furthermore, the implementation of sediment and pollution management plans, as per the First Iteration EMP (TR010064/APP/6.5), will mitigate impacts associated with cleared vegetation during construction. Therefore, such impacts are unlikely to cause any noticeable change.	Roch (Spodden to Irwell) (-)	None required	No risk of deterioration to supporting elements.
	Chemical status quality elements	Fine sediment entering the watercourses could be bound by pollutants, which will have an impact on local water quality. However, the low energy nature of both watercourses mean that such sediment is likely to be deposited locally. This and the implementation of sediment and pollution management measures means that such impacts would be negligible.	All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.
All activities and their impacts to Invasive Non-Native Species (management)	Scoped in Biological quality elements	The following Invasive on-native species are present within the catchments of screened in water bodies: • Himalayan balsam (*Impatiens glandulifera)* • Japanese knotweed (*Reynoutria japonica*) • Rhododendron (*Rhododendron arboretum*) • Nutall's waterweed (*Elodea nuttallii*) • Variegated yellow archangel (*amiastrum galeobdolon*), All activities could potentially disturb, spread or promote them which could potentially impact aquatic flora populations through the reduction in habitat variation. However, through measures implemented through the First Iteration EMP (TR010064/APP/6.5), the impact of construction activities will lead to negligible impacts on a water body scale.	All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.
	Scoped in Hydromorphological Supporting elements	INNS known along the water bodies would likely replace the indigenous riparian vegetation along the banks, if disturbed, spread or promoted. As they are generally seasonal in nature, INNS would die during winter months, leaving bank material and riparian soils exposed to erosion. Sediment loading would likely increase as a result of bank destabilisation and silt-laden runoff during precipitation events, which would likely smother the bed substrate downstream. However, measures implemented through the First Iteration EMP (TR010064/APP/6.5), the impact of construction activities will lead to negligible impacts on a water body scale.			
	Scoped in physico-chemical quality elements Chemical status quality elements	If disturbed, the increase in abundancy of noted Invasive non-native species could increase nutrients, as they die-back during winter months. This would reduce dissolved oxygen levels. Furthermore, Himalayan balsam and Japanese knotweed would also leave banks exposed to erosion during winter. This could lead to localised increases in fine sediment along each water body. However, measures implemented through the First Iteration EMP (TR010064/APP/6.5), the impact of construction activities will lead to negligible impacts on a water body scale.			

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change			
Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**			**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk to quality element**
All activities and their impacts on protected areas	Scoped in Biological quality elements	No protected areas are connected to the Scheme, therefore no impacts anticipated.			All screened in water bodies	None required.	No risk of deterioration to supporting elements.
	Scoped in Hydromorphological Supporting elements						
	Scoped in physico-chemical quality elements						
	Chemical status quality elements						

Table 6.2 Assessment of the Scheme against status objectives and elements for all scoped in surface water bodies during the operational phase

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change			
Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**			**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk of quality element deterioration**
Outfall structures	Scoped in hydromorphological supporting elements (flow regime and flow dynamics, river width and depth, structure and substrate or river bed, structure of riparian zone)	Commitment W15 in the REAC, contained within the First Iteration EMP (TR010064/APP/6.5) states that construction of outfalls will incorporate good practice, as per CIRIA guidance. Therefore, mitigating any impacts the headwall structure will have on flow dynamics, river width and depth and structure of the riverbed. There is likely to be a localised change in river width at the site of the outfall structure, given its set back nature. However, this would not pose a risk to quality element and would remain negligible.			Whittle Brook (-)	None required	No risk of deterioration.
	Scoped in hydromorphological supporting elements (groundwater connectivity)	Localised disconnection would result from the presence of three new outfalls (two at Castle Brook Tributary and one at Castle Brook). This would be a permanent loss of connectivity; however, such a change would not be of detriment to the quality of element of the water body, given the size of water body and localised extent of the impact.			Whittle Brook (x)	None required.	No risk of deterioration given the localised nature of the change.
	Scoped in hydromorphological supporting elements (structure of riparian zone)	Outfall structures represent a permanent change to the riparian corridor as they are new permanent feature that would replace vegetation and natural material. There are three outfalls, two of which are on Castle Brook Tributary and one on Castle Brook. The riparian corridors here comprise of pastoral agriculture with limited evidence of a varied natural habitat. Therefore, although there is likely to be a noticeable impact on functionality along the riparian zone, it would remain localised and unlikely to be a risk on a water body scale. Furthermore, the vegetated swale connecting an outfall to Castle Brook Tributary is likely to represent localised betterment, although one that would remain negligible on a water body scale.			Whittle Brook	None required.	No risk of deterioration given the localised nature of the change.

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change			
Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**			**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk of quality element deterioration**
	Scoped in physico-chemical quality elements (Dissolved oxygen; pH, BOD, nutrient conditions, acid-neutralising capacity)	Fine sediment released as Castle Brook Tributary and Castle Brook adjust to the presence of three outfall structures would alter local dissolved oxygen levels, nutrient conditions and pH within the water bodies. Impacts would however be short-term and local to the structure, with dissolved oxygen levels returning to existing conditions further downstream, as they deposit. Therefore, the anticipated changes would be negligible on a water body scale.			Whittle Brook (-)	None required.	No risk of deterioration to quality element.
	Chemical status quality elements	Fine sediment released at Castle Brook Tributary and Castle Brook as they both adjust to the presence of the three outfall structures could impact the watercourse by causing localised increase in chemicals such as copper, cadmium and any remnant hydro-carbons. Impacts would, however, be short-term and local to the structure, with the capacity of the channel diluting such changes further downstream. Furthermore, the set back nature of the outfalls and swale for one of the outfalls at Castle Brook Tributary would also mitigate the impact of fine sediment release. Therefore, the anticipated changes would be negligible on a water body scale.			Whittle Brook (-)	None required.	No risk of deterioration to quality element.
Discharge of Routine Runoff; impermeable surfaces	Scoped in Biological quality elements (fish; macro-invertebrates; Phytobenthos and Macrophytes)	With embedded mitigation, all routine runoff assessments pass for all parameters and all accidental spillage risk assessments are within acceptable limits. As a consequence, routine runoff and accidental spillage are unlikely to lead to a serious pollution incident capable of impacting both flora and fauna across the water body. Localised changes in flow could scour bed and bank material; however, a lack of invertebrates, fish and macrophytes in the channel mean that such impacts are unlikely.			Whittle Brook	None required.	No risk of deterioration to supporting elements.
		With embedded mitigation, all routine runoff assessments pass for all parameters and all accidental spillage risk assessments are within acceptable limits. As a consequence, routine runoff and accidental spillage are unlikely to lead to a serious pollution incident capable of impacting both flora and fauna across the water body. The new outfalls are in culverted channels where flora and fauna are likely to be absent. Therefore, no changes are anticipated here.			Roch (Spodden to Irwell)		
		With embedded mitigation, all routine runoff assessments pass for all parameters and all accidental spillage risk assessments are within acceptable limits. As a consequence, routine runoff and accidental spillage are unlikely to lead to a serious pollution incident capable of impacting both flora and fauna across the water body.			Irk (Wince to Irwell)		
	Scoped in Hydromorphological Supporting elements (Quantity and Dynamics of Flow)	Generally, as flow rates would be attenuated to match greenfield run off rates or the existing discharge rate, it is unlikely any changes in flow regime would occur. Changes in flow dynamics would remain localised to the outfall structure and would have been mitigated for, where the outfalls would face downstream and submerged, where applicable. At Parr Brook, where the outfalls will discharge into existing culverts, flow dynamics will change but these changes will be localised to the outfall and would not cause water body scale change. A swale linking an outfall to Castle Brook Tributary would also mitigate any impacts on flow dynamics.			All screened in water bodies	None required.	No risk of deterioration to supporting elements.

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change			
Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**			**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk of quality element deterioration**
	Scoped in Hydromorphological Supporting elements (River width and depth)	Flow rates would be attenuated to match greenfield runoff rates. Therefore, flow discharging from new outfalls would have a minimal impact, where bed scour would remain localised to the outfall. This is likely to only occur at Castle Brook where flow is perennial. The swale linking an outfall to Castle Brook Tributary would mitigate any risk of scour to the bed and banks of the watercourse. Furthermore, Castle Brook Tributary is largely dry, so where scour may take place is likely to intermittent and highly localised to the outfall that directly connect to the watercourse.			Whittle Brook	None required.	No risk of deterioration to supporting elements.
		Discharges from road drainage would flow into an existing culverted channel and would not have any impact on channel bed or banks.			Roch (Spodden to Irwell)	None required.	No risk of deterioration to supporting elements.
	Scoped in Hydromorphological Supporting elements (structure and substrate of river bed)	Embedded mitigation and the design of ponds would trap any fine sediment that has historically been flushed from the existing drainage networks and into receiving watercourses. Therefore, providing a betterment to in terms of fine sediment management along each water body and reducing siltation of watercourses such as Parr Brook, the River Irk and Castle Brook.			All screened in water bodies (+)	None required.	No risk of deterioration to supporting elements.
	Scoped in physico-chemical quality elements	Assessment of routine runoff and accidental spillage risk from impermeable carriageways during the operational phase has been undertaken. With embedded mitigation, all routine runoff assessments pass for all parameters and all accidental spillage risk assessments are within acceptable limits. As a consequence, routine runoff and accidental spillage are unlikely to lead to a serious pollution incident which would cause a reduction in WFD status.			All screened in water bodies.	None required.	No risk of deterioration to supporting elements.
	Chemical status quality elements				All screened in water bodies.		No risk of deterioration to supporting elements.
Excavations	Scoped in Biological quality elements (fish; macro-invertebrates; Phytobenthos and Macrophytes)	A reduction in baseflow could lead to localised impacts on habitat availability for fish. Alterations in physico-chemical qualities that may impact habitat availability for fish and macroinvertebrates, whilst also impacting macrophyte communities. However, given the lack of fish species at these watercourses, the distance between the activity and each watercourse, the small footprint of the activities and the implementation of mitigation, such impacts are likely to remain negligible.			All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.
	Scoped in Hydromorphological Supporting elements (Quantity and Dynamics of Flow; connection to groundwater)	Excavations, cuttings and pilings to facilitate structures could impact on groundwater pathways and inevitably baseflows rates of watercourses (namely Castle Brook and Parr Brook). However, given the distance between the activity and each watercourse, the small footprint of the activities and the implementation of mitigation, such impacts are likely to remain negligible.			All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.
	Scoped in physico-chemical quality elements	A reduction in baseflow, as a result of potentially altered groundwater could reduce acid-neutralising capacity and dissolved oxygen levels as flow would reduce. Conversely temperature could increase as there would be less flow to absorb solar radiation. However, impacts would remain localised to Castle Brook and Parr Brook and return to near existing levels at Whittle Brook and the River Roch. Also, given the distance between the activity and each watercourse, the small footprint of the activities and the implementation of mitigation, such impacts are likely to remain negligible.			All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change			
Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**			**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk of quality element deterioration**
	Chemical status quality elements	A reduction in baseline would reduce the local dilution capacity of watercourses within the area. However, further downstream of the initial impact, baseflows are likely to improve, particularly at each respective designated water body, as it would be diluted by the wider drainage network. However, given the distance between the activity and each watercourse, the small footprint of the activities and the implementation of mitigation, such impacts are likely to remain negligible.			All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.
All activities and their impacts to INNS (management)	Scoped in Biological quality elements	The following Invasive on-native species are present within the catchments of screened in water bodies: • Himalayan balsam (*Impatiens glandulifera)* • Japanese knotweed (*Reynoutria japonica*) • Rhododendron (*Rhododendron arboretum*) • Nutall's waterweed (*Elodea nuttallii*) • Variegated yellow archangel (*amiastrum galeobdolon*), All activities could potentially disturb, spread or promote them which could potentially impact aquatic flora populations through the reduction in habitat variation. However, through measures implemented through the First Iteration EMP (TR010064/APP/6.5), the impact of construction activities will lead to negligible impacts on a water body scale.			All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.
	Scoped in Hydromorphological Supporting elements	INNS known along the water bodies would likely replace the indigenous riparian vegetation along the banks, if disturbed, spread or promoted. As they are generally seasonal in nature, INNS would die during winter months, leaving bank material and riparian soils exposed to erosion. Sediment loading would likely increase as a result of bank destabilisation and silt-laden runoff during precipitation events, which would likely smother the bed substrate downstream. However, measures implemented through the First Iteration EMP (TR010064/APP/6.5), the impact of construction activities will lead to negligible impacts on a water body scale.					
	Scoped in physico-chemical quality elements	If disturbed, the increase in abundancy of noted Invasive non-native species could increase nutrients, as they die-back during winter months. This would reduce dissolved oxygen levels. Furthermore, Himalayan balsam and Japanese knotweed would also leave banks exposed to erosion during winter. This could lead to localised increases in fine sediment along each water body. However, measures implemented through the First Iteration EMP (TR010064/APP/6.5), the impact of construction activities will lead to negligible impacts on a water body scale.					
	Chemical status quality elements						
All activities and their impacts on protected areas	Scoped in Biological quality elements	No protected areas are connected to the Scheme, therefore no impacts anticipated.			All screened in water bodies	None required.	No risk of deterioration to supporting elements.
	Scoped in Hydromorphological Supporting elements						
	Scoped in physico-chemical quality elements						

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change			
Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**			**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk of quality element deterioration**
	Chemical status quality elements						

Table 6.3 Assessment of the Scheme against status objectives and elements for all scoped in groundwater water bodies during the construction phase

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change			
Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**			**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk of quality element deterioration**
Groundwater Quantitative Status							
Piling (bored)	Saline Intrusion Water Balance Dependant surface water body status	The bored piling is relatively localised and has a very small footprint compared to the scale of the groundwater body. A piling risk assessment will be undertaken prior to construction and will be undertaken in general accordance with Environment Agency methodology. However, piling is undertaken routinely in similar settings and is unlikely to cause a risk providing that environmental design and protective measures in the piling risk assessment are followed.			All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.
Groundwater Chemical Status							
Piling (bored)	General Chemical Test Dependent surface water body status Saline intrusion	The bored piling is relatively localised and has a very small footprint compared to the scale of the groundwater body. A piling risk assessment is required prior to the works commencing. This should be undertaken in general accordance with Environment Agency methodology. However, piling is undertaken routinely in similar settings and is unlikely to cause a risk providing that environmental design and protective measures in the piling risk assessment are followed.			All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.

Table 6.4 Assessment of the Scheme against status objectives and elements for all scoped in groundwater water bodies during the operational phase

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change			
Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**			**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk of quality element deterioration**
Groundwater Quantitative Status							
Piling (bored)	Saline Intrusion Water Balance Dependant surface water body status	The bored piling is relatively localised and has a very small footprint compared to the scale of the groundwater body. A piling risk assessment will be undertaken prior to construction and will be undertaken in general accordance with Environment Agency methodology. However, piling is undertaken routinely in similar settings and is unlikely to cause a risk providing that environmental design and protective measures in the piling risk assessment are followed.			All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements.
Groundwater Chemical Status							

Key to change	Negligible change (-)	Negative change (x)	Positive change (+)	No change			
Activity	**Quality element**	**Potential impact(s) (following embedded and essential mitigation)**			**Relevant designated water body and magnitude of impact**	**Additional mitigation to reduce risk of deterioration**	**Risk of quality element deterioration**
Piling (bored)	General Chemical Test	The bored piling is relatively localised and has a very small footprint compared to the scale of the groundwater body. A piling risk assessment will be undertaken prior to construction and will be undertaken in general accordance with Environment Agency methodology. However, piling is undertaken routinely in similar settings and is unlikely to cause a risk providing that environmental design and protective measures in the piling risk assessment are followed.			All screened in water bodies (-)	None required.	No risk of deterioration to supporting elements
	Dependent surface water body status						
	Saline intrusion						

6.2 Assessment of the Scheme against the WFD mitigation measures

6.2.1 Each RBMP, contains a list of mitigation measures, or environmental improvements. These measures need to be implemented in order to improve the ecology of water bodies by a specified date, so the UK meets its target date set by the WFD Regulations. Part of the WFD Regulations compliance assessment is to consider mitigation measures and assess whether a Scheme can contribute to them or might obstruct any of them from being delivered.

6.2.2 Table 6.5 provides a list of all mitigation measures relevant, and an explanation of why the Scheme might/might not be able to achieve or contribute to mitigation measures. It shows that there are only mitigation measures on Roch (Spodden to Irwell). None of these mitigation measures would be impacted by the Scheme.

6.2.3 For the surface water body, Irk (Wince to Irwell) general information has been provided. However, the information lacks any detail on location and specific methodology to achieve the mitigation measures. Instead, this assessment has taken a general approach over whether the Scheme would either have an impact on the mitigation measure or contribute to achieving it.

Table 6.5 Mitigation measures and assessment of whether the Scheme would help to contribute to them or impact them adversely

Water Body	Mitigation measure	Would the Scheme adversely impact the progress of the mitigation measure?	Would the Scheme help to achieve or contribute to mitigation measure?
Roch (Spodden to Irwell)	Weir removal, Oakenrod Bridge in Rochdale.	No – The Scheme would have no impact on mitigation measures. The mitigation measures are neither within the Order Limits of the Scheme nor hydrologically connected to it.	No – The Scheme would not work to achieve or contribute to the success of the mitigation as each mitigation measure is neither located within the Order Limits of the Scheme nor hydrologically connected to it.
	Gauging weir removal adjacent to treatment works.		
	Roch lateral connection to right bank, near to Roch Valley Way.		
	Crimble Mill weir removal.		
	Roch at Lower Crimble. Improve floodplain connection on right-hand bank/inside bend of meander near to boating lake.		
	Roch at Lower Crimble. Improve floodplain connection with right-hand bank opposite Queen's Park Bridge and boating lake.		
	Roch at Hooley Bridge. Remove or modify weir.		
	Roch at Bottom o' th' Brow. Improve floodplain connection with right-hand bank on meander bend.		
	Roch at Broad Oak Wood. Remove weir.		
	Roch at Prettywood. Notch weir.		

Water Body	Mitigation measure	Would the Scheme adversely impact the progress of the mitigation measure?	Would the Scheme help to achieve or contribute to mitigation measure?
	Roch, downstream of Prettywood and just upstream of M66. Installation of fish passage.		
	Roch between Crimble and just downstream of Gristlehurst House. Improve morphological diversity.		
	Roch at Elbut Wood. Improve floodplain connection.		
	Roch at Plimhole. Improve floodplain connection.		
	Roch at Plimhole. Improve floodplain connection with right-hand bank, Fletcher Fold, Redvales.		
	Roch at Plimhole. Improve floodplain connection with left-hand bank, opposite Fletcher Fold, Redvales.		
	Roch at Blackford Bridge. Remove/partially remove or notch weir.		
Irk (Wince to Irwell)	Removal of obsolete structures	No – No obsolete structures are located within the Order Limits of the Scheme.	No – The Scheme's Order Limits do not consist of any obsolete structures.
	Fish passes and enhancing ecology	No - There is no requirement for fish passes or improving the ecology of watercourses within the Scheme.	No – The Scheme would not contribute to the mitigation measure due to a lack of notable aquatic ecology within the Order Limits.

Water Body	Mitigation measure	Would the Scheme adversely impact the progress of the mitigation measure?	Would the Scheme help to achieve or contribute to mitigation measure?
	Selective vegetation control	No – There is no known requirement to control vegetation, given the already managed land cover throughout the Order Limits.	No – There is no known requirement to control vegetation, given the already managed land cover throughout the Order Limits.
	Vegetation control and timing		
	Invasive species techniques	No – No invasive species are present in the Order Limits.	No – No invasive species are present in the Order Limits.
	Retain habitats	No – The majority of aquatic habitat is likely to remain unaltered following the Scheme. Furthermore, the modified nature of all watercourses in the Order Limits precludes opportunity for substantial aquatic habitat from forming.	No – The Scheme would not contribute to retaining habitats given the lack of substantial aquatic habitats in the Order Limits and the lack of betterment to habitats in the Order Limits.
	Sediment management strategy	No - Embedded mitigation would mitigate sediment management issues resulting from the Scheme.	Yes – If sediment management is associated with the watercourses discussed in this assessment, then the embedded mitigation would work to prevent fine sediment from discharging into the water bodies.
	Maintenance – minimise habitat impact	No – Through the implementation of the First Iteration EMP (TR010064/APP/6.5), the Scheme would have a minimal impact on aquatic habitats.	Yes – If minimising aquatic habitats is required in the vicinity of the Order Limits, then the Scheme would work towards this measure, given the implementation of the First Iteration EMP (TR010064/APP/6.5).

Water Body	Mitigation measure	Would the Scheme adversely impact the progress of the mitigation measure?	Would the Scheme help to achieve or contribute to mitigation measure?
	Maintenance – prevent sediment transfer	No – Embedded mitigation would mitigate sediment transfer issues resulting from the Scheme.	Yes – If sediment transfer issues are associated with the watercourses discussed in this assessment, then the embedded mitigation would work to prevent fine sediment from discharging into the water bodies.
	Remove or soften hard bank	No – No hard banks for alteration as a result of the Scheme.	No – No hard banks for alteration as a result of the Scheme.
	Align and attenuate flow	No – There is no requirement for the Scheme to align or attenuate flow.	No – There is no requirement for the Scheme to align or attenuate flow.
	Educate landowners	No – There is no requirement to educate landowners on aquatic habitats.	No – There is no requirement to educate landowners on aquatic habitats.
	Alter culvert channel bed	No – There is no requirement to open or modify any existing culverts.	No – There is no requirement to open or modify any existing culverts.

6.3 Cumulative impact assessment of the Scheme in conjunction with other schemes planned or in place along the water body

6.3.1 Currently, there are six planning applications within 1km of the Scheme that require assessment of potential cumulative impacts to WFD water body quality/supporting elements. Chapter 15: Assessment of Cumulative Effects of the Environmental Statement (TR010064/APP/6.1) provides further details regarding the scoping of additional developments.

6.3.2 The potential cumulative impacts of the six additional developments on WFD Regulations quality/supporting elements are summarised in Table 6.6.

Table 6.6 Cumulative assessment

Additional developments	Planning application reference	Distance from Scheme (km)	Potential cumulative impact on WFD Regulations quality elements
Erection of 33 apartments with associated parking and a detached dwellinghouse.	58918	0	Potential cumulative impacts are unlikely, as the development is located north of the most eastern region of the Scheme where impact pathways are not present.
Erection of new four storey office building (Class B1) and new four storey building comprising of 11 residential apartments (Class C3) together with dedicated parking.	63003	0.05	Potential cumulative impacts are unlikely, as the development is located north of the most eastern region of the Scheme where impact pathways are not present.
Variation of condition of planning permission 61515 for erection of new main school building: Revised site layout plan to show amendments to the habitat zone and parking layout. Ref 61515: Demolition of existing main school building and erection of new (relocated replacement) main school building, relocated hard surface games areas, car parking and landscaping and new substation.	63378	0.05	Potential cumulative impacts are unlikely, as the development is located north of the most eastern region of the Scheme where impact pathways are not present.
Demolition of existing building and construction of a three-storey block of apartments consisting of 27 units.	65379	0.4	Potential cumulative impacts are unlikely, as the development is located north of the most eastern region of the Scheme where impact pathways are not present.

Additional developments	Planning application reference	Distance from Scheme (km)	Potential cumulative impact on WFD Regulations quality elements
Redevelopment and change of use of the site to provide 30 new residential dwellings along with associated works including landscaping and provision of access from Victoria Avenue, including highway works to Victoria Avenue.	68691	0.50	Potential cumulative impacts are unlikely, as the development is located north of the most eastern region of the Scheme where impact pathways are not present.
Hybrid application - Full application: Zone 1 development of Commercial building No1 (Creche, Use Class E), car parking and internal site roads, a new site access junction to Pilsworth Road, highway improvements to Hollins Brook Way and Pilsworth Road, and continued use of an existing car park exit to Aviation Road. Outline application: Zone 2 development of Commercial building No.2 (Hub building, Use Class E) car parking and internal site roads and a multi-purpose all-weather sports pitch (Including reserved matters of means of access, layout and scale included for determination).	68530	0.80	Potential cumulative impacts are unlikely. The development is upstream of impact pathways of the Scheme.

6.4 Assessment of the Scheme against other linked legislation (protected areas)

6.4.1 No protected areas, as per WFD Regulations, are identified within the study area of the Scheme, with no recognized impact pathways present either. Appendix 8.13: Habitat Regulations Assessment of the Environmental Statement Appendices (TR010064/APP/6.3) also identifies the lack of protected areas and potential impact pathways, other than the Affected Road Network potentially impacting flora along Rochdale Canal. However, no significant impacts are anticipated as a result of the Scheme, as the Scheme is not hydrologically connected to Rochdale Canal. Therefore, the Habitat Regulations Assessment (Appendix 8.13: Habitat Regulations Assessment of the Environmental Statement Appendices (TR010064/APP/6.3)) found that there would be no significant impacts or effects on protected areas, as a result of the Scheme. Thus, the Scheme is compliant with regard to other linked legislation.

6.5 Assessment of the Scheme against WFD objectives

6.5.1 Table 6.7 provides a summary of the compliance of the Scheme against the legislative objectives of the WFD Regulations. In summary, it is considered that at a water body scale, the Scheme would be compliant for all designated water bodies assessed.

6.5.2 Some of the construction and operation activities of the Scheme would lead to localised negative changes to water quality elements. However, with the implementation of embedded and essential mitigation, these impacts are unlikely to lead to deterioration in classification and/or prevent the water quality elements from either achieving good classification or achieving their RBMP objectives.

Table 6.7 Compliance with the environmental objectives of the WFD

Environmental Objective	Scheme	Compliance with the WFD Directive
No changes affecting high status sites	Not applicable – no high-status water bodies present.	Yes
No changes that would cause failure to meet surface water Good Ecological Status or Potential or result in a deterioration of surface water Ecological Status or Potential	The Scheme would not cause deterioration in the status of most identified quality/supporting elements.	Yes
No changes which would permanently prevent or compromise the Environmental Objectives being met in other water bodies	The Scheme would not cause a permanent exclusion, or compromise achieving the objectives in other bodies of water within the same River Basin District.	Yes
No changes that would cause failure to meet good groundwater status or result in a deterioration to groundwater status.	The only activity impacting the WFD groundwater bodies comprises bored piling. This is unlikely to cause a deterioration in the groundwater quantitative or chemical status of the groundwater bodies.	Yes

Acronyms

Acronym or initialism	Term
A/HMWB	Artificial or heavily modified water body
BOD	Biochemical Oxygen Demand
CDE	Catchment Data Explorer
CIRIA	Construction Industry Research and Information Association
Defra	Department for Environment, Food and Rural Affairs
EMP	EMP
EQS	Environmental Quality Standard
GEP	Good Ecological Potential
GES	Good Ecological Status
GWDTE	Groundwater Dependent Terrestrial Ecosystem
INNS	Invasive Non-Native Species
LNR	Local Nature Reserve
MAGIC	Multi-Agency Geographic Information for Countryside
mbgl	Metres below ground level
NGR	National Grid Reference
PEIR	Preliminary Environmental Information Report
PNEC	Predicted No Effect Concentration
RBD	River Basin District
RBMP	River Basin Management Plan
WFD	Water Framework Directive

References

Department for Environment, Food and Rural Affairs (2023). Magic Map Application. Accessed April 2023 https://magic.defra.gov.uk/MagicMap.aspx.

Environment Agency (2001) Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention National Groundwater & Contaminated Land Centre report NC/99/73 (withdrawn).

Environment Agency (2006) Piling in layered ground: risks to groundwater and archaeology, Science Report SC020074/SR Land. Accessed April 2023.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/320701/scho0906bllt-e-e.pdf.

Environment Agency (2016). Protecting and improving the water environment: Water Framework Directive compliance of physical work in rivers. Document No. 488-10. Version 2.

Environment Agency (2022). Northwest River Basin Management Plan. Accessed April 2023. https://www.gov.uk/guidance/north-west-river-basin-district-river-basin-management-plan-updated-2022

Environment Agency (2023). Catchment Data Explorer. Accessed April 2023. https://environment.data.gov.uk/catchment-planning/

Planning Inspectorate (2017). Advice Note Eighteen: The Water Framework Directive. Version 1. Accessed March 2023. https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-18/.

Tameside Council (2017). Greater Manchester Ecology Unit (GMEU) (2017). Accessed April 2023. https://www.tameside.gov.uk/ecologyunit.

Annex A Figures

Figure 13.1.1: Water Framework Directive Surface Water and Groundwater Bodies

ENVIRONMENTAL STATEMENT APPENDIX 13.1 FIGURE 13.1.1

Legend

- Order Limits
- WFD River, Canal and Surface Waterbodies Cycle 2
- WFD Groundwater Bodies Cycle 1
- WFD Groundwater Bodies Cycle 2

Whittle Brook (Irwell)

Irwell (Rossendale STW to Roch)

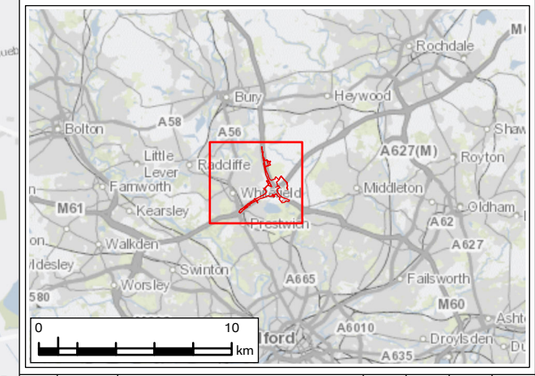
Roch (Spodden to Irwell)

Irwell (Roch to Croal)

Northern Manchester Carboniferous Aquifers Cycle 1 & 2

Manchester and East Cheshire Permo-Triassic Sandstone Aquifers Cycle 1 & 2

Irk (Wince to Irwell)



P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number: TR010064

Development Consent Order Drawing Number: 6.3

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title: WATER FRAMEWORK DIRECTIVE SURFACE WATER AND GROUNDWATER BODIES

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:15,000	DO NOT SCALE	
Jacobs No.	B36601F0		
Client No.	HE548642	Rev	P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0035