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HS2

High Speed Rail (Crewe – Manchester) Environmental Statement

Volume 5: Appendix WR-001-00000_Part 1

Water resources and flood risk

Water Framework Directive compliance assessment - Part 1 of 2

M300

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Department for Transport

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1 Introduction

1.1.1 This report is an appendix to the water resources and flood risk assessment. It reports on the compliance of the Proposed Scheme with the objectives of the Water Framework Directive (WFD) 2000/60/EC[1] as transposed in England and Wales via the Water Environment Regulations[2].

1.1.2 The WFD compliance assessment is summarised in Volume 3, Route-wide effects, Section 16.

1.1.3 The water resources and flood risk assessments include both route-wide and community area specific reports. The route-wide appendices comprise:

- this Water Framework Directive compliance assessment; and
- a Draft water resources and flood risk operation and maintenance plan (Volume 5, Appendix WR-007-00000).

1.1.4 The community area specific appendices comprise:

- Water resources assessments reported for each community area (Volume 5, Appendices WR-003);
- Flood risk assessments reported for each community area (Volume 5, Appendices WR-005); and
- Hydraulic modelling reports to support the flood risk assessments (Volume 5, Appendices WR-006).

1.1.5 Additional information relevant to this assessment is set out in Background Information and Data (BID)[3]:

- Water Framework Directive compliance assessment baseline data is presented in BID WR-002-00001; and
- Water resources assessment baseline data is reported for each community area (BID WR-004).

1.1.6 Maps referred to within this assessment are contained in the Volume 5, Water resources and flood risk Map Book, Map Series WR-03. This map series shows the location and current overall WFD status of surface water and groundwater bodies across the extent of the Proposed Scheme.

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[1] *Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy*. Strasbourg, European Parliament and European Council.

[2] *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*. (SI 2017 No. 407). Available online at: https://www.legislation.gov.uk/uksi/2017/407.

[3] High Speed Two Ltd (2021), High Speed Rail (Crewe – Manchester), *Background Information and Data*. Available online at: https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-environmental-statement.

1.2 Purpose of this appendix

1.2.1 The WFD aims to protect and enhance the quality of the water environment. It takes a holistic approach to the sustainable management of water by considering the interactions between surface water, groundwater and water-dependent ecosystems.

1.2.2 Under the WFD, 'water bodies' are the basic management units and are defined as all or part of a river system or aquifer. These water bodies form part of a larger 'river basin district' (RBD), for which 'river basin management plans' (RBMP) are developed, and environmental objectives are set for all water bodies. These RBMP are produced every six years by the Environment Agency in England and by the Scottish Environment Protection Agency in Scotland, in accordance with the river basin management planning cycle.

1.2.3 The statutory objective of the WFD is to prevent deterioration of all designated water bodies at good or high status and to prevent water bodies at less than good status from deteriorating further. To demonstrate compliance with the WFD, decision makers must consider whether proposals for new developments have the potential to:

- cause a deterioration of a water body from its current status or potential;
- prevent future attainment of good status or potential where not already achieved;
- impact on protected or priority species and habitats; and/or
- provide opportunities to improve the water environment.

1.2.4 The Proposed Scheme has the potential to affect numerous surface and groundwater bodies. An assessment of the Proposed Scheme's compliance against the statutory WFD objectives for each of these water bodies is therefore required.

1.2.5 The assessment is based on consideration of the Proposed Scheme design (as shown in the Volume 2 Map Books, Map Series CT-05 and CT-06), which includes a range of avoidance and mitigation measures in the design.

1.2.6 This report summarises the WFD assessment process, its results and the additional mitigation required to achieve compliance with WFD legislation.

1.3 Scope of the WFD compliance assessment

1.3.1 A detailed description of the WFD compliance assessment scope and methodology is provided in the WFD compliance assessment process Technical note found in the Environmental Impact Assessment Scope and Methodology report (SMR) (see Volume 5, Appendix CT-001-00001). This approach has been developed and, in consultation with the Environment Agency, is aligned with the Planning Inspectorate's Advice Note 18: The Water Framework Directive[4].

[4] Planning Inspectorate (2017), *Advice Note 18, The Water Framework Directive.* Available online at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2017/06/advice_note_18.pdf.

1.3.2 The assessment has involved a staged process, including:

- baseline assessment (screening) to identify the relevant WFD water bodies, watercourses and relevant groundwater features potentially affected by the Proposed Scheme and to assess their existing condition;
- preliminary assessment (scoping) to establish the likely impacts of the various Proposed Scheme components and associated effects on the relevant WFD status elements of the water bodies affected by the Proposed Scheme (with regard to likely effects on current status and/or the future achievement of status objectives); and
- detailed impact assessment, to establish the nature and magnitude of the effects of Proposed Scheme components on current status and status objectives of WFD quality elements at the water body scale.

1.3.3 The spatial scope of the assessment includes all WFD designated surface water and groundwater bodies with potential to be affected by the Proposed Scheme.

1.3.4 The assessment has been undertaken at the water body scale. For surface water bodies, the assessment considers all tributary watercourses that are potentially affected by the Proposed Scheme. It considers the potential impacts on all the quality elements associated with these surface water and groundwater bodies.

1.3.5 Temporary adverse impacts are reviewed on a case-by-case basis and are not considered to result in a deterioration of status if the water body:

- is only impacted for a short time period;
- is likely to recover within a short time period; and/or
- is likely to recover without the need for any restoration measures.

1.4 Assumptions and limitations

1.4.1 The WFD water body classification data presented in Volume 2, Community Area reports and Volume 5, Appendices is taken from the Environment Agency 2015 Cycle 2 River Basin Management Plan (RBMP) data[5]. These classifications are considered to provide the current best estimate of status and are the formal baseline against which the Environment Agency will assess compliance with the 'no deterioration' objective in 2021. The assessment will be reviewed and updated where necessary following the publication of the Environment Agency Cycle 3 RBMP in 2022.

1.4.2 Where baseline data is limited, professional judgement has been used in the assessment and a precautionary approach has been adopted.

[5] Environment Agency (2020), *Catchment Data Explorer*. Available online at: http://environment.data.gov.uk/catchment-planning/.

1.4.3 The WFD assessment takes into account the avoidance and mitigation measures included in the design and the draft Code of Construction Practice (CoCP) (see Volume 5: Appendix CT-002-00000). These measures are described further in the WFD compliance assessment process Technical note and relevant Volume 5, Water resources assessment community area reports.

1.4.4 All activities related to the borrow pits will be managed in accordance with the measures in the draft CoCP to reduce the potential for adverse impacts on the water environment. Restoration of the borrow pit areas at the end of the construction period is described in Volume 5: Appendix CT-008-00000, Borrow pit report, Section 9.

1.4.5 The assumptions presented in Volume 1, Introduction and methodology, Section 8.16 also apply to this assessment.

1.4.6 The assessment has made full use of the quantitative analysis reported in the water resources assessments (see Volume 5, Appendices WR-003) for each community area. Where these assessments are based on professional judgement only, a precautionary approach has been adopted.

1.4.7 Potential impacts to groundwater quantity or water quantity that habitats depend on are described in this report. Impacts on ecological receptors, including protected species and designated sites, are described in the Volume 2, Community Area reports, Section 7, Ecology and biodiversity, where resulting in significant effects.

1.4.8 Impacts to groundwater quality from existing land contamination are presented in the Volume 2, Community Area reports, Section 10, Land quality, where mitigation options by way of removal or remediation are presented. Based on these land quality measures this report assumes that all potential impacts from land contamination will be mitigated during the construction phase.

2 Baseline assessment (screening)

2.1 Surface water baseline

2.1.1 A total of 26 surface water bodies have been identified as having potential to be affected by the Proposed Scheme. This includes 22 river water bodies, three canal water bodies and one lake water body. These water bodies are summarised in Annex A (Table A 1).

2.1.2 Following desk study and walkover surveys, a total of 56 individual watercourses (including canals and navigable channels) and one individual lake was screened in for detailed impact assessment. These are summarised in Annex A (Table A 2), grouped according to the relevant WFD surface water body catchment.

2.1.3 A breakdown of the current (2015 and 2019 Cycle 2) status and status objectives data for each of the relevant surface water bodies, together with descriptions of each affected watercourse and figures showing their locations relative to the proposed route, is provided in BID.

2.2 Groundwater baseline

2.2.1 A total of four groundwater bodies have been identified as having potential to be affected by the Proposed Scheme. These water bodies are summarised in Annex A (Table A 3).

2.2.2 Following desk study and walkover surveys, a total of 118 groundwater features (including springs, groundwater dependent habitats, and groundwater abstractions) within these groundwater bodies were screened in for detailed impact assessment. These are summarised in Annex A (Table A 4).

2.2.3 A breakdown of the current (2015 and 2019 Cycle 2 RBMP) status and status objectives data of the relevant groundwater bodies, together with descriptions of each groundwater feature and figures showing their locations relative to the proposed route, is provided in BID.

2.3 Scheme baseline

Scheme components

2.3.1 A description of the permanent design features of the Proposed Scheme is provided in Volume 1, Introduction and methodology, Section 5.

2.3.2 The key construction (Map Series CT-05) and operation (Map Series CT-06) maps in Volume 2, Map Books are the primary source of Proposed Scheme design information.

2.3.3 The assessment has considered all ‘scheme components’ that have the potential to permanently affect surface water and groundwater bodies, and therefore have the potential to impact upon WFD status. All scheme components have been assessed individually (except

where a proposed realignment or diversion involves the removal of an existing culvert) before the combined overall effect on quality element status is considered.

Surface water

2.3.4 The following scheme component types have been identified as having the potential to directly or indirectly affect the surface water bodies/watercourses along the route of the Proposed Scheme:

- viaduct (where a multi-span structure is needed to provide a continuous elevated route across undulating terrain, existing roads or floodplains);
- bridge (a bridge carrying a new or realignment highway over a watercourse, including underbridges whereby the Proposed Scheme is carried over other features, and overbridges whereby a feature is carried above the Proposed Scheme);
- aqueduct (an open, artificial channel for conveying water over the Proposed Scheme or other features);
- culvert (a pipe or box shaped structure that carries a watercourse under a road or railway crossing);
- daylighting of existing culvert (opening/removal of an existing culvert structure without associated realignment/diversion of the watercourse);
- inverted siphon (a form of culvert used on level ground where the water level has to be lowered in order to pass under a road or railway crossings; constructed using enclosed chambers on both sides of the crossing);
- highway drainage outfall[6] (a discharge point carrying drainage from highways into a watercourse);
- diversion (permanent, localised diversion of a watercourse involving the creation of a new section of river channel whereby the location of the watercourse's confluence with the downstream watercourse is changed);
- realignment (permanent, localised realignment of a watercourse involving the creation of a new section of river channel tying back into the existing watercourse at the downstream extent);
- removal of existing culvert associated with a proposed watercourse diversion/realignment;
- embankment with sub-surface reinforcement (an embanked area with subsurface piling or other foundation support for the purposes of reinforcement where ground conditions are poor);
- retaining walls (engineered structural support which may include deep foundations or cut-off walls);

[6] Highway drainage outfalls are considered under the WFD assessment where there is a risk identified as part of the Highways England Water Risk Assessment Tool (HEWRAT) assessment.

- cutting (excavation in areas where the local topography is at a higher level than the desired route alignment);
- cut and cover tunnel (a tunnel structure constructed in open excavation and generally covered with suitable excavated or imported material);
- tunnel portal (entry/exit ways for all tunnels; portals will take different forms, depending on ground conditions, local topography and train speeds);
- bored tunnel (tunnels constructed where the depth between the railway and existing ground is such that open excavation is not practicable, and where the tunnel length is sufficient to make the use of tunnelling equipment viable);
- station (specifically those proposed at Manchester Piccadilly and Manchester Airport);
- infrastructure maintenance base, including railheads (providing stabling, servicing and maintenance of trains and storage areas for materials, parts and plant); and
- borrow pit (areas where the excavation of granular or cohesive materials for use during the construction of the Proposed Scheme is proposed).

2.3.5 Individual scheme components with the potential to affect the surface water bodies / watercourses screened in for WFD detailed impact assessment have been identified and catalogued route-wide. These scheme components are summarised in relation to the relevant surface water body catchment and watercourse in Annex A (Table A 5). The crossing type (i.e. track, access road or highway realignment), scheme component type and name, and a unique reference ID is provided for each scheme component.

2.3.6 Tunnel vent shafts have been screened out of the surface water assessment as having no effect on the status of surface water bodies along the route of the Proposed Scheme.

Groundwater

2.3.7 The following scheme component types have been identified as having the potential to directly or indirectly affect groundwater bodies along the route of the Proposed Scheme:

- viaduct foundations;
- bridge foundations;
- embankment;
- embankment with sub-surface reinforcement;
- cutting;
- retaining wall;
- bored tunnel (including cross passages);
- cut and cover tunnels;
- tunnel vent shaft;
- tunnel portal;
- borrow pit;
- station; and
- infrastructure maintenance base (including railheads).

2.3.8 Individual scheme components with the potential to affect the groundwater bodies screened in for WFD detailed impact assessment have been identified and catalogued route-wide. These scheme components are summarised in relation to the relevant groundwater body in Annex A (Table A 6). The scheme component type and name, and a unique reference ID is provided for each scheme component.

2.3.9 Underbridges have been screened out of the groundwater assessment as having no effect on the status of groundwater bodies along the route of the Proposed Scheme.

2.3.10 Impacts associated with potential leakage have been screened out of the groundwater (and surface water) assessment for bored tunnels, as their construction by tunnel boring machine (TBM) seals the development from groundwater ingress. Cross passages, which although are not constructed by TBM are constructed under controlled conditions to prevent groundwater loss, are screened out of the assessment. Bored tunnels (and cross passages) remain included within the assessment with respect to potential for damming and/or diverting groundwater, which is dealt with on a case by case basis.

Avoidance and mitigation included within the design

2.3.11 The hybrid Bill designs have been developed iteratively in close consultation with fluvial geomorphologists, hydrologists, hydrogeologists, ecologists and water quality scientists. A series of workshops were also held with Environment Agency specialists. The SMR WFD compliance assessment process Technical note (see Volume 5, Appendix CT-001-00001) describes the generic approach to developing designs that are compliant with WFD legislation.

2.3.12 Further site-specific mitigation included within the design to reduce the effects of specific scheme components on water environment receptors is also detailed within the Volume 5 Water resources assessment community area reports. This mitigation has also been taken into account by this assessment.

2.3.13 In addition, a range of wider environmental mitigation has been included within the design of the Proposed Scheme in order to avoid, prevent or reduce the likely significant adverse effects on the environment. This includes mitigation measures such as tree planting, wet grassland creation and flood storage areas, which may provide additional localised ecological, hydromorphological and water quality benefits within the relevant water body catchments. The approach to mitigation is described in Volume 1, Introduction and methodology, Section 9.

3 Preliminary assessment (scoping)

3.1 Likely effects on current status

3.1.1 A preliminary assessment of the likely effects of each of the scheme components on the various WFD status elements of the surface water and groundwater bodies concerned is summarised in the following sections.

Surface water

3.1.2 The results of the preliminary assessment of the likely effects of the relevant scheme components on the WFD status elements of surface water bodies are summarised in Annex B (Table B 1). The impacts and likely effects on surface water WFD status elements for each scheme component type are discussed in the following sections.

3.1.3 Where likely effects are anticipated based on the preliminary assessment, the scheme components and relevant WFD elements have been scoped in for more detailed impact assessment (see Section 4). This detailed impact assessment has then identified the specific individual effects of each scheme component and their combined overall effect on the WFD status of the relevant water body.

3.1.4 All scheme components have been assessed on a case-by-case basis, taking into account the avoidance and mitigation measures included in the design, as described in the SMR WFD compliance assessment process Technical note (see Volume 5, Appendix CT-001-00001).

3.1.5 For culverts, the preliminary assessment has considered the length of the culvert and the baseline aquatic habitat potential and hydromorphological condition of the reach of watercourse to be culverted, as well as those reaches upstream and downstream. Similarly, for instances where the Proposed Scheme will result in the daylighting or the removal of an existing culvert, the assessment has taken into consideration the location and length of channel being daylighted, the local land use, and the wider baseline aquatic habitat potential and hydromorphological condition of the reaches upstream and downstream.

3.1.6 The assessment of inverted siphons has assumed that an appropriate maintenance regime will be developed as part of the detailed design of the siphon, to ensure that an adequate baseflow regime is maintained downstream.

3.1.7 The assessment of watercourse realignments/diversions has taken into consideration the baseline aquatic habitat potential and hydromorphological condition of the reaches of watercourse to be lost and the total net gain/loss of river length following the creation of the new realigned/diverted channel.

3.1.8 The assessment of cuttings has taken into consideration the location, size and depth of the proposed excavation area, the anticipated level of groundwater connectivity between the excavation site and nearby watercourses, and degree of catchment area potentially affected. Retaining walls have been assessed with regards to their location, design, depth, extent and

the anticipated level of groundwater connectivity between the retaining wall and nearby watercourses, as well as the degree of catchment area potentially affected.

3.1.9 Borrow pits have been assessed with regards to the location, size and depth of the proposed excavation area, and the anticipated level of groundwater connectivity between the excavation site and nearby watercourses.

3.1.10 All stations, infrastructure maintenance bases (IMB) and rolling stock depots (RSD) have been assessed based on the location, size, proximity to water bodies/watercourses, the depth of any proposed excavations and the anticipated level of groundwater connectivity between the excavation site(s) and nearby watercourses.

3.1.11 Effects from bored tunnels and cross passages on surface water have been scoped out during preliminary assessment, due to mitigation included within the design.

3.1.12 As a result of the preliminary assessment, the following three surface water bodies have been scoped out of the detailed assessment. Given mitigation included within the design and the draft CoCP, the Proposed Scheme is not anticipated to cause any effects on the WFD status of these water bodies:

- Valley Brook (Englesea Brook to Weaver) (GB112068055310);
- Fallowfield Brook (GB112069061410); and
- Platt Brook (Source to Fallowfield Brook) (GB112069061060).

Biological effects

3.1.13 Effects on biological status are considered in terms of likely change in composition and abundance of phytobenthos, macrophytes and macroinvertebrate communities and for fish on composition, abundance and age structure of communities.

3.1.14 The likely effects of the relevant scheme component types scoped in for assessment on biological status are summarised in Table 1.

Table 1: Likely biological effects of scheme component types on surface water bodies (after consideration of mitigation included within the design)

Scheme component type	Likely biological effects of scheme component	
	Impact type	**Impact description**
Viaduct	Shading	Viaducts will likely cause some minor, localised and periodic shading of the river channel. This may result in some localised reduction in photosynthetic activity. In most cases, this is anticipated to have a negligible effect on macrophytes and phytobenthos, macroinvertebrates and fish.
	Footprint	In some cases, viaducts may be required with pier footings located within the channel. This will cause a localised impact on hydromorphology and aquatic and/or bankside habitats. Some localised but permanent modifications to the river channel may also be required around the footings (e.g. local re-profiling and/or the installation of bank protection). In most cases, this is anticipated to have a minor, localised adverse effect on macrophytes and phytobenthos, macroinvertebrates and fish.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Viaducts requiring pier footings located within the channel will also cause a localised but permanent change to the hydromorphological regime, which may in turn lead to changes in river processes and habitat immediately upstream and downstream. In most cases, this is anticipated to have either a negligible effect on macrophytes and phytobenthos, macroinvertebrates and fish.
Underbridge / overbridge / bridge	Shading	Underbridges, overbridges, and clear span bridges will cause localised but permanent shading of a section of the river channel. This may result in a localised reduction in photosynthetic activity for macrophytes and phytobenthos. In most cases, this is anticipated to have a minor, localised adverse effect on macrophytes, phytobenthos, macroinvertebrates and fish.
Aqueduct	Footprint	Aqueducts will cause a localised but permanent loss of a section of existing river channel within the footprint of the aqueduct. This is anticipated to have a minor, localised adverse effect on macrophytes and phytobenthos, macroinvertebrates and fish. Where the length of proposed aqueducts is significant, however, this may have a more widespread, adverse effect on fish due to impacts on fish passage and spawning migration.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Aqueducts will also cause a localised but permanent change to the hydromorphological regime, which may lead to changes in river processes and habitat upstream and downstream. However, due to the mitigation measures included within the design, this is anticipated to have a negligible effect on macrophytes and phytobenthos, macroinvertebrates and fish.

Scheme component type	Likely biological effects of scheme component	
	Impact type	**Impact description**
Culvert	Footprint and shading	Culverts will cause a localised but permanent loss of a section of existing river channel and localised but permanent shading of the river channel within the footprint of the culvert. The magnitude of effect will be dependent on the length of proposed culvert and its location within the river network. In most cases, this is anticipated to have a minor, localised adverse effect on macrophytes and phytobenthos, macroinvertebrates and fish. However, where the length of proposed culvert is significant, depending on the location within the river network, this may have a more widespread, adverse effect on fish due to impacts on fish passage and spawning migration.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Culverts will also cause a localised but permanent change to the hydromorphological regime, which may lead to changes in river processes and habitat upstream and downstream. However, due to the mitigation included within the design, this is anticipated to have a negligible effect on macrophytes and phytobenthos, macroinvertebrates and fish.
Daylighting / removal of existing culvert	Footprint / creation of new habitat	Daylighting/removal of existing culverts will result in a localised but permanent increase in open river channel and riparian habitat and a reduction in shading of the watercourse. The magnitude of effect will be dependent on the length of culvert that is daylighted/removed and its location within the river network. In most cases, this is anticipated to have a minor, localised beneficial effect on macrophytes, phytobenthos, macroinvertebrates and fish. However, where the length of existing culvert to be daylighted/removed is significant, and/or the existing culvert dimensions are currently restricting continuity, daylighting/removal may provide a more widespread beneficial effect on biological elements (including improvements in fish passage and spawning migration).
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Daylighting/removal of existing culverts will also cause localised but permanent changes in hydromorphological regime, which may in turn lead to changes in river processes and habitats upstream and downstream. In most cases, this is anticipated to have a negligible or minor, localised beneficial effect on macrophytes, phytobenthos, macroinvertebrates and fish. However, where the length of the culvert to be daylighted/removed is significant, or where the existing culvert is currently impacting upon river continuity and sediment transfer, this may provide a more widespread beneficial effect on macrophytes, phytobenthos, macroinvertebrates and fish.
Inverted siphon	Footprint and shading	Inverted siphons will cause a localised but permanent loss of a section of existing river channel and localised but permanent shading of the river channel within the footprint of the siphon. In most cases, this is anticipated to have a minor, localised adverse effect on macrophytes and phytobenthos, macroinvertebrates and fish. However, depending on the location of the proposed siphon within the river network, this may have a more widespread, adverse effect on fish due to impacts on fish passage and spawning migration.
	Changes to hydromorphology leading to changes in process	Inverted siphons will also cause a localised but permanent change to the hydromorphological regime, which may lead to changes in river processes and habitat upstream and downstream. Assuming appropriate allowances for an ongoing maintenance strategy are incorporated into the design of the siphon and implemented after construction, this is

Scheme component type	Likely biological effects of scheme component	
	Impact type	**Impact description**
	and habitat upstream and/or downstream	anticipated to have either a negligible effect or minor, localised adverse effect on macrophytes and phytobenthos, macroinvertebrates and fish.
Highway drainage outfall	Drainage (changes in water quantity or quality due to discharge of surface water runoff to surface water body	In some areas new highway outfalls associated with proposed highway realignments will cause a localised but permanent change in the quantity and/or quality of surface water runoff discharging to the water body. In most cases, this is anticipated to have a negligible effect on macrophytes and phytobenthos, macroinvertebrates and fish. However, in some cases, predicted increases in construction and/or permanent traffic due to the proposed road realignments may increase the concentrations of pollutants entering the water body above Environmental Quality Standard (EQS) thresholds, which in turn may have a minor, localised adverse effect or adverse effect on biological quality elements downstream.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	New highway outfalls will also cause a localised but permanent change in hydromorphological regime, which may lead to changes in river processes and habitat upstream and downstream. In most cases, this is anticipated to have a negligible effect on macrophytes and phytobenthos, macroinvertebrates and fish.
Realignment / diversion	Footprint	Realignments/diversions will result in the permanent loss of existing sections of river channel and riparian habitat. However, the newly created realigned/diverted channel will provide features equivalent to those lost in the existing channel and, where reasonably practicable, will aim to provide hydromorphological improvements over the existing condition. In addition, all realigned/diverted channels will incorporate an appropriately sized buffer strip to allow for marginal and riparian habitat creation/improvements. Realignments/diversions could therefore have either a negligible effect, a minor, localised adverse effect, or a minor, localised beneficial effects on macrophytes and phytobenthos, macroinvertebrates and fish; depending on the net loss or a net gain in river habitat and the existing condition of the watercourse.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Realignments/diversions will result in a localised but permanent change in hydromorphological regime, with potential resultant changes to river processes and habitat upstream and downstream. In most cases, given appropriate design of the realigned/diverted channel, this is anticipated to have a negligible effect on macrophytes, phytobenthos, macroinvertebrates and fish.
Embankment with sub-surface reinforcement	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Embankments with sub-surface reinforcement may cause a localised change in the flow regime of nearby watercourses due to a deflection or damming of the water table. This may, in turn, have an impact on aquatic habitats downstream. The magnitude of effect will be dependent on the degree of deflection or damming and any baseflow reduction. In most cases, this is anticipated to have either a negligible effect or a minor, localised adverse effect on macrophytes, phytobenthos, macroinvertebrates and fish.

Scheme component type	Likely biological effects of scheme component	
	Impact type	**Impact description**
	Changes in water quality due to discharge of groundwater to surface water	Embankment with sub-surface reinforcement may result in localised changes in groundwater levels, flows and interactions with surface water, potentially resulting in changes in surface water quality. This could potentially have an indirect adverse effect on biological quality elements. The magnitude of the effect will be dependent on the degree of change in the groundwater flow regime and the water quality of the groundwater bodies affected. In most cases, this is anticipated to have a negligible effect on macrophytes, phytobenthos, macroinvertebrates and fish.
Cutting	Footprint	Cuttings may cause a localised but permanent loss of a section of existing watercourse and/or riparian vegetation within the footprint of the cutting. In most cases, this is anticipated to have a minor, localised adverse effect on macrophytes and phytobenthos, macroinvertebrates and fish. Where the length of existing watercourse to be lost is greater, however, this may have a more widespread, adverse effect on biological quality elements.
	Changes in flow velocity and volume due to dewatering / Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Cuttings may cause a localised change in the flow regime of nearby watercourses due to a reduction in the groundwater table resulting from dewatering activities. Baseflow reduction will cause a localised but permanent change to the hydromorphological regime, which may in turn lead to changes in river processes and habitat downstream. The magnitude of effect will be dependent on the degree of groundwater drawdown and baseflow reduction. In most cases, this is anticipated to have either a negligible effect or a minor, localised adverse effect on macrophytes, phytobenthos, macroinvertebrates and fish.
	Changes in water quality due to discharge of groundwater to surface water	Groundwater intercepted in cuttings will be collected and discharged to surface water. All drainage networks are designed on a case by case basis so that collected groundwater is discharged to the receiving water that it naturally would drain to. Changes to the groundwater flow regime may lead to changes in surface water quality. The magnitude of the effect will be dependent on the degree of change in the flow regime and the water quality of the groundwater bodies affected. In most cases, this is anticipated to have a negligible effect on macrophytes, phytobenthos, macroinvertebrates and fish. Potential impacts to groundwater quality from existing land contamination are presented in Volume 2 Section 10, Land quality, which provides mitigation by way of removal or remediation. On the basis that existing contamination will be mitigated against, this is anticipated to have a negligible effect on macrophytes, phytobenthos, macroinvertebrates and fish.
Cutting with retaining structure	Footprint	Cuttings with retaining structures may cause a localised but permanent loss of a section of existing watercourse and/or riparian vegetation within the footprint of the cutting. In most cases, this is anticipated to have a minor, localised adverse effect on macrophytes and phytobenthos, macroinvertebrates and fish. Where the length of existing watercourse to be lost is greater, however, this may have a more widespread, adverse effect on biological quality elements.
	Changes in flow velocity and volume due to dewatering / Changes to hydromorphology	Cuttings with retaining structures may cause a localised but permanent loss of a section of existing watercourse and/or riparian vegetation within the footprint of the cutting. This is anticipated to have a minor, localised adverse effect on

Scheme component type	Likely biological effects of scheme component	
	Impact type	**Impact description**
	leading to changes in process and habitat upstream and/or downstream	macrophytes and phytobenthos, macroinvertebrates and fish. Where the length of existing watercourse to be lost is greater, however, this may have a more widespread, adverse effect on biological quality elements.
	Changes in water quality due to discharge of groundwater to surface water	Groundwater intercepted in cuttings with retaining structures will be collected and discharged to surface water. All drainage networks are designed on a case by case basis so that collected groundwater is discharged to the receiving water that it naturally would drain to. Retaining structures may also result in localised changes in groundwater levels, flows and interactions with surface water. Changes to the groundwater flow regime may lead to changes in surface water quality. This could potentially have an indirect adverse effect on biological quality elements. The magnitude of the effect will be dependent on the degree of change in the groundwater flow regime and the water quality of the groundwater bodies affected. In most cases, this is anticipated to have a negligible effect on macrophytes and phytobenthos, macroinvertebrates and fish. Changes to the groundwater flow regime may lead to changes in surface water quality. The magnitude of the effect will be dependent on the degree of change in the flow regime and the water quality of the groundwater bodies affected. In most cases, this is anticipated to have a negligible effect on macrophytes, phytobenthos, macroinvertebrates and fish.
Retaining wall	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Retaining walls may cause a localised change in the flow regime of nearby watercourses due to a deflection or damming of the water table. This may in turn have an impact on aquatic habitats downstream. The magnitude of effect will be dependent on the degree of deflection or damming and any baseflow reduction. In most cases, this is anticipated to have either a negligible effect or a minor, localised adverse effect on macrophytes, phytobenthos, macroinvertebrates and fish.
	Changes in water quality due to discharge of groundwater to surface water	Retaining walls may result in localised changes in groundwater levels, flows and interactions with surface water, potentially resulting in changes in water quality. This could potentially have an indirect adverse effect on biological quality elements. The magnitude of the effect will be dependent on the degree of change in the groundwater flow regime and the water quality of the groundwater bodies affected. In most cases, this is anticipated to have a negligible effect on macrophytes and phytobenthos, macroinvertebrates and fish.
Tunnel vent shaft	Likely impacts and effects same as for retaining walls and cuttings. Refer to retaining wall and cutting scheme components above for likely biological effects.	
Cut and cover tunnel	Likely impacts and effects same as for retaining walls and cuttings. Refer to retaining wall and cutting scheme components above for likely biological effects.	
Tunnel portal	Tunnel portals have been assessed based on their relevant sub-components. Refer to cutting and retaining walls scheme components above for likely biological effects.	

Scheme component type	Likely biological effects of scheme component	
	Impact type	**Impact description**
Borrow pit	Footprint	During construction, borrow pits will cause a localised and temporary loss of area of catchment (and in some cases areas of active floodplain) but will typically have no direct physical impact on the river channel or riparian zone (applying an appropriate buffer zone between the excavated area and watercourse). Following construction, the excavated areas are anticipated to be restored to their original levels and land use in accordance with the Borrow pit report, Section 9 (see Volume 5: Appendix CT-008-00000).
	Changes in flow velocity and volume due to dewatering / Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	During construction, borrow pits may cause a localised and temporary change in the flow regime of nearby watercourses due to a reduction in water table resulting from dewatering activities. The magnitude of effect will be dependent on the degree of groundwater drawdown and baseflow reduction. For borrow pits excavated within granular material, this is anticipated to have either a minor, localised adverse effect or an adverse effect on macrophytes, phytobenthos, macroinvertebrates and fish.
Station / IMB / RSD	Footprint	Depending on the specific design proposals, stations, IMBs and RSDs may cause a permanent loss of a section of existing river channel and/or riparian habitat within the footprint of the station. The magnitude of effect will be dependent on the location, extent and baseline condition of the affected reach of watercourse / riparian habitat. In most cases, this is anticipated to have a localised, adverse effect on macrophytes and phytobenthos, macroinvertebrates and fish. However, where the length of watercourse affected is greater, this may result in a more widespread, adverse effect on fish due to impacts on fish passage and spawning migration.

Physicochemical effects

3.1.15 Effects on physicochemical status are considered in relation to likely changes in the chemical composition of phosphate and ammonia and for physical changes which cause variations in dissolved oxygen and temperature within a water body.

3.1.16 Potential impacts to groundwater and surface water quality from the disruption of existing land contamination are presented in Volume 2, Community Area reports, Section 10, Land quality, which provides mitigation by way of removal or remediation. Accordingly, no scheme components are considered likely to cause impacts on physicochemical quality elements associated with runoff/drainage from areas of existing contaminated land.

3.1.17 The likely effects of the relevant scheme component types scoped in for assessment on physicochemical status are summarised in Table 2.

Table 2: Likely physicochemical effects of scheme component types on surface water bodies (after consideration of mitigation included within the design)

Scheme component type	Likely physicochemical effects of scheme component	
	Impact Type	**Impact Description**
Viaduct	Shading	Viaducts will likely cause some minor, localised and periodic shading of the river channel. This is anticipated to have a negligible effect on water temperature and dissolved oxygen (due to potential localised reductions in photosynthetic activity by aquatic flora).
Underbridge / overbridge / bridge	Shading	Underbridges, overbridges, and bridges will cause localised but permanent shading of the river channel. In most cases, this is anticipated to have a negligible effect on water temperature and dissolved oxygen levels (due to a reduction in photosynthetic activity by aquatic flora).
Aqueduct	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Aqueducts will also cause a localised but permanent change in hydromorphological regime, which may lead to changes in river processes and habitat upstream and downstream. However, due to the mitigation measures included within the design, this is anticipated to have a negligible effect on dissolved oxygen.
Culvert	Shading	Culverts will cause localised but permanent shading of the watercourse. The magnitude of effect will be dependent on the length of culvert and baseline condition of the reach of watercourse affected. In most cases, this is anticipated to have a negligible effect on water temperature and dissolved oxygen levels (due to potentially reduced photosynthetic activity by aquatic flora).
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Culverts will also cause a localised but permanent change in hydromorphological regime, which may in turn lead to changes in river processes and habitat upstream and downstream. Given mitigation included within the design of the culverts to minimise impacts on sediment transfer and flow continuity, in most cases this is anticipated to have a negligible effect on dissolved oxygen.
Daylighting / removal of existing culvert	Shading	Daylighting/removal of existing culverts will result in a localised but permanent reduction in shading of the watercourse. The magnitude of effect will be dependent on the length of culvert that is daylighted/removed. In most cases, this is anticipated to have a negligible effect on water temperature and dissolved oxygen levels (due to a potential increase in photosynthetic activity by aquatic flora).

Scheme component type	Likely physicochemical effects of scheme component	
	Impact Type	**Impact Description**
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Daylighting/removal of existing culverts will also cause localised but permanent changes in hydromorphological regime, which may lead in turn to changes in river processes and habitats upstream and downstream. In most cases, this is anticipated to have a negligible effect or a minor, localised beneficial effect on dissolved oxygen.
Inverted siphon	Shading	Siphons will cause localised but permanent shading of the river channel. This is anticipated to have a negligible effect on water temperature and dissolved oxygen levels (due to a potential reduction in photosynthetic activity by aquatic flora).
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Siphons will also cause a localised but permanent change in hydromorphological regime, which may lead to changes in river processes and habitat upstream and downstream. Assuming appropriate allowances for an ongoing maintenance strategy are incorporated into the design of the siphon and implemented after construction, this is anticipated to have a negligible effect on dissolved oxygen.
Highway drainage outfall	Drainage (changes in water quantity or quality due to discharge of surface water runoff to surface water body)	In some areas new highway outfalls associated with proposed highway realignments will cause a localised but permanent change in the quantity and/or quality of surface water runoff discharging to the water body. In most cases, this is anticipated to have a negligible effect on dissolved oxygen.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	New highway outfalls will also cause a localised but permanent change in hydromorphological regime. In most cases, this is anticipated to have a negligible effect on dissolved oxygen.
Realignment / diversion	Footprint	Realignments/diversions will result in the permanent loss of existing river channel and riparian habitat. However, the newly created realigned/diverted channel will provide features equivalent to those lost in the existing channel and, where reasonably practicable, will aim to provide hydromorphological improvements over the existing condition. In addition, all realigned/diverted channels will incorporate an appropriately sized buffer strip to allow for marginal and riparian habitat creation/improvements where practicable. This, in turn, may reduce bank erosion (e.g. via poaching by livestock) and sediment runoff and nutrient loading from adjacent land. In most case, this is anticipated to have a negligible effect on dissolved oxygen, phosphate and ammonia concentrations.

Scheme component type	Likely physicochemical effects of scheme component	
	Impact Type	**Impact Description**
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Realignments/diversions will also result in a localised and permanent change in hydromorphological regime, which may in turn lead to changes in river processes and habitat upstream and downstream. In most cases, given appropriate design of the realigned/diverted channel, this is anticipated to have a negligible effect on dissolved oxygen.
Embankment with sub-surface reinforcement	Changes in water quality due to discharge of groundwater to surface water	Embankments with sub-surface reinforcement may result in localised changes in groundwater levels, flows and interactions with surface water, potentially resulting in changes in surface water quality. The magnitude of the effect will be dependent on the degree of change in the groundwater flow regime and the water quality of the groundwater bodies affected. In most cases, this is anticipated to have a negligible effect on pH, phosphate and ammonia concentrations.
Cutting	Changes in flow velocity and volume due to dewatering / Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	During the construction phase, cuttings may cause a change in the flow regime of nearby watercourses due to a reduction in the groundwater table resulting from dewatering activities. The magnitude of effect will be dependent on the degree of groundwater drawdown and baseflow reduction. In most cases, this is anticipated to have a negligible effect or a minor, localised adverse effect on dissolved oxygen.
	Changes in water quality due to discharge of groundwater to surface water	Groundwater intercepted in cuttings will be collected and discharged to surface water. All drainage networks are designed on a case by case basis so that collected groundwater is discharged to the receiving water that it naturally would drain to. The magnitude of the effect will be dependent on the degree of change in the groundwater flow regime and quality groundwater of adjacent groundwater bodies. In most cases, this is anticipated to have either a negligible effect on phosphate and ammonia concentrations.
Cutting with retaining structure	Changes in flow velocity and volume due to dewatering	Cuttings with retaining structures may cause a change in the flow regime of nearby watercourses due to a reduction in the groundwater table resulting from dewatering activities. The magnitude of effect will be dependent on the degree of groundwater drawdown and baseflow reduction. In most cases, this is anticipated to have a negligible effect on dissolved oxygen concentrations.
	Changes in water quality due to discharge of groundwater to surface water	Groundwater intercepted in cuttings will be collected and discharged to surface water. All drainage networks are designed on a case by case basis so that collected groundwater is discharged to the receiving water that it naturally would drain to. Retaining structures may also result in localised changes in groundwater levels, flows and interactions with surface water. Changes to the groundwater flow regime may lead to changes in surface water quality. The magnitude of the effect will be dependent on the degree of change in the groundwater flow regime and the water

Scheme component type	Likely physicochemical effects of scheme component	
	Impact Type	**Impact Description**
		quality of the groundwater bodies affected. In most cases, this is anticipated to have a negligible effect on pH, phosphate and ammonia concentrations.
Retaining wall	Changes in flow velocity and volume / Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Retaining walls may cause a localised change in the flow regime of nearby watercourses due to a deflection or damming of the water table. The magnitude of effect will be dependent on the degree of deflection or damming and any baseflow reduction. In most cases, this is anticipated to have either a negligible or minor, localised adverse effect on dissolved oxygen.
	Changes in water quality due to discharge of groundwater to surface water	Retaining walls may result in localised changes in groundwater levels, flows and interactions with surface water, potentially resulting in changes in surface water quality. The magnitude of the effect will be dependent on the degree of change in the groundwater flow regime and the water quality of the groundwater bodies affected. In most cases, this is anticipated to have a negligible effect on pH, phosphate and ammonia concentrations.
Tunnel vent shaft	Likely effects same as for retaining walls and cuttings. Refer to Retaining wall and Cutting scheme components above for likely physicochemical effects.	
Cut and cover tunnel	Likely effects same as for cuttings. Refer to Cutting scheme component above for likely physicochemical effects.	
Tunnel portal	Tunnel portals have been assessed on based on their relevant sub-components. Refer to Cutting, Retaining wall and Bored tunnel scheme components above for likely physicochemical effects.	
Borrow pit	Footprint	During construction, borrow pits will cause a localised and temporary loss of area of catchment (and in some cases areas of active floodplain) but will typically have no direct physical impact on the river channel or riparian zone (applying an appropriate buffer zone between the excavated area and watercourse). In some cases, this will result in a localised reduction in agricultural activity, including livestock grazing and/or arable crop production (with potential associated reductions in the application of organic and inorganic fertilizer), during the construction phase. Following construction, the excavated areas are anticipated to be restored to their original levels and land use in accordance with the Borrow pit report (see Volume 5: Appendix CT-008-00000). This is anticipated to have a negligible effect on phosphate and ammonia concentrations.

Scheme component type	Likely physicochemical effects of scheme component	
	Impact Type	**Impact Description**
	Changes in flow velocity and volume due to dewatering / Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	During the construction phase, borrow pits may cause a change in the flow regime of nearby watercourses due to a reduction in water table resulting from dewatering activities. The magnitude of effect will be dependent on the degree of groundwater drawdown and baseflow reduction. For borrow pits excavated within granular material, this is anticipated to have a negligible effect or a minor, localised adverse effect on dissolved oxygen.
Station / IMB / RSD	Shading	In some cases, the proposed footprint of the station/depot will require a section of watercourse to be culverted or siphoned beneath the station building. This will cause localised but permanent shading of the river channel. Refer to Culverts and/or Inverted siphons above for likely physicochemical effects.
	Changes in flow velocity and volume due to dewatering / Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	In some cases, stations/depots will involve below ground excavations which may cause a localised change in the flow regime of nearby watercourses due to a reduction in water table resulting from dewatering activities. Refer to Cuttings above for likely physicochemical effects.

Specific pollutants effects

3.1.18 Effects on specific pollutants are considered in relation to likely changes in the concentrations of relevant substances, such as copper, triclosan, and zinc.

3.1.19 Potential impacts to groundwater and surface water quality from the disruption of existing land contamination are presented in Volume 2, Community Area reports, Section 10, Land quality, which provides mitigation by way of removal or remediation. Accordingly, no scheme components are considered likely to cause impacts on specific pollutant quality elements associated with runoff/drainage from areas of existing contaminated land.

3.1.20 The likely effects of the relevant scheme component types scoped in for assessment on specific pollutants status are summarised in Table 3.

Table 3: Likely specific pollutants effects of scheme component types on surface water bodies (after consideration of mitigation included within the design)

Scheme component type	Likely specific pollutant effects of scheme component	
	Impact type	**Impact description**
Viaduct	None	No anticipated effects.
Underbridge / overbridge / bridge	None	No anticipated effects.
Aqueduct	None	No anticipated effects.
Culvert	None	No anticipated effects.
Inverted siphon	None	No anticipated effects.
Highway drainage outfall	Drainage (changes in water quantity or quality due to discharge of surface water runoff to surface water body	In some areas, new highway outfalls associated with proposed highway realignments may cause a localised but permanent change in the quantity and/or quality of surface water runoff discharging to the water body. In most cases, this is anticipated to have a negligible effect on specific pollutant concentrations. However, in some cases, predicted increases in construction and/or permanent traffic due to the proposed road realignments may increase the concertation of pollutants entering the water body above EQS thresholds; which may have a minor, localised adverse effect or an adverse effect on specific pollutants such as copper and zinc.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	New highway outfalls will also cause a localised but permanent change in hydromorphological regime. In most cases, this is anticipated to have a negligible effect on the concentrations of specific pollutants.
Daylighting / removal of existing culvert	None	No anticipated effects.
Realignment / diversion	None	No anticipated effects.
Embankment with sub-surface reinforcement	Changes in water quality due to discharge of groundwater to surface water	Embankments with sub-surface reinforcement may result in localised changes in groundwater levels, flows and interactions with surface water, potentially resulting in changes in surface water quality. The magnitude of the effect will be dependent on the degree of change in the groundwater flow regime and the water quality of the groundwater bodies affected. In most cases, this is anticipated to have a negligible effect on specific pollutants.

Scheme component type	Likely specific pollutant effects of scheme component	
	Impact type	**Impact description**
Cutting	Changes in water quality due to discharge of groundwater to surface water	Groundwater intercepted in cuttings will be collected and discharged to surface water. All drainage networks are designed on a case by case basis so that collected groundwater is discharged to the receiving water that it naturally would drain to. The magnitude of the effect will be dependent on the degree of change in the groundwater flow regime and quality groundwater of adjacent groundwater bodies. In most cases, this is anticipated to have a negligible effect on the concentrations of relevant substances such as copper, triclosan and zinc.
Cutting with retaining structure	Changes in water quality due to discharge of groundwater to surface water	Groundwater intercepted in cuttings will be collected and discharged to surface water. All drainage networks are designed on a case by case basis so that collected groundwater is discharged to the receiving water that it naturally would drain to. Retaining structures may also result in localised changes in groundwater levels, flows and interactions with surface water. Changes to the groundwater flow regime may lead to changes in surface water quality. The magnitude of the effect will be dependent on the degree of change in the groundwater flow regime and quality groundwater of adjacent groundwater bodies. In most cases, this is anticipated to have a negligible effect on the concentrations of specific pollutants such as copper, triclosan and zinc.
Retaining wall	Changes in water quality due to discharge of groundwater to surface water	Retaining walls may result in localised changes in groundwater levels, flows and interactions with surface water, potentially resulting in changes in water quality. In most cases, this is anticipated to have a negligible effect on specific pollutant concentrations. The magnitude of the effect will be dependent on the degree of groundwater-surface water interaction and extent of the affected reach of watercourse.
Tunnel vent shaft	Likely effects have same elements as for Retaining walls and Cuttings. Refer to Retaining wall and Cutting scheme component above for likely specific pollutant effects.	
Cut and cover tunnel	Likely effects are the same as for Cuttings. Refer to cutting scheme component above for likely specific pollutant effects.	
Tunnel portal	Tunnel portals have been assessed on based on their relevant sub-components. Refer to Cuttings, Retaining walls and Bored tunnel scheme components above for likely specific pollutant effects.	
Borrow pit	None	No anticipated effects.
Station / IMB / RSD	None	No anticipated effects.

Hydromorphological effects

3.1.21 Effects on hydromorphological status are considered in relation to quantity and dynamics of flow, river continuity (including existing restrictions such as sluices), river depth and width variation, structure and substrate and structure of the riparian zone.

3.1.22 The likely effects on hydromorphological status of the relevant scheme component types scoped in for assessment are summarised in Table 4.

Table 4: Likely hydromorphological effects of scheme component types on surface water bodies (after consideration of mitigation included within the design)

Scheme component	Likely hydromorphological effects of scheme component	
	Impact type	**Impact description**
Viaduct	Footprint	In some cases, viaducts may be required with pier footings located within the channel. This will cause a localised impact on hydromorphology and aquatic and/or bankside habitats. Some localised but permanent modifications to the river channel may also be required around the footings (e.g. local re-profiling and/or the installation of bank protection). In most cases, this is anticipated to have a minor, localised adverse effect on flow dynamics, river depth and width, the structure and substrate of the river bed, and the structure of the riparian zone.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Viaducts requiring pier footings located within the channel will also cause a localised but permanent change to the hydromorphological regime, which may lead to changes in river processes and habitat immediately upstream and downstream. In most cases, this is anticipated to have a negligible effect on flow dynamics, river depth and width, the structure and substrate of the river bed.
Underbridge / overbridge / bridge	None	No anticipated significant effects.
Bridge with footings in watercourse	Footprint	Bridges with footings in a watercourse will cause a localised impact on local hydromorphology and aquatic or bankside habitats. Some localised but permanent modifications to the river channel may also be required around the footings (e.g. via local re-profiling and/or the installation of bank protection). This is anticipated to have a minor, localised adverse effect on flow dynamics, river depth and width, the structure and substrate of the river bed, and the structure of the riparian zone.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Bridges with footings in a watercourse will also cause a localised but permanent change to the hydromorphological regime, which may lead to changes in river processes and habitat upstream and downstream. However, in most cases, this is anticipated to have a negligible effect on flow dynamics, river depth and width, the structure and substrate of the river bed, and the structure of the riparian zone.
Aqueducts	Footprint	Aqueducts will cause a localised but permanent loss of a section of existing channel within the footprint of the aqueduct. This is anticipated to have a minor, localised adverse effect on flow dynamics, connection to groundwater, river continuity, river depth and width, the structure and substrate of the riverbed, and the structure of the riparian zone. Where the length of proposed aqueducts is significant, however, this may have a more widespread, adverse effect on these hydromorphological elements.

Scheme component	Likely hydromorphological effects of scheme component	
	Impact type	**Impact description**
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Aqueducts will also cause a localised but permanent change in hydromorphological regime, which may lead to changes in river processes and habitat upstream and downstream. However, due to the mitigation measures included within the design, this is anticipated to have a negligible effect on flow dynamics, river width and depth, and structure and substrate of the river bed.
Culverts	Footprint & shading	Culverts will cause a localised but permanent loss of a section of open river channel and riparian habitat, including permanent shading of the watercourse, within the footprint of the culvert. The magnitude of effect will be dependent on the length of culvert and baseline condition of the reach of watercourse affected. In most cases, this is anticipated to have a minor, localised adverse effect on local flow dynamics, connection to groundwater, river continuity, river depth and width, the structure and substrate of the river bed, and the structure of the riparian zone. However, where the length of proposed culverts is significant, this may have a more widespread adverse effect on these hydromorphological elements.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Culverts will also cause a localised but permanent change in hydromorphological regime, which may lead to changes in river processes and habitat upstream and downstream. However, due to the mitigation included within the design, this is anticipated to have a negligible effect on flow dynamics, river width and depth, and structure and substrate of the river bed.
Inverted siphon	Footprint	Siphons will cause a localised but permanent loss of a section of existing channel within the footprint of the siphon. This will have a minor, localised adverse effect on local flow dynamics, connection to groundwater, river continuity, river depth and width, the structure and substrate of the river bed, and the structure of the riparian zone. However, depending on the location of the proposed siphon within the river network, this may have a more widespread, adverse effect on river continuity.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Siphons will also cause a localised but permanent change in hydromorphological regime, which may lead to changes in river processes and habitat upstream and downstream. Assuming appropriate allowances for an ongoing maintenance strategy are incorporated into the design of the siphon and implemented after construction, this is anticipated to have either a negligible effect or a minor, localised adverse effect on flow dynamics, river width and depth, and structure and substrate of the river bed.
Daylighting / removal of existing culvert	Footprint, shading & creation of new habitats	Daylighting/removal of existing culverts will result in a localised but permanent increase in open river channel and a reduction in shading of the watercourse within the footprint of the existing culvert. The magnitude of effect will be dependent on the length of culvert that is daylighted/removed. In most cases, this is anticipated to have a minor, localised beneficial effect on flow dynamics, connection to groundwater, river continuity, river depth and width, structure and substrate of the river bed, and structure of riparian zone. However, where the length of existing culvert

Scheme component	Likely hydromorphological effects of scheme component	
	Impact type	**Impact description**
		to be daylighted/removed is significant, and/or the existing culvert dimensions are currently restricting continuity, daylighting/removal may provide a more widespread beneficial effect on these hydromorphological elements.
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Daylighting/removal of existing culverts will also cause a localised but permanent change in hydromorphological regime, which may in turn lead to changes in river processes and habitat upstream and downstream. In most cases, this is anticipated to have a negligible effect on hydromorphology elements. However, where the length of the culvert to be daylighted/removed is significant, or where the existing culvert is currently impacting upon river continuity and sediment transfer, this may provide a more widespread beneficial effect on hydromorphology elements.
Highway drainage outfall	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	In some areas, new highway outfalls associated with proposed highway realignments may cause a localised but permanent change in the hydromorphological regime of the receiving watercourse. In most instances, this is anticipated to have a negligible effect on local flow dynamics and river depth and width.
Realignment / Diversion	Footprint	Realignments/diversions will result in the permanent loss of a section of existing river channel. However, realigned/diverted channels will provide features equivalent to those lost in the existing channel and, where reasonably practicable, will aim to provide hydromorphological improvements over the existing condition. In addition, all realignments and diversions will incorporate an appropriately sized buffer strip for marginal and riparian habitat creation/improvements. Where the existing hydromorphological value of the watercourse is limited or degraded, this is anticipated to have a negligible or minor, localised beneficial effect on hydromorphology elements. However, the realignment/diversion of reaches with well-developed riparian habitats may have a minor, localised adverse effect or adverse effect on the structure of the riparian zone (until riparian vegetation fully re-establishes).
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Realignments/diversions will also result in a localised but permanent change in hydromorphological regime, which may in turn lead to changes in river processes and habitat upstream and downstream. In most cases, given appropriate design of the realigned/diverted channel, this is anticipated to have a negligible effect on hydromorphology elements.
Embankment with sub-surface reinforcement	Footprint	Embankments with sub-surface reinforcement may cause a localised but permanent loss of a section of existing watercourse and/or riparian vegetation within the footprint of the embankment. This is anticipated to have either a negligible effect to minor, localised adverse effect on the structure and density of the riparian zone. Where the length of existing watercourse and/or riparian habitat to be lost is greater, however, this may have a more widespread, adverse effect on the structure and density of riparian habitats.

Scheme component	Likely hydromorphological effects of scheme component	
	Impact type	**Impact description**
	Changes in flow velocity and volume due to deflection or damming of groundwater / Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Embankment with sub-surface reinforcement may cause a localised change in the flow regime of nearby watercourses due to a deflection or damming of the water table. The magnitude of effect will be dependent on the degree of deflection or damming and any baseflow reduction. In most cases, this is anticipated to have either a negligible effect or minor, localised adverse effect on quantity and dynamics of water flow, groundwater connection, and river depth and width.
Cutting	Footprint	Cuttings may cause a localised but permanent loss of a section of existing watercourse and/or riparian vegetation within the footprint of the cutting. This is anticipated to have a minor, localised adverse effect on hydromorphological quality elements. Where the length of existing watercourse and/or riparian habitat to be lost is greater, however, this may have a more widespread, adverse effect.
	Changes in flow velocity and volume due to dewatering / Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Cuttings may cause a change in the flow regime of nearby watercourses due to a reduction in the groundwater table resulting from dewatering activities. Baseflow reduction will cause a localised but permanent change to the hydromorphological regime. The magnitude of effect will be dependent on the degree of groundwater drawdown and baseflow reduction. In most cases, this is anticipated to have either a negligible effect or a minor, localised adverse effect on quantity and dynamics of water flow, groundwater connection, and river depth and width variation.
Cutting with retaining structure	Footprint	Cuttings with retaining structures may cause a localised but permanent loss of a section of existing watercourse and/or riparian vegetation within the footprint of the cutting. This is anticipated to have a minor, localised adverse effect (yellow) on hydromorphological quality elements. Where the length of existing watercourse and/or riparian habitat to be lost is greater, however, this may have a more widespread, adverse effect (amber).
	Changes in flow velocity and volume due to dewatering / Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	Cuttings with retaining structures may cause a change in the flow regime of nearby watercourses due to a reduction in the groundwater table resulting from dewatering activities. Retaining structures may also cause a localised change in the flow regime of nearby watercourses due to a deflection or damming of the water table. Baseflow reduction will cause a localised but permanent change to the hydromorphological regime. The magnitude of effect will be dependent on the degree of groundwater drawdown and baseflow reduction. In most cases, this is anticipated to have either a negligible effect (green) or a minor, localised adverse effect (yellow) on quantity and dynamics of water flow, groundwater connection, and river depth and width variation.
Retaining wall	Changes in flow velocity and volume due to deflection or damming of groundwater /	Retaining walls may cause a localised change in the flow regime of nearby watercourses due to a deflection or damming of the water table. The magnitude of effect will be dependent on the degree of deflection or damming and

Scheme component	Likely hydromorphological effects of scheme component	
	Impact type	**Impact description**
	Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	any baseflow reduction. In most cases, this is anticipated to have either a negligible effect or minor, localised adverse effect on quantity and dynamics of water flow, groundwater connection, and river depth and width.
Cut and cover tunnel	Likely effects are the same as for cuttings. Refer to Cutting scheme component above for likely hydromorphological effects.	
Tunnel portal	Tunnel portals have been assessed on based on their relevant sub-components. Refer to Cutting, Retaining wall and Bored tunnel scheme components above for likely hydromorphological effects.	
Borrow pit	Footprint	During construction, borrow pits will cause a localised and temporary loss of area of catchment (and in some cases areas of active floodplain) but will typically have no direct physical impact on the river channel or riparian zone (applying an appropriate buffer zone between the excavated area and watercourse). Following construction, the excavated areas are anticipated to be restored to their original level and land use in accordance with the Borrow pit report (see Volume 5: Appendix CT-008-00000). This is anticipated to have a negligible effect on the hydromorphological elements.
	Changes in flow velocity and volume due to dewatering / Changes to hydromorphology leading to changes in process and habitat upstream and/or downstream	During the construction phase, borrow pits may cause a change in the flow regime of nearby watercourses due to a reduction in water table resulting from dewatering activities. The magnitude of effect will be dependent on the degree of groundwater drawdown and baseflow reduction. For borrow pits excavated within granular material, this is anticipated to have either a minor, localised adverse effect or adverse effect on quantity and dynamics of water flow, groundwater connection, and river depth and width variation.
Station / IMB / RSD	Footprint	In some cases, the proposed footprint of the station/IMB/RSD will cause a permanent loss of a section of existing open river channel habitat. This may include the need to culvert or siphon a section of the watercourse beneath the station building. The magnitude of effect will be dependent on degree of channel loss and the baseline condition of the reach affected. However, this is anticipated to have either a minor, localised adverse or an adverse effect on flow dynamics, river depth and width, the structure and substrate of the river bed, and the structure of the riparian zone.

Groundwater

3.1.23 The results of the preliminary assessment of the likely effects of relevant scheme components on the WFD status elements of groundwater bodies are summarised in Annex B (Table B 2). The impacts and likely effects on groundwater WFD status for each scheme component type are discussed in the following sections.

3.1.24 Where likely effects are anticipated based on the preliminary assessment, the scheme components and relevant WFD elements have been scoped in for more detailed impact assessment (see Section 4). This detailed impact assessment has then identified the specific individual effects of each scheme component and their combined overall effect on the WFD status of the relevant water body.

3.1.25 The majority of the Proposed Scheme is predicted to result in local and/or temporary impacts that are considered unlikely to affect WFD status at the groundwater body scale. However, potential risks to WFD quantitative status and chemical status elements have been identified for a number of the groundwater bodies.

3.1.26 Where groundwater impacts have the potential to impact to surface water then these 'knock on' impacts are considered in the surface water assessment.

Quantitative effects

3.1.27 Likely effects on quantitative status elements are considered in terms of the following two key impact types:

- lowering of groundwater levels and reduction in groundwater or baseflow contributions by temporary dewatering or permanent groundwater control; and
- 'damming' of groundwater flow and reduction in groundwater or baseflow contributions by physical obstruction of pathways.

3.1.28 The likely effects arising from the groundwater impacts at each of the relevant scheme component types are described in terms of changes in groundwater contributions to receptors (surface waters, groundwater dependent terrestrial ecosystems (GWDTE), groundwater abstractions and drinking water) and intrusions (saline or other) in Table 5.

Table 5: Likely quantitative status effects of scheme component types on groundwater bodies (after consideration of mitigation included within the design)

Scheme component type	Likely quantitative status effects of scheme component	
	Impact type	**Impact description**
Viaduct foundations / Bridge foundations	'Damming' of groundwater flow and reduction in groundwater contributions	Foundations of the Proposed Scheme will have no anticipated effects where they do not extend down to the water table. Foundations that extend below the water table have the potential to reduce transmissivity and lead to groundwater damming upgradient and groundwater lowering down gradient. If foundations facilitate connectivity between two isolated aquifers, then groundwater levels may interact and either rise or fall depending on the relative groundwater heads.
Embankment with sub-surface reinforcement	Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	Embankments of the proposed scheme may include sub surface reinforcement (such as linear closely spaced piles or retaining structures). Potential quantitative effects are considered on a site by site basis.
	'Damming' of groundwater flow and reduction in groundwater contributions	Embankment of the proposed with sub-surface reinforcement (such as linear closely spaced piles or retaining structures) will have no anticipated effects where they do not extend down to the water table. Refer to Viaduct foundations/ Overbridge foundations for effects from deep foundations that extend below the water table.
Cutting	Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	Drawdown of groundwater levels will occur along the cutting where the cutting invert (including drainage elements) lies below the water table. The extent of drawdown is a function of the cutting length, the range of cutting depth and the properties of the aquifer where the cut occurs. Potential quantitative effects are considered on a site by site basis.
Retaining wall	Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary	Retaining walls of the Proposed Scheme will have no anticipated effects where they are shallow and do not extend down to the water table. Refer to Embankment with sub-surface reinforcement for lowering effects that extend below the water table.

Scheme component type	Likely quantitative status effects of scheme component	
	Impact type	**Impact description**
	dewatering/permanent groundwater control	
	'Damming' of groundwater flow and reduction in groundwater contributions	Retaining walls of the Proposed Scheme will have no anticipated effects where they are shallow and do not extend down to the water table. Refer to Viaduct foundations/ Overbridge foundations for effects from deep foundations that extend below the water table.
Cut and cover tunnels	Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	Drawdown of groundwater levels will at cut and cover tunnels where the cutting invert (including drainage elements) lies below the water table. Refer to cutting scheme component above for likely quantitative effects.
Bored tunnel	'Damming' of groundwater flow and reduction in groundwater contributions	The lining of a bored tunnel (and associated cross passages) has the potential to reduce aquifer transmissivity, which could lead to localised damming of groundwater flow. The potential for damming is a function of the tunnel or shaft length, height and properties of the aquifer through which the tunnel is driven. Likely quantitative effects are considered on a site by site basis.
Tunnel portal	Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	Drawdown of groundwater levels will occur at a portal (including drainage elements) where the portal lies below the water table. Refer to cutting scheme component above for likely quantitative groundwater lowering effects.
	'Damming' of groundwater flow and reduction in groundwater contributions	Where portals of the Proposed Scheme include retaining structures, they will have no anticipated effects where they are shallow and do not extend down to the water table. Refer to Viaduct foundations/ Overbridge foundations for effects from deep foundations that extend below the water table.
Tunnel vent shaft	Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary	Drawdown of groundwater levels my occur at a vent shaft location where the structure lies below the groundwater table. Likely quantitative effects are considered on a site by site basis.

Scheme component type	Likely quantitative status effects of scheme component	
	Impact type	**Impact description**
	dewatering/permanent groundwater control	
	'Damming' of groundwater flow and reduction in groundwater contributions	Where vent shafts of the Proposed Scheme extend below the water table they have the potential to have a damming effect on groundwater flows. Refer to Viaduct foundations/ Overbridge foundations for effects from deep foundations that extend below the water table.
Borrow pit	Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	Borrow pit sites will be assessed in detail on a case-by-case basis, based on the location, size and depth of the proposed excavation area and the restoration strategy. During the construction phase, borrow pits may cause a local change in the groundwater regime if dewatering activities are required. Potential adverse effects may occur from groundwater drawdown due to excavations during temporary works if they extend below the water table. Excavated areas are anticipated to be restored to their original level and land use following construction, in accordance with the Borrow pit report (see Volume 5: Appendix CT-008-00000).
	'Damming' of groundwater flow and reduction in groundwater contributions	Reinstatement of borrow pits may cause a damming effect where the replacement material is of lower hydraulic conductivity than the original in-situ geology. Likely quantitative effects are considered on a site by site basis.

Chemical effects

3.1.29 Likely effects on chemical status elements are considered in terms of the likely changes in water quality. This is related to the following two key impact types:

- disturbing or mobilising existing poor-quality groundwater by temporary dewatering or depressurisation and permanent groundwater control; and
- creating or altering pathways along which existing poor quality groundwater can migrate.

3.1.30 The likely effects arising from groundwater impacts at each of the relevant scheme component types are described in terms of changes in groundwater contributions to receptors (surface waters, GWDTE, groundwater abstractions and drinking water) and intrusions (saline or other intrusions) in Table 6.

Table 6: Likely chemical status effects of scheme component types on groundwater bodies (after consideration of mitigation included in the design)

Scheme component type	Likely chemical status effect of scheme component	
	Impact type	**Impact description**
Viaduct foundations / Bridge foundations	Creating or altering of pathways along which existing poor quality groundwater can migrate	Foundations of the Proposed Scheme will have no anticipated effects where they do not extend down to the water table. Foundations that extend below the water table may create pathways between aquifers and potentially cause change in chemical status.
Embankment with sub-surface reinforcement	Creating or altering of pathways along which existing poor quality groundwater can migrate	Embankment with sub-surface reinforcement of the Proposed Scheme will have no anticipated effects where they do not extend down to the water table. Embankment with sub-surface reinforcement that extend below the water table may create pathways between aquifers and potential for change in chemical status. If damming of the water table occurs from embankment with sub-surface reinforcement, then there is potential for change in chemical status from modifications to the groundwater flow regime.
Cutting	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	If drawdown of the water table occurs, then there is potential for change in chemical status from modifications to the groundwater flow regime.
Retaining wall	Creating or altering of pathways along which existing poor quality groundwater can migrate	Likely effects are the same as for Embankment with sub-surface reinforcement. Refer to Embankment with sub-surface reinforcement component above for likely chemical effects.
Cut and cover tunnels	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Likely effects are the same as for cuttings. Refer to cutting scheme component above for likely chemical effects.
Bored tunnel	Creating or altering of pathways along which existing poor quality groundwater can migrate	If damming of the water table occurs, then there is potential for change in chemical status from modifications to the groundwater flow regime.

Scheme component type	Likely chemical status effect of scheme component	
	Impact type	**Impact description**
Tunnel portal	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	If drawdown of the water table occurs, then there is potential for change in chemical status from modifications to the groundwater flow regime.
	Creating or altering of pathways along which existing poor quality groundwater can migrate	Likely effects are the same as for Embankment with sub-surface reinforcement. Refer to Embankment with sub-surface reinforcement component above for likely chemical effects.
Tunnel vent shaft	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	If damming of the water table occurs from vent shafts, then there is potential for change in chemical status from modifications to the groundwater flow regime. Considered on site by site basis.
	Creating or altering of pathways along which existing poor quality groundwater can migrate	Vent shafts of the Proposed Scheme that extend below the water table and have the potential to cause change in chemical status from modification of the groundwater regime. Considered on site by site basis.
Borrow pit	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	If drawdown of the water table occurs, then there is potential for change in chemical status due to modifications to the groundwater flow regime. Refer to cuttings.

Scheme component type	Likely chemical status effect of scheme component	
	Impact type	**Impact description**
	Creating or altering of pathways along which existing poor quality groundwater can migrate	Reinstatement of borrow pits may cause modification to the groundwater regime and has potential for change to chemical status. Considered on site by site basis.

3.2 Likely effects on achievement of status objectives

3.2.1 WFD legislation requires consideration of whether new developments have the potential to prevent the future attainment of good status or potential objectives for water bodies (where not already achieved).

3.2.2 As part of the preliminary assessment, a scoping exercise has therefore been carried out to ensure that the construction and operation of the Proposed Scheme will not prevent any of the relevant water bodies from achieving their status objectives in the future.

3.2.3 The assessment has included only those water bodies affected by the Proposed Scheme that are currently failing to meet their good ecological status/potential or good quantitative status (with regards to surface water and groundwater bodies, respectively).

3.2.4 This has included assessing the likely effects of the Proposed Scheme on key existing pressures known to be limiting water body current status/potential and a range of management and enhancement measures/actions identified by the Environment Agency to support future improvements in water body status/potential. This has utilised the latest available Environment Agency Cycle 2 RBMP investigation outputs listed below:

- 'Reasons for not achieving good' status (RNAG), which identifies the relevant category, business sector, surface water management issue (SWMI) and activity responsible for the various quality elements currently failing their status objectives;
- 'Programmes of measures' (PoM), which identifies the actions proposed for relevant business sectors to address confirmed RNAG; and
- 'Heavily Modified Water Body (HMWB)/ Artificial Water Body (AWB) mitigation measure assessments' (MMA), which identify actions required to implement measures to mitigate the impacts of existing physical modifications, assets and operations related to the 'use' of heavily modified and artificial water bodies (e.g. flood defence, water resource management, navigation, etc.).

3.2.5 The likely effects of the Proposed Scheme on each of the above are summarised in the following sections. The assessment will be reviewed and updated where necessary following the publication of the Cycle 3 RBMPs in 2022.

Reasons for not achieving good status

3.2.6 The Environment Agency have identified RNAG status for all water body quality elements that are not currently at good status/potential. The RNAG identify the pressures (including relevant sectors and activities) that are currently impacting upon the status classification of a water body and therefore provide an indication of the high-level causes of status objective failure.

3.2.7 The available 2015 RBMP RNAG for the quality elements of each of the surface water and groundwater bodies affected by the Proposed Scheme are provided in Annex B (Table B 3 and Table B 4). These have been considered against the relevant scheme components affecting each water body.

3.2.8 The assessment has considered whether the RNAG are likely to be adversely or beneficially effected by the relevant scheme components, following consideration of mitigation included in the design. A precautionary approach has been taken, whereby the identification of a potential adverse effect on a RNAG is used to highlight the potential for the Proposed Scheme to prevent or inhibit the attainment of the status objective of the relevant quality element. RNAG relating to outstanding HMWB/AWB mitigation measures have been omitted from this assessment, as the potential effects of the Proposed Scheme on these measures is covered separately (see paragraphs 3.2.19 – 3.2.23).

3.2.9 In total, nine surface water body and one groundwater body RNAG have been identified as having the potential to be adversely affected by the Proposed Scheme to an extent that may risks the future attainment of water body status objectives (see Annex B, Table B 3 and Table B 4, respectively). These RNAG have been taken forward for further detailed assessment in consultation with the Environment Agency to ensure that the Proposed Scheme does not worsen these existing pressures that are currently considered to be restricting the achievement of the status objectives of the relevant water bodies (see Section 4).

3.2.10 In total, there are 32 surface water body RNAG where the Proposed Scheme is anticipated to have minor, localised beneficial effects (see Annex B Table B 3). Of these:

- twenty-nine relate to diffuse pollution in rural areas;
- one relates to diffuse pollution from towns, cities and transport; and
- two relate to physical modifications that are presently limiting fish status.

3.2.11 The provision of buffer strips and riparian improvements, and the creation of areas of wet grassland and tree planting associated with localised watercourse realignments, viaduct crossings, and the borrow pit excavations is anticipated to have minor, localised beneficial effects on the RNAG relating to diffuse pollution from rural areas and adjacent urban centres and existing transport infrastructure.

3.2.12 The daylighting of an existing culverted section of the River Medlock is anticipated to have minor, localised beneficial effects with regard to contributing towards addressing physical modifications that are presently limiting the fish status of the water body.

3.2.13 These beneficial effects are not anticipated to be of a scale such as to affect the achievement of status objectives at the water body scale.

Programmes of measures

3.2.14 The Environment Agency have identified cost-effective, catchment-wide measures required for supporting the achievement of the good status or potential objectives of a water body. These measures are linked to the RNAG identified for the quality elements of a water body

that are not currently at good status/potential. The planning, implementation and evaluation of the PoM involves an iterative process developed through the river basin management plan cycles.

3.2.15 The available 2015 RBMP PoM for the surface water affected by the Proposed Scheme are provided in Annex B (Table B 5). These measures have been considered against the relevant scheme components affecting each water body.

3.2.16 The assessment has considered whether the PoM are likely to be adversely or beneficially affected by the scheme components, following consideration of mitigation included in the design. A precautionary approach has been taken, whereby the identification of a potential adverse effect on a PoM is used to highlight the potential for the Proposed Scheme to prevent or inhibit the attainment of the status objective of the relevant quality element.

3.2.17 One surface water body measure has been identified as potentially being adversely affected by the Proposed Scheme to an extent that may risk the future attainment of water body status objectives (see Annex B, Table B 5). This PoM, relating to diffuse urban pollution in the Timperley Brook (GB112069061260) water body, has been taken forward for further detailed assessment in consultation with the Environment Agency (see Section 4).

3.2.18 No measures have been identified to date by the Environment Agency for the groundwater bodies affected by the Proposed Scheme. As such, these water bodies have been scoped out of the assessment at this stage in consultation with the Environment Agency.

HMWB/AWB mitigation measures

3.2.19 The ecological potential of HMWB and AWB is principally classified according to an assessment of a suite of 'mitigation measures'; with good ecological potential being assigned to water bodies where all applicable mitigation is in place, and moderate ecological potential being assigned where some or all relevant mitigation is missing. These measures are derived by the Environment Agency and are designed to address biological and hydromorphological pressures caused by physical modifications and/or operations associated with the anthropogenic 'uses' attached to the water body's heavily modified or artificial designation (e.g. flood defence, water resource management, navigation, etc.).

3.2.20 The latest available Cycle 2 RBMP mitigation measures assessment information for the HMWB/AWBs affected by the Proposed Scheme are summarised in Annex B (Table B 6). These measures have been considered against the relevant scheme components affecting each water body.

3.2.21 The assessment has considered whether the HMWB/AWB mitigation measures are likely to be adversely or beneficially effected by the scheme components, following consideration of mitigation included in the design. A precautionary approach has been taken, whereby the identification of a potential adverse effect on a HMWB/AWB mitigation measure is used to highlight the potential for the Proposed Scheme to prevent or inhibit the attainment of the status objective of the relevant quality element.

3.2.22 At this stage, no HMWB/AWB mitigation measures have been identified as being adversely affected by the Proposed Scheme to an extent that potentially risks the future achievement of water body status objectives.

3.2.23 One HMWB/AWB mitigation measure has been identified as having the potential to be beneficially affected by the Proposed Scheme. The measure for the Hey/Borsdane Brook water body aims to restore or increase in-channel morphological diversity via river restoration along 475 metres of channel, which is presently straight, parallel to the Leeds-Liverpool Canal (SD6024401864). It is anticipated that the proposed Hey Brook channel realignment at Wigan Road may provide an opportunity for this measure to be delivered. This will be reviewed during detailed design in continued consultation with the Environment Agency.

4 Detailed impact assessment

4.1 Overview

4.1.1 Following baseline and preliminary assessment, a detailed impact assessment has been undertaken for all water bodies and scheme components where a potential for the Proposed Scheme to have an effect on current status and status objectives has been identified.

4.1.2 The detailed impact assessment process is described the WFD compliance assessment process Technical note in the SMR (see Volume 5, Appendix CT-001-00001). This includes the methodology applied for assessing the effects of the Proposed Scheme on the current status and status objectives of the quality elements of water bodies. This relates to the requirement under the WFD for the consideration of whether new developments have the potential to result in:

- a deterioration in current status; and/or
- prevention of the achievement of good status/potential objectives in the future.

4.1.3 The assessment process for determining the potential for a deterioration of current status uses the following traffic light rating system as agreed with the Environment Agency, in order to assign the magnitude of the effect anticipated on the quality elements of the affected watercourse:

- **dark blue**: beneficial effect of a scale sufficient to increase status class for the quality element at water body scale;
- **light blue**: minor beneficial effect resulting in a localised improvement, but insufficient to increase status class for the quality element at water body scale;
- **green**: no measurable change to (or effect on) status class for the quality element at water body scale;
- **yellow**: minor, localised adverse effect when balanced against likely mitigation included in the design – insufficient to affect status class for the quality element at water body scale;
- **amber**: an adverse effect is possible when balanced against likely mitigation included in the design – the extent of effect is uncertain and there remains a potential to affect status class for the quality element at water body scale; and
- **red**: adverse effect of sufficient scale to impact on status class for the quality element at a water body scale.

4.1.4 The outcome of the assessment identifies the overall effect of all of the relevant /scheme components on each quality element at a water body scale. As part of this process, the assessment also considers the 'cumulative effects' on quality elements associated with the impacts of scheme components located within other, adjacent water bodies.

4.1.5 Where adverse (amber or red) effects on quality elements are identified, with a risk of causing deterioration of status, or preventing future attainment of the objectives, the assessment identifies additional mitigation requirements and the resultant residual effect.

4.1.6 The assessments have made full use of the quantitative analysis reported in the Volume 5 Water resources assessments reports (Appendices WR-003) for each community area. Where the assessments are based on professional judgement only, a precautionary approach has been adopted.

4.2 Surface water

Effects on current status

4.2.1 The baseline assessment has identified a total of 26 surface water bodies potentially affected by the Proposed Scheme (see Section 2.1). Within these water bodies, individual watercourses have been screened in for detailed assessment based on their hydromorphological and ecological characteristics. The baseline assessment has also identified all relevant scheme component affecting each of these water bodies / watercourses and the associated mitigation included in the design (see Section 2.3).

4.2.2 The preliminary assessment has then identified the relevant impacts of the various scheme components and the associated likely effects on the different WFD status elements of the surface water bodies affected by the Proposed Scheme (see Section 3.1). This, in turn, has identified which quality elements are scoped in for detailed assessment for each water body/watercourse. Of the 26 surface water bodies, three water bodies have been scoped out of further detailed assessment (see Section 3.1).

4.2.3 A detailed assessment has then identified the magnitude of the effects of the scheme components on the current status of the quality elements of the remaining 23 water bodies, together with any associated additional mitigation requirements.

4.2.4 In total, of the 23 surface water bodies scoped in for detailed impact assessment:

- five surface water bodies are anticipated to experience negligible (green) overall effects only, with no measurable change in quality element status;
- twelve surface water bodies are anticipated to experience minor, localised adverse (yellow) overall effects on one or more quality elements, but with no deterioration in status;
- six surface water bodies are at risk of experiencing adverse (amber) overall effects on one or more quality elements, with the potential for a deterioration in quality element status (requiring additional mitigation);
- no surface water bodies are at risk of experiencing severe adverse (red) overall effects of sufficient scale to cause a deterioration in quality element status; and
- no surface water bodies are anticipated to experience wider beneficial (dark blue) overall effects of a scale sufficient to cause an increase in quality element status class.

4.2.5 An overview of the adverse and beneficial effects anticipated within each surface water body as a result of the Proposed scheme is provided in Table 7. The detailed impact assessment results for each water body are provided in Annex C in Part 2 of this report.

Table 7: Summary of effects of the Proposed Scheme on WFD surface water bodies and associated risks of deterioration in status

Water body (ID)	Overview of interaction between Proposed Scheme and water body[7]	Overview of the effects of the Proposed Scheme[8]	Risk of deterioration and non-compliance at this stage
Wistaston Brook (GB112068055280)	The Proposed Scheme crosses centrally through this water body in a Bored Tunnel (Crewe Tunnel). The tunnel passes beneath the lower reaches of Wistaston/Gresty/Basford Brook, where the watercourse is currently culverted below Crewe Station.	Highway drainage runoff discharging to Basford Brook from the David Whitby Way is anticipated to have a localised, adverse effect on the physicochemical status element and a potential adverse effect on the biological and specific pollutants status elements, with a potential risk of deterioration.	Risk of deterioration and non-compliance identified. Additional mitigation measures required.
Weaver (Marbury Brook to Dane) (GB112068060460)	The Proposed Scheme crosses the far eastern boundary of this water body catchment, in a combination of Bored Tunnel (to the south) and on embankment/viaduct (to the north of the water body). Where the track is on embankment, it passes close to multiple tributaries of the River Weaver in the proximity of Wimboldsley, but does not cross them directly.	Four culverts are proposed within this water body, on the Tributary of River Weaver 2 (the Park Hall culvert, A530 Nantwich Road Offline East Culvert, A530 Nantwich Road Offline West Culvert, and an access track culvert). These are anticipated to have minor, localised adverse effects on biological and hydromorphological status elements. The proposed realignment of the Tributary of River Weaver 2 is anticipated to have a localised, beneficial effect on biological and hydromorphological status elements. Highway drainage runoff discharging to Tributary of River Weaver 2 associated with the A530 Nantwich Road Realignment is anticipated to have a localised, adverse effect on the physicochemical status element and a potential adverse effect on the biological and specific pollutants status elements, with a potential risk of deterioration.	Risk of deterioration and non-compliance identified. Additional mitigation measures required.
Shropshire Union Canal, Market	The Proposed Scheme crosses the Shropshire Union Canal on viaducts at three separate	The three viaduct crossings, and the Shropshire Union Canal Overbridge, are anticipated to have a negligible effect on the Shropshire Union Canal.	Negligible effects anticipated at the water body scale. No risk of

[7] Refer to BID WR-002-00001 for detailed baseline information and figures relating to the WFD surface water bodies and watercourses affected by the Proposed Scheme.

[8] Negligible (green) effects are not described within, unless these are the only anticipated effects associated with a scheme component. Refer to Annex C in Part 2 of this report for the full detailed impact assessment results for each WFD surface water body.

Water body (ID)	Overview of interaction between Proposed Scheme and water body[7]	Overview of the effects of the Proposed Scheme[8]	Risk of deterioration and non-compliance at this stage
Drayton to Ellesmere Port (GB71210001)	locations (at SJ6845665508, SJ6848365529, and SJ6851065549).		deterioration in current status identified at this stage.
Dane (Wheelock to Weaver) (GB112068060470)	The Proposed Scheme crosses the south-eastern most extent of this water body catchment, towards the downstream end of the water body, on a combination of embankment and viaduct. The River Dane is crossed via viaduct at three locations, to the east of Bostock (at SJ6838168097, SJ6839968181 and SJ6829768781).	The River Dane Viaduct is anticipated to have a minor, localised adverse effect on the River Dane.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)	The Proposed Scheme crosses the Trent and Mersey Canal on viaducts at three separate locations (at SJ6835068828, SJ6837370218, and SJ6843470757).	The three viaducts (River Dane Viaduct, Puddinglake Brook Viaduct and Trent and Mersey Canal Viaduct) are anticipated to have a negligible effect on the biological and physicochemical status elements of the Trent and Mersey Canal.	Negligible effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Puddinglake Brook (GB112068060220)	The Proposed Scheme crosses the far western extent of this water body catchment, towards the downstream end of the water body, on a combination of embankment and viaduct. Further north, the track crosses the lower reaches of Puddinglake Brook on viaduct in the proximity of Whatcroft. A granular borrow pit is proposed at the upstream end of Puddinglake Brook (at SJ7298569178).	The Puddinglake Brook Viaduct is anticipated to have a negligible effect on the biological and physicochemical status elements of Puddinglake Brook. The MA02 Granular Borrow Pit D is anticipated to have a potential localised adverse effect on physicochemical water quality (dissolved oxygen) and a potential adverse effect on the biological and hydromorphological status elements of Puddinglake Brook, with a potential risk of deterioration. The Puddinglake Brook Overbridge, associated with the temporary road realignment of Whatcroft Hall Lane, is anticipated to have a minor, localised adverse effect on the biological status element of Puddinglake Brook.	Risk of deterioration and non-compliance identified. Additional mitigation measures required.

Water body (ID)	Overview of interaction between Proposed Scheme and water body[7]	Overview of the effects of the Proposed Scheme[8]	Risk of deterioration and non-compliance at this stage
		Highway drainage runoff discharging to Puddinglake Brook associated with the A530 King Street is anticipated to have a localised, adverse effect on the physicochemical status element and a potential adverse effect on the biological and specific pollutants status elements, with a potential risk of deterioration.	
Wade Brook (GB112068060370)	The Proposed Scheme crosses the western, downstream most extent of this water body catchment, on a combination of embankment and viaduct. The route passes over Gad Brook (a tributary of the River Dane), and a tributary of Gad Brook on a viaduct to the south-east of Rudheath (at SJ6862671902), before crossing Wade Brook on viaduct north of Lostock Green (at SJ6960274283).	The two viaducts (Gad Brook Viaduct and Wade Brook Viaduct) are anticipated to have a negligible effect on the biological and physicochemical status elements of this water body. The proposed extension of an existing culvert on Wade Brook is anticipated to have a minor, localised adverse effect on the biological and hydromorphological status elements. The Wade Brook Overbridge, associated with the realigned A556 Chester Road, is anticipated to have a localised adverse effect on the biological and hydromorphological status elements of Wade Brook. Highway drainage runoff discharging to Wade Brook, Gad Brook, and Tributary of Gad Brook 3 associated with the A556 Shurlach Road, A530 King Street, and Penny's Lane Realignment is anticipated to have a localised, adverse effect on the physicochemical status element and a potential adverse effect on the biological and specific pollutants status elements, with a potential risk of deterioration.	Localised, adverse effects anticipated at the water body scale. Risk of deterioration and non-compliance identified. Additional mitigation measures required.
Peover Eye (GB112068060390)	The Proposed Scheme crosses the western, downstream extent of this water body catchment, on a combination of embankment (to the south) and viaduct (to the north). The route crosses the lower reaches of Peover Eye, and a tributary of Peover Eye, on a viaduct in the proximity of Winnington Wood (at approximately SJ7027775629).	The Smoker Brook Viaduct is anticipated to have a minor, localised adverse effect on biological and hydromorphological status elements of Smoker Brook, due to the potential impacts to the existing, high quality riparian zone in the proximity of the proposed viaduct.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.

Water body (ID)	Overview of interaction between Proposed Scheme and water body[7]	Overview of the effects of the Proposed Scheme[8]	Risk of deterioration and non-compliance at this stage
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	The Proposed Scheme crosses the western half of this water body catchment, on a combination of embankment and viaduct. The route crosses the lower reaches of Smoker Brook on viaduct, before crossing the mid-reaches of Waterless Brook/Arley Brook on viaduct, and a number of tributaries of Tabley Brook on either viaduct or embankment south of Hoo Green. At the northernmost extent of the water body, a combination of cuttings and retaining walls are proposed in the proximity of Hoo Green.	The Arley Brook Viaduct is anticipated to have negligible effects on the biological and physicochemical status elements of the water body. Smoker Brook Viaduct is anticipated to have a localised, adverse effect on biological and hydromorphological status elements. Bongs Wood Culvert, and the extension of an existing culvert on Tributary of Tabley Brook 3 are both anticipated to have a localised, adverse effect on biological and hydromorphological status elements. A 15m realignment of the Tributary of Tabley Brook 2, for the purposes of flowing into Bongs Wood Culvert, is anticipated to have a negligible effect on biological and hydromorphological status elements. The Hoo Green box structure, Hoo Green south cutting retaining wall and Hoo Green north cutting retaining wall are anticipated to have localised, adverse effects on hydromorphological status elements. A clear span bridge over Tabley Brook, associated with temporary access to a satellite construction compound, is anticipated to have a localised, adverse effect on the biological status element.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	The Proposed Scheme crosses this water body catchment via two sections: the HS2 West Coast Main Line (WCML) connection, which intersects the central area of catchment in a north-south alignment, and the HS2 Manchester spur, which intersects the southern portion of the catchment in an east-west alignment. These alignments diverge at the southernmost extent of the water body catchment.	The Millington Clough Underbridge and the Millington Clough Offline Overbridge are anticipated to have a localised, adverse effect on the biological status element. Both the Millington Cutting, and the Rostherne Cutting Retaining Wall West are anticipated to have a localised, adverse effect on the hydromorphological status element. The two viaducts (Agden Brook Viaduct and River Bollin West Viaduct) are anticipated to have a negligible effect on the water body.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.

Water body (ID)	Overview of interaction between Proposed Scheme and water body[7]	Overview of the effects of the Proposed Scheme[8]	Risk of deterioration and non-compliance at this stage
	The HS2 Manchester spur crosses Millington Clough on embankment (at SJ7215484210), and Agden Brook on viaduct (at SJ7258984601). At the northern extent of the catchment, the HS2 WCML connection crosses the River Bollin on viaduct.		
Bridgewater Canal (GB71210001)	The Proposed Scheme crosses Bridgwater Canal on a viaduct in the proximity of Warrington Lane (at SJ7140586826).	The Bridgewater Canal Viaduct is anticipated to have a negligible effect on the biological and physicochemical status elements of the Bridgewater Canal.	Negligible effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	The Proposed Scheme crosses the south-west extent of this water body catchment in the proximity of Warburton. The route here is in cutting through the southern extent of the catchment, and raises up on a combination of embankment and viaduct through the western and north-western extent of the catchment. The route crosses the Manchester Ship Canal on viaduct to the north east of Warburton, towards the downstream end of the water body.	The Manchester Ship Canal Viaduct is anticipated to have a localised, adverse effect on the biological and hydromorphological status elements of the Manchester Ship Canal.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Sinderland Brook (GB112069060980)	The Proposed Scheme intersects the far western edge of this water body catchment only. The route is entirely on viaduct (the Manchester Ship Canal Viaduct) through this water body catchment, with the viaduct crossing the lower reaches of Red Brook where it currently flows through Coroners Wood (at SJ7008990807).	The Manchester Ship Canal Viaduct is anticipated to have a negligible effect on the biological and physicochemical status elements of Red Brook.	Negligible effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.

Water body (ID)	Overview of interaction between Proposed Scheme and water body[7]	Overview of the effects of the Proposed Scheme[8]	Risk of deterioration and non-compliance at this stage
Glaze (GB112069061420)	The Proposed Scheme crosses the westernmost portion of this water body catchment. To the south of the water body catchment, the route is largely on embankment, with sections of viaduct over the M62 and existing Manchester to Liverpool line. Further north west, near Culcheth, the route is largely through cutting and on embankment. At the southern extent of the catchment, the route crosses a number of headwater tributaries of the Glaze Brook and of Holcroft Lane Brook.	The two realignments proposed within this water body (on Holcroft Lane Brook and Carr Brook) are anticipated to have localised beneficial effects on biological and hydromorphological status elements. The Culcheth cutting and Lowton cutting are anticipated to have a localised, adverse effect on biological and hydromorphological status elements. Two culverts proposed on Carr Brook (Newton Road Access Offline Culvert and the Golborne Pumping Station Access Culvert), and the Carr Brook Aqueduct, are all anticipated to have a localised, adverse effect on biological and hydromorphological status elements. The Culcheth South embankment is anticipated to have a localised, adverse effect on the hydromorphological status element.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Hey/Borsdane Brook (GB112069064520)	The Proposed Scheme connection crosses the southern half of this water body catchment, primarily on embankment, before joining the existing WCML near Bamfurlong.	The four realignments proposed within this water body (on Windy Bank Brook, Nan Holes Brook, Coffin Lane Brook, and the Tributary of Hey Brook 4) are anticipated to have a localised, beneficial effect on the biological and hydromorphological status elements. Abram cutting and the associated retaining wall are anticipated to have a localised, adverse effect on biological, physicochemical, and hydromorphological status elements. The Hey Brook Offline Overbridge is anticipated to have a localised, beneficial effect on biological and hydromorphological status elements associated with the meander bypass channel. Shading from the overbridge structure is anticipated to have a localised, adverse effect on the biological status element. Six culverts are proposed within this water body, including the extension of an existing culvert associated with the WCML. These culverts are all anticipated to have a localised, adverse effect on the biological and hydromorphological status elements, with the exception of the Windy Bank Culvert and the Coffin Lane Brook Culvert, where an adverse effect is anticipated on the biological	Risk of deterioration and non-compliance identified. Additional mitigation measures required.

Water body (ID)	Overview of interaction between Proposed Scheme and water body[7]	Overview of the effects of the Proposed Scheme[8]	Risk of deterioration and non-compliance at this stage
		status element due to the length of these culverts. A further localised, adverse effect is anticipated on the physicochemical status element from Nan Holes Brook Culvert and Nan Holes Brook Offline Culvert. When considered collectively at the water body scale, the six culverts are anticipated to have an overall adverse effect on the biological and hydromorphological status elements of Hey/Borsdane Brook, with a risk of deterioration.	
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	The Proposed Scheme crosses the northern extent of this water body catchment in an east-west alignment, as part of the HS2 Manchester spur. Through this water body, the route is primarily on a combination of embankment and viaduct (south/south-west of Ashley) with cuttings proposed north of Rostherne Mere and west of Thorns Green.	The Ashley Road Offline East Culvert, and the extension of an existing culvert on the Tributary of Birkin Brook 1 (Middle House Brook) are anticipated to have a localised, adverse effect on the biological and hydromorphological status elements. The Mobberley Road Offline Overbridge, also on Tributary of Birkin Brook 1, is anticipated to have a localised adverse effect on the biological status element. The 680m watercourse realignment on Tributary of Birkin Brook 1 is anticipated to have a localised, beneficial effect on biological and hydromorphological status elements. The Blackburn's Brook Viaduct is anticipated to have a negligible effect on Blackburn's Brook and Birkin Brook.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Rostherne Mere (GB31232650)	The Proposed Scheme passes immediately north of Rostherne Mere between the M56 and Rostherne, in an east-west alignment as part of the HS2 Manchester Spur. The route is primarily in cutting through this area.	The three cuttings (Millington Cutting, Rostherne Cutting, and Hoo Green North Cutting) in the proximity of Rostherne Mere are anticipated to have a localised, adverse effect on the biological, hydromorphological, and specific pollutants status elements. The potential impacts of these cuttings on Rostherne Mere and associated mitigation measures included within the design are described further in a Technical Note on the water environment and ecology of Rostherne Mere and The Mere, Mere (see Volume 5, Appendix EC-016-00003, Annex B).	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Sugar Brook (GB112069061350)	The Proposed track alignment does not intersect this water body directly but works associated with the Ashley Railhead have the potential to	The extension of an existing culvert on the Tributary of Sugar Brook is anticipated to have a localised, adverse effect on biological and hydromorphological status elements.	Localised, adverse effects anticipated at the water body scale. No risk of

Water body (ID)	Overview of interaction between Proposed Scheme and water body[7]	Overview of the effects of the Proposed Scheme[8]	Risk of deterioration and non-compliance at this stage
	affect this water body in the proximity of a Tributary of Sugar Brook, north of Breach House Lane (at SJ7770882765).		deterioration in current status identified at this stage.
Bollin (River Dean to Ashley Mill) (GB112069061381)	The Proposed Scheme crosses the northern section of this water body catchment, as part of the HS2 Manchester Spur. The route is primarily in cutting through this water body, with the River Bollin East Viaduct proposed to convey the route over the River Bollin.	The M56 East Tunnel is anticipated to have a localised, adverse effect on the biological, physicochemical, and hydromorphological status elements of the Tributary of River Bollin 2 and Tributary of River Bollin 3. Thorns Green Cutting is anticipated to have a localised, adverse effect on the biological, physicochemical, and hydromorphological status elements of Tributary of River Bollin 6. The River Bollin East Viaduct is anticipated to have a negligible effect on the biological and physicochemical status elements of this water body.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Timperley Brook (GB112069061260)	The Proposed Scheme intersects the south-east extent of this water body catchment in a roughly north-south alignment via retaining wall, as part of the HS2 Manchester Spur.	Highway drainage runoff discharging to Timperley Brook associated with the M56 East and West Link Realignment/Access to Manchester Airport High Speed Station/Runger Lane Realignment is anticipated to have a potential adverse effect on the biological and specific pollutants status elements, with a risk of deterioration. The drainage is also anticipated to have a localised adverse effect on dissolved oxygen. An inverted siphon is also proposed on Timperley Brook, taking a headwater reach of the watercourse beneath the footprint of the Manchester Airport High Speed Station. This is anticipated to have an adverse effect on the biological and hydromorphological status elements, with a risk of deterioration. The retaining wall associated with the Manchester Airport High Speed Station Cutting is anticipated to have a localised, adverse effect on the biological and hydromorphological status elements. The proposed 330m realignment of Timperley Brook downstream of Brook Drive is anticipated to have a localised, beneficial effect on	Risk of deterioration and non-compliance identified. Additional mitigation measures required.

Water body (ID)	Overview of interaction between Proposed Scheme and water body[7]	Overview of the effects of the Proposed Scheme[8]	Risk of deterioration and non-compliance at this stage
		the biological, physicochemical, and hydromorphological status elements.	
Sinderland Brook (Fairywell Brook and Bagueley Brook) (GB112069061270)	The Proposed Scheme crosses centrally through this water body catchment in a Bored Tunnel (Manchester Tunnel).	The Manchester Tunnel is anticipated to have a localised, adverse effect on the biological and hydromorphological status elements of Baguley Brook.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	The Proposed Scheme crosses the central section of this water body catchment in the proximity of Didsbury and Northenden. The route is in a Bored Tunnel (Manchester Tunnel) throughout this water body.	The Manchester Tunnel is anticipated to have a localised, adverse effect on the biological, specific pollutants, and hydromorphological status elements of the Tributary of River Mersey 2.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Medlock (Lumb Brook to Irwell) (GB112069061152)	The Proposed Scheme intersects the south western corner of this water body catchment on the approach into Manchester. The scheme is primarily on viaduct here.	The Piccadilly Approach Viaduct is anticipated to have a negligible effect on the biological and physicochemical status elements of the River Medlock. The Fairfield Street Offline Overbridge is anticipated to have a localised, adverse effect on the biological status elements of the River Medlock. The daylighting of approximately 100m of River Medlock beneath the Piccadilly Approach Viaduct is anticipated to have a localised, beneficial effect on biological and hydromorphological status elements.	Negligible effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.

Adverse effects with risk of deterioration in status

4.2.6 The detailed impact assessment has identified the potential for adverse (amber) overall effects on one or more quality elements as a result of the Proposed Scheme within the following surface water bodies. These effects have the potential to cause a deterioration in quality element status, which therefore requires the consideration of additional mitigation to appropriately manage the risk:

- Wistaston Brook (GB112068055280);
- Weaver (Marbury Brook to Dane) (GB112068060460);
- Puddinglake Brook (GB112068060220);
- Wade Brook (GB112068060370);
- Hey/Borsdane Brook (GB112069064520); and
- Timperley Brook (GB112069061260).

4.2.7 Table 8 provides a summary of the relevant scheme components causing the adverse (amber) effects and the watercourses affected within each water body.

4.2.8 A description of each of these effects, together with the associated additional mitigation requirements, is provided in the following sections.

Table 8: Summary of scheme components anticipated to cause adverse (amber) effects with risk of deterioration in status of WFD surface water bodies

Water body (ID)	Watercourse(s)	Scheme component(s) causing amber effect(s)	Impact type(s) causing amber effect(s)	Quality element(s) subject to amber effect(s)
Wistaston Brook (GB112068055280)	Basford Brook	Highway drainage – David Whitby Way	Drainage (changes in water quality due to discharge of surface water runoff to surface water body)	Fish; Macroinvertebrates; Macrophytes; Specific Pollutants (Copper and Zinc)
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Highway drainage – A530 Nantwich Road	Drainage (changes in water quality due to discharge of surface water runoff to surface water body)	Fish; Macroinvertebrates; Macrophytes; Specific Pollutants (Copper and Zinc)
Puddinglake Brook (GB112068060220)	Puddinglake Brook	MA02 Granular Borrow Pit D (maximum extraction depth 5m)	Change in flow velocity and volume due to dewatering	Fish; Macroinvertebrates; Macrophytes; Hydromorphology
		Highway drainage - A530 King Street	Drainage (changes in water quality due to discharge of surface water runoff to surface water body)	Fish; Macroinvertebrates; Macrophytes; Specific Pollutants (Copper)
Wade Brook (GB112068060370)	Gad Brook	Highway drainage – A530 King Street	Drainage (changes in water quality due to discharge of surface water runoff to surface water body)	Fish; Macroinvertebrates; Macrophytes; Specific Pollutants (Copper)
	Wade Brook	Highway drainage – A556 Shurlach Road	Drainage (changes in water quality due to discharge of surface water runoff to surface water body)	Fish; Macroinvertebrates; Macrophytes; Specific Pollutants (Copper)
	Tributary of Gad Brook 3	Highway drainage – Penny's Lane and A530 King Street	Drainage (changes in water quality due to discharge of surface water runoff to surface water body)	Fish; Macroinvertebrates; Macrophytes; Specific Pollutants (Copper and Zinc)
Hey/Borsdane Brook (GB112069064520)	Windy Bank Brook	Windy Bank Culvert (55m)	Footprint (cumulative)	
	Coffin Lane Brook	Coffin Lane Brook Culvert (60m)		

Water body (ID)	Watercourse(s)	Scheme component(s) causing amber effect(s)	Impact type(s) causing amber effect(s)	Quality element(s) subject to amber effect(s)
	Tributary of Hey Brook 4	Critchley culvert (approximately 17m)		Fish; Macroinvertebrates; Macrophytes; Hydromorphology[9]
	Nan Holes Brook	Nan Holes Brook culvert (35m)		
		Nan Holes Brook Offline culvert (50m)		
	Windy Bank Brook	Extension of existing culvert		
Timperley Brook (GB112069061260)	Timperley Brook	Timperley Brook inverted siphon	Footprint	Fish; Macroinvertebrates; Macrophytes; Hydromorphology
		Highway drainage - M56 East and West Link / access to Manchester Airport High Speed station/ Runger Lane Realignment	Drainage (changes in water quality due to discharge of surface water runoff to surface water body)	Fish; Macroinvertebrates; Macrophytes; Specific Pollutants (Copper and Zinc)

[9] Cumulative amber effects at the water body scale, on account of footprint impacts from a number of culverts proposed within the Hey/Borsdane Brook water body.

Wistaston Brook (GB112068055280) - highway drainage (David Whitby Way)

4.2.9 The assessment has identified the potential for adverse (amber) overall effects on the status of the Wistaston Brook (GB112068055280) water body associated with highways drainage discharges to Basford Brook (see Annex C, Table C 1 in Part 2 of this report).

4.2.10 Where discharge of highway drainage to local watercourses is required as part of the Proposed Scheme, an assessment has been undertaken to determine whether routine runoff is likely to have a detrimental impact on water quality, using the Highways England Risk Assessment Tool (HEWRAT)[10]. The predicted effects on surface water receptors have then been assessed in accordance with the methodology described in the SMR Surface water quality and Spillage risk assessment Technical note (see Volume 5, Appendix CT-001-00001). Where background surface water quality data in the vicinity of the Proposed Scheme is not available to support the HEWRAT assessment, an assumption has been made on a precautionary basis that there is still the potential to exceed environmental quality standards (EQS) in the receiving watercourse.

4.2.11 A screening exercise identified the need for a routine runoff assessment related to the potential for increased traffic on David Whitby Way during the construction phase of the Proposed Scheme (see Volume 5, Appendix WR-003-0MA01 for further details).

4.2.12 The HEWRAT assessment identified that both the acute soluble and sediment-bound pollutants passed, and there would be no resultant EQS exceedances for copper and zinc in the discharge. However, as no data is currently available with regards to the background concentrations of copper in the watercourse, sensitivity testing has been carried out. This testing indicates that if background concentrations for copper exceed 0.97µg/l the water quality in the receiving watercourse after discharge would exceed the EQS.

4.2.13 Accordingly, on a precautionary basis, the water quality impact from surface water drainage from increased traffic on David Whitby Way is anticipated to have the potential to cause adverse (amber) effects on the biological status and specific pollutants status of the water body.

4.2.14 These adverse effects have the potential to cause a deterioration in status. Consequently, additional mitigation measures may be required at this site to reduce the potential impact on the water quality of Wistaston Brook and appropriately manage the risk to the biological status and specific pollutant status of the water body. These measures are described in paragraphs 4.2.58 – 4.2.61.

[10] Routine Runoff and surface water quality in LA 113 Road Drainage and the Water Environment Revision 1 (formally HD 45/09) of the Design Manual for Roads and Bridges (DMRB). Available online at: https://www.standardsforhighways.co.uk/dmrb/.

Weaver (Marbury Brook to Dane) (GB112068060460) – highway drainage (A530 Nantwich Road)

4.2.15 The assessment has identified the potential for adverse (amber) overall effects on the status of the Weaver (Marbury Brook to Dane) (GB112068060460) water body, associated with highways drainage discharges to Tributary of River Weaver 2 (see Annex C, Table C 2 in Part 2 of this report).

4.2.16 A screening exercise identified the need for a routine runoff assessment related to the proposed modifications to the A530 Nantwich Road as part of the Proposed Scheme (see Volume 5, Appendix WR-003-0MA02 for further details). The proposed drainage associated with the realignment of the A530 Nantwich Road will discharge to two attenuation ponds. The highway attenuation pond located at the south-west of the realignment will outfall via two discharges into Tributary of River Weaver 2 (herein referred to as outfall 1 and outfall 2). The highway pond located at the north-east of the realignment will connect to the existing highway drainage network.

4.2.17 The HEWRAT assessment results for outfall 1 identified that both the acute soluble and sediment-bound pollutants assessments passed and there would be no resultant EQS exceedances for copper and zinc in the discharge. The HEWRAT assessment results for outfall 2 identified that both the acute soluble and sediment-bound pollutants assessments are passed; however, copper exceeds the EQS annual average concentration in the discharge.

4.2.18 A cumulative assessment was also undertaken for the two outfalls to Tributary of River Weaver 2, as the outfalls are less than 100m apart. The assessment results identified that the sediment-bound assessment is passed, however the acute soluble pollutants assessment failed for zinc, and, as before, copper exceeds the EQS annual average concentration.

4.2.19 No data is currently available with regards to the background concentrations of copper in the watercourse in the proximity of the proposed discharges, therefore sensitivity testing has been carried out. This testing found that if background concentrations for copper exceed 0.5µg/l, then the water quality in the receiving watercourse after discharges would exceed the EQS.

4.2.20 Accordingly, on a precautionary basis, the water quality impact from surface water drainage from the A530 Nantwich Road is anticipated to have the potential to cause adverse (amber) effects on the biological status and specific pollutants status of the water body.

4.2.21 These adverse effects have the potential to cause a deterioration in status. Consequently, additional mitigation measures are required at this site to reduce the potential impact on the water quality of Weaver (Marbury Brook to Dane) and appropriately manage the risk to the biological status and specific pollutant status of the water body. These measures are described in paragraphs 4.2.58 – 4.2.63.

Puddinglake Brook (GB112068060220) – MA02 Granular Borrow Pit D

4.2.22 The assessment has identified the potential for adverse (amber) overall effects on the status of the Puddinglake Brook (GB112068060220) water body, associated with the MA02 Granular Borrow Pit D (see Annex C, Table C 6 in Part 2 of this report). The borrow pit, located at SJ7355269313 (see Volume 2, MA02 Map Book, map CT-05-312-R5), will involve the excavation of glaciofluvial sheet deposits to a maximum excavation depth of 5m. It is assumed that, during excavation of the sand and gravels, dewatering will be undertaken to allow for safe working. The measures outlined in the draft CoCP will be implemented throughout the works to manage drainage and protection of water quality. However, dewatering of the excavations has the potential to reverse the hydraulic gradient between the aquifer and nearby surface water features, resulting in a loss of water to the ground. Accordingly, there is the potential for the lowering of groundwater levels caused by the dewatering to impact upon the baseflow of the nearby Puddinglake Brook during construction. This, in turn, may affect hydromorphological conditions and aquatic habitat along the watercourse.

4.2.23 The borrow pit is therefore anticipated to have the potential to cause adverse effects on the fish, macroinvertebrates, macrophytes and hydromorphology status of the water body with the potential to cause a deterioration in status. Consequently, additional mitigation measures are required at this site to reduce the potential impacts on the baseflow of Puddinglake Brook during construction and appropriately manage the risk to fish, macroinvertebrates, macrophytes and hydromorphological status of the water body. These measures are described in paragraphs 4.2.64 – 4.2.66.

Puddinglake Brook (GB112068060220) – highway drainage (A530 King Street)

4.2.24 The assessment has identified the potential for adverse (amber) overall effects on the status of the Puddinglake Brook (GB112068060220) water body, associated with highways drainage discharges to Puddinglake Brook (see Annex C, Table C 6 in Part 2 of this report).

4.2.25 A screening exercise identified the need for a routine runoff assessment related to the potential for increased traffic on the A530 King Street during the construction phase of the Proposed Scheme (see Volume 5, Appendix WR-003-0MA02 for further details). At this time, no information is available on the drainage arrangements on the existing A530 King Street. Therefore, on a precautionary basis it is assumed that drainage goes to local watercourses (at the low points in the road) and that no mitigation is in place.

4.2.26 The HEWRAT assessment identified that both the acute soluble and sediment-bound pollutants assessments passed and there would be no EQS exceedances of copper and zinc in the discharge. However, no data is currently available with regards to the background concentrations of copper in Puddinglake Brook in the proximity of the presumed discharge, therefore sensitivity testing has been carried out. This testing indicates that were

background concentrations for copper to exceed 0.7µg/l, the water quality in the receiving watercourse after discharge would exceed the EQS.

4.2.27 Accordingly, on a precautionary basis, the water quality impact from surface water drainage from the A530 Nantwich Road is anticipated to have the potential to cause adverse (amber) effects on the biological status and specific pollutants status of the water body.

4.2.28 These adverse effects have the potential to cause a deterioration in status. Consequently, additional mitigation measures are required at this site to reduce the potential impact on the water quality of Puddinglake Brook and appropriately manage the risk to the biological status and specific pollutant status of the water body. These measures are described in paragraphs 4.2.58 – 4.2.61.

Wade Brook (GB112068060370) – highway drainage (A530 King Street / A556 Shurlach Road / Penny's Lane)

4.2.29 The assessment has identified the potential for adverse (amber) overall effects on the status of the Wade Brook (GB112068060370) water body, associated with highways drainage discharges to Gad Brook, Wade Brook, and Tributary of Gad Brook 3 (see Annex C, Table C 7 in Part 2 of this report).

4.2.30 A screening exercise identified the need for a routine runoff assessment associated with the A530 King Street, the A556 Shurlach Road, and Penny's Lane, as part of the Proposed Scheme (see Volume 5, Appendix WR-003-0MA02 for further details).

4.2.31 At this time, no information is available on the drainage arrangements on the existing A530 King Street. Therefore, on a precautionary basis it is assumed that drainage currently goes to local watercourses (at the low points in the road) and that no mitigation is in place. The HEWRAT assessment for this road has therefore considered the effects of increased traffic during the construction phase on Gad Brook and Tributary of Gad Brook 3.

4.2.32 The HEWRAT surface water assessment results identified that for the discharge to Gad Brook from the A530 King Street, both the acute soluble and sediment-bound pollutants assessment passed and there would be no EQS exceedances of copper and zinc in the discharge. However, as no data is currently available with regards to the background concentrations of copper in the watercourse at the point of discharge, sensitivity testing has been carried out. This testing indicates that if background concentrations for copper exceed 0.7µg/l the water quality in the receiving watercourse after discharge would exceed the EQS. Accordingly, on a precautionary basis, the water quality impact from surface water drainage from the A530 King Street to Gad Brook is anticipated to have the potential to cause adverse (amber) effects on the biological status and specific pollutants status of the water body.

4.2.33 For the discharge to Tributary of Gad Brook 3 from the A530 King Street, the HEWRAT assessment identified that both the acute soluble (for copper) and sediment-bound pollutants aspects of the assessment failed, and copper would exceed the EQS annual average concentration. Accordingly, the water quality impact from surface water drainage from the A530 King Street to Tributary of Gad Brook 3 is anticipated to have the potential to

cause adverse (amber) effects on the biological status and specific pollutants status of the water body.

4.2.34 In addition to the A530 King Street, it is anticipated that Tributary of Gad Brook 3 could be affected by changes to drainage associated with the proposed realignment of Penny's Lane. The modifications involve the diversion of Penny's Lane to join the A530 approximately 440m north of where the existing road would be severed by the Proposed Scheme. The existing drainage network for Penny's Lane is kerb and gullies, and this is also proposed for the road diversion. A combined carrier filter drain would intercept sub-surface flows in the cutting under the Gad Brook Viaduct, with the flows discharging to a highway attenuation pond located at the roundabout junction with the A530. The outfall from this highway attenuation pond is proposed to be piped along the A530 King Street, ultimately discharging to Tributary of Gad Brook 3.

4.2.35 The HEWRAT assessment results associated with the proposed modifications to Penny's Lane identified that both the acute soluble and sediment-bound pollutants assessments are passed and there would be no EQS exceedances of copper and zinc in the discharge. However, as no data is currently available with regards to the background concentrations of copper in the watercourse in the proximity of the proposed discharge, sensitivity testing has been carried out. This testing indicates that if background concentrations for copper exceed 0.6µg/l, the water quality in the receiving watercourse after discharge would exceed the EQS. Accordingly, on a precautionary basis, the water quality impact from surface water drainage from the diverted Penny's Lane is anticipated to have the potential to cause adverse (amber) effects on the biological status and specific pollutants status of the water body.

4.2.36 The modifications to the A556 Shurlach Road between Rudheath and Lostock Gralam involve the rebuilding of the carriageway along a total length of 2.3km adjacent to the Proposed Scheme. The existing drainage of the A556 Shurlach Road consists of kerb and gullies on both sides of each carriageway. It is proposed to provide a new system of kerbs and gullies, discharging to three attenuation ponds under gravity. Two ponds, proposed to the north of the diversion, will discharge to Wade Brook.

4.2.37 Environment Agency water quality monitoring data is available for Wade Brook. This data indicates that background concentrations of copper in Wade Brook are above the EQS of 1 µg/l[11], varying between 4.1µg/l and 6.2 µg/l (across the period of 2000 to 2021).

4.2.38 Applying this background concentration into the HEWRAT tool, the surface water assessment has been carried out for the two outfalls to the Wade Brook. The assessment results identified that both the acute soluble and sediment-bound pollutants assessments are passed. However, an EQS exceedance of copper is recorded. A cumulative assessment was also undertaken for the two outfalls to the Wade Brook. The assessment results identified that the acute soluble pollutants aspect of the assessment is passed, however, an EQS exceedance of copper is again recorded. The sediment-bound aspect of the assessment is

[11] Department for Environmental, Food and Rural Affairs (2014), *Water Framework Directive implementation in England and Wales: new and updated standards to protect the water environment*.

not applicable, as the outfalls are more than 100m apart. Accordingly, on a precautionary basis, the water quality impact from surface water drainage associated with the proposed modifications to the A556 Shurlach Road is anticipated to have the potential to cause adverse (amber) effects on the biological status and specific pollutants status of the water body.

4.2.39 The adverse effects described above associated with the A530 King Street, Penny's Lane, and A556 Shurlach Road have the potential to cause a deterioration in status. Consequently, additional mitigation measures are required at this site to reduce the potential impact on the water quality of Wade Brook and appropriately manage the risk to the biological status and specific pollutant status of the water body. These measures are described in paragraphs 4.2.58 – 4.2.63.

Hey/Borsdane Brook (GB112069064520) – multiple culverts

4.2.40 The assessment has identified the potential for adverse (amber) overall effects on the status of the Hey/Borsdane Brook (GB112069064520), associated with the cumulative effects of multiple culverts proposed on a number of headwater tributaries of Hey Brook (see Annex C, Table C 15 in Part 2 of this report). These are summarised below.

4.2.41 Critchley Culvert will comprise an approximately 17m long culvert located at approximate NGR SJ6174499075 on the Tributary of Hey Brook 4 (see Volume 2, MA05 Map Book, map CT-06-332). Tributary of Hey Brook 4 flows from north of Lowton (at SJ6131798914) to its confluence with Hey Brook close to Critchley House (at SJ6231999445). At the location of the Proposed Scheme, surveys indicate that Tributary of Hey Brook 4 exhibits good habitat diversity, with potential to support diverse macroinvertebrate and fish communities. The watercourse is dominated by a plane-riffle flow type with a moderate gradient and a mixture of coarse and fine gravel substrate. The existing river continuity is good, with no barriers to flow or sediment transport.

4.2.42 Windy Bank Culvert will comprise an approximately 55m long culvert located at SJ6085099763 on Windy Bank Book, approximately 100m east of the A573 Wigan Road (see Volume 2, MA05 Map Book, map CT-06-332). Windy Bank Brook flows from the north of Edge Green (at SJ6008999597) in an easterly direction to its confluence with Hey Brook north-west of Lightshaw Hall (at SJ6130099935). Surveys undertaken downstream of the Proposed Scheme at SJ6090099800 indicate that the watercourse exhibits good habitat diversity, with the potential to support diverse macroinvertebrate and fish communities. Here, the watercourse is small and sinuous, with a moderate gradient and moderate energy. The watercourse is constrained by the valley sides, with some evidence of historic channel incision observed. A desk study of the watercourse revealed significant historic channel straightening through the upstream reaches of the watercourse, as well as habitat fragmentation caused by culverting beneath the WCML and Wigan Road.

4.2.43 Coffin Lane Brook Culvert will comprise an approximately 60m long culvert located at SD6017900984 on Coffin Lane Brook (see Volume 2, MA05 Map Book, map CT-06-333). Coffin Lane Brook flows from the east of Bryn Gates (at SD5884301248) in an existing culvert under

the WCML, to its confluence with Hey Brook close to the eastern edge of the Leeds and Liverpool Canal near Abram (at SD6055700932). Surveys undertaken at the location of the Proposed Scheme (at SD6055000920) indicate that the watercourse exhibits low habitat potential. Here, the channel is a narrow (0.5-1m wide) and shallow (<0.5m deep) low energy drainage channel dominated by silt substrate. Upstream of the Proposed Scheme (at SD5993101030) surveys indicate that the watercourse is an artificial drainage ditch with evidence of realignment and possible dredging. The watercourse is presently impacted by several culverts, including the existing culvert beneath the WCML.

4.2.44 Nan Holes Brook Culvert will comprise an approximately 35m long culvert located at SD6054200075 on Nan Holes Brook (see Volume 2, MA05 Map Book, map CT-06-333). Nan Holes Brook Offline Culvert will comprise an approximately 50m long culvert located at SJ6041799995 (see Volume 2, MA05 Map Book, map CT-06-333). Nan Holes Brook flows from the eastern edge of Ashton-in-Makerfield (at SJ5926299999) to its confluence with Hey Brook between the A573 Aye Bridge Road and the Leeds and Liverpool Canal (at SD6118700084). Surveys undertaken at the location of the Proposed Scheme (at SD6060000100) indicate that the watercourse exhibits good habitat diversity, with the potential to support diverse macroinvertebrate and fish communities. Here, the watercourse is small and sinuous, with a moderate gradient and moderate energy. The dominant flow type is plane riffle. Surveys undertaken upstream of the Proposed Scheme (at SJ5965699876) indicate that the watercourse here is a shallow, overgrown field ditch with low aquatic habitat potential. Furthermore, a desk study assessment of the watercourse indicated significant historic channel straightening through the upstream reaches of Nan Holes Brook, as well as habitat fragmentation caused by culverting beneath the WCML and Wigan Road.

4.2.45 Collectively, the culverts described above will result in approximately 217m footprint loss of existing river channel and riparian habitat. This cumulative footprint impact of culverting is anticipated to have an adverse effect on the fish, macroinvertebrates, macrophytes and hydromorphology status of the water body with the potential to cause a deterioration in status. Consequently, additional mitigation measures are required to compensate for the footprint habitat losses caused by the Proposed Scheme and appropriately manage the risk to the fish, macroinvertebrates, macrophytes and hydromorphological status of the water body. These measures are described in paragraphs 4.2.67 – 4.2.69.

4.2.46 Given the length of Windy Bank Culvert, Nan Holes Brook Culvert, and Nan Holes Brook Offline Culvert, the assessment has also considered the risk of impacting upon fish passage along the Windy Bank Brook and Coffin Lane Brook and access to potential spawning habitats upstream. Baseline desk study and field surveys completed to date have indicated that existing aquatic habitat potential to support migratory fish populations is poor upstream (west) of the Proposed Scheme. Upstream access for fish to the far headwater reaches of these watercourses upstream of the Proposed Scheme is also currently restricted by the presence of existing culverts beneath the WCML. Any potential impacts on fish passage, including fish migration and spawning, are therefore anticipated to be minor and localised only and will not cause a deterioration in the current fish status of the water body. Where access allows, further detailed surveys will be undertaken in consultation with the

Environment Agency to verify that there will be no adverse effects on fish migration and spawning.

Timperley Brook (GB112069061260) – Timperley Brook inverted siphon (Manchester Airport Station)

4.2.47 The assessment has identified the potential for an adverse (amber) overall effect on the status of the Timperley Brook (GB112069061260) water body, associated with of the Timperley Brook Siphon (Manchester Airport Station) on Timperley Brook (see Annex C, Table C 20 in Part 2 of this report).

4.2.48 An inverted siphon (approximately 170m in length) is proposed below the footprint of the Manchester Airport High Speed station, along the upper reach of Timperley Brook (at SJ8052986049, see Volume 2, MA06 Map Book, map CT-06-357a). The constraints of existing infrastructure and the tunnel portal entrance for HS2 just to the north, mean that the level of the station requires an inverted siphon solution to convey Timperley Brook beneath it. The inverted siphon will re-join the existing watercourse west of the station. Immediately upstream of the siphon, the upper headwaters of watercourse are currently culverted beneath the M56 and Manchester Airport car park. As such, potential impacts of the siphon on fish passage/migration and river continuity are considered to be negligible. However, the siphon will result in the permanent loss of approximately 275m of existing open channel and riparian habitat along a wooded headwater section of the watercourse.

4.2.49 Given the length of the siphon and the baseline condition of the impacted reach, the footprint impact of the siphon is anticipated to cause an adverse effect on the fish, macroinvertebrates, macrophytes and hydromorphology status of the water body. These adverse effects have the potential to cause a deterioration in status. Consequently, additional mitigation measures are required compensate for the footprint habitat losses caused by the Proposed Scheme and appropriately manage the risk to fish, macroinvertebrates, macrophytes and hydromorphological status of the water body. These measures are described in paragraphs 4.2.70 – 4.2.72.

Timperley Brook (GB112069061260) – highway drainage (M56 East and West Link / access to Manchester Airport High Speed station/ Runger Lane Realignment)

4.2.50 The assessment has also identified the potential for an adverse (amber) overall effect on the status of the Timperley Brook (GB112069061260) water body associated with highways drainage discharges to the Timperley Brook (see Annex C, Table C 20 in Part 2 of this report).

4.2.51 A screening exercise identified the need for a routine runoff assessment related to the proposed modifications to the M56 East and West Links, Manchester Airport High Speed Station access road (east), Manchester Airport High Speed Station access road (west) and Runger Lane, as part of the Proposed Scheme (see Volume 5, Appendix WR-003-0MA06 for further details).

4.2.52 The modifications to these roads have been assessed together as they are each incorporated into the proposed eastern highways drainage catchment that will be collected and routed into attenuation tanks. The tanks located on the eastern side of the HS2 alignment will discharge to the Timperley Brook inverted siphon, crossing beneath the HS2 tracks and discharge to Timperley Brook.

4.2.53 Mitigation measures that have been incorporated within the design include attenuation tanks, vortex grit separators and rain gardens. All highways drainage will pass through holding tanks and vortex grit separators, while 42% of the highway drainage will also pass through rain gardens (see Volume 5, Appendix WR-003-0MA06 for further details).

4.2.54 With the inclusion of this mitigation included within the design, the assessment has identified that routine runoff drainage from these proposed highway realignments to Timperley Brook would result in a pass for sediment-bound and soluble pollutants copper and zinc, against EQS. However, no data is currently available with regards to the background concentrations of copper in the watercourse in the proximity of the discharge point. Sensitivity testing has identified that following the implementation of the mitigation included within the design, if background concentrations for copper exceed 0.2µg/l, the water quality in the receiving watercourse after discharge would exceed the EQS.

4.2.55 Accordingly, on a precautionary basis, the water quality impact from surface water drainage from these highway realignments is anticipated to have the potential to cause adverse (amber) effects on the biological status and specific pollutants status of the water body.

4.2.56 These adverse effects have the potential to cause a deterioration in status. Consequently, additional mitigation measures are required at this site to reduce the potential impact on the water quality of Timperley Brook and appropriately manage the risk to the biological status and specific pollutant status of the water body. These measures are described in paragraphs 4.2.73 – 4.2.74.

Additional mitigation to avoid deterioration in status

4.2.57 Additional mitigation measures are required where the detailed impact assessment has identified adverse (amber) effects with a risk of deterioration in status of water body quality elements. These measures are described in the following sections, with reference to the relevant scheme components and water bodies.

Wistaston Brook (GB112068055280), Weaver (Marbury Brook to Dane) (GB112068060460), Puddinglake Brook (GB112068060220), Wade Brook (GB112068060370) – highway drainage

4.2.58 Options have been identified to mitigate the potential adverse effects on the biological and specific pollutants status of the Wistaston Brook (GB112068055280), Weaver (Marbury Brook to Dane) (GB112068060460), Puddinglake Brook (GB112068060220), and Wade Brook (GB112068060370) water bodies associated with highway drainage discharges affected by the Proposed Scheme

4.2.59 During the passage of the Bill, investigation is required in consultation with the Environment Agency to understand the background concentrations of copper and zinc within the receiving watercourses. Further analysis of the bioavailability of metals and dilution will be carried out, where reasonably practicable, to identify whether additional measures are required to mitigate potential impacts associated with highway drainage runoff as a result of the Proposed Scheme.

4.2.60 If further mitigation is required, this will be designed in consultation with the Environment Agency and other stakeholders to mitigate any significant effects on water quality. Additional measures to filter solids and pollutants from water prior to discharge might include:

- use of wet attenuation basins;
- vortex grit separators; and
- swales.

4.2.61 Until further baseline investigations are complete, the potential for residual adverse overall effects with the risk of causing a deterioration in status of one or more quality elements is considered to remain at this stage on a precautionary basis.

4.2.62 In addition, soluble and sediment bound pollutants have been identified to fail the assessment in relation to highway drainage runoff from the A530 King Street to Tributary of Gad Brook 3. An EQS exceedance for copper has also been identified in relation to highway drainage runoff from the proposed modifications to the A556 Shurlach Road to Wade Brook. Accordingly, additional mitigation measures will need be considered during design development for these sites in order to mitigate the risk of deterioration in the status of the Wade Brook (GB112068060370) water body. Measures to mitigate the impact of discharges from the A530 King Street to Tributary of Gad Brook 3 may include the use of a swales and vortex grit separator or the temporary rerouting of the drainage into a large watercourse.

4.2.63 Soluble pollutants have also failed the assessment in relation to highway drainage runoff from the proposed A530 Nantwich Road realignment to Tributary of River Weaver 2. Accordingly, additional mitigation measures will need be considered during design development for this site to mitigate the risk of deterioration in the status of the Weaver (Marbury Brook to Dane) (GB112068060460) water body. Mitigation measures at this site may include the use of a wet retention pond.

Puddinglake Brook (GB112068060220) – MA02 Granular Borrow Pit D

4.2.64 Additional measures have been identified to mitigate the potential adverse effects on the fish, macroinvertebrate, macrophyte, and hydromorphology status of the Puddinglake Brook (GB112068060220) water body associated with the MA02 Granular Borrow Pit D.

4.2.65 These mitigation measures are required to manage groundwater baseflows to the headwaters of Puddinglake Brook during excavation and dewatering of the borrow pit. These measures will be designed in detail in consultation with the Environment Agency

following ground investigation and pre-construction monitoring of surface water and groundwater levels. Mitigation could take the form of:

- widening the buffer strip between the borrow pit and surface water feature;
- recirculate abstracted water back into local watercourses to maintain flows at the appropriate locations;
- installation of cut-off structures around excavations;
- ensuring that cut-off structures are driven to sufficient depths to meet an underlying strata or zone of lower permeability;
- promotion of groundwater recharge, such as discharging pumped water to recharge trenches around excavations to maintain baseline groundwater and surface water conditions;
- incorporation of passive bypasses within the design, which could comprise a 'blanket' of permeable material, such as gravel, placed around temporary structures, allowing groundwater to bypass the below-ground works without a rise in groundwater levels on the upstream side; or
- extracting material below the standing water level in the borrow pit using wet working techniques, so as not to require dewatering.

4.2.66 Whilst it is currently anticipated that it will be feasible to develop and implement a mitigation strategy to ensure that any potential impact is fully mitigated and there is a negligible effect on flow in Puddinglake Brook, further ground investigation, baseflow monitoring and design work is required to inform the best mitigation solution at the site. As such, on a precautionary basis, the potential for residual adverse overall effects with the risk of causing a deterioration in status of one or more quality elements is considered to remain at this stage.

Hey/Borsdane Brook (GB112069064520) – multiple culverts

4.2.67 A range of potential options have been identified to mitigate the potential adverse effects on the fish, macroinvertebrate, macrophyte, and hydromorphology status of the Hey/Borsdane Brook (GB112069064520) water body associated with the cumulative footprint impact of several culverts proposed on the headwater tributaries of Hey Brook.

4.2.68 These comprise various compensatory enhancement opportunities identified within the catchment in consultation with the Environment Agency, including localised in-channel or planform river restoration works, riparian planting/improvements, the removal or softening of existing sections of hard bank protection, and/or modifications to or removal of existing culverts along reaches of the affected tributaries and/or the Hey Brook immediately downstream of the Proposed Scheme. These measures have been mapped and categorised in relation to their proximity to the current Consolidated Construction Boundary of the Proposed Scheme and their ability to mitigate like-for-like impacts. The measures will be developed further and designed in detail in consultation with the Environment Agency following further surveys, site investigation and assessment.

4.2.69 Whilst it is currently anticipated that it will be feasible to develop and implement a mitigation strategy to ensure that that the cumulative footprint impacts of the proposed culverts are fully mitigated for by a range of compensatory enhancements, further surveys, feasibility and design work is required in consultation with the Environment Agency to inform the best mitigation solution. As such, on a precautionary basis, the potential for residual adverse overall effects with the risk of causing a deterioration in status of one or more quality elements is considered to remain at this stage.

Timperley Brook (GB112069061260) – Timperley Brook inverted siphon (Manchester Airport Station)

4.2.70 Additional measures have been identified to mitigate the potential adverse effects on the fish, macroinvertebrate, macrophyte, and hydromorphology status of the Timperley Brook (GB112069061260) water body associated with the footprint impacts of the Timperley Brook inverted siphon.

4.2.71 The permanent loss of 275m of open channel and riparian habitat along the siphon footprint will be mitigated by realigning the watercourse and creating a new section of open channel of approximately 300-350m length immediately north (downstream) of Brooks Drive, where the brook is currently culverted alongside the road (see Volume 2, MA06 Map Book, map CT-06-357a). The design of these works will be developed during the detailed design stage in consultation with the Environment Agency and following completion of further surveys and investigation.

4.2.72 The implementation of this additional mitigation will ensure that there are no adverse (amber) residual overall effects within this water body.

Timperley Brook (GB112069061260) – highway drainage (M56 East and West Link / access to Manchester Airport High Speed station/ Runger Lane Realignment)

4.2.73 Additional measures, including attenuation tanks, vortex grit separators and rain gardens, have been identified and included within the design to mitigate the potential adverse effects on the biological and specific pollutants status of the Timperley Brook (GB112069061260) water body associated with highway drainage discharges from the M56 East and West Link in the vicinity of the Manchester Airport Station. The assessment of the design with the inclusion of this mitigation results in a pass for sediment-bound and soluble pollutants against EQS.

4.2.74 Whilst it is currently anticipated that these measures are sufficient to mitigate any potential highway drainage runoff water quality impacts to Timperley Brook, further monitoring and investigation (including determining the bioavailability of dissolved metals) is required in consultation with the Environment Agency to further understand the background concentrations of copper in the watercourse and whether further mitigation measures are required.

4.2.75 If further mitigation is required, this will be designed in consultation with the Environment Agency and other stakeholders to mitigate any significant effects on the biological and specific pollutants status of the water body. Until further baseline investigations are complete, the potential for residual adverse overall effects with the risk of causing a deterioration in status of one or more quality elements is considered to remain at this stage on a precautionary basis.

Residual adverse effects with risk of deterioration in status

4.2.76 At this stage, the potential for residual adverse (amber) overall effects with the risk of causing a deterioration in status of one or more quality elements remains in relation to the following surface water bodies and scheme components:

- Wistaston Brook (GB112068055280) - highway drainage (David Whitby Way);
- Weaver (Marbury Brook to Dane) (GB112068060460) – highway drainage (A530 Nantwich Road);
- Puddinglake Brook (GB112068060220) – MA02 Granular Borrow Pit D;
- Puddinglake Brook (GB112068060220) – highway drainage (A530 King Street);
- Hey/Borsdane Brook (GB112069064520) – multiple culverts (Critchley Culvert; Windy Bank Culvert; Coffin Lane Brook Culvert; Nan Holes Brook Culvert; Nan Holes Brook Offline Culvert);
- Wade Brook (GB112068060370) – highway drainage (A530 King Street / A556 Shurlach Road / Penny's Lane); and
- Timperley Brook (GB112069061260) – highway drainage (M56 East and West Link/Access to Manchester Airport High Speed Station/Runger Lane Realignment).

4.2.77 A range of additional mitigation measures have been identified in consultation with the Environment Agency to avoid or reduce the potential adverse effects at these sites. Whilst it is currently anticipated that it will be feasible to develop these mitigation solutions to ensure that there is no residual risk of deterioration in status for these water bodies, further assessment and design work is required to inform the best mitigation strategy at each site. As such, on a precautionary basis, the potential for residual adverse overall effects with the risk of causing a deterioration in status of one or more quality elements of these surface water bodies is considered to remain at this stage.

Cumulative effects across water bodies

4.2.78 No cumulative effects associated with the impacts of scheme component located within other, adjacent water bodies (upstream or downstream) have been identified for any of the surface water bodies affected by the Proposed Scheme.

4.2.79 Whilst a number of water bodies are located either upstream or downstream of other water bodies that are also affected by the Proposed Scheme, no widespread adverse effects have

been identified within any of the surface water bodies that have the potential to propagate upstream/downstream (e.g. significant impacts on flow regime, sediment transfer or biological continuity).

Targeted monitoring of effects on current status

4.2.80 The detailed impact assessment has identified the route-wide effects anticipated on surface water bodies and watercourses affected by the Proposed Scheme.

4.2.81 Targeted WFD monitoring will be implemented on each of these water bodies / watercourses prior to, during and following construction, to assess the effects of the Proposed Scheme and the suitability and effectiveness of mitigation included within the design and additional mitigation measures outlined within this assessment for the relevant scheme components.

4.2.82 This monitoring strategy will be developed in consultation with the Environment Agency and tailored around the relevant scheme components and quality elements affected.

4.2.83 Monitoring outcomes will be utilised to inform the development of any corrective measures and/or further mitigation measures if/where deemed necessary by the Environment Agency.

Effects on achievement of status objectives

4.2.84 The preliminary assessment has scoped the likely effects of the Proposed Scheme on RNAG, PoM, and HMWB/AWB mitigation measures derived by the Environment Agency for the surface water bodies affected by the Proposed Scheme (see Section 3.2).

4.2.85 Where RNAG, PoM, and HMWB/AWB mitigation measures have been identified as being potentially at risk from the Proposed Scheme, the effects of relevant scheme components potentially affecting the watercourses screened in within the surface water body catchment have been assessed in consultation with the Environment Agency. These effects are discussed in the following sections. The detailed impact assessment results for each water body are provided in Annex C in Part 2 of this report.

Hey/Borsdane Brook (GB112069064520) – physical modifications

4.2.86 One RNAG for the Hey/Borsdane Brook (GB112069064520) water body has been identified as potentially being at risk from the Proposed Scheme (see Annex C, Table C 28 in Part 2 of this report). This relates to physical modifications which are considered to currently be limiting the Invertebrate status of the water body.

4.2.87 As described in paragraphs 4.2.40 – 4.2.46, multiple culverts are proposed on a number of headwater tributaries of Hey Brook. Collectively, these culverts will result in a loss of approximately 217m of existing river and riparian habitat. In addition, the Hey Brook Offline Overbridge located at SD6068400505, is anticipated to cause localised shading impacts to a 10m section of the Hey Brook. This is considered to have an adverse effect on aquatic and riparian habitat, which has the potential to worsen existing physical modification pressures on the macroinvertebrate status of the water body. Consequently, there is a risk that the

proposed scheme may inhibit the future achievement of the water body's Good status objective.

4.2.88 Additional mitigation measures are therefore required to compensate for the footprint habitat losses caused by the Proposed Scheme and prevent a worsening of physical modification pressures within the water body. These measures are the same as those required to mitigate effects on the current status of the water body and are described in paragraphs 4.2.67 – 4.2.69.

Timperley Brook (GB112069061260) – urban diffuse pollution

4.2.89 Seven RNAG for the Timperley Brook (GB112069061260) water body have been identified as potentially being at risk from the Proposed Scheme (see Annex C, Table C 29 in Part 2 of this report). These relate to urban diffuse pollution pressures which are considered to currently be limiting the Invertebrate, Macrophyte and Phytobenthos, Ammonia, Phosphate, and Dissolved Oxygen status of the water body.

4.2.90 One PoM for the water body has also been identified as potentially being at risk from the Proposed Scheme. This corresponds to the above RNAGs and relates to a package of measures needed to control or manage diffuse urban pollution pressures within the water body.

4.2.91 As described in paragraphs 4.2.50 – 4.2.56, subject to further investigation, the assessment has identified that routine runoff drainage from the proposed highway realignments to Timperley Brook has the potential to cause a failure for sediment-bound and soluble pollutants copper and zinc, against environmental quality standards (EQS). This is considered to have the potential to worsen existing urban diffuse pollution pressures on the biological status of the water body and/or inhibit the implementation of the package of measures needed to control and manage these pressures. Consequently, there is a risk that the proposed scheme may inhibit the future achievement of the water body's Good status objective.

4.2.92 Additional mitigation measures may therefore be required to mitigate the risk caused by the Proposed Scheme and prevent a worsening of urban diffuse pollution water quality pressures within the water body. These measures are the same as those required to mitigate effects on the current status of the water body, and are described in paragraphs 4.2.73 – 4.2.75.

Residual adverse effects with risk of prevention of achievement of status objectives

4.2.93 At this stage, the potential for residual adverse (amber) effect with the risk of preventing the achievement of status objectives remain in relation to the following surface water bodies and scheme components:

- Hey/Borsdane Brook (GB112069064520) – Critchley Culvert; Windy Bank Culvert; Coffin Lane Brook Culvert; Nan Holes Brook Culvert; Nan Holes Brook Offline Culvert; and

- Timperley Brook (GB112069061260) – highway drainage (M56 East and West Link / access to Manchester Airport High Speed station/ Runger Lane Realignment).

4.2.94 A range of additional mitigation measures have been identified in consultation with the Environment Agency to avoid or reduce the potential adverse effects at these sites. Whilst it is currently anticipated that it will be feasible to develop and implement a mitigation strategy to ensure that there is no residual risk to the future achievement of status objectives for these water bodies, further assessment and design work is required to inform the best mitigation solution at each site. As such, on a precautionary basis, the potential for residual adverse overall effects with the risk of preventing the future achievement of status objectives of these surface water bodies is considered to remain at this stage.

4.3 Groundwater

Effects on current status

4.3.1 The baseline assessment has identified the relevant groundwater bodies potentially affected by the Proposed Scheme (see Section 2.2). Within these water bodies, individual groundwater features (including GWDTE) have been screened in for detailed assessment based on their baseline condition and value. The baseline assessment has also identified all relevant scheme components affecting each of these water bodies and the associated mitigation included in the design (see Section 2.3).

4.3.2 The preliminary assessment has then identified the relevant impacts of the various scheme components and the associated likely effects on the different WFD status elements of the groundwater bodies affected by the Proposed Scheme (see Section 3.2). This, in turn, has identified which quality elements are scoped in for detailed assessment for each water body.

4.3.3 This detailed assessment has identified the magnitude of the effects of the scheme components on the current status of the quality elements of the water body, together with any associated additional mitigation requirements.

4.3.4 In total, of the 4 groundwater bodies screened in for detailed impact assessment:

- two groundwater body is anticipated to experience localised adverse (yellow) overall effects only, with no measurable change in quality element status;
- two groundwater bodies are at risk of experiencing adverse (amber) overall effects on one or more quality elements, with the potential for a deterioration in quality element status (requiring additional mitigation);
- no groundwater bodies are at risk of experiencing severe adverse (red) overall effects of sufficient scale to cause a deterioration in status.

4.3.5 An overview of the adverse and beneficial effects anticipated for each groundwater body as a result of the Proposed Scheme is provided in Table 9. The detailed impact assessment results for the groundwater bodies affected by the Proposed Scheme are provided in Annex C in Part 2 of this report.

Table 9: Summary of effects of the Proposed Scheme on WFD groundwater bodies, including any risk of deterioration and non-compliance

Water body (ID)	Overview of interaction between Proposed Scheme and water body[12]	Overview of effects of the Proposed Scheme[13]	Risk of deterioration and non-compliance at this stage
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991699)	The majority of the Proposed Scheme is located within the extent of this water body. The route crosses centrally through the water body in a north-south alignment, from the southernmost extent of the route south of Crewe, to the divergence of the HS2 WCML connection and HS2 Manchester Spur near Hoo Green at the northern end of the water body. To the south of the water body, the Proposed Scheme is in bored tunnel through central Crewe. The route is then primarily on a combination of embankments and viaducts throughout the centre of the water body, with the exception of short sections of cutting and retaining wall immediately north of Crewe, and as the route passes between Winsford and Middlewich. The HS2 WCML spur passes south of Bowden in an east-west alignment on a combination of embankment, viaduct, cutting and retaining wall, before orienting north in the proximity of Gatley, where the route is in a bored tunnel.	The Proposed Scheme is largely expected to have only negligible or minor, localised adverse effects on the Weaver and Dane Quaternary Sand and Gravel Aquifers water body. The Crewe Tunnel and Manchester Tunnel are both anticipated to have a negligible effect when considered against the embedded design and draft CoCP measures. Two vent shafts are proposed in associated with the Crewe Tunnel (Cowley Way Vent Shaft and the Middlewich Street Vent Shaft) and have been assessed as having negligible effects. The Altrincham Road vent shaft associated with the Manchester Tunnel is anticipated to have a localised, adverse effect on the quantitative and chemical status of the water body. The Crewe Tunnel South Porous Portal and the Crewe Tunnel North Porous Portal are both anticipated to have localised, adverse effects on the quantitative status element of the water body, whilst the Manchester Tunnel South Porous Portal is anticipated to have negligible effects. The M56 East Tunnel is anticipated to have a localised, adverse effect on the quantitative status element of the water body. Foundations associated with 24 overbridges and two underbridges are proposed within the water body. These are anticipated to have only negligible effects on the water body, with the exception of the Raised Metrolink Overbridge which is anticipated to have a localised, adverse effect on the quantitative status. Foundations associated with 29 viaducts are also proposed within the water body; of which 19 are anticipated to have a negligible effect and nine are anticipated to have minor, localised adverse effects. However, the foundations	Risk of deterioration and non-compliance identified. Additional mitigation measures required.

[12] Refer to BID WR-002-00001 for detailed baseline information relating to groundwater features included in the WFD assessment.

[13] Negligible (green) effects are not described within, unless these are the only anticipated effects associated with a scheme component. Refer to Annex C in Part 2 of this report for the full detailed impact assessment results for each groundwater body.

Water body (ID)	Overview of interaction between Proposed Scheme and water body[12]	Overview of effects of the Proposed Scheme[13]	Risk of deterioration and non-compliance at this stage
		associated with the Manchester Ship Canal viaduct at the Hollins Green historical landfill site are anticipated to have an adverse effect on the chemical status element with a risk of deterioration. In total, 12 cuttings are proposed within the water body extent. Of these, one is anticipated to have a negligible effect, seven are anticipated to have a localised, adverse effect on the quantitative status, and four cuttings have been assessed as having a localised, adverse effect on both the quantitative and chemical status of the water body. In addition, 11 cuttings with retaining structures and 12 retaining walls are proposed within the water body extent. These are expected to have only negligible or minor, localised adverse effects on the quantitative and/or chemical status of the water body. The potential impacts of cuttings on Rostherne Mere and associated mitigation measures included within the design are described further in a Technical Note on the water environment and ecology of Rostherne Mere and The Mere, Mere (see Volume 5: Appendix EC-016-00003, Annex B). One section of embankment proposed within the water body involves subsurface reinforcement: the Glazebrook Embankment North. This is anticipated to have localised, adverse effects on the quantitative and chemical status elements of the water body. Three cohesive material borrow pits are proposed within the water body, of which two are anticipated to have negligible effects. The MA02 Cohesive Borrow Pit C is anticipated to have localised, adverse effects on the quantitative status. One granular borrow pit (MA02 Granular Borrow Pit D) is proposed to the east of Puddinglake, which is anticipated to have a localised, adverse effect on the chemical status and an adverse effect on the quantitative status element with a risk of deterioration. One new station (Manchester Airport High Speed Station) is proposed within the water body extent, which is anticipated to have negligible effects. Three depots are also proposed within the water body. These include the Crewe North rolling stock depot which is	

Water body (ID)	Overview of interaction between Proposed Scheme and water body[12]	Overview of effects of the Proposed Scheme[13]	Risk of deterioration and non-compliance at this stage
		anticipated to have localised, adverse effects on the quantitative status and the Ashley Infrastructure Maintenance Base and Ashley railhead which are anticipated to have localised, adverse effects on the chemical status.	
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	The Proposed Scheme crosses the eastern portion of this water body as part of the HS2 WCML connection. The route is primarily on a combination of embankments and viaducts through the water body, with two cuttings proposed where the route passes east of Lowton and south of Culcheth respectively. To the north of the water body, where the Proposed Scheme passes west of Abram, the route comprises a combination of retaining wall and viaduct.	Foundations associated with two underbridges (Risley East accommodation underbridge and the Croft Footpath 13/1 accommodation underbridge) are anticipated to have a negligible effect on the Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers. Similarly, foundations associated with four overbridges (Millington Lane overbridge, A574 Warrington Road overbridge, Wigshaw Lane overbridge, and the A580 East Lancashire Road overbridge) are anticipated to have a negligible effect on the water body. Five overbridge foundations (associated with the Croft Footpath 8a/2 and 108/1 overbridge, B5207 Wilton Lane overbridge, Carr Brook aqueduct, A572 Newton Road overbridge, and the Hey Brook offline overbridge) are anticipated to have a localised, adverse effect on the chemical status element of the water body. Four retaining walls associated with embankments (the Aye Bridge embankment retaining walls (south and north), and the Abram embankment retaining wall (south and north)) are anticipated to have a localised, adverse effect on the chemical status element of the water body, with the Abram embankment retaining wall (north) also anticipated to have a localised, adverse effect on the quantitative status element. The Wigshaw Lane retaining wall is anticipated to have a localised, adverse effect on the quantitative status element of the water body. The retaining wall associated with the Abram cutting is anticipated to have a localised, adverse effect on the chemical status element. Six viaduct foundations are proposed within the water body. Five of these (associated with the A573 Wigan Road viaduct, the WCML box structure, Culcheth North (railway) viaduct, M62 West viaduct, and the Slag Lane viaduct) are anticipated to have a localised, adverse	Risk of deterioration and non-compliance identified. Additional mitigation measures required.

Water body (ID)	Overview of interaction between Proposed Scheme and water body[12]	Overview of effects of the Proposed Scheme[13]	Risk of deterioration and non-compliance at this stage
		effect on the chemical status element. The A56 Lymm Road viaduct is anticipated to have a negligible effect on the water body. Five cuttings are proposed within the Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers water body. Millington Cutting and Agden Cutting are anticipated to have localised, adverse effects on the quantitative status element of the water body. The Abram cutting is anticipated to have a localised, adverse effect on the chemical status element. Lowton cutting is anticipated to have a localised, adverse effect on the quantitative status element and a widespread, adverse effect on the chemical status element of the water body. The Culcheth cutting is anticipated to have a negligible effect on the water body. The Glazebrook embankment north, which has associated subsurface reinforcement, is anticipated to have a localised, adverse effect on the quantitative and chemical status elements of the water body. The Culcheth South embankment, which has associated subsurface reinforcement, is anticipated to have a localised, adverse effect on the quantitative status element of the water body.	
Sankey and Glaze Carboniferous Aquifers (GB41202G100100)	The Proposed Scheme partially crosses the central part of this water body, joining the WCML at Bamfurlong. The route is in cutting throughout this water body.	The Abram cutting is anticipated to have a localised, adverse effect on the quantitative status element of the Sankey and Glaze Carboniferous Aquifers water body.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	The Proposed Scheme partially crosses the northern part of this water body on the approach into Manchester. The route is primarily in Bored Tunnel throughout the water body, passing near Didsbury, Fallowfield, and Longsight. In central Manchester, the Proposed Scheme is on viaduct and embankment, with sections of retaining wall near Ardwick.	The Manchester Tunnel is anticipated to have a localised, adverse effect on the quantitative status of the water body. Three vent shafts are proposed within this water body associated with the tunnel. The Wilmslow Road Vent Shaft and the Birchfields Road Vent Shaft are both anticipated to have a localised, adverse effect on both the quantitative and chemical status, while the Palatine Road Vent Shaft is anticipated to have a localised, adverse effect on the chemical status. The Manchester Tunnel North Porous Portal is anticipated to have a negligible effect on the water body.	Localised, adverse effects anticipated at the water body scale. No risk of deterioration in current status identified at this stage.

Water body (ID)	Overview of interaction between Proposed Scheme and water body[12]	Overview of effects of the Proposed Scheme[13]	Risk of deterioration and non-compliance at this stage
		Foundations associated with two viaducts (the Piccadilly Approach Viaduct and the Piccadilly Station Viaduct) are anticipated to have a negligible approach on this water body. Foundations associated with two overbridges (the Piccadilly Offline Access Ramp and the B6469 Fairfield Street Offline Overbridge) are anticipated to have a negligible effect on the water body. The Manchester Piccadilly High Speed Station is anticipated to have a localised, adverse effect on the quantitative status element of the water body. Eight retaining walls are proposed within this water body, of which seven are anticipated to have negligible effects on the water body. The Ardwick Box Structure retaining wall is anticipated to have a localised, adverse effect on the quantitative status element. The Ardwick South and North cuttings incorporate retaining structures, and are anticipated to have a localised, adverse effect on the quantitative status of the water body.	

Adverse effects with risk of deterioration in status

4.3.6 The assessment has identified the potential for adverse (amber) overall effects on one or more quality elements within each of the groundwater bodies listed below. These effects have the potential to cause a deterioration in quality element status, which therefore requires the consideration of additional mitigation to appropriately manage the risk:

- Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700); and
- Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700).

4.3.7 Table 10 provides a summary of the relevant scheme components causing the adverse (amber) overall effects within each water body aquifer.

4.3.8 A description of each of these effects, together with the associated additional mitigation requirements, is provided in the following sections.

Table 10: Summary of scheme components anticipated to cause adverse (amber) effects with a potential risk of deterioration in status on WFD groundwater bodies

Water body (ID)	Scheme component(s) causing amber effect	Impact type causing amber effect	Quality element(s) subject to amber effects
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700)	• MA02 Granular Borrow Pit D (maximum extraction depth 5m)	• Lowering of groundwater levels and potential reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	• Quantitative (Dependent Surface Water Body)
	• Manchester Ship Canal Viaduct Foundations	• Creating or altering of pathways along which existing poor quality groundwater can migrate	• Chemical Dependent Surface Water Body • General Chemical Test
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	• Lowton Cutting	• Creating or altering of pathways along which existing poor quality groundwater can migrate	• Chemical Drinking Water Protected Areas (DrWPAs)

Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) – MA02 Granular Borrow Pit D

4.3.9 The assessment has identified the potential for adverse (amber) overall effects on the status of the Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) water body, associated with MA02 Granular Borrow Pit D (see Annex C, Table C 24 in Part 2 of this report).

4.3.10 The borrow pit, approximately 47.7ha in size and located at SJ7355269313 (see Volume 2, MA02 Map Book, map CT-05-312-R5), will involve the excavation of glaciofluvial sheet deposits to a maximum excavation depth of 5m. It is assumed that, during excavation of the sand and gravels, dewatering will be undertaken to allow for safe working. The measures outlined in the draft CoCP will be implemented throughout the works to manage drainage and protection of water quality.

4.3.11 The need for dewatering is assumed as a worst case and could lead to localised and temporary impacts on groundwater flow and levels within the glaciofluvial sheet deposits Secondary A aquifer and the glacial till Secondary (Undifferentiated) aquifer. Implementation of the measures in the draft CoCP and the excavated materials management strategy[14] will ensure that groundwater levels are controlled with minimal losses of water from the aquifer system. Any effects on the overall status of the aquifer are likely to be minor localised. However, dewatering of the excavations may reverse the hydraulic gradient between the aquifer and surface water features and without additional mitigation the surface water bodies could lose water to the ground (see Volume 5: Appendix WR-003-0MA02). There is therefore the potential for the lowering of groundwater levels caused by the dewatering to impact upon the baseflow of the nearby Puddinglake Brook during construction.

4.3.12 The borrow pit is therefore anticipated to have the potential to cause an adverse effect on the Quantitative (Dependent Surface Water Body status of the water body, with the potential to cause a deterioration in status. Consequently, additional mitigation measures are required at this site to reduce the potential impacts on the baseflow of Puddinglake Brook during construction and appropriately manage the risk to the Quantitative (Dependent Surface Water Body) status of the water body. These measures are described in paragraphs 4.3.21– 4.3.32.

4.3.13 As set out in the Borrow Pit Report the nominated undertaker will be required to create a site specific borrow pit restoration plan. These plans will be designed in detail following ground investigation and monitoring. The borrow pit areas will be reinstated to their existing levels and land use by the end of the construction period. The reinstatement works will be designed to ensure that the land within the borrow pit areas drains in a manner suitable for its continued use as agricultural land. The restoration will ensure that existing baseflow and catchment runoff characteristics will be maintained for surface water features. Similarly, measures will be taken to ensure the groundwater regime maintains baseflow connectivity

[14] High Speed Two Ltd (2020), *HS2 Phase 2b Excavated Materials Management Strategy.*

with the surface water regime. This will be achieved through appropriately designed drainage systems. The implementation of these measures will ensure that there are no permanent significant effects on groundwater – surface water interactions caused by the restoration of the borrow pits.

Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) – Manchester Ship Canal Viaduct Foundations

4.3.14 The assessment has identified the potential for adverse (amber) overall effects on the status of the Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) water body, associated with the Manchester Ship Canal Viaduct Foundations (see Annex C, Table C 24 in Part 2 of this report).

4.3.15 The Manchester Ship Canal Viaduct will include drilled concrete piles with pile caps. The piles are designed with a depth of 29m. They are expected to penetrate through the Shirdley Hill Sand Formation, glaciofluvial deposits, glaciofluvial sheet deposits and glacial till into the underlaying Bollin Mudstone Member of the Sidmouth Mudstone Formation, and the Tarporley Siltstone Formation; both of these formations are part of the Mercia Mudstone Group. Some of the piling associated with the construction of the viaduct will be installed through the Hollins Green historical landfill site. Piling through the landfill could potentially create a preferential flow path for existing contamination within the landfill to migrate into the underlaying aquifer. There is currently little information available on the waste material within this landfill site. Therefore, on a precautionary basis, the assessment has identified the potential for the construction activity within this area to result in a change to water quality in the aquifer (see Volume 5: Appendix WR-003-0MA04). Further information and assessment for Hollins Green landfill site is provided in Land quality, Volume 5, Appendix LQ-001-0MA04.

4.3.16 The viaduct foundations are therefore anticipated to have the potential to cause an adverse effect on the Chemical Dependent Surface Water Body status and the General Chemical Test status of the water body, with the potential to cause a deterioration in status. Consequently, additional mitigation measures and potential remediation options are required at this site to appropriately manage the risk to the Chemical Dependent Surface Water Body status and the General Chemical Test status of the water body. These measures are described in paragraphs 4.3.24 – 4.3.26.

Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700) – Lowton cutting

4.3.17 The assessment has identified the potential for an adverse (amber) overall effect on the status of the Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700) water body, associated with the Lowton Cutting (see Annex C, Table C 25 in Part 2 of this report).

4.3.18 Lowton Cutting will comprise a 1.8km long cutting, extending up to a maximum depth of 10.1m below ground level (see Volume 2, MA05 Map Book, map CT-05-330 and CT-05-331).

The cutting will pass through the source protection zone (SPZ2) for the licensed public water supply (E5, SPZ2 location) south of Wash End. The cutting is likely to extend through the glacial till and into the Sherwood Sandstone aquifer, which is the source of water for the public water supply. Although the cutting is not expected to extend below the groundwater level in the Sherwood Sandstone, there is currently no available information on groundwater elevations or depth to groundwater in the glacial till for the Lowton Cutting area. It has therefore been conservatively assumed that groundwater levels within the glacial till are at ground level and that groundwater flow within the glacial till may be affected by the cutting. There is therefore the potential that construction activity could result in a change to water quality in the aquifer (see Volume 5: Appendix WR-003-0MA05).

4.3.19 The cutting is therefore anticipated to have the potential to cause an adverse effect on the Chemical (Drinking Water Protected Areas) status and the General Chemical Test status of the water body, with the potential to cause a deterioration in status. Consequently, additional mitigation measures are required at this cutting site to appropriately manage the risk to the Chemical (Drinking Water Protected Areas) status of the water body. These measures are described in paragraphs 4.3.27 – 4.3.30.

Additional mitigation to avoid status deterioration

4.3.20 Where the detailed impact assessment has identified adverse (amber) effects with the potential risk of deterioration in status of water body quality elements, or severe adverse (red) effects of sufficient scale to cause deterioration, additional mitigation requirements have been defined. These are described below.

Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) – MA02 Granular Borrow Pit D

4.3.21 Additional measures have been identified to mitigate the potential adverse (amber) effects on the Quantitative Dependent Surface Water Body status of the Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) water body, associated with the MA02 Granular Borrow Pit D.

4.3.22 As described in paragraphs 4.3.9 – 4.3.13, additional mitigation measures are required for the management of groundwater baseflows to Puddinglake Brook during excavation and dewatering of the borrow pit. Mitigation measures will be designed in detail following ground investigation and monitoring of surface water and groundwater levels, resulting in a negligible effect which is not significant. Mitigation could take the form of:

- widening the buffer strip between the borrow pit and surface water feature;
- recirculate abstracted water back into local watercourses to maintain flows at the appropriate locations;
- installation of cut-off structures around excavations;
- ensuring that cut-off structures are driven to sufficient depths to meet an underlying strata or zone of lower permeability;

- promotion of groundwater recharge, such as discharging pumped water to recharge trenches around excavations to maintain baseline groundwater and surface water conditions;
- incorporation of passive bypasses within the design, which could comprise a 'blanket' of permeable material, such as gravel, placed around temporary structures, allowing groundwater to bypass the below-ground works without a rise in groundwater levels on the upstream side; or
- extracting material below the standing water level in the borrow pit using wet working techniques, so as not to require dewatering.

4.3.23 Whilst it is currently anticipated that it will be feasible to develop a mitigation strategy to ensure that any potential impact is fully mitigated and there is a negligible effect on flow in Puddinglake Brook, further ground investigation, baseflow monitoring and design work is required to inform the best mitigation solution at the site. As such, on a precautionary basis, the potential for residual adverse overall effects with the risk of causing a deterioration in status is considered to remain at this stage.

Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) – Manchester Ship Canal Viaduct Foundations

4.3.24 Additional measures have been identified to mitigate the adverse (amber) effects on the Chemical Dependent Surface Water Body status and the General Chemical Test status of the Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) water body, associated with the Manchester Ship Canal Viaduct Foundations.

4.3.25 Mitigation measures will be included, as necessary, either through the draft CoCP or as part of the site-specific remediation strategy implemented to address the contaminated land within the Hollins Green historical landfill site. The remediation strategy will aim to leave the site in a state such that no significant risks to groundwater quality will remain. The mitigation measures will be refined as the design progresses, following detailed site investigation (see Volume 2, Community Area report: Broomedge to Glazebrook (MA04), Section 10, Land quality).

4.3.26 The implementation of these additional mitigation measures will ensure that there are no adverse (amber) residual overall effects within this water body.

Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700) – Lowton Cutting

4.3.27 Additional measures have been identified to mitigate the adverse (amber) effect on the Chemical (Drinking Water Protected Areas) status of the Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700) water body, associated with the Lowton Cutting.

4.3.28 Mitigation options are being discussed with the operator of the public water supply boreholes (United Utilities Group plc) and the Environment Agency, to ensure no adverse

impacts to water quality will occur during construction. These options may include the temporary variation of pumping from these boreholes and other boreholes outside of the zone of influence of the cutting, or the installation of additional treatment facilities, to ensure a continuous, resilient water supply during the construction period.

4.3.29 Mitigation measures will also be included, as necessary, either through the draft CoCP or as part of the site-specific remediation strategy implemented to address the contaminated land within the Lowton Sidings historical landfill site. The remediation strategy will aim to leave the site in a state such that no significant risks to groundwater quality will remain. The mitigation measures will be refined as the design progresses, following detailed site investigation (see Volume 2, Community Area report: Risley to Bamfurlong (MA05), Section 10, Land quality).

4.3.30 The implementation of these additional mitigation measures will ensure that there are no adverse (amber) residual overall effects within this water body.

Residual adverse effects with risk of deterioration in status

4.3.31 At this stage, the potential for residual adverse (amber) overall effects with the risk of causing a deterioration in status remains in relation to the MA02 Granular Borrow Pit D within the Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) groundwater body.

4.3.32 A range of additional mitigation measures have been identified in consultation with the Environment Agency to avoid or reduce the potential adverse effects at this site. Whilst it is currently anticipated that it will be feasible to develop and implement these mitigation solutions to ensure that there is no residual risk of deterioration in the status of the water body, further ground investigation and design work is required to inform the best mitigation strategy at the site. As such, on a precautionary basis, the potential for residual adverse overall effects with the risk of causing a deterioration in status is considered to remain at this stage.

Cumulative effects across water bodies

4.3.33 No cumulative effects associated with the impacts of scheme components located within other, adjacent water bodies have been identified for any of the groundwater bodies affected by the Proposed Scheme.

Further groundwater baseline investigation and monitoring

4.3.34 The groundwater aspect of the WFD assessment has been based primarily on desk study information. In many areas, due to the lack of site-specific ground investigation or monitoring data, there is therefore a residual uncertainty regarding hydrogeological

characteristics. As such, site-specific ground investigation and monitoring is required during the detailed design phase of the Proposed Scheme, in order to further establish baseline conditions for groundwater.

4.3.35 This additional baseline ground investigation and monitoring will be undertaken in consultation with the Environment Agency and United Utilities and, where necessary, the outcomes utilised to inform the refinement and development of construction and design mitigation requirements required to ensure no significant effects to the groundwater environment.

4.3.36 Key areas that will be addressed by further baseline investigation and monitoring during the detailed design process include the following:

- detailed characterisation of ground conditions;
- measurement of site-specific hydraulic properties;
- site-specific monitoring of groundwater levels and quality;
- monitoring of spring flows;
- monitoring of surface water flows and quality;
- ecological assessment and monitoring, particularly for GWDTE; and
- characterisation of existing contamination.

4.3.37 Areas where mitigation may be developed further during the detailed design process include the design and management of temporary dewatering during construction and the design of individual sustainable drainage system features to optimise groundwater recharge without causing significant risks to groundwater quality.

4.3.38 In accordance with the Section 16 of the draft CoCP, Volume 5, site-specific monitoring will also be undertaken in consultation with the Environment Agency prior to, during and post-construction, if required, to confirm the effectiveness of agreed temporary and permanent construction mitigation measures.

Targeted monitoring of effects on quality element status

4.3.39 The detailed impact assessment has identified the route-wide effects anticipated on the status elements of the groundwater bodies affected by the Proposed Scheme.

4.3.40 Targeted WFD monitoring will be implemented prior to, during and following construction to assess the effects of the Proposed Scheme and the suitability and effectiveness of mitigation included within the design and additional mitigation measures outlined in this assessment for the relevant scheme components.

4.3.41 This monitoring strategy will be developed in consultation with the Environment Agency and tailored around the relevant scheme components and status elements and receptors affected.

4.3.42 Monitoring outcomes will be utilised to inform the development of any corrective measures and/or further mitigation measures if/where deemed necessary by the Environment Agency.

Effects on future achievement of status objectives

4.3.43 The preliminary assessment has scoped the likely effects of the Proposed Scheme on RNAG and PoM derived by the Environment Agency for the groundwater bodies affected by the Proposed Scheme (see Section 3.2).

4.3.44 Where RNAG have been identified as being potentially at risk from the Proposed Scheme, the effects of relevant scheme components have been assessed in consultation with the Environment Agency. These effects are discussed below. The detailed impact assessment results are provided in Annex C in Part 2 of this report.

4.3.45 No PoM have been identified as being at risk from the Proposed Scheme at this stage.

Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700) – Diffuse pollution

4.3.46 One RNAG for the Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700) water body has been identified as potentially being at risk from the Proposed Scheme (see Annex C, Table C 31 in Part 2 of this report). This RNAG relates to diffuse pollution pressures, which are considered to currently be limiting the Chemical Drinking Water Protected Area status of the water body.

4.3.47 As described in paragraphs 4.3.17 – 4.3.19, the Lowton Cutting proposed within this water body will extend up to a maximum depth of 10.1m below ground level through the glacial till and into the Sherwood Sandstone aquifer, which is the source of water for the public water supply. Although the cutting is not expected to extend below the groundwater level in the Sherwood Sandstone, there is the potential that construction activity could result in a change to water quality in the aquifer. This has the potential to worsen existing diffuse pollution pressures on the Chemical Drinking Water Protected Area status of the water body. Consequently, there is a risk that the proposed scheme may inhibit the future attainment of the water body's Good status objective.

4.3.48 Additional mitigation measures are therefore required at this site to appropriately manage the risk to the Chemical Drinking Water Protected Area status of the water body. These measures are the same as those required to mitigate effects on the current status of the water body and are described in paragraphs 4.3.27 – 4.3.30.

4.3.49 The implementation of this additional mitigation will ensure that there are no residual adverse (amber) effects within this water body that may prevent future achievement of status objectives.

Residual adverse effects with risk of preventing achievement of status objectives

4.3.50 At this stage, provided implementation of the mitigation measures identified, no residual adverse (amber) overall effects with the risk of preventing the achievement of status objectives are anticipated for the groundwater bodies affected by the Proposed Scheme.

5 Conclusions

5.1 Overview

5.1.1 The Proposed Scheme will cross a number of surface water bodies and groundwater bodies. This appendix reports on an assessment of the Proposed Scheme's compliance against the statutory WFD objectives of those water bodies potentially affected.

5.1.2 The WFD assessment methodology has been developed in accordance with the WFD compliance assessment process Technical note in the SMR (see Volume 5, Appendix CT-001-00001) and in consultation with the Environment Agency. It has also been developed to retain consistency with the approaches adopted at Phase One and Phase 2a. This includes the methodology applied for assessing the effects of the Proposed Scheme on the current status and status objectives of the quality elements of water bodies. This relates to the requirement under the WFD for the consideration of whether new developments have the potential to result in:

- a deterioration in current status; and/or
- prevention of the achievement of good status/potential objectives in the future.

5.1.3 The assessment has identified a total of 26 surface water bodies (including 22 river water bodies, three canal water bodies, and one lake water body) and four groundwater bodies potentially affected by the Proposed Scheme. In total, 56 individual watercourses (including canals) and 118 groundwater features within these surface water and groundwater bodies have been identified for assessment. These are summarised in Annex A.

5.2 Effects on current status

5.2.1 A detailed impact assessment has been undertaken of all components of the Proposed Scheme identified as having the potential to have an effect on the status elements of the relevant WFD water bodies.

5.2.2 The assessment process for determining the potential for a deterioration of status uses a traffic light rating system agreed with the Environment Agency, in order to assign the magnitude of the effect on the quality elements of the affected water body. The outcome of the assessment identifies the overall effect of all the relevant scheme components on each quality element at a water body scale.

Surface water

5.2.3 Of the 26 surface water bodies identified as potentially being impacted by the Proposed Scheme:

- three surface water bodies are anticipated to experience no effects, given mitigation included within the design and the draft CoCP;

- five surface water bodies are anticipated to experience negligible (green) overall effects only, with no measurable change in quality element status;
- twelve surface water bodies are anticipated to experience minor, localised adverse (yellow) overall effects on one or more quality elements, but with no deterioration in status;
- six surface water bodies are at risk of experiencing adverse (amber) overall effects on one or more quality elements, with the potential for a deterioration in quality element status (requiring additional mitigation);
- no surface water bodies are at risk of experiencing severe adverse (red) overall effects, of sufficient scale to cause a deterioration in status; and
- no surface water bodies are anticipated to experience wider beneficial (dark blue) overall effects, of a scale sufficient to cause an increase in status class.

5.2.4 The potential for adverse (amber) overall effects on one or more quality elements, with the potential to cause a deterioration in quality element status, has been identified in relation to the following surface water bodies and scheme components:

- Wistaston Brook (GB112068055280) - highway drainage – David Whitby Way;
- Weaver (Marbury Brook to Dane) (GB112068060460) – highway drainage - A530 Nantwich Road;
- Puddinglake Brook (GB112068060220) - MA02 Granular Borrow Pit D;
- Puddinglake Brook (GB112068060220) – highway drainage (A530 King Street);
- Wade Brook (GB112068060370) – highway drainage (A530 King Street, A556 Shurlach Road, Penny's Lane);
- Hey/Borsdane Brook (GB112069064520) – Windy Bank Culvert; Coffin Lane Brook Culvert; Critchley Culvert; the extension of an existing culvert on Windy Bank Brook; Nan Holes Brook Culvert; and Nan Holes Brook Offline Culvert;
- Timperley Brook (GB112069061260) – Timperley Brook inverted siphon; and
- Timperley Brook (GB112069061260) – highway drainage (M56 East and West Link/Access to Manchester Airport High Speed Station/Runger Lane Realignment).

5.2.5 A range of additional mitigation measures have therefore been identified in consultation with the Environment Agency, with the aim to ensure no residual risk of status deterioration within these surface water bodies. These measures ensure that there are no residual risks of status deterioration associated with the Timperley Brook inverted siphon at this stage.

5.2.6 Whilst it is currently anticipated that it will be feasible to develop and implement these mitigation measures, further detailed work is required to inform the best mitigation solution for the following scheme components. As such, on a precautionary basis, the potential for residual adverse overall effects with the risk of causing a deterioration in status of one or more quality elements is considered to remain at this stage at these locations:

- highway drainage (David Whitby Way);
- highway drainage (A530 Nantwich Road);

- MA02 Granular Borrow Pit D;
- highway drainage (A530 King Street);
- highway drainage (A530 King Street, A556 Shurlach Road, Penny's Lane);
- Multiple culverts (Critchley Culvert; the extension of an existing culvert on Windy Bank Brook; Windy Bank Culvert; Coffin Lane Brook Culvert; Nan Holes Brook Culvert; Nan Holes Brook Offline Culvert); and
- highway drainage (M56 East and West Link/Access to Manchester Airport High Speed Station/Runger Lane Realignment).

5.2.7 The mitigation strategy for these scheme components will continue to be refined as the design progresses, in consultation with the Environment Agency. This will be informed by further surveys, ground investigation, and assessment. The development and implementation these measures during the passage of the Bill will ensure that there are no residual adverse overall effects and risks of deterioration in status within the Wistaston Brook (GB112068055280), Weaver (Marbury Brook to Dane) (GB112068060460), Puddinglake Brook (GB112068060220), Wade Brook (GB112068060370), Hey/Borsdane Brook (GB112069064520) and Timperley Brook (GB112069061260) surface water bodies.

Groundwater

5.2.8 Of the four groundwater bodies impacted by the Proposed Scheme:

- two groundwater bodies are anticipated to experience only negligible (green) and/or minor, localised adverse (yellow) overall effects, resulting in no change in status;
- two groundwater bodies are at risk of experiencing adverse (amber) overall effects on one or more quality elements, with a potential risk of deterioration in status (requiring consideration of additional mitigation); and
- no groundwater bodies are anticipated to experience severe adverse (red) overall effects, of sufficient scale to cause a deterioration in status.

5.2.9 The potential for adverse (amber) overall effects on one or more quality elements, with the potential to cause a deterioration in quality element status, has been identified in relation to following groundwater bodies and scheme components:

- Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) – MA02 Granular Borrow Pit D; Manchester Ship Canal Viaduct Foundations; and
- Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700) – Lowton Cutting.

5.2.10 A range of additional mitigation measures have been identified in consultation with the Environment Agency, with the aim to ensure no residual risk of status deterioration within these groundwater bodies. These measures ensure that there are no residual risks of status deterioration associated with the Manchester Ship Canal Viaduct Foundations and the Lowton Cutting at this stage.

5.2.11 Whilst it is currently anticipated that it will be feasible to develop and implement these mitigation measures, further detailed work is required to inform the best solution for the MA02 Granular Borrow Pit D. As such, on a precautionary basis, the potential for residual adverse overall effects with the risk of causing a deterioration in status is considered to remain at this stage at this location.

5.2.12 The mitigation strategy for this scheme component will continue to be refined as the design progresses in consultation with the Environment Agency. This will be informed by further surveys, ground investigation, and assessment. The development and implementation of these measures during the passage of the Bill will ensure that there are no residual adverse overall effects and risks of deterioration in status of the Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700) groundwater body.

5.3 Effects on achievement of status objectives

5.3.1 The Proposed Scheme has been scoped against the available 2015 RBMP RNAG, PoM, and HMWB/AWB MMA data for the relevant surface water and groundwater bodies.

5.3.2 Where RNAG, PoM, and HMWB/AWB mitigation measures have been identified as being potentially at risk from the Proposed Scheme, the effects of relevant scheme components potentially affecting the surface water and groundwater bodies have been assessed in consultation with the Environment Agency.

Surface water

5.3.3 The Proposed Scheme poses a risk of exacerbating one or more of the RNAG identified by the Environment Agency for the Hey/Borsdane Brook (GB112069064520) and Timperley Brook (GB112069061260) surface water bodies.

5.3.4 Multiple culverts are proposed on a number of headwater tributaries of Hey Brook, which would collectively result in a loss of approximately 217m of existing river and riparian habitat. These culverts are considered to present a risk of worsening one RNAG for the Hey/Borsdane Brook (GB112069064520) water body, relating to physical modifications which are considered to currently be limiting the Invertebrate status of the water body.

5.3.5 Seven RNAG for the Timperley Brook (GB112069061260) water body have also been identified as potentially being at risk from the Proposed Scheme. These relate to urban diffuse pollution pressures which are considered to currently be limiting the invertebrate, macrophyte and phytobenthos, ammonia, phosphate, and dissolved oxygen status of the water body. One PoM for the Timperley Brook (GB112069061260) water body has also been identified as potentially be at risk. This corresponds to the aforementioned RNAG and relates to a package of measures needed to control or manage diffuse urban pollution pressures within the water body. These RNAG and PoM are considered at risk due to the routine runoff drainage from the proposed highway realignments to Timperley Brook, which has the potential to cause a failure for sediment-bound and soluble pollutants copper and zinc, against environmental quality standards.

5.3.6 A range of additional mitigation measures have therefore been identified in consultation with the Environment Agency, with the aim of ensuring no residual risk of status deterioration within the Hey/Borsdane Brook (GB112069064520) and Timperley Brook (GB112069061260) surface water bodies. Whilst it is currently anticipated that it will be feasible to develop and implement a mitigation strategy to ensure that there is no residual risk to the future achievement of status objectives for these water bodies, further assessment and design work is required to inform the best mitigation solution at each site. As such, on a precautionary basis, the potential for residual adverse overall effects with the risk of preventing the future achievement of status objectives of these surface water bodies is considered to remain at this stage.

Groundwater

5.3.7 The Proposed Scheme poses a risk of exacerbating one RNAG identified by the Environment Agency for the Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700) groundwater body. This RNAG relates to diffuse pollution pressures, which are considered to currently be limiting the Chemical Drinking Water Protected Area status of the water body.

5.3.8 There is the potential for the construction of the Lowton Cutting proposed within this water body to result in a change to water quality in the aquifer, which may in turn worsen existing diffuse pollution pressures on the Chemical Drinking Water Protected Area status of the water body. Consequently, there is a risk that the proposed scheme may inhibit the future attainment of the water body's Good status objective.

5.3.9 Mitigation options are being discussed with the operator of the public water supply boreholes (United Utilities Group plc) and the Environment Agency, to ensure no adverse impacts to water quality will occur during construction. Mitigation measures will also be included, as necessary, either through the draft CoCP or as part of the site-specific remediation strategy implemented to address the contaminated land within the Lowton Sidings historical landfill site. The remediation strategy will aim to leave the site in a state such that no significant risks to groundwater quality will remain. The mitigation measures will be refined as the design progresses, following detailed site investigation. The implementation of these mitigation measures will ensure that there are no residual adverse effects that may prevent the future achievement of status objectives within the Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700) groundwater body.

5.4 Scheme compliance

5.4.1 The WFD assessment provides an indication of the likely compliance of the Proposed Scheme at the time the assessment was prepared.

5.4.2 The assessment has concluded that the Proposed Scheme has the potential to cause a deterioration in the current status and/or prevent the future achievement of status

objectives of six surface water bodies and one groundwater body. Accordingly, the Proposed Scheme may give rise to the potential risk of the Proposed Scheme being non-compliant with the statuary objectives of the WFD.

5.4.3 If the residual risks of deterioration in current status and/or prevention of attainment of status objectives cannot be mitigated for these water bodies, a Regulation 19 exemption assessment will be required for each affected water body and submitted for approval by the Environment Agency (as the competent regulatory authority).

5.4.4 Whilst every effort will be made to ensure a Regulation 19 exemption assessment is not required; where unavoidable, such an assessment will be prepared on a route-wide and/or specific water body basis, as appropriate, in consultation with the Environment Agency and reported to Parliament during passage of the Bill. In all circumstances, appropriate evidence will need to be collated and presented to aid in the design decision making process and ensure that any justification is appropriate.

5.4.5 In accordance with Regulation 19 of the WFD Regulations, new modifications resulting in a deterioration in the current status of a water body, or the prevention of the attainment of status objectives, will not be in breach of the WFD where:

- all practicable steps have been taken to mitigate the adverse impact on the status of the body of water;
- the reasons for those modifications or alterations are specifically set out and explained in the RBMP;
- the reasons for those modifications or alterations are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives set out in Regulation 13 of the WFD Regulations are outweighed by the benefits of the new modifications or alterations to (among other things) sustainable development; and
- the beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.

Annex A: Baseline assessment (screening)

1 Surface water baseline

1.1 WFD surface water bodies

The surface water bodies screened in as being affected by the Proposed Scheme are summarised in Table A 1.

Baseline details for all the surface water bodies within the study area are summarised in the Water Framework Directive compliance assessment baseline data for the Proposed Scheme (see BID WR-002-00001).

Table A 1: Summary of WFD surface water bodies screened in as being affected by the Proposed Scheme and their 2015 and 2019 Cycle 2 status classifications

WFD water body	Water body ID	River Basin District/ Management Plan	EA management catchment	Water body type (designation)	Overall status	Ecological status/ potential	Chemical status[15]
Wistaston Brook	GB112068055280	North West	Weaver Gowy	River (not Artificial (A) / Heavily Modified Water Body (HMWB))	Bad (2015), Bad (2019)	Bad (2015), Bad (2019)	Good (2015), Fail (2019)
Valley Brook (Englesea Brook to Weaver)	GB112068055310	North West	Weaver Gowy	River (HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Weaver (Marbury Brook to Dane)	GB112068060460	North West	Weaver Gowy	River (not A/HMWB)	Poor (2015), Poor (2019)	Poor (2015), Poor (2019)	Good (2015), Fail (2019)
Shropshire Union Canal, Market Drayton to Ellesmere Port	GB71210133	North West	North West AWB	Canal (AWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Dane (Wheelock to Weaver)	GB112068060470	North West	Weaver Gowy	River (not A/HMWB)	Bad (2015), Moderate (2019)	Bad (2015), Moderate (2019)	Good (2015), Fail (2019)
Trent and Mersey Canal, summit to Preston Brook Tunnel	GB71210247	North West	North West AWB	Canal (AWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Fail (2015), Fail (2019)
Puddinglake Brook	GB112068060220	North West	Weaver Gowy	River (not A/HMWB)	Poor (2015), Poor (2019)	Poor (2015), Poor (2019)	Good (2015), Fail (2019)
Wade Brook	GB112068060370	North West	Weaver Gowy	River (not A/HMWB)	Poor (2015),	Poor (2015),	Fail (2015),

[15] The chemical status assessment for RBMP Cycle 3 (2019) has changed since Cycle 2 (2015), as it now includes assessment of uPBT substances (ubiquitous, persistent, bio accumulative, toxic) and a new priority substance: Cypermethrin (previously only assessed as part of the ecological classification). This has meant that surface waterbodies in England now fail chemical status classifications.

WFD water body	Water body ID	River Basin District/ Management Plan	EA management catchment	Water body type (designation)	Overall status	Ecological status/ potential	Chemical status [15]
					Poor (2019)	Poor (2019)	Fail (2019)
Peover Eye	GB112068060390	North West	Weaver Gowy	River (not A/HMWB)	Poor (2015), Bad (2019)	Poor (2015), Bad (2019)	Good (2015), Fail (2019)
Smoker Brook (Gale Brook to Wincham Brook)	GB112068060410	North West	Weaver Gowy	River (not A/HMWB)	Poor (2015), Bad (2019)	Poor (2015), Bad (2019)	Good (2015), Fail (2019)
Bollin (Ashley Mill to Manchester Ship Canal)	GB112069061382	North West	Mersey Upper	River (HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Bridgewater Canal	GB71210001	North West	North West AWB	Canal (AWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Mersey/ Manchester Ship Canal (Irwell/ Manchester Ship Canal to Bollin)	GB112069061011	North West	Mersey Upper	River (HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Sinderland Brook	GB112069060980	North West	Mersey Upper	River (not A/HMWB)	Poor (2015), Poor (2019)	Poor (2015), Poor (2019)	Good (2015), Fail (2019)
Glaze	GB112069061420	North West	Mersey Lower	River (not A/HMWB)	Poor (2015), Bad (2019)	Poor (2015), Bad (2019)	Good (2015), Fail (2019)
Hey/Borsdane Brook	GB112069064520	North West	Mersey Lower	River (HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook)	GB112069061370	North West	Mersey Upper	River (not A/HMWB)	Bad (2015), Bad (2019)	Bad (2015), Bad (2019)	Good (2015), Fail (2019)

WFD water body	Water body ID	River Basin District/ Management Plan	EA management catchment	Water body type (designation)	Overall status	Ecological status/ potential	Chemical status [15]
Sugar Brook	GB112069061350	North West	Mersey Upper	River (not A/HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Bollin (River Dean to Ashley Mill)	GB112069061381	North West	Mersey Upper	River (not A/HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Timperley Brook	GB112069061260	North West	Mersey Upper	River (HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Sinderland Brook (Fairywell Bk and Baguley Bk)	GB112069061270	North West	Mersey Upper	River (HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Mersey (upstream of Manchester Ship Canal)	GB112069061030	North West	Mersey Upper	River (HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Fallowfield Brook	GB112069061410	North West	Mersey Upper	River (HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Platt Brook (Source to Fallowfield Bk)	GB112069061060	North West	Mersey Upper	River (HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Medlock (Lumb Brook to Irwell)	GB112069061152	North West	Irwell	River (HMWB)	Moderate (2015), Moderate (2019)	Moderate (2015), Moderate (2019)	Good (2015), Fail (2019)
Rostherne Mere	GB31232650	North West	Mersey Upper	Lake (not A/HMWB)	Bad (2015), Bad (2019)	Bad (2015), Bad (2019)	Good (2015), Fail (2019)

1.2 Watercourses

The watercourses that have been screened in for preliminary assessment are summarised in Table A 2. Watercourses are show in relation to the relevant WFD surface water body.

Baseline details of all watercourses affected by the Proposed Scheme are summarised in the Water Framework Directive compliance assessment baseline data for the Proposed Scheme (see BID WR-002-00001).

Table A 2: Summary of watercourses affected by Proposed Scheme screened in for preliminary assessment

WFD water body (ID)	Watercourse name	Designation	Upstream/ downstream extent National Grid Reference (NGR)	Approx. watercourse length within water body extent (km)	Estimated total catchment area (km^2)	Estimated Q95 (m^3/s) at Proposed Scheme location	Receptor value at Proposed Scheme location
Wistaston Brook (GB112068055280)	Tributary of Swill Brook 1	Ordinary watercourse	SJ7173352578 / SJ6988952507	1.9	0.56	<0.002	Moderate
Wistaston Brook (GB112068055280)	Tributary of Gresty Brook 1	Ordinary watercourse	SJ7168752668 / SJ7044352890	1.7	0.77	<0.002	Moderate
Wistaston Brook (GB112068055280)	Gresty Brook	Main river	SJ7208653620 / SJ6997353887	2.4	24.7	0.0598	High
Wistaston Brook (GB112068055280)	Basford Brook	Main river	SJ7269251728 / SJ7208753619	2.9	19.6	0.052	High
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	Main river	SJ7236155084 / SJ6867255508	4.3	48.2	0.0981	High
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Ordinary watercourse	SJ6873561830 / SJ6759262677	2.0	1.3	<0.002	Moderate
Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133)	Shropshire Union Canal	Canal	SJ6733461270 / SJ6957365786	6.2	N/A	N/A	Very high
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	Main river	SJ6935066991 / SJ6717670159	2.3	395.2	0.839	Very high
Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)	Trent and Mersey Canal	Canal	SJ7063565714 / SJ6850574774	11.9	N/A	N/A	Very high
Puddinglake Brook (GB112068060220)	Puddinglake Brook	Main river	SJ6994970019 / SJ6740370848	8.3	10.9	0.0084	High

WFD water body (ID)	Watercourse name	Designation	Upstream/ downstream extent National Grid Reference (NGR)	Approx. watercourse length within water body extent (km)	Estimated total catchment area (km^2)	Estimated Q95 (m^3/s) at Proposed Scheme location	Receptor value at Proposed Scheme location
Wade Brook (GB112068060370)	Gad Brook	Ordinary watercourse	SJ6976571265 / SJ6723572515	3.5	9.7	0.00396	Moderate
Wade Brook (GB112068060370)	Tributary of Gad Brook 3	Ordinary watercourse	SJ7004271760 / SJ6861471909	1.9	2	<0.002	Moderate
Wade Brook (GB112068060370)	Wade Brook	Main river	SJ7035773356 / SJ6780874058	4.1	41.3	0.075	High
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye	Ordinary watercourse	SJ7008574773 / SJ7009675711	2.3	0.9	<0.002	Moderate
Peover Eye (Wincham Brook) (GB112068060390)	Peover Eye	Main river	SJ7142775425 / SJ7006075781	1.9	78.3	0.188	High
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Smoker Brook	Main River	SJ7105776204 / SJ7006075781	1.5	69.7	0.0685	High
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Waterless Brook	Main River	SJ6909480314 / SJ7105776204	8.4	62	0.0397	High
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tabley Brook	Ordinary watercourse	SJ7183680441 / SJ7081578604	3.7	8.8	0.0126	Moderate
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 2	Ordinary watercourse	SJ7060879793 / SJ7137379138	1.6	4	<0.002	Moderate
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 3	Ordinary watercourse	SJ7098279990 / SJ7110979980	0.4	0.3	<0.002	Moderate

WFD water body (ID)	Watercourse name	Designation	Upstream/ downstream extent National Grid Reference (NGR)	Approx. watercourse length within water body extent (km)	Estimated total catchment area (km^2)	Estimated Q95 (m^3/s) at Proposed Scheme location	Receptor value at Proposed Scheme location
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 9	Ordinary watercourse	SJ7155682477 / SJ7183780441	6.3	3.2	N/A	Moderate
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough	Main River	SJ7211584234 / SJ7263084306	0.7	3.4	0.00432	High
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Agden Brook	Main River	SJ7263084306 / SJ7173787920	5.2	7.5	0.01	Moderate
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Tributary of River Bollin 10	Ordinary watercourse	SJ7325585387 / SJ7354085599	0.6	0.07	<0.002	Moderate
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Tributary of River Bollin 11	Main river	SJ7380585154 / SJ7344786079	1.2	2.19	0.00285	Moderate
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	River Bollin	Main River	SJ7232087656 / SJ6960988559	4.3	268.5	1.219	Very high
Bridgewater Canal (GB71210001)	Bridgewater Canal	Canal	SJ7285787460 / SJ6992387441	3.8	N/A	N/A	Very high
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	Canal[16]	SJ7260093468 / SJ6871589097	6.0	1689.3	N/A	Very high

[16] The Manchester Ship Canal is a canalised section of the River Mersey in the study area. It is referred to as the Manchester Ship Canal throughout this report.

WFD water body (ID)	Watercourse name	Designation	Upstream/ downstream extent National Grid Reference (NGR)	Approx. watercourse length within water body extent (km)	Estimated total catchment area (km^2)	Estimated Q95 (m^3/s) at Proposed Scheme location	Receptor value at Proposed Scheme location
Sinderland Brook (GB112069060980)	Red Brook	Main river	SJ7153190500 / SJ6996890836	2.2	49.9	0.188	High
Glaze (GB112069061420)	Holcroft Lane Brook	Main river	SJ6607394270 / SJ6840394075	2.6	3.4	<0.002	Moderate
Glaze (GB112069061420)	Tributary of Glaze Brook 4	Ordinary watercourse	SJ6454295431 / SJ6568896454	2.2	1.3	<0.002	Moderate
Glaze (GB112069061420)	Jibcroft Brook	Ordinary watercourse	SJ6395695742 / SJ6478096126	1.2	0.6	<0.002	Moderate
Glaze (GB112069061420)	Carr Brook	Ordinary watercourse	SJ6265496570 / SJ6470797326	2.7	1.9	0.00261	Moderate
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4	Ordinary watercourse	SJ6131798914 / SJ6231999445	1.6	1.3	<0.002	Moderate
Hey/Borsdane Brook (GB112069064520)	Windy Bank Brook	Ordinary watercourse	SJ6008999597 / SJ6130099935	1.6	0.4	<0.002	Moderate
Hey/Borsdane Brook (GB112069064520)	Nan Holes Brook	Main river	SJ5926299999 / SD6118700084	2.7	2	<0.002	Moderate
Hey/Borsdane Brook (GB112069064520)	Hey Brook	Main river	SD6061602477 / SJ6296599352	6.7	30.9	0.036	High
Hey/Borsdane Brook (GB112069064520)	Coffin Lane Brook	Main river	SD5884301248 / SD6055700932	4.0	2.7	0.00388	Moderate
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook	Main river	SJ7481283929 / SJ7542084696	1.5	10.7	0.0231	Moderate
Birkin Brook - Mobberley Brook to River Bollin	Birkin Brook	Main river	SJ7643583044 / SJ7467286002	3.2	96.1	0.123	High

WFD water body (ID)	Watercourse name	Designation	Upstream/ downstream extent National Grid Reference (NGR)	Approx. watercourse length within water body extent (km)	Estimated total catchment area (km^2)	Estimated Q95 (m^3/s) at Proposed Scheme location	Receptor value at Proposed Scheme location
(including Rostherne Brook) (GB112069061370)							
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Tributary of Birkin Brook 1 (Middle House Brook)	Main river	SJ7985282427 / SJ7686483736	4.5	3.3	<0.002	Moderate
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	Main river	SJ7866282670 / SJ7761082726	1.8	0.8	<0.002	Moderate
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin	Main river	SJ8024283338 / SJ7480485706	10.3	153.1	0.302	Very high
Bollin (River Dean to Ashley Mill) (GB112069061381)	Tributary of River Bollin 3	Ordinary watercourse	SJ7965484731 / SJ7929084367	0.8	0.3	<0.002	Moderate
Bollin (River Dean to Ashley Mill) (GB112069061381)	Tributary of River Bollin 2	Ordinary watercourse	SJ8022984672 / SJ7968984089	1.7	0.5	<0.002	Moderate
Bollin (River Dean to Ashley Mill) (GB112069061381)	Tributary of River Bollin 6	Ordinary watercourse	SJ7868684220 / SJ7862184645	0.5	0.17	<0.002	Moderate
Timperley Brook (GB112069061260)	Timperley Brook	Main river	SJ8087685655 / SJ7962887149	3.9	5.1	0.00293	Moderate
Timperley Brook (GB112069061260)	Tributary of Timperley Brook 3	Ordinary watercourse	SJ8041786576 / SJ7974586915	0.9	0.4	<0.002	Moderate
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook	Ordinary watercourse	SJ8123687346 / SJ7984488918	2.5	1.5	<0.002	Moderate
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Baguley Brook	Main river	SJ8192386154 / SJ7817290322	8.2	8.1	0.0111	Moderate

WFD water body (ID)	Watercourse name	Designation	Upstream/ downstream extent National Grid Reference (NGR)	Approx. watercourse length within water body extent (km)	Estimated total catchment area (km^2)	Estimated Q95 (m^3/s) at Proposed Scheme location	Receptor value at Proposed Scheme location
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey	Main River	SJ8407589374 / SJ8243591340	6.5	614.6	1.471	Very high
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	Tributary of River Mersey 2	Main River	SJ8403990787 / SJ8340390974	1.1	0.1	<0.002	Moderate
Fallowfield Brook (GB112069061410)	Cringle Brook	Main river	SJ8748293413 / SJ8425293853	3.8	4.1	0.00689	Moderate
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook	Ordinary watercourse	SJ8856493819 / SJ8425293853	4.4	9.2	0.0034	Moderate
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Gore Brook	Main River	SJ8858695875 / SJ8576994726	3.3	11.9	0.0139	Moderate
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	Main River	SJ8642598795 / SJ8327197513	5.2	64.5	0.187	High
Rostherne Mere (GB31232650)	Rostherne Mere	Lake	SJ7439584186 (centre of Mere)	N/A	N/A	N/A	High

2 Groundwater baseline

2.1 WFD groundwater bodies

The groundwater bodies screened in as being affected by the Proposed Scheme are summarised in Table A 3.

Baseline details of all the groundwater bodies within the study area are summarised in the Water Framework Directive compliance assessment baseline data for the Proposed Scheme (see BID WR-002-00001).

Table A 3: Summary of WFD groundwater bodies screened in as being affected by the Proposed Scheme and their 2015 and 2019 Cycle 2 status classifications

WFD water body	Water body ID	River Basin District/ Management Plan	Overall status	Quantitative status	Chemical status
Weaver and Dane Quaternary Sand and Gravel Aquifers	GB41202G991700	North West	Poor (2015), Poor (2019)	Good (2015), Good (2019)	Poor (2015), Poor (2019)
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	GB41201G101700	North West	Poor (2015), Poor (2019)	Poor (2015), Poor (2019)	Poor (2015), Poor (2019)
Sankey and Glaze Carboniferous Aquifers	GB41202G100100	North West	Poor (2015), Poor (2019)	Good (2015), Good (2019)	Poor (2015), Poor (2019)
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers	GB41201G101100	North West	Poor (2015), Poor (2019)	Poor (2015), Poor (2019)	Poor (2015), Poor (2019)

2.2 Groundwater features

A range of features, such as groundwater abstraction sites, springs, and GWDTE, can be used to characterise the groundwater body and are also receptors to potential Proposed Scheme impacts. These have been assessed in the relevant Volume 2, Community Area reports and Volume 5, Water resources assessment reports (see Volume 5, Appendices WR-003) and are considered, where relevant, in this assessment.

Features which have potential to be springs have been identified from Ordnance Survey maps. Where possible, these have been surveyed to confirm if they are true expressions of groundwater or are related to land drainage. Where the latter has been proven by field surveys, these features have been screened out from the assessment. Where field surveys have not been possible, the potential springs have been screened in on a precautionary basis at this stage.

The groundwater features screen in as being affected by the Proposed Scheme are summarised in Table A 4. Features are show in relation to the relevant WFD groundwater body.

Baseline details of all groundwater features affected by the Proposed Scheme are summarised in the supporting the Water Framework Directive compliance assessment baseline data for the Proposed Scheme (see BID WR-002-00001).

Table A 4: Summary of groundwater body features/receptors screened in as being potentially affected by Proposed Scheme

WFD groundwater water body (ID)	Feature type	NGR	Unique ID	Feature name
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7256251353	S_02	Potential spring 70m east of Chorlton Bank Farm
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7210153665	S_06	Potential spring at Savoy Road, Crewe
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6987458613	G_15b	Moss Bridge Marsh
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6962558759	G_15c	Spring Plantation Grassland
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ6829462201	S_16	Spring 100m south of Wimboldsley Hall
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6780264427	G_20	Wimboldsley Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	Exact location unknown. Approximately SJ6780264427	S_21	Potential saliferous spring in Wimboldsley Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Unlicensed abstraction	SJ6911165531	Uab_26	Mellor Knowl Farm and Otters Retreat
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ6768965833	S_28	Spring south-west of Clive
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ6880765992	S_29	Potential spring at pond 40m west of Coalpit Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ6871066074	S_30	Potential spring 140m north of Yew-Tree Farm, Coalpit Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ6916666426	S_31a	Potential spring at Mill Farm, Coalpit Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6828366636	G_31b	Stanthorne Hall Farm
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ6905566619	S_32	Potential sink at Bostock House, A54

WFD groundwater water body (ID)	Feature type	NGR	Unique ID	Feature name
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ6890266690	S_33a	Spring 215m west of Bostock House, A54
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Unlicensed abstraction	SJ6820167304	Uab_33b	Bank Farm, Stanthorne, Middlewich
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ3777067121	G_34a	Greenhays Farm Pasture
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6836568138	G_34b	River Dane, Bostock
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6899167121	G_34c	Oak Clump
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6830868068	G_35	Bull's Wood and Meadow
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6847870728	G_36	Whatcroft Lane Wetlands
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7015775044	G_37	Long Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6851474354	G_40e	Wade Brook
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6964275583	G_42	Wincham Brook Valley & Mill Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ6972475960	S_45	Spring 215m south-east of Home Farm, Higher Wincham
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7143977475	S_48	Potential spring at Cley House Farm, Flittogate Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7063376092	G_49a	Smoker Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7117277943	G_49b	Rinks Wood and Round Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Unlicensed abstraction	SJ7080579603	Uab_52b	Well at Heyrose Farm, Over Tabley, Knutsford

WFD groundwater water body (ID)	Feature type	NGR	Unique ID	Feature name
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7179680491	G_55	Tableypipe Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7199680724	S_57	Potential spring north of Tableypipe Wood, Cheshire East
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7315981832	G_61	The Mere, Mere
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7185281892	S_63	Potential spring at Belt Wood east
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7189482216	S_66	Spring at Belt Wood north
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7121982941	S_70	Potential spring at Dobb Lane, Yew Tree Farm, A50
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7145083461	S_72a	Spring at Wrenshot House, Wrenshot Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7112883547	G_72b	Park Covert
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7158983894	S_73	Potential spring at ponds 360m north of Wrenshot House, Wrenshot Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7435885868	S_77	Potential spring at Bowdon roundabout
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7330285954	S_78	Potential spring 25m north-east of The Meadows, Spodegreen Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7188687494	G_84	Woolstencroft Farm Meadow
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7018388048	G_94	Heatley Lake
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ6709592938	G_110	Pestfurlong Moss
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Unlicensed Abstraction	SJ7671683257	Uab_115b	Well at Birtles Farm

WFD groundwater water body (ID)	Feature type	NGR	Unique ID	Feature name
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Unlicensed Abstraction	SJ7733983313	Uab_115c	Well at Mobberley Road
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Unlicensed Abstraction	SJ7686083773	Uab_115d	Well at Arden House
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7318383162	S_116b	Potential spring in Bucklow Hill
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7327883552	S_116c	Potential spring east of Chester Road
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ8000183617	G_117	Bollin Oxbow at Castle Hill
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7826083708	S_118	Potential spring at Ecclesfield Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7809683729	G_119	Ecclesfield Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7961684063	S_130	Spring 130m south-east of Pigleystair Bridge, River Bolin
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7960284071	S_131	Spring 115m south-east of Pigleystair Bridge, River Bollin
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7387884129	S_133	Potential spring at Harpers Bank Wood, 216m east of Hunters Moon Rostherne Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7955084161	S_134	Spring at Pigleystair Bridge, River Bollin
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7371884187	S_135	Potential spring at Hunters Moon, Rostherne Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7372384194	S_136	Potential spring at Hunters Moon, Rostherne Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ8001984203	G_137	Sunbank Wood and Ponds (including Bollin Bank Ancient Woodland)
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7398584221	S_138	Potential spring in Harpers Bank Wood

WFD groundwater water body (ID)	Feature type	NGR	Unique ID	Feature name
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7933484225	S_139	Potential spring 222m west of Pigleystair Bridge, River Bollin
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7905584438	S_144b	Spring 90m north of Lower Thornsgreen Farm
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7910883633	G_145a	Brickhill Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7979283924	G_145b	Mill Wood, Castle Mill
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7943884440	G_145c	Wood Near Chapel Lane (including Hennersley Bank Ancient Woodland)
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7574684507	G_147	Ryecroft Covert
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7553284560	G_150	Hancock's Bank South (including Birkin House)
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ8020684632	S_155	Potential spring 127m south-east of Keepers Cottage, Sunbank Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ8006984653	S_157	Spring at Keepers Cottage, Sunbank Lane (south)
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ8020884661	S_159	Potential spring 120m east of Keepers Cottage, Sunbank Lane.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ8006784668	S_160	Potential spring at Keepers Cottage, Sunbank Lane (north)
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7940484691	S_162	Potential spring 70m south of Haslemere Avenue, Hale
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7851484727	S_165	Potential spring at Jackson's Bank, 35m west of Hale Golf Course south
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7852884772	S_168	Potential sink at Jackson's Bank, 20m west of Hale Golf Course south
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7537184790	G_169	Hancock's Bank North

WFD groundwater water body (ID)	Feature type	NGR	Unique ID	Feature name
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7418884914	G_171	Rostherne Mere
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7901584944	S_172	Potential spring at River Mead Avenue, Hale
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7878884945	S_173	Spring at Carrwood, 45m west of Pump House
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ7891384966	S_174	Potential spring at Carrwood, 75m east of Pump House
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7451985190	G_178	Yarwood Heath Covert
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ8031185440	S_182	Potential spring at hotel on Hasty Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7312885482	G_183	Grey's Grose
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ8045086210	G_187	Davenport Green Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ8041786572	S_189	Spring at Davenport Green, Roaring Gate Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ7994886900	G_190	Ponds at Davenport Green
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ8027287073	S_191	Potential spring 145m west of Roaring Gate Farm, Roaring Gate Lane
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ8180988919	S_194	Potential spring at Blackcarr Wood south, Baguley
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ8212188985	G_195	Blackcarr Wood and Baguley Bottoms
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ8245389329	G_198b	Round Wood
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ8240889450	S_200	Potential spring at Gib Lane Wood east, Baguley

WFD groundwater water body (ID)	Feature type	NGR	Unique ID	Feature name
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring	SJ8212989474	S_201	Potential sink at Gib Lane Wood south, Baguley
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	GWDTE	SJ8162789763	G_205	Wythenshawe Park and Gib Lane Wood
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Spring	SJ7126786464	S_04	Spring at Agdenlane Farm west, Agden Lane
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Spring	SJ6992692665	S_11	Potential spring at Glazebrook Trail and railway intercept
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	GWDTE	SJ6709592938	G_15	Pestfurlong Moss
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	GWDTE	SJ6840093200	G_17	Holcroft Moss
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Licensed abstraction	Location confidential	Lab_21	United Utilities abstraction (licence identifier confidential) Warrington
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Licensed abstraction	SJ6446595756	Lab_30	Borehole at Leigh Golf Club, Broseley Lane, Culcheth
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Licensed abstraction	Location confidential	Lab_36	United Utilities abstraction (licence identifier confidential) Golborne
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Licensed abstraction	Location confidential	Lab_37	United Utilities abstraction (licence identifier confidential) Golborne
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Licensed abstraction	Location confidential	Lab_41	United Utilities abstraction (licence identifier confidential) Golborne, Warrington

WFD groundwater water body (ID)	Feature type	NGR	Unique ID	Feature name
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Spring	SJ6131698915	S_42	Potential spring 150m north of Water Treatment Works, north Golborne
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Licensed abstraction	Location confidential	Lab_45	United Utilities abstraction (licence identifier confidential) Lowton Golborne
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Spring	SJ6175899909	S_47	Potential spring 330m west of Smith's Bridge, Leeds and Liverpool Canal
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Spring	SJ6174299913	S_48	Potential sink 345m west of Smith's Bridge, Leeds and Liverpool Canal
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Spring	SJ6156299939	S_49	Potential spring 350m north of Lightshaw Hall, Ashton-in-Makerfield
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Spring	SD6028200466	S_51	Spring at WCML railway, 320m north-west of Aye Bridge Farm
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	GWDTE	SJ6155798813	G_53a	Ponds near Lightshaw Lane
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	GWDTE	SJ6159999151	G_53b	Lightshaw Lime Beds
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Spring	SD6113100506	S_54	Potential spring at Crankwood Road, 120m west of Chadwick's Farm
Sankey and Glaze Carboniferous Aquifers (GB41202G100100)	Spring	SJ6019499909	S_01	Spring at Nan Holes Brook, 310m west of Locker Lane Farm
Sankey and Glaze Carboniferous Aquifers (GB41202G100100)	Spring	SD5958200820	S_05	Potential spring 200m west of Viridor Wood, Bryn Gates

WFD groundwater water body (ID)	Feature type	NGR	Unique ID	Feature name
Sankey and Glaze Carboniferous Aquifers (GB41202G100100)	Spring	SD6043601921	S_11	Potential spring 220m east of Bamfurlong Bridge
Sankey and Glaze Carboniferous Aquifers (GB41202G100100)	Spring	SD6043501921	S_12	Potential spring 220m east of Bamfurlong Bridge
Sankey and Glaze Carboniferous Aquifers (GB41202G100100)	Spring	SD6043301924	S_13	Potential spring 220m east of Bamfurlong Bridge
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	GWDTE	SJ8425790067	G_04	Stenner Woods and Millgate Field, Didsbury and Fletcher Moss
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Spring	SJ8453190417	S_06	Potential sink at Stenner Lane Museum & Art Gallery
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Licensed abstraction	SJ8395090470	Lab_07	Borehole at Didsbury Golf Club Northenden Wythenshawe
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	GWDTE	SJ8378890992	G_08	Wrengate Wood & Heycroft

3 Scheme baseline

3.1 Surface water scheme components

All scheme components affecting the surface water bodies and watercourses screened in are summarised in Table A 5. The scheme component type, name and design parameters are provided, and a unique reference ID has been applied for each scheme component.

Table A 5: Summary of proposed scheme components located on surface water bodies/watercourses screened in for preliminary assessment

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Wistaston Brook (GB112068055280)	Tributary of Swill Brook 1	Track	Bored Tunnel	Crewe Tunnel	GB112068055280-T-01-BT-01	A 6.2km long x 8.8m internal diameter bored tunnel up to a max. depth of 42.7m below ground level.	CT-06-302
Wistaston Brook (GB112068055280)	Tributary of Gresty Brook 1	Track	Bored Tunnel	Crewe Tunnel	GB112068055280-T-02-BT-01	A 6.2km long x 8.8m internal diameter bored tunnel up to a max. depth of 42.7m below ground level.	CT-06-302
Wistaston Brook (GB112068055280)	Gresty Brook	Track	Bored Tunnel	Crewe Tunnel	GB112068055280-MW-01-BT-01	A 6.2km long x 8.8m internal diameter bored tunnel up to a max. depth of 42.7m below ground level.	CT-06-303
Wistaston Brook (GB112068055280)	Basford Brook	Highway	Highway drainage outfall	David Whitby Way	GB112068055280-MW-02-HD-01	Road drainage outfalls from David Whitby Way; increased traffic load. During construction drains to Basford Brook.	CT-06-302-R1
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	Track	Bored Tunnel	Crewe Tunnel	GB112068055310-MW-01-BT-01	A 6.2km long x 8.8m internal diameter bored tunnel up to a max. depth of 42.7m below ground level.	CT-06-304
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Track	Extension of existing culvert	Park Hall Culvert	GB112068060460-T-01-CVX-01	Culvert (110m in length) - this is extension or rebuild of an existing culvert under WCML	CT-06-308
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Access road	Access road culvert	N/A	GB112068060460-T-01-CVA-01	Short culvert for access track to attenuation pond	CT-06-308

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Highway	Realignment	River Weaver Tributary Realignment	GB112068060460-T-01-RE-01	c. 260m realignment of Tributary of River Weaver 2	CT-06-308
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Highway	Highway realignment culvert	A530 Nantwich Road Offline East Culvert	GB112068060460-T-01-CVH-01	Offline culvert for road, approx. 25m in length.	CT-06-308
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Highway	Highway realignment culvert	A530 Nantwich Road Offline West Culvert	GB112068060460-T-01-CVH-02	Offline culvert for road, approx. 25m in length.	CT-06-308
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Highway	Highway drainage outfall	A530 Nantwich Road Realignment	GB112068060460-T-01-HD-01	Road drainage outfalls from A530 Nantwich Road Realignment. Drains to Tributary of River Weaver 2.	CT-06-308
Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133)	Shropshire Union Canal	Highway	Clear Span Bridge	Shropshire Union Canal Offline Overbridge	GB71210133-MW-01-OB-01	Offline overbridge for Clive Green Lane over Shropshire Union Canal. Bridge approx. 126m long, 20m wide.	CT-06-310
Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133)	Shropshire Union Canal	Track	Viaduct	Shropshire Union Canal Viaduct No. 2	GB71210133-MW-01-VD-01	An 8.0m wide x 84.5m long reinforced concrete (RC) box girder viaduct, approx. 7m max height.	CT-06-310
Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133)	Shropshire Union Canal	Track	Viaduct	Shropshire Union Canal Viaduct No. 1	GB71210133-MW-01-VD-02	A 19.0m wide x 84.5m long RC box girder viaduct, approx. 7m max height.	CT-06-310
Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133)	Shropshire Union Canal	Track	Viaduct	Shropshire Union Canal Viaduct No. 3	GB71210133-MW-01-VD-03	A 14.0m wide x 84.5m long RC box girder viaduct, up to 7.6m in height above existing ground level.	CT-06-310

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	Track	Viaduct	River Dane Viaduct	GB112068060470-MW-01-VD-01	A 14.0m wide x 1.13km RC box girder viaduct comprising 26 spans up to a max. height of 28.9m. Crosses River Dane at three points - 262+890, 262+960, 263+550. Potential need for ground stabilisation for foundations.	CT-06-311 and CT-06-312
Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)	Trent and Mersey Canal	Track	Viaduct	River Dane Viaduct	GB71210247-MW-01-VD-01	A 14.0m wide x 1.13km RC box girder viaduct comprising 26 spans up to a max. height of 28.9m.	CT-06-312
Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)	Trent and Mersey Canal	Track	Viaduct	Puddinglake Brook Viaduct	GB71210247-MW-01-VD-02	A 14.0m wide x 160m long RC box girder viaduct comprising 4 x 40.0m spans up to a max. Height of approx. 10m	CT-06-313
Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)	Trent and Mersey Canal	Track	Viaduct	Trent and Mersey Canal Viaduct	GB71210247-MW-01-VD-03	An approx. 14.0m wide x 283m long RC box girder viaduct comprising 4x19.4m span,2x28.0 span,2x27.3m span and 1x39 span up to a max. height of approx. 12.6m.	CT-06-313
Puddinglake Brook (GB112068060220)	Puddinglake Brook	Track	Viaduct	Puddinglake Brook Viaduct	GB112068060220-MW-01-VD-01	A 14.0m wide x 160m long RC box girder viaduct comprising 4 x 40.0m spans up to a max. Height of approx. 10m.	CT-06-313
Puddinglake Brook (GB112068060220)	Puddinglake Brook	Highway	Clear span bridge	Whatcroft Hall Lane temporary road realignment	GB112068060220-MW-01-OB-01	Access bridge over Puddlinglake Brook for temporary realignment of Whatcroft Lane during construction. Expected to be in	CT-05-312

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
						place for approximately 3 years and 3 months.	
Puddinglake Brook (GB112068060220)	Puddinglake Brook	Offline	Borrow pit	MA02 Granular Borrow Pit D	GB112068060220-MW-01-BP-01	Borrow pit assumed average extraction depth 3m, and maximum extraction depth 5m. The excavation will be in glaciofluvial sheet deposits.	CT-05-312-R5
Puddinglake Brook (GB112068060220)	Puddinglake Brook	Highway	Highway drainage outfall	A530 King Street	GB112068060220-MW-01-HD-01	Road drainage outfalls from A530 King Street; increased traffic load. Drains to Puddinglake Brook.	CT-05-312-R1
Wade Brook (GB112068060370)	Gad Brook	Track	Viaduct	Gad Brook Viaduct	GB112068060370-T-01-VD-01	A 14.0m wide x 980.0m RC box girder viaduct comprising 28 x 35.0m spans up to a max. height of approx. 18.6m.	CT-06-313
Wade Brook (GB112068060370)	Gad Brook	Highway	Highway drainage outfall	A530 King Street	GB112068060370-T-01-HD-01	Road drainage outfalls from A530 King Street; increased traffic load. Drains to Gad Brook.	CT-06-313
Wade Brook (GB112068060370)	Tributary of Gad Brook 3	Track	Viaduct	Gad Brook Viaduct	GB112068060370-T-02-VD-02	A 14.0m wide x 980.0m RC box girder viaduct comprising 28 x 35.0m spans up to a max. height of approx. 18.6m.	CT-06-313
Wade Brook (GB112068060370)	Tributary of Gad Brook 3	Highway	Highway drainage outfall	A530 King Street	GB112068060370-T-02-HD-01	Road drainage outfalls from A530 King Street; increased traffic load. Drains to Tributary of Gad Brook 3.	CT-06-313
Wade Brook (GB112068060370)	Tributary of Gad Brook 3	Highway	Highway drainage outfall	Penny's Lane Realignment	GB112068060370-T-02-HD-02	Road drainage outfalls from Penny's Lane Realignment. Drains to Tributary of Gad Brook 3.	CT-06-314
Wade Brook (GB112068060370)	Wade Brook	Track	Viaduct	Wade Brook Viaduct	GB112068060370-MW-04-VD-03	A 14.0m wide x 285.0m long RC box girder viaduct comprising 2 x	CT-06-315

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
						30.0m spans, 5 x 35.0m spans and 1 x 50.0m span up to a max. height of 19.5m.	
Wade Brook (GB112068060370)	Wade Brook	Highway	Highway drainage outfall	A556 Chester Road Realignment	GB112068060370-MW-04-HD-01	Road drainage outfalls from A556 Chester Road Realignment. Drains to Wade Brook.	CT-06-315
Wade Brook (GB112068060370)	Wade Brook	Highway	Clear Span Bridge	Wade Brook Offline Overbridge	GB112068060370-MW-04-OB-01	Offline Overbridge for A556 Chester Road over Wade Brook, approximately 105.0m in length.	CT-06-315
Wade Brook (GB112068060370)	Wade Brook	Access road	Extension of existing culvert	N/A	GB112068060370-MW-04-CVX-01	Access road follows route of existing road and crosses watercourse. Assumed that in worst-case this will require extension of existing culvert.	CT-06-315
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye	Track	Viaduct	Smoker Brook Viaduct	GB112068060390-T-01-VD-01	An approx. 14.0m wide x 805.5m long RC box girder viaduct comprising 18 x 44.8m spans up to a max. height of 24.7m.	CT-06-316
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye	Track	Realignment	Tributary of Peover Eye - watercourse realignment	GB112068060390-T-01-RE-01	Two realignments of Tributary of Peover Eye of 46m and 20m in length respectively, to avoid viaduct piers	CT-06-316
Peover Eye (Wincham Brook) (GB112068060390)	Peover Eye	Track	Viaduct	Smoker Brook Viaduct	GB112068060390-MW-02-VD-02	An approx. 14.0m wide x 805.5m long RC box girder viaduct comprising 18 x 44.8m spans up to a max. height of 24.7m.	CT-06-316
Peover Eye (Wincham Brook) (GB112068060390)	Peover Eye	Track	Realignment	Peover Eye - watercourse realignment	GB112068060390-MW-02-RE-01	Realignment of Peover Eye for 44m to avoid viaduct pier	CT-06-316

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Smoker Brook	Track	Viaduct	Smoker Brook Viaduct	GB112068060410-MW-01-VD-01	An approx. 14.0m wide x 805.5m long RC box girder viaduct comprising 18 x 44.8m spans up to a max. height of 24.7m.	CT-06-316
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Waterless Brook/Arley Brook	Track	Viaduct	Arley Brook Viaduct	GB112068060410-MW-03-VD-02	A 14.0m wide x 201.0m long precast 'W'- type PCC beams and in-situ deck viaduct (comprising 3 x 33m span and 3x 34m span), up to max approx. height of 12.2m.	CT-06-318
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tabley Brook	Access road	Clear span bridge	Site access bridge over Tabley Brook	GB112068060410-MW-04-OB-01	Overbridge / clear span bridge associated with temporary access road crossing Tabley Brook during construction. Expected to be in place for approximately one year and 7 months.	CT-05-318
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 2	Track	Culvert	Bongs Wood Culvert	GB112068060410-T-04-CV-01	Bongs Wood Culvert approx. 70m in length	CT-06-318
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 2	Track	Realignment	N/A	GB112068060410-T-04-RE-01	15m length realigned to flow through Bongs Wood Culvert. Total length of realignment including culvert is 85m.	CT-06-318
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 3	Access road	Extension of existing culvert	N/A	GB112068060410-T-05-CVX-01	Access road (no existing road) crossing tributary. Assumed that in worst-case this will require extension of existing culvert.	CT-06-318
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 9	Track	Tunnel Portal	Hoo Green Box/Tunnel	GB112068060410-T-10-TP-01	297m long box structure Up to 8.7mbgl	CT-06-320

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 9	Track	Cutting with retaining structure	Hoo Green south cutting retaining wall	GB112068060410-T-10-CU-01	Hoo Green south cutting retaining wall is approx. 360m in length, with a maximum cutting depth of 7.5m. The cutting will penetrate the glacial till and the Mercia Mudstone Group.	CT-06-319
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 9	Track	Cutting with retaining structure	Hoo Green North cutting	GB112068060410-T-10-CU-02	Hoo Green north cutting is approx. 2.7km in length, with a maximum of 17.3m cutting depth. Hoo Green north cutting retaining wall is approx. 500m in length, with a maximum of 10.2m cutting depth.	CT-06-319, CT-06-319-R1, CT-06-320
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough	Track	Underbridge	Millington Clough Underbridge	GB112069061382-MW-05-UB-01	Millington Clough Underbridge approx. 60m in length and max. 5.6m above existing ground level. May require localised realignment.	CT-06-321
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough	Offline	Underbridge	Millington Clough Offline Underbridge	GB112069061382-MW-05-UB-02	Offline Underbridge for Peacock Lane Access Track over Millington Clough. Approx. length 10m	CT-06-321
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Agden Brook	Track	Viaduct	Agden Brook Viaduct	GB112069061382-MW-06-VD-01	A 119.0m long concrete box girder viaduct, up to 16.8m high, comprising 2 x 19m and 3x 27m spans.	CT-06-351
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Agden Brook	Track	Cutting	Millington Cutting	GB112069061382-MW-06-CU-01	1.46km long Up to a depth of 11.4mbgl	CT-06-351

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Tributary of River Bollin 10	Track	Cutting	Millington Cutting	GB112069061382-T-07-CU-01	1.46km long Up to a depth of 11.4mbgl	CT-06-352
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Tributary of River Bollin 11	Track	Cutting	Millington Cutting	GB112069061382-T-08-CU-01	1.46km long Up to a depth of 11.4mbgl	CT-06-353
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Tributary of River Bollin 11	Track	Cutting with retaining structure	Rostherne cutting retaining wall west	GB112069061382-T-08-CU-02	110m long Varying in depth up to 6.8mbgl	CT-06-352
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	River Bollin	Track	Viaduct	River Bollin West Viaduct	GB112069061382-MW-09-VD-02	A 14m wide x 400.0m long precast 'W' type pre-stressed precast beams and in-situ deck viaduct comprising 16 x 25.0m spans, with max height of approx. 10.9m	CT-06-323
Bridgewater Canal (GB71210001)	Bridgewater Canal	Track	Viaduct	Bridgewater Canal Viaduct	GB71210001-MW-01-VD-01	An approx. 14.0m wide x 200.0m long concrete box girder viaduct comprising 3x 38.5m spans, 1x55m span and 1 x 29.5m span, max Height of approx. 13m.	CT-06-322
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	Track	Viaduct with footings in water body	Manchester Ship Canal Viaduct	GB112069061011-MW-03-VD-02	A 14m wide x 1.886 km long concrete box girder viaduct comprising 1 x 32m spans, 1 x 44.9m, 1x45.1m, 16 x 45.0m spans, 2 x 63.m, 18 x 46.0m approach spans and 1 x 90.0m central canal span. Max height approx. 28.7m.	CT-06-325
Sinderland Brook (GB112069060980)	Red Brook	Track	Viaduct	Manchester Ship Canal Viaduct	GB112069060980-MW-01-VD-01	A 14m wide x 1.886 km long concrete box girder viaduct	CT-06-325

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
						comprising 1 x 32m spans, 1 x 44.9m, 1x45.1m, 16 x 45.0m spans, 2 x 63.m,18 x 46.0m approach spans and 1 x 90.0m central canal span. Max height approx. 28.7m.	
Glaze (GB112069061420)	Holcroft Lane Brook	Offline	Realignment	N/A	GB112069061420-T-09-RE-03	Approx. length of realignment 580m	CT-06-327, CT-06-328
Glaze (GB112069061420)	Holcroft Lane Brook	Track	Embankment with sub-surface reinforcement	Culcheth South embankment	GB112069061420-T-09-EM-02	2.138km long piled embankment Up to a maximum height of 8.4m	CT-06-328
Glaze (GB112069061420)	Tributary of Glaze Brook 4	Track	Cutting	Culcheth cutting	GB112069061420-T-10-CU-01	Culcheth cutting is approx. 1.9km in length, with a maximum of 5.1m cutting depth. The cutting will penetrate the glacial till.	CT-06-329
Glaze (GB112069061420)	Jibcroft Brook	Track	Cutting	Culcheth cutting	GB112069061420-T-12-CU-03	Culcheth cutting is approx. 1.9km in length, with a maximum of 5.1m cutting depth. The cutting will penetrate the glacial till.	CT-06-329
Glaze (GB112069061420)	Carr Brook	Track	Realignment	N/A	GB112069061420-MW-14-RE-04	Approx. total length of realignment 426m. Watercourse realigned for approx.166m upstream of mainline route (comprising watercourse realignment of 40m, aqueduct of 76m and 2 culverted sections (15m and 35m) to cross route in culvert/aqueduct, then further realignment downstream of route for approx. 260m., including	CT-06-330

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
						removal of approx. 140m of brook from culvert.	
Glaze (GB112069061420)	Carr Brook	Access road	Access road culvert	Newton Road Access Offline Culvert	GB112069061420-MW-14-CVA-04	Newton Road Access Offline Culvert approx. 35m in length. Approx. dimensions 1.35mx1.35m.	CT-06-330
Glaze (GB112069061420)	Carr Brook	Access road	Access road culvert	Golborne Pumping Station Access Culvert	GB112069061420-MW-14-CVA-05	Golborne Pumping Station Access Culvert approx. 15m in length. Approx. dimensions 1.35mx1.35m.	CT-06-330
Glaze (GB112069061420)	Carr Brook	Track	Cutting	Lowton Cutting	GB112069061420-MW-14-CU-05	Lowton cutting is approx. 1.83km in length, with a maximum of 13.4m cutting depth. The cutting will penetrate the glacial till and the top of the Sherwood Sandstone Principal aquifer.	CT-06-330
Glaze (GB112069061420)	Carr Brook	Track	Aqueduct	Carr Brook Aqueduct	GB112069061420-MW-14-AQ-01	Carr Brook aqueduct comprises three [3] spans of up to 23.0m, 23.0m and 30.0m - a total length of 76.0m	CT-06-330
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4	Track	Realignment	N/A	GB112069064520-T-06-RE-03	Approx. length of realignment 150m	CT-06-332
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4	Track	Culvert	Golborne Footpath 31/10 and Critchley Culvert	GB112069064520-T-06-CV-03	Culvert approx. 17m in length	CT-06-332
Hey/Borsdane Brook (GB112069064520)	Windy Bank Brook	Track	Realignment	N/A	GB112069064520-T-07-RE-04	Approx. length of realignment 100m	CT-06-332
Hey/Borsdane Brook (GB112069064520)	Windy Bank Brook	Highway	Extension of existing culvert	N/A	GB112069064520-T-07-CVX-02	Watercourse flows under A573 Wigan Road realignment in	CT-06-332

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
						existing culvert (under WCML). Assumed that in worst-case this will require extension of existing culvert.	
Hey/Borsdane Brook (GB112069064520)	Windy Bank Brook	Track	Culvert	Footpath Golborne 27/10 and Windy Bank culvert	GB112069064520-T-07-CV-04	Windy Bank Culvert approx. 55m in length.	CT-06-332
Hey/Borsdane Brook (GB112069064520)	Nan Holes Brook	Track	Culvert	Nan Holes Brook Culvert	GB112069064520-T-11-CV-05	Nan Holes Brook Culvert approx. 35m in length. Approx. dimensions 1.35m x 1.35m.	CT-06-333
Hey/Borsdane Brook (GB112069064520)	Nan Holes Brook	Track	Realignment	N/A	GB112069064520-T-11-RE-05	Realignment to flow through Nan Holes Brook Culvert. Approx. length of realignment 80m.	CT-06-333
Hey/Borsdane Brook (GB112069064520)	Nan Holes Brook	Highway	Highway realignment culvert	Nan Holes Brook Offline Culvert	GB112069064520-T-11-CVH-02	Nan Holes Brook Offline Culvert approx. 50m in length. Approx. dimensions 3mx5m.	CT-06-333
Hey/Borsdane Brook (GB112069064520)	Hey Brook	Highway	Clear Span Bridge	Hey Brook Offline Overbridge	GB112069064520-MW-01-OB-01	Offline overbridge for A573 Wigan Road over Hey Brook (approx. length 110m). A bypass channel is proposed under the proposed A573 Wigan Road realignment to counteract the localised increase in flood levels as a result of the bridge piers and the partial encroachment of the bridge embankments on the Environment Agency flood zones.	CT-06-333

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Hey/Borsdane Brook (GB112069064520)	Coffin Lane Brook	Track	Extension of existing culvert	Coffin Lane Brook Culvert	GB112069064520-T-15-CVX-03	Coffin Lane Brook Culvert approx. 60m in length	CT-06-333
Hey/Borsdane Brook (GB112069064520)	Coffin Lane Brook	Track	Realignment	N/A	GB112069064520-T-15-RE-06	Coffin Lane Brook realigned through culvert, into flood compensation area, then re-joins existing course. Total length of realignment approx. 75m.	CT-06-333
Hey/Borsdane Brook (GB112069064520)	Coffin Lane Brook	Track	Cutting with retaining structure	Abram Cutting	GB112069064520-T-15-CU-03	Abram cutting retaining wall is approx. 155m in length, with a maximum of 1.2m cutting depth.	CT-06-333
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook	Track	Viaduct	Blackburn's Brook North Viaduct	GB112069061370-MW-01-VD-01	An approx. 384.0m long concrete box girder viaduct, up to 10.4m max. height, comprising 1 x 32.5m spans, 1 x 32.0m spans, 7 x 40.0m spans and 1x 39.5m span	CT-06-353
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Birkin Brook	Track	Viaduct	Blackburn's Brook North Viaduct	GB112069061370-MW-02-VD-02	An approx. 384.0m long concrete box girder viaduct, up to 10.4m max. height, comprising 1 x 32.5m spans, 1 x 32.0m spans, 7 x 40.0m spans and 1x 39.5m span	CT-06-353
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Tributary of Birkin Brook 1 (Middle House Brook)	Track	Realignment	N/A	GB112069061370-T-04-RE-03	Approx. length of realignment 680m	CT-06-354, CT-06-355
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Tributary of Birkin Brook 1 (Middle House Brook)	Highway	Clear Span Bridge	Mobberley Road Offline Overbridge	GB112069061370-T-04-OB-02	Approx. length 113.6m	CT-06-354

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Tributary of Birkin Brook 1 (Middle House Brook)	Track	Extension of existing culvert	N/A	GB112069061370-T-04-CVX-03	Tributary crosses track at location of existing culvert. No additional culvert shown in design drawings, so assumed to be extension of existing culvert	CT-06-354
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Tributary of Birkin Brook 1 (Middle House Brook)	Highway	Highway realignment culvert	Ashley Road Offline East Culvert	GB112069061370-T-04-CVH-04	Ashley Road Offline East Culvert approx. 25m in length	CT-06-354
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	Offline	Extension of existing culvert	N/A	GB112069061350-T-01-CVX-01	Tributary crosses Ashley Railhead footprint adjacent to existing railway culvert. Extension of existing culvert assumed	CT-05-354-R1
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin	Track	Viaduct	River Bollin East Viaduct	GB112069061381-MW-01-VD-01	An approx. 99.4m long viaduct comprising 1x 17.4m span and 2x 25m span and 1x 32m span, up to a max. height of 16.4m.	CT-06-356
Bollin (River Dean to Ashley Mill) (GB112069061381)	Tributary of River Bollin 6	Track	Cutting	Thorns Green Cutting	GB112069061381-T-05-CU-01	Thorns Green Cutting is approximately 1km in length, with a maximum cutting depth of 11m and width of 76m.	CT-06-355
Bollin (River Dean to Ashley Mill) (GB112069061381)	Tributary of River Bollin 3	Track	Cut and cover tunnel	M56 East Tunnel	GB112069061381-T-02-BT-01	133m long box structure Up to a maximum depth of 11m	CT-06-356
Bollin (River Dean to Ashley Mill) (GB112069061381)	Tributary of River Bollin 2	Track	Cut and cover tunnel	M56 East Tunnel	GB112069061381-T-03-BT-01	133m long box structure Up to a maximum depth of 11m	CT-06-356

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Timperley Brook (GB112069061260)	Timperley Brook	Station	Inverted siphon	Timperley Brook inverted siphon	GB112069061260-MW-01-IS-01	Timperley Brook Culvert would be constructed as an inverted siphon under the station, re-joining the existing watercourse west of the station. Siphon expected to be approximately 170m in length, plus additional realignment of up to 120m.	CT-06-357
Timperley Brook (GB112069061260)	Timperley Brook	Track	Realignment	N/A	GB112069061260-MW-01-RE-01	Timperley Brook realigned (approx. length 330m) downstream of Brooks Drive as offsite mitigation for impact of inverted siphon.	CT-06-357
Timperley Brook (GB112069061260)	Timperley Brook	Offline	Cutting with retaining structure	Manchester Airport High Speed Station cutting retaining wall north	GB112069061260-MW-01-CU-01	1.76km long with maximum depth of 12.9m	CT-06-357 CT-06-357
Timperley Brook (GB112069061260)	Timperley Brook	Highway	Highway drainage outfall	M56 East and West Link Realignment/ Access to Manchester Airport High Speed Station/ Runger Lane Realignment	GB112069061260-MW-01-HD-01	Road drainage outfall from M56 East and West Link Realignment/ Access to Manchester Airport High Speed Station/ Runger Lane Realignment: Drains to Timperley siphon. Fails HEWRAT assessment and requires additional mitigation.	CT-06-357
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook	Track	Bored Tunnel	Manchester Tunnel	GB112069061270-T-02-BT-01	Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages.	CT-06-358

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Baguley Brook	Track	Bored Tunnel	Manchester Tunnel	GB112069061270-MW-03-BT-01	Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages.	CT-06-359
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey	Track	Bored Tunnel	Manchester Tunnel	GB112069061030-MW-01-BT-01	Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages.	CT-06-360
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	Tributary of River Mersey 2	Track	Bored Tunnel	Manchester Tunnel	GB112069061030-T-02-BT-02	Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages.	CT-06-360
Fallowfield Brook (GB112069061410)	Cringle Brook	Track	Bored Tunnel	Manchester Tunnel	GB112069061410-MW-01-BT-01	Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages.	CT-06-362
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook	Track	Bored Tunnel	Manchester Tunnel	GB112069061060-MW-01-BT-01	Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages.	CT-06-362
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Gore Brook	Track	Bored Tunnel	Manchester Tunnel	GB112069061060-MW-03-BT-02	Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages.	CT-06-363
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	Track	Viaduct	Piccadilly Approach Viaduct	GB112069061152-MW-01-VD-01	A 470.0m long deck, varying in width from 25.0m to 47.0m before reducing to two 12.7m wide viaducts as it enters the station structure. Max approx. height of 14.8m. Comprises 15x	CT-06-365

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
						20m spans, 6x 16m spans, 4x 14m spans and 1x 18m span.	
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	Highway	Clear Span Bridge	Fairfield Street Offline Overbridge	GB112069061152-MW-01-OB-01	Offline overbridge for realigned Fairfield Street. Approx. 22.7m in length and 16m wide.	CT-06-365
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	Track	Daylighting of existing culvert	N/A	GB112069061152-MW-01-DY-01	Deculverting of approx. 100m of watercourse to create open multi-stage channel for flood mitigation	CT-06-365
Rostherne Mere (GB31232650)	Rostherne Mere	Track	Cutting	Millington Cutting	GB31232650-LAKE-01-CU-01	Millington cutting is approx. 1.46km in length, with a maximum of 12.7m cutting depth. The cutting will penetrate the glacial till and the Sherwood Sandstone.	CT-06-352, CT-05-353
Rostherne Mere (GB31232650)	Rostherne Mere	Track	Cutting with retaining structure	Rostherne Cutting	GB31232650-LAKE-01-CU-02	Rostherne cutting, 1.2km in length, up to 8m in depth and 83m in width with retaining walls to the west and east. Rostherne cutting retaining wall west, 110m in length –Rostherne cutting retaining wall east, 323m in length.	CT-06-352, CT-05-353
Rostherne Mere (GB31232650)	Rostherne Mere	Track	Cutting with retaining structure	Hoo Green North Cutting	GB31232650-LAKE-01-CU-03	Hoo Green north cutting is approx. 0.9km in length, with a maximum of 17.3m cutting depth. The cutting will penetrate the glaciofluvial deposits and glacial till and into the underlying Sidmouth Mudstone Formation, Bollin Mudstone Member and	CT-06-352, CT-05-353

WFD water body (ID)	Watercourse	Crossing type	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
						Tarporley Siltstone Formation of the Mercia Mudstone Group.	

3.2 Groundwater scheme components

All scheme components affecting the groundwater bodies screened in are summarised in Table A 6. The scheme component type, name and design parameters are provided, and a unique reference ID has been applied to each scheme component.

Table A 6: Summary of proposed scheme components within groundwater bodies screened in for preliminary assessment

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Tunnel Portal	Crewe Tunnel South porous portal	GB41202G991700-TP-01	150m long. Maximum depth of 20.0mbgl.	CT-05-302
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bored Tunnel	Crewe Tunnel	GB41202G991700-BT-02	6.2km long bored tunnel with 8.8m internal diameter. Maximum depth of up to 42.7mbgl.	CT-05-302 CT-05-303 CT-05-304 CT-05-305
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Vent shaft	Cowley Way vent shaft	GB41202G991700-VT-03	24.0m internal diameter 43.0mbgl	CT-05-303
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Vent shaft	Middlewich Street vent shaft	GB41202G991700-VT-04	24.0m internal diameter 47.0mbgl	CT-05-304
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Tunnel Portal	Crewe Tunnel North porous portal	GB41202G991700-TP-05	150m long Maximum depth of up to 16.8mbgl	CT-05-305
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	Crewe North portal (retained cutting)	GB41202G991700-CR-06	593m long 14.3m maximum depth, rising to approximately 7mbgl	CT-05-305
Weaver and Dane Quaternary Sand and	Overbridge Foundations	Parkers Road overbridge	GB41202G991700-OF-07	No piles required for footbridge	CT-05-305

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Coppenhall Moss cutting	GB41202G991700-C-08	220m long Maximum depth of up to 1.8mbgl	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Footpath Crewe 29/1 overbridge	GB41202G991700-OF-09	Average pile length of 15m	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Coppenhall Moss South embankment	GB41202G991700-EM-10	684m long Up to 5m above ground level	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Warmingham Moss southbound embankment No.1	GB41202G991700-EM-11	122m long Up to 3m above ground level	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Warmingham Moss southbound retaining wall	GB41202G991700-RT-12	144m long Up to 4.6m above ground level	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Warmingham Moss southbound WCML embankment	GB41202G991700-EM-13	630m long Up to 3m above ground level	CT-05-306
Weaver and Dane Quaternary Sand and	Viaduct Foundations	Warmingham Moss southbound approach viaduct No.1	GB41202G991700-VF-14	201m long Pile depth up to 30mbgl	CT-05-306

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Warmingham Moss southbound box structure No.1	GB41202G991700-RT-15	122m long Up to 3m above ground level	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Warmingham Moss southbound connecting viaduct	GB41202G991700-VF-16	65m long Average pier height of 10.7m	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Warmingham Moss northbound WCML embankment	GB41202G991700-EM-17	196m long Up to 2.7m above ground level	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Warmingham Moss southbound box structure No.2	GB41202G991700-RT-18	180m long Up to 2.6m above ground level	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Warmingham Moss southbound approach viaduct No.2	GB41202G991700-VF-19	300m long Pile depth up to 26mbgl	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Warmingham Moss southbound embankment No.2	GB41202G991700-EM-20	574m long Up to 8.4 above ground level	CT-05-306
Weaver and Dane Quaternary Sand and	Retaining Wall	Warmingham Moss northbound retaining wall No.1	GB41202G991700-RT-21	126m long Up to 4m above ground level	CT-05-306

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Warmingham Moss northbound approach viaduct No.1	GB41202G991700-VF-22	501m long Pile depth up to 29mbgl	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Warmingham Moss northbound WCML cutting	GB41202G991700-C-23	550m long Up to 5.7mbgl	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Warmingham Moss southbound RSD embankment	GB41202G991700-EM-24	529m long Up to 2.7m above ground level	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Warmingham Moss southbound RSD cutting	GB41202G991700-C-25	189m long Up to 6.2mbgl	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Warmingham Moss northbound box structure	GB41202G991700-RT-26	307m long	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Warmingham Moss northbound approach viaduct No.2	GB41202G991700-VF-27	301m long Pile depth up to 26mbgl	CT-05-306
Weaver and Dane Quaternary Sand and	Retaining Wall	Warmingham Moss northbound retaining wall No.2	GB41202G991700-RT-28	359m long Up to 6.0 high	CT-05-306

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Coppenhall Moss North embankment	GB41202G991700-EM-29	2.7km long Up to 3.3m above ground level	CT-05-306
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Footpath Minshull Vernon 8/1 accommodation overbridge	GB41202G991700-OF-30	Average pile length of 15m	CT-05-307
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Station/Depot	Crewe North rolling stock depot (RSD)	GB41202G991700-ST-31	3.0km long Up to 2.0m above ground level	CT-05-308a CT-05-308b CT-05-309
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Walley's Green embankment	GB41202G991700-EM-32	2.644km long Up to 2.8m above ground level	CT-05-308b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	A530 Nantwich Road overbridge	GB41202G991700-OF-33	Average pile length of 17m	CT-05-308a CT-05-308b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Borrow Pit	Cohesive Borrow Pit MA02-A	GB41202G991700-BP-34	Total area 13.6ha Maximum depth 5.0mbgl	CT-05-308a CT-05-308b CT-05-309
Weaver and Dane Quaternary Sand and	Borrow Pit	Cohesive Borrow Pit MA02-B	GB41202G991700-BP-35	Total area 10.5ha Maximum depth 3.0mbgl	CT-05-309

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Clive Green Lane overbridge	GB41202G991700-OF-36	Average pile length of 25m	CT-05-309
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Shropshire Union Canal offline overbridge	GB41202G991700-OF-37	Average pile length of 25m	CT-05-309
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Clive Green South embankment No.3	GB41202G991700-EM-38	1.037km long Up to 6.2m above ground level Depth of below ground features unconfirmed due to history of subsidence.	CT-05-309 CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Clive Green South embankment No.1	GB41202G991700-EM-39	Offline embankment for Crewe Depot up track.	CT-05-309 CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Clive Green South embankment No.2	GB41202G991700-EM-40	Offline embankment for Crewe North Connection down track.	CT-05-309 CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Highways Drainage discharge	Clive Green Lane Highways Drainage discharge 1	GB41202G991700-HD-38a	Highways drainage discharge from realigned Clive Green Lane into Tributary of River Weaver 4	CT-05-309 CT-05-310

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Highways Drainage discharge	Clive Green Lane Highways Drainage discharge 2	GB41202G991700-HD-38b	Highways drainage discharge from realigned Clive Green Lane into Tributary of River Wheelock 4	CT-05-309 CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Shropshire Union Canal viaduct No.3	GB41202G991700-VF-41	85m long Pile depth up to 34mbgl Depth of below ground features unconfirmed due to history of subsidence.	CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Shropshire Union Canal viaduct No.1	GB41202G991700-VF-42	80m long Pile depth up to 34mbgl	CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Shropshire Union Canal viaduct No.2	GB41202G991700-VF-43	80m long Pile depth up to 27mbgl	CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Clive Green North embankment No.3	GB41202G991700-EM-44	346m long Up to 7.6m above ground level Depth of below ground features unconfirmed due to history of subsidence.	CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Clive Green North embankment No.1	GB41202G991700-EM-45	Offline embankment for Crewe Depot up track.	CT-05-310

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Clive Green North embankment No.2	GB41202G991700-EM-46	Offline embankment for Crewe North Connection down track.	CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Clive Green North cutting	GB41202G991700-C-47	Offline cutting for Crewe Depot up track.	CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Clive Green North embankment retaining wall	GB41202G991700-RT-48	89m long Up to 7.6m above ground level Below ground features (depth unconfirmed) due to history of subsidence.	CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Middlewich box structure	GB41202G991700-RT-49	163m long Up to 9.8m above ground level Below ground features (depth unconfirmed) due to history of subsidence.	CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Borrow Pit	Cohesive Borrow Pit MA02-C	GB41202G991700-BP-50	Total area 11.2ha Maximum depth 3.0mbgl	CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Stanthorne South embankment retaining wall	GB41202G991700-RT-51	194m long Up to 12.1m above ground level	CT-05-310
Weaver and Dane Quaternary Sand and	Embankment	Stanthorne South embankment No.1	GB41202G991700-EM-52	343m long Up to 12.1m above ground	CT-05-310

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)				level Below ground features (depth unconfirmed) due to history of subsidence.	
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Stanthorne South embankment No.2	GB41202G991700-EM-53	Offline embankment for Crewe Depot up track	CT-05-310
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	A54 Middlewich Road viaduct	GB41202G991700-VF-54	65m long Up to 8.5m above ground level Pile length up to 30m long	CT-05-311
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Stanthorne North embankment	GB41202G991700-EM-55	938m long Up to 7.8m above ground level Below ground features (depth unconfirmed) due to history of subsidence.	CT-05-311
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	River Dane viaduct	GB41202G991700-VF-56	1.129km long Up to 23.8m above ground level Pile length up to 32m long Below ground features (depth unconfirmed) due to history of subsidence and Winsford Rock Salt Mine.	CT-05-311 CT-05-312
Weaver and Dane Quaternary Sand and	Borrow Pit	MA02 Granular Borrow Pit D	GB41202G991700-BP-57	Total area 48.0ha Maximum depth 5.0mbgl	CT-05-312-R5

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Dane Valley embankment	GB41202G991700-EM-58	1.218km long Up to a maximum height of 5.9m above ground level Below ground features (depth unconfirmed) due to Winsford Rock Salt Mine.	CT-05-312
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Puddinglake Brook viaduct	GB41202G991700-VF-59	160m long Up to max height 9.6m above ground level Pile length up to 36m long	CT-05-312 CT-05-313
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Whatcroft embankment south	GB41202G991700-EM-60	386m long Up to max height 7.3m above ground level	CT-05-313
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Trent and Mersey Canal viaduct	GB41202G991700-VF-61	283m long Up to max height 12.2m above ground level Pile length up to 37m long	CT-05-313
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Whatcroft embankment north	GB41202G991700-EM-62	512m long Up to max height 12.7m above ground level	CT-05-313
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Gad Brook viaduct	GB41202G991700-VF-63	980m long Up to max height 17.6m above ground level Pile length up to 37m long	CT-05-313 CT-05-314

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Rudheath embankment	GB41202G991700-EM-64	1.88km long Up to max height 9.4m above ground level	CT-05-314 CT-05-315
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Highways Drainage discharge	A556 Shurlach Road drainage	GB41202G991700-HD-64a	Highways drainage discharge from realigned A556 Shurlach Road into Broken Cross Drains	CT-05-314 CT-05-315
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Wade Brook offline overbridge	GB41202G991700-OF-65	Pile length up to 20m long	CT-05-315
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Wade Brook viaduct	GB41202G991700-VF-66	285m long Up to max height 17.5m above ground level Pile length up to 25m long	CT-05-315
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Lostock Gralam South embankment	GB41202G991700-EM-67	353m long Up to max height 13.7m above ground level	CT-05-315
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Lostock Gralam viaduct	GB41202G991700-VF-68	61m long Up to max height 8.5m above ground level Pile length up to 36m long	CT-05-315
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Lostock Gralam North embankment	GB41202G991700-EM-69	655m long Up to max height 8.8m above ground level	CT-05-315 CT-05-316a

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Smoker Brook viaduct	GB41202G991700-VF-70	806m long Up to max height 21.4m above ground level Pile length up to 26m long	CT-05-316a
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Pickmere embankment	GB41202G991700-EM-71	2.466km long Up to max height 9.4m above ground level	CT-05-316a CT-05-316b CT-05-317
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bridge Foundations	Tabley Inferior Footpath 1/1 accommodation underbridge	GB41202G991700-BF-72	No piles required for footbridge (box culvert)	CT-05-317
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bridge Foundations	Pickmere Footpath 9/1 underbridge	GB41202G991700-BF-73	No piles required for footbridge (box culvert)	CT-05-317
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Arley Brook viaduct	GB41202G991700-VF-74	201m long Pile length up to 27m long	CT-05-318
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Heyrose embankment	GB41202G991700-EM-75	1.763km long Up to max height 9.1m above ground level	CT-05-318
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bridge Foundations	Restricted Byway Tabley Superior 4/1 accommodation underbridge	GB41202G991700-BF-76	No piles required for footbridge (box culvert)	CT-05-318

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	M6 Mere viaduct	GB41202G991700-VF-77	97m long Pile length up to 27m long	CT-05-319
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bridge Foundations	Bridleway Mere 1/1 accommodation underbridge	GB41202G991700-BF-78	No piles required for footbridge (box culvert)	CT-05-319
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Hoo Green South embankment No.2	GB41202G991700-EM-79	1.238m long Up to 10.4m above ground level	CT-05-319
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Hoo Green South embankment No.1	GB41202G991700-EM-80	Offline embankment for NPR down line.	CT-05-319
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Hoo Green South embankment No.3	GB41202G991700-EM-81	Offline embankment for NPR up line.	CT-05-319
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Hoo Green South embankment No.2 retaining wall	GB41202G991700-RT-82	177m long Up to 4.3m in height	CT-05-319
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Hoo Green viaduct	GB41202G991700-RT-83	232m long box structure Maximum height of 4.1m	CT-05-320

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Hoo Green North embankment retaining wall No.2	GB41202G991700-RT-84	172m long Up to a maximum height of 3.0m	CT-05-320
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Hoo Green North embankment retaining wall No.1	GB41202G991700-RT-85	Offline embankment retaining wall between NPR up and down lines	CT-05-320
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Hoo Green North embankment No.1	GB41202G991700-EM-86	Offline embankment for NPR up Line	CT-05-320
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	Hoo Green North cutting	GB41202G991700-C-87	2.725km long Average depth of 12.3mbgl (up to 17.3mbgl)	CT-05-320 CT-05-321 CT-05-351
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	Hoo Green West cutting	GB41202G991700-C-88	Offline rail track spur down to Liverpool.	CT-05-321
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	High Legh cutting retaining wall	GB41202G991700-CR-89	51m long Up to 16m in height	CT-05-321
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	High Legh cutting	GB41202G991700-C-90	197m long Up to 22.0mbgl	CT-05-321

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	A50 overbridge	GB41202G991700-OF-91	Pile length up to 20m long	CT-05-320
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bridge Foundations	Millington Clough offline underbridge	GB41202G991700-BF-92	No piles required for footbridge (box culvert).	CT-05-321 CT-05-351
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Peacock Lane overbridge	GB41202G991700-OF-93	Pile length up to 11m long	CT-05-321
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Millington Clough aqueduct	GB41202G991700-OF-94	Pile length up to 11m long	CT-05-321 CT-05-351
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Manchester to Leeds Junction overbridge	GB41202G991700-OF-95	Pile length up to 11m long	CT-05-321
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	M56 West overbridge	GB41202G991700-RT-96	52m long box structure Up to 12.0mbgl	CT-05-321
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Agden cutting	GB41202G991700-C-97	611m long Average depth of 20.1mbgl	CT-05-322a CT-05-322b

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Lymm South embankment	GB41202G991700-EM-98	450m long Up to 8.3m above ground level	CT-05-322a CT-05-322b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	A56 Lymm Road viaduct	GB41202G991700-VF-99	49m long Pile length up to 38m long	CT-05-322a CT-05-322b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Lymm North embankment	GB41202G991700-EM-100	330m long Up to 11.0m above ground level	CT-05-322a CT-05-322b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Bridgewater Canal viaduct	GB41202G991700-VF-101	209m long Pile length up to 32m long	CT-05-322a CT-05-322b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Heatley South embankment	GB41202G991700-EM-102	1.192km long Up to 9.45m above ground level	CT-05-322a CT-05-322b CT-05-323
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bridge Foundations	Spring Lane underbridge	GB41202G991700-BF-103	Pile length up to 20m long	CT-05-323
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	River Bollin West viaduct	GB41202G991700-VF-104	400m long Pile length up to 36m long	CT-05-323

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Heatley North embankment	GB41202G991700-EM-105	360m long Up to 6.3m above ground level	CT-05-323
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Warburton cutting	GB41202G991700-C-106	1.075km long Up to an average depth of 2.0mbgl	CT-05-324
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Highways Drainage discharge	A6144 Paddock Lane Highways discharge	GB41202G991700-HD-106a	Highways drainage discharge from realigned A6144 Paddock lane into A6144 Field Drains	CT-05-324
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Footpath Warburton 3 accommodation overbridge	GB41202G991700-OF-107	Pile length up to 15m long	CT-05-324
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	A6144 Paddock Lane overbridge	GB41202G991700-OF-108	Pile length up to 20m long	CT-05-324
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Warburton embankment	GB41202G991700-EM-109	290m long Up to 4.6m above ground level	CT-05-324
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Manchester Ship Canal viaduct	GB41202G991700-VF-110	1.886km long Pile length up to 29m long	CT-05-324 CT-05-325

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Glazebrook embankment south	GB41202G991700-EM-111	703m long Up to 10.9m above ground level	CT-05-325 CT-05-326a
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Glazebrook (Railway) viaduct	GB41202G991700-VF-112	66m long Pile length up to 18m long	CT-05-326a CT-05-326b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment with subsurface reinforcement	Glazebrook embankment north	GB41202G991700-EMR-113	793m long Up to 10.0m above ground level Soil stabilisation, reinforced base and foundations required due to being situated on peat.	CT-05-326a CT-05-326b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Hoo Green South embankment No.2	GB41202G991700-EM-114	655m long Up to max height 10.4m above ground level	CT-05-319
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	Hoo Green South cutting retaining wall	GB41202G991700-CR-115	31m long Maximum depth of 2.0mbgl	CT-05-319 Ct-05-320
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	Hoo Green South cutting retaining wall	GB41202G991700-CR-116	328m long Up to 6m in height	CT-05-319 Ct-05-320
Weaver and Dane Quaternary Sand and	Retaining Wall	Hoo Green (box) tunnel	GB41202G991700-RT-117	297m long box structure Up to 8.7mbgl	CT-05-320

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Hoo Green North embankment No.2	GB41202G991700-EM-118	Offline embankment	CT-05-320
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	Hoo Green North cutting retaining wall	GB41202G991700-CR-119	476m long Maximum height of 8.3m in depth	CT-05-320
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	Hoo Green North cutting retaining wall	GB41202G991700-CR-120	25m long Maximum height of 8.7m in depth	CT-05-320
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Hoo Green North cutting	GB41202G991700-C-121	905m long Maximum depth of 10.6mbgl	CT-05-320
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Hulseheath South embankment	GB41202G991700-EM-122	529m long Maximum height of 7.2m above ground level	CT-05-321
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Peacock Lane viaduct	GB41202G991700-VF-123	44m long Piles up to 21m long	CT-05-321 CT-05-351 CT-05-351-R1
Weaver and Dane Quaternary Sand and	Embankment	Hulseheath North embankment	GB41202G991700-EM-124	596m long Up to a maximum height of 7.7m	CT-05-321

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bridge Foundations	Millington Clough underbridge	GB41202G991700-BF-125	No piles required for footbridge (box culvert).	CT-05-321 CT-05-351 CT-05-351-R1
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Agden Brook viaduct	GB41202G991700-VF-126	119m long Pile length up to 25m long	CT-05-351
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Millington cutting	GB41202G991700-C-127	1.462km long Up to a depth of 11.4mbgl	CT-05-351 CT-05-352
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Manchester to Liverpool junction	GB41202G991700-C-128	526m long Up to 10.6mbgl	CT-05-351 CT-05-352
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Millington Footpath 7/4 accommodation overbridge	GB41202G991700-OF-129	Pile length up to 15m long	CT-05-352
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	A556 Chester Road overbridge	GB41202G991700-OF-130	Tangent piled wall.	CT-05-352
Weaver and Dane Quaternary Sand and	Cutting with retaining structure	Rostherne cutting retaining wall west	GB41202G991700-CR-131	110m long Varying in depth up to 6.8mbgl	CT-05-352

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Rostherne cutting	GB41202G991700-C-132	788m long Varying in depth up to 5.5mbgl	CT-05-352 CT-05-353
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Rostherne North cutting	GB41202G991700-C-133	456m long Up to 5.4mbgl	CT-05-353
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Yarwood Heath Farm accommodation overbridge	GB41202G991700-OF-134	Pile length up to 20m long.	CT-05-353
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Rostherne West embankment	GB41202G991700-EM-135	439m long Up to 5.9mbgl	CT-05-353
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	Rostherne cutting retaining wall east	GB41202G991700-CR-136	323m long Up to a depth of 5.4m	CT-05-353
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Rostherne East box structure	GB41202G991700-RT-137	235m long Up to a depth of 4.2m	CT-05-353
Weaver and Dane Quaternary Sand and	Embankment	Blackburn's Brook embankment	GB41202G991700-EM-138	57m long Up to a maximum height of 6.0m	CT-05-353

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Blackburn's Brook North viaduct	GB41202G991700-VF-139	385m long Pile length up to 19m long	CT-05-353
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Blackburn's Brook South viaduct provision	GB41202G991700-VF-140	Pile lengths approximately 20mbgl	CT-05-353
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Birkin Brook embankment	GB41202G991700-EM-141	882m long Up to 7.6m above ground level	CT-05-353 CT-05-354
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Rostherne East embankment	GB41202G991700-EM-142	252m long Up to a maximum height of 9.9m	CT-05-353
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Ashley embankment retaining wall	GB41202G991700-RT-143	189m long Up to a maximum height of 4.9m	CT-05-354
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Ashley embankment	GB41202G991700-EM-144	640m long Up to a maximum height of 7.5m	CT-05-354
Weaver and Dane Quaternary Sand and	Station/Depot	Ashley Infrastructure Maintenance Base - Rail (IMB-R)	GB41202G991700-ST-145	Permanent Ashley IMB-R structure located on the northern side of the HS2 route alongside Ashley	CT-05-354

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Gravel Aquifers (GB41202G991700)				embankment. Maximum excavation depth of 0.35m within sidings.	
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Station/Depot	Ashley railhead	GB41202G991700-ST-146	Temporary railway sidings located alongside the existing main line. Maximum excavation depth 3.76m on loop track and 1.42m within sidings.	CT-05-353 CT-05-354 CT-05-354-R1 CT-05-355-R1 CT-05-355-R2
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	Mid-Cheshire (railway) viaduct and Mobberley Road viaduct	GB41202G991700-VF-147	266m long Pile length up to 23m long	CT-05-354
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Mobberley Road offline overbridge	GB41202G991700-OF-148	Pile length up to 12m long	CT-05-354
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	Thorns Green embankment	GB41202G991700-EM-149	725m long Up to a maximum height of 7.2m	CT-05-354 CT-05-355
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Back Lane accommodation overbridge	GB41202G991700-OF-150	Pile length up to 15m long	CT-05-355
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Thorns Green cutting	GB41202G991700-C-151	1.020km long Varying depths up to 8.3m	CT-05-355

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Castle Mill Lane overbridge	GB41202G991700-OF-152	Pile length up to 20m long	CT-05-355
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	River Bollin South embankment	GB41202G991700-EM-153	94m long Up to a maximum height of 4.5m	CT-05-355 CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Viaduct Foundations	River Bollin East viaduct	GB41202G991700-VF-154	100m long Pile length up to 25m long	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Embankment	River Bollin North embankment	GB41202G991700-EM-155	66m long Up to a maximum height of 3.7m	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Ringway cutting	GB41202G991700-C-156	430m long Up to a maximum depth of 10.1m	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Sunbank Lane overbridge	GB41202G991700-OF-157	Pile length up to 12m long	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	M56 cutting retaining wall	GB41202G991700-CR-158	66m long Up to a maximum depth of 13.1m	CT-05-356

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cut and Cover with retaining structure	M56 East tunnel	GB41202G991700-CCTR-159	133m long box structure Up to a maximum depth of 11m	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bridge Foundations	M56/A538 Wilmslow Road offline underbridge	GB41202G991700-BF-160	12m embedment length (depth of pile)	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	A538 Wilmslow Road offline retaining wall	GB41202G991700-RT-161	Offline retaining wall	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	Manchester Airport High Speed Station cutting retaining wall south	GB41202G991700-CR-162	86m long Up to a maximum depth of 15.0m	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting	Manchester Airport High Speed Station cutting	GB41202G991700-C-163	255m long Up to a maximum height of 12.6m	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cutting with retaining structure	Manchester Airport High Speed Station cutting retaining wall north	GB41202G991700-CR-164	1.763km long Up to a maximum height of 12.9m	CT-05-357a CT-05-357b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	A538 Hale Road overbridge (south)	GB41202G991700-OF-165	Unable to determine piling configuration.	CT-05-356

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	A538 Hale Road overbridge (north)	GB41202G991700-OF-166	Unable to determine piling configuration.	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Hasty Lane NMU underpass extension	GB41202G991700-OF-167	Extension of existing NMU underpass.	CT-05-356
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Station/Depot	Manchester Airport High Speed Station	GB41202G991700-ST-168	Within shallow retained cutting.	CT-05-357a CT-05-357b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Davenport Green Wood offline reinforced soil retaining wall	GB41202G991700-RT-169	Reinforced earth so no piling. 1-2mbgl embedment (depth of wall).	CT-05-357a CT-05-357b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Raised Metrolink overbridge	GB41202G991700-OF-170	Current design preference for single span overbridge supported on piers, not on abutments.	CT-05-357a CT-05-357b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Overbridge Foundations	Thorley Lane overbridge	GB41202G991700-OF-171	Abutments not required as the bridge is sitting on retaining walls.	CT-05-357a CT-05-357b
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Tunnel Portal	Manchester Tunnel South porous portal	GB41202G991700-TP-172	50m long Constructed to a maximum depth of 15.0m	CT-05-357a CT-05-357b

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bored Tunnel	Manchester Tunnel	GB41202G991700-BT-173	12.8km long with 7.55 internal diameter Maximum 45.0mbgl	CT-05-357a CT-05-357b CT-05-358 CT-05-359 CT-05-360 CT-05-361 CT-05-362 CT-05-363 CT-05-364
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Retaining Wall	Altrincham Road vent shaft access road retaining wall	GB41202G991700-RT-174	Sheet piles with a 2m retained height, 6m embedment (piling) depth	CT-05-359
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Vent shaft	Altrincham Road vent shaft	GB41202G991699-VT-175	24.0m internal diameter 48.6mbgl	CT-05-359
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Cutting	Millington cutting	GB41201G101700-C-01	1.462km long Up to a depth of 11.4mbgl	CT-05-351 CT-05-352
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Overbridge Foundations	Millington Lane overbridge	GB41201G101700-OF-02	Pile length up to 20m long	CT-05-351 CT-05-352
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone	Cutting	Agden cutting	GB41201G101700-C-03	611m long Average depth of 20.1mbgl	CT-05-322a

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Aquifers (GB41201G101700)					
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Bridge Foundations	Agden Brook Farm accommodation underbridge	GB41201G101700-BF-04	No piles required for footbridge (box culvert).	CT-05-322a CT-05-322b
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Embankment	Lymm South embankment	GB41201G101700-EM-05	450m long Up to 8.3m above ground level	CT-05-322a CT-05-322b
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Viaduct Foundations	A56 Lymm Road viaduct	GB41201G101700-VF-06	49m long Pile length up to 38m long	CT-05-322a
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Embankment	Lymm North embankment	GB41201G101700-EM-07	330m long Up to 11.0m above ground level	CT-05-322a
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Embankment with subsurface reinforcement	Glazebrook embankment north	GB41201G101700-EMR-08	793m long Up to 10.0m above ground level Soil stabilisation, reinforced base and foundations required due to being situated on peat.	CT-05-326b

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Viaduct Foundations	M62 West viaduct	GB41201G101700-VF-09	829m long Pile length up to 11m long	CT-05-326a CT-05-326b Ct-05-327
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Embankment with subsurface reinforcement	Culcheth South embankment	GB41201G101700-EMR-10	2.138km long piled embankment Up to a maximum height of 8.4m	CT-05-326b CT-05-327 CT-05-328
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Bridge Foundations	Risley East accommodation underbridge	GB41201G101700-BF-11	Piling up to 10m depth	CT-05-327
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Bridge Foundations	Croft Footpath 13/1 accommodation underbridge	GB41201G101700-BF-12	Piling up to 10m depth	CT-05-327
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Cutting	Culcheth cutting	GB41201G101700-C-13	1.930km long Up to a maximum depth of 3.6mbgl	CT-05-328 CT-05-329
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Highways Drainage discharge	A574 Warrington Road and Wigshaw Lane Highways discharges	GB41201G101700-HD-13a	3 highways drainage discharges into Culcheth Linear Drain 1	CT-05-328

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Overbridge Foundations	A574 Warrington Road overbridge	GB41201G101700-OF-14	Pile length up to 20m long	CT-05-328
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Retaining Wall	Wigshaw Lane retaining wall	GB41201G101700-RT-15	60m long reinforced soil retaining wall Up to a maximum depth of 1.5mbgl	CT-05-329
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Overbridge Foundations	Wigshaw Lane overbridge	GB41201G101700-OF-16	Pile length up to 20m long	CT-05-329
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Embankment	Culcheth North embankment	GB41201G101700-EM-17	1.283km long Maximum height of 3.7m above ground level	CT-05-329 CT-05-330
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Overbridge Foundations	Croft Footpath 8a/2 and 108/1 overbridge	GB41201G101700-OF-18	Pile length up to 15m long	CT-05-329
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Viaduct Foundations	Culcheth North (Railway) viaduct	GB41201G101700-VF-19	51m long Pile length up to 19m long	CT-05-330

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Cutting	Lowton cutting	GB41201G101700-C-20	1.826km long Up to a maximum depth of 10.1mbgl	CT-05-330 CT-05-331
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Highways Drainage discharge	B5207 Wilton Lane highways discharge	GB41201G101700-HD-21a	B5207 Wilton Lane highways drainage discharge to ground	CT-05-330
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Overbridge Foundations	B5207 Wilton Lane overbridge	GB41201G101700-OF-21	Pile length up to 20m long	CT-05-330
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Overbridge Foundations	A580 East Lancashire Road overbridge	GB41201G101700-OF-22	Tangent piled wall	CT-05-330
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Overbridge Foundations	Carr Brook aqueduct	GB41201G101700-OF-23	Pile length up to 19m long	CT-05-330
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Overbridge Foundations	A572 Newton Road overbridge	GB41201G101700-OF-24	Tangent piled wall	CT-05-331

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Embankment	Lowton South embankment	GB41201G101700-EM-25	657m long Maximum height of 6.1m	CT-05-331
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Viaduct Foundations	Slag Lane viaduct	GB41201G101700-VF-26	44m long Pile length up to 23m long	CT-05-331
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Embankment	Lowton North embankment	GB41201G101700-EM-27	2.789km long Up to 7.1m above ground level	CT-05-332 CT-05-333
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Bridge Foundations	Golborne Footpath 33/10 accommodation underbridge	GB41201G101700-BF-28	No piles required for footbridge (box culvert).	CT-05-331
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Viaduct Foundations	A573 Wigan Road viaduct	GB41201G101700-VF-29	68m long Pile length up to 38m long	CT-05-333
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Overbridge Foundations	Hey Brook offline overbridge	GB41201G101700-OF-30	Pile length up to 20m long	CT-05-333

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Retaining Wall	Aye Bridge embankment retaining wall (south)	GB41201G101700-RT-31	152m long Up to a height of 9.7m	CT-05-333
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Retaining Wall	Aye Bridge embankment retaining wall (north)	GB41201G101700-RT-32	125m long Up to a height of 9.7m	CT-05-333
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Retaining Wall	WCML box structure	GB41201G101700-RT-33	142m underground box structure Up to 11.3m high	CT-05-333
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Retaining Wall	Abram embankment retaining wall (south)	GB41201G101700-RT-34	88m long Up to a maximum height of 7.1m	CT-05-333
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Retaining Wall	Abram embankment retaining wall (north)	GB41201G101700-RT-35	252m long Up to a maximum height of 9.5m	CT-05-333
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Bridge Foundations	Ashton-in-Makerfield Footpath 22/20 accommodation underbridge	GB41201G101700-BF-36	No piles required for footbridge (box culvert).	CT-05-333

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Cutting with retaining structure	Abram cutting retaining wall	GB41201G101700-CR-37	247m long Up to a maximum height of 1.3m	CT-05-333
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Cutting	Abram cutting	GB41201G101700-C-38	155m long Up to a maximum depth of 0.6m	CT-05-333
Sankey and Glaze Carboniferous Aquifers (GB41202G100100)	Cutting	Abram cutting	GB41202G100100-C-01	155m long Up to a maximum depth of 0.6m	CT-05-333
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Bored Tunnel	Manchester Tunnel	GB1201G101100-BT-01	12.8km long with 7.55 internal diameter Maximum 45.0mbgl	CT-05-357a CT-05-357b CT-05-358 CT-05-359 CT-05-360 CT-05-361 CT-05-362 CT-05-363 CT-05-364
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Vent shaft	Palatine Road vent shaft	GB1201G101100-VT-02	41.5m by 51.0m internal diameter 36.6mbgl	CT-05-360
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Vent shaft	Wilmslow Road vent shaft	GB1201G101100-VT-03	24.0m internal diameter 48.4mbgl	CT-05-361

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Vent shaft	Birchfields Road vent shaft	GB1201G101100-VT-04	24.0m internal diameter 47.8mbgl	CT-05-362 CT-05-363
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Tunnel Portal	Manchester Tunnel North porous portal	GB1201G101100-TP-05	50m long Constructed to a maximum depth of 19.0m	CT-05-364 CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Cutting with retaining structure	Ardwick South cutting retaining wall	GB1201G101100-CR-06	167m long Up to 10.0m in height	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Retaining Wall	Ardwick box structure	GB1201G101100-RT-07	108m long Up to 8.0m in height	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Cutting with retaining structure	Ardwick North cutting retaining wall	GB1201G101100-CR-08	92m long Up to 6.0m in height	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Embankment	Manchester to Leeds embankment	GB1201G101100-EM-09	186m long Up to 4.8m above ground level	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Cutting with retaining structure	Ardwick North cutting retaining wall	GB1201G101100-CR-10	148m long Up to 4.0m in height	CT-05-365a CT-05-365b

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Retaining Wall	Ardwick embankment retaining wall	GB1201G101100-RT-11	46m long 1.1m high retaining wall	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Embankment	Ardwick embankment	GB1201G101100-EM-12	58m long Up to 4.4m above ground level	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	viaduct Foundations	Piccadilly Approach viaduct	GB1201G101100-VF-13	420m long Pile length up to 12m long	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Viaduct Foundations	Piccadilly Station viaduct	GB1201G101100-VF-14	455m long Pile length up to 13m long	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Station/Depot	Manchester Piccadilly High Speed station	GB1201G101100-ST-15	450m long by 60m wide with a subterranean Metrolink Station and allowance for future NPR platforms.	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Cutting with retaining structure	Ashton Line connection	GB1201G101100-CR-16	Cut-and-cover, raising to retained cutting before re-joining the existing track at ground level Pile length currently up to 20m long	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic	Retaining Wall	A635 Mancunian Way southbound retaining wall	GB1201G101100-RT-17	Assumed cantilever pile wall (not yet geotechnically designed).	CT-05-365a CT-05-365b

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Sandstone Aquifers (GB41201G101100)					
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Overbridge Foundations	Piccadilly offline access ramp	GB1201G101100-OF-18	Offline overbridge	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Overbridge Foundations	B6469 Fairfield Street offline overbridge	GB1201G101100-OF-19	Offline overbridge	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Retaining Wall	St Andrews Street retaining wall	GB1201G101100-RT-20	Assumed cantilever pile wall (not yet geotechnically designed).	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Retaining Wall	Baird Street retaining wall	GB1201G101100-RT-21	Assumed cantilever pile wall (not yet geotechnically designed).	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Retaining Wall	Sparkle Street retaining wall	GB1201G101100-RT-22	Assumed cantilever pile wall (not yet geotechnically designed).	CT-05-365a CT-05-365b
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Retaining Wall	Store Street retaining wall	GB1201G101100-RT-23	Assumed cantilever pile wall (not yet geotechnically designed).	CT-05-365a CT-05-365b
Douglas, Darwen and Calder Carboniferous	Permanent features of Proposed Scheme do not directly cross this WFD groundwater body.				

WFD groundwater water body (ID)	Scheme component type	Scheme component name	Unique ID	Scheme component details	CT-05 or CT-06 Map Series no.
Aquifers (GB41202G100300)					

Annex B: Preliminary assessment (scoping)

1 Likely effects on current status

1.1 Surface water

The results of the preliminary assessment (scoping) of the likely effects of the relevant scheme components on the WFD status elements of surface water bodies are summarised in Table B 1.

The assessment has identified the relevant impact types of each scheme component (following consideration of mitigation included within the design) and which WFD status elements are likely to be affected. Where impacts types and effects on WFD status elements have been scoped in, these have been carried forward for detailed impact assessment (see Annex C in Part 2 of this report).

Table B 1: Summary of preliminary assessment (scoping) of the likely effects of the Proposed Scheme on the WFD status elements of surface water bodies

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Wistaston Brook (GB112068055280)	Tributary of Swill Brook 1	Bored Tunnel	Crewe Tunnel	GB112068055280-T-01-BT-01	✗	✗	✗	✗	✗
Wistaston Brook (GB112068055280)	Tributary of Gresty Brook 1	Bored Tunnel	Crewe Tunnel	GB112068055280-T-02-BT-01	✗	✗	✗	✗	✗
Wistaston Brook (GB112068055280)	Gresty Brook	Bored Tunnel	Crewe Tunnel	GB112068055280-MW-01-BT-01	✗	✗	✗	✗	✗
Wistaston Brook (GB112068055280)	Basford Brook	Highway drainage outfall	David Whitby Way	GB112068055280-MW-02-HD-01	✓	✓	✓	✗	✗
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	Bored Tunnel	Crewe Tunnel	GB112068055310-MW-01-BT-01	✗	✗	✗	✗	✗
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Extension of existing culvert	Park Hall Culvert	GB112068060460-T-01-CVX-01	✓	✓	✗	✓	✗
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Access road culvert	N/A	GB112068060460-T-01-CVA-01	✓	✓	✗	✓	✗
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Realignment	River Weaver Tributary Realignment	GB112068060460-T-01-RE-01	✓	✓	✗	✓	✗
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Highway realignment culvert	A530 Nantwich Road Offline East Culvert	GB112068060460-T-01-CVH-01	✓	✓	✗	✓	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Highway realignment culvert	A530 Nantwich Road Offline West Culvert	GB112068060460-T-01-CVH-02	✔	✔	✗	✔	✗
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	Highway drainage outfall	A530 Nantwich Road Realignment	GB112068060460-T-01-HD-01	✔	✔	✔	✗	✗
Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133)	Shropshire Union Canal	Clear Span Bridge	Shropshire Union Canal Offline Overbridge	GB71210133-MW-01-OB-01	✔	✔	✗	✗	✗
Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133)	Shropshire Union Canal	Viaduct	Shropshire Union Canal Viaduct No. 2	GB71210133-MW-01-VD-01	✔	✔	✗	✗	✗
Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133)	Shropshire Union Canal	Viaduct	Shropshire Union Canal Viaduct No. 1	GB71210133-MW-01-VD-02	✔	✔	✗	✗	✗
Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133)	Shropshire Union Canal	Viaduct	Shropshire Union Canal Viaduct No. 3	GB71210133-MW-01-VD-03	✔	✔	✗	✗	✗
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	Viaduct	River Dane Viaduct	GB112068060470-MW-01-VD-01	✔	✔	✗	✔	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)	Trent and Mersey Canal	Viaduct	River Dane Viaduct	GB71210247-MW-01-VD-01	✔	✔	✗	✗	✗
Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)	Trent and Mersey Canal	Viaduct	Puddinglake Brook Viaduct	GB71210247-MW-01-VD-02	✔	✔	✗	✗	✗
Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)	Trent and Mersey Canal	Viaduct	Trent and Mersey Canal Viaduct	GB71210247-MW-01-VD-03	✔	✔	✗	✗	✗
Puddinglake Brook (GB112068060220)	Puddinglake Brook	Viaduct	Puddinglake Brook Viaduct	GB112068060220-MW-01-VD-01	✔	✔	✗	✗	✗
Puddinglake Brook (GB112068060220)	Puddinglake Brook	Clear span bridge	Whatcroft Hall Lane temporary road realignment	GB112068060220-MW-01-OB-01	✔	✔	✗	✗	✗
Puddinglake Brook (GB112068060220)	Puddinglake Brook	Borrow pit	MA02 Granular Borrow Pit D	GB112068060220-MW-01-BP-01	✔	✔	✗	✔	✗
Puddinglake Brook (GB112068060220)	Puddinglake Brook	Highway drainage outfall	A530 King Street	GB112068060220-MW-01-HD-01	✔	✔	✔	✗	✗
Wade Brook (GB112068060370)	Gad Brook	Viaduct	Gad Brook Viaduct	GB112068060370-T-01-VD-01	✔	✔	✗	✗	✗
Wade Brook (GB112068060370)	Gad Brook	Highway drainage outfall	A530 King Street	GB112068060370-T-01-HD-01	✔	✔	✔	✗	✗
Wade Brook (GB112068060370)	Tributary of Gad Brook 3	Viaduct	Gad Brook Viaduct	GB112068060370-T-02-VD-02	✔	✔	✗	✗	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Wade Brook (GB112068060370)	Tributary of Gad Brook 3	Highway drainage outfall	Penny's Lane Realignment	GB112068060370-T-02-HD-02	✓	✓	✓	✗	✗
Wade Brook (GB112068060370)	Wade Brook	Viaduct	Wade Brook Viaduct	GB112068060370-MW-04-VD-03	✓	✓	✗	✗	✗
Wade Brook (GB112068060370)	Wade Brook	Highway drainage outfall	A556 Chester Road Realignment	GB112068060370-MW-04-HD-01	✓	✓	✓	✗	✗
Wade Brook (GB112068060370)	Wade Brook	Clear Span Bridge	Wade Brook Offline Overbridge	GB112068060370-MW-04-OB-01	✓	✓	✗	✓	✗
Wade Brook (GB112068060370)	Wade Brook	Extension of existing culvert	N/A	GB112068060370-MW-04-CVX-01	✓	✓	✗	✓	✗
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye	Viaduct	Smoker Brook Viaduct	GB112068060390-T-01-VD-01	✓	✓	✗	✓	✗
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye	Realignment	Tributary of Peover Eye - watercourse realignment	GB112068060390-T-01-RE-01	✓	✓	✗	✓	✗
Peover Eye (Wincham Brook) (GB112068060390)	Peover Eye	Viaduct	Smoker Brook Viaduct	GB112068060390-MW-02-VD-02	✓	✓	✗	✓	✗
Peover Eye (Wincham Brook) (GB112068060390)	Peover Eye	Realignment	Peover Eye - watercourse realignment	GB112068060390-MW-02-RE-01	✓	✓	✗	✓	✗
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Smoker Brook	Viaduct	Smoker Brook Viaduct	GB112068060410-MW-01-VD-01	✓	✓	✗	✓	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Waterless Brook/Arley Brook	Viaduct	Arley Brook Viaduct	GB112068060410-MW-03-VD-02	✔	✔	✗	✗	✗
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tabley Brook	Clear span bridge	Site access bridge over Tabley Brook	GB112068060410-MW-04-OB-01	✔	✔	✗	✗	✗
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 2	Culvert	Bongs Wood Culvert	GB112068060410-T-04-CV-01	✔	✔	✗	✔	✗
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 2	Realignment	N/A	GB112068060410-T-04-RE-01	✔	✔	✗	✔	✗
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 3	Extension of existing culvert	N/A	GB112068060410-T-05-CVX-01	✔	✔	✗	✔	✗
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 9	Tunnel Portal	Hoo Green Box/Tunnel	GB112068060410-T-10-TP-01	✔	✔	✗	✔	✗
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 9	Cutting with retaining structure	Hoo Green south cutting retaining wall	GB112068060410-T-10-CU-01	✔	✔	✗	✔	✗
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Tributary of Tabley Brook 9	Cutting with retaining structure	Hoo Green North cutting	GB112068060410-T-10-CU-02	✔	✔	✗	✔	✗
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough	Underbridge	Millington Clough Underbridge	GB112069061382-MW-05-UB-01	✔	✔	✗	✗	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough	Underbridge	Millington Clough Offline Underbridge	GB112069061382-MW-05-UB-02	✔	✔	✗	✗	✗
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Agden Brook	Viaduct	Agden Brook Viaduct	GB112069061382-MW-06-VD-01	✔	✔	✗	✗	✗
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Agden Brook	Cutting	Millington Cutting	GB112069061382-MW-06-CU-01	✔	✔	✗	✔	✗
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Tributary of River Bollin 10	Cutting	Millington Cutting	GB112069061382-T-07-CU-01	✔	✔	✗	✔	✗
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Tributary of River Bollin 11	Cutting	Millington Cutting	GB112069061382-T-07-CU-01	✔	✔	✗	✔	✗
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Tributary of River Bollin 11	Cutting with retaining structure	Rostherne cutting retaining wall west	GB112069061382-T-08-CU-02	✔	✔	✗	✔	✗
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	River Bollin	Viaduct	River Bollin West Viaduct	GB112069061382-MW-09-VD-02	✔	✔	✗	✗	✗
Bridgewater Canal (GB71210001)	Bridgewater Canal	Viaduct	Bridgewater Canal Viaduct	GB71210001-MW-01-VD-01	✔	✔	✗	✗	✗
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	Viaduct with footings in water body	Manchester Ship Canal Viaduct	GB112069061011-MW-03-VD-02	✔	✔	✗	✔	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Sinderland Brook (GB112069060980)	Red Brook	Viaduct	Manchester Ship Canal Viaduct	GB112069060980-MW-01-VD-01	✔	✔	✗	✗	✗
Glaze (GB112069061420)	Holcroft Lane Brook	Realignment	N/A	GB112069061420-T-09-RE-03	✔	✔	✗	✔	✗
Glaze (GB112069061420)	Holcroft Lane Brook	Embankment with sub-surface reinforcement	Culcheth South embankment	GB112069061420-T-09-EM-02	✔	✔	✗	✔	✗
Glaze (GB112069061420)	Tributary of Glaze Brook 4	Cutting	Culcheth cutting	GB112069061420-T-10-CU-01	✔	✔	✗	✔	✗
Glaze (GB112069061420)	Jibcroft Brook	Cutting	Culcheth cutting	GB112069061420-T-12-CU-03	✔	✔	✗	✔	✗
Glaze (GB112069061420)	Carr Brook	Realignment	N/A	GB112069061420-MW-14-RE-04	✔	✔	✗	✔	✗
Glaze (GB112069061420)	Carr Brook	Access road culvert	Newton Road Access Offline Culvert	GB112069061420-MW-14-CVA-04	✔	✔	✗	✔	✗
Glaze (GB112069061420)	Carr Brook	Access road culvert	Golborne Pumping Station Access Culvert	GB112069061420-MW-14-CVA-05	✔	✔	✗	✔	✗
Glaze (GB112069061420)	Carr Brook	Cutting	Lowton Cutting	GB112069061420-MW-14-CU-05	✔	✔	✗	✔	✗
Glaze (GB112069061420)	Carr Brook	Aqueduct	Carr Brook Aqueduct	GB112069061420-MW-14-AQ-01	✔	✔	✗	✔	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4	Realignment	N/A	GB112069064520-T-06-RE-03	✔	✔	✗	✔	✗
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4	Culvert	Golborne Footpath 31/10 and Critchley Culvert	GB112069064520-T-06-CV-03	✔	✔	✗	✔	✗
Hey/Borsdane Brook (GB112069064520)	Windy Bank Brook	Realignment	N/A	GB112069064520-T-07-RE-04	✔	✔	✗	✔	✗
Hey/Borsdane Brook (GB112069064520)	Windy Bank Brook	Extension of existing culvert	N/A	GB112069064520-T-07-CVX-02	✔	✔	✗	✔	✗
Hey/Borsdane Brook (GB112069064520)	Windy Bank Brook	Culvert	Footpath Golborne 27/10 and Windy Bank culvert	GB112069064520-T-07-CV-04	✔	✔	✗	✔	✗
Hey/Borsdane Brook (GB112069064520)	Nan Holes Brook	Culvert	Nan Holes Brook Culvert	GB112069064520-T-11-CV-05	✔	✔	✗	✔	✗
Hey/Borsdane Brook (GB112069064520)	Nan Holes Brook	Realignment	N/A	GB112069064520-T-11-RE-05	✔	✔	✗	✔	✗
Hey/Borsdane Brook (GB112069064520)	Nan Holes Brook	Highway realignment culvert	Nan Holes Brook Offline Culvert	GB112069064520-T-11-CVH-02	✔	✔	✗	✔	✗
Hey/Borsdane Brook (GB112069064520)	Hey Brook	Clear Span Bridge	Hey Brook Offline Overbridge	GB112069064520-MW-01-OB-01	✔	✔	✗	✔	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Hey/Borsdane Brook (GB112069064520)	Coffin Lane Brook	Extension of existing culvert	Coffin Lane Brook Culvert	GB112069064520-T-15-CVX-03	✓	✓	✗	✓	✗
Hey/Borsdane Brook (GB112069064520)	Coffin Lane Brook	Realignment	N/A	GB112069064520-T-15-RE-06	✓	✓	✗	✓	✗
Hey/Borsdane Brook (GB112069064520)	Coffin Lane Brook	Cutting with retaining structure	Abram Cutting	GB112069064520-T-15-CU-03	✓	✓	✗	✓	✗
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook	Viaduct	Blackburn's Brook North Viaduct	GB112069061370-MW-01-VD-01	✓	✓	✗	✗	✗
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Birkin Brook	Viaduct	Blackburn's Brook North Viaduct	GB112069061370-MW-02-VD-02	✓	✓	✗	✗	✗
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Tributary of Birkin Brook 1 (Middle House Brook)	Realignment	N/A	GB112069061370-T-04-RE-03	✓	✓	✗	✓	✗
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Tributary of Birkin Brook 1 (Middle House Brook)	Clear Span Bridge	Mobberley Road Offline Overbridge	GB112069061370-T-04-OB-02	✓	✓	✗	✗	✗
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Tributary of Birkin Brook 1 (Middle House Brook)	Extension of existing culvert	N/A	GB112069061370-T-04-CVX-03	✓	✓	✗	✓	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Tributary of Birkin Brook 1 (Middle House Brook)	Highway realignment culvert	Ashley Road Offline East Culvert	GB112069061370-T-04-CVH-04	✔	✔	✗	✔	✗
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	Extension of existing culvert	N/A	GB112069061350-T-01-CVX-01	✔	✔	✗	✔	✗
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin	Viaduct	River Bollin East Viaduct	GB112069061381-MW-01-VD-01	✔	✔	✗	✗	✗
Bollin (River Dean to Ashley Mill) (GB112069061381)	Tributary of River Bollin 6	Cutting	Thorns Green Cutting	GB112069061381-T-06-CU-01	✔	✔	✗	✔	✗
Bollin (River Dean to Ashley Mill) (GB112069061381)	Tributary of River Bollin 3	Cut and cover tunnel	M56 East Tunnel	GB112069061381-T-02-BT-01	✔	✔	✗	✔	✗
Bollin (River Dean to Ashley Mill) (GB112069061381)	Tributary of River Bollin 2	Cut and cover tunnel	M56 East Tunnel	GB112069061381-T-03-BT-01	✔	✔	✗	✔	✗
Timperley Brook (GB112069061260)	Timperley Brook	Inverted siphon	Timperley Brook inverted siphon	GB112069061260-MW-01-IS-01	✔	✔	✗	✔	✗
Timperley Brook (GB112069061260)	Timperley Brook	Realignment	N/A	GB112069061260-MW-01-RE-01	✔	✔	✗	✔	✗
Timperley Brook (GB112069061260)	Timperley Brook	Cutting with retaining structure	Manchester Airport High Speed Station cutting	GB112069061260-MW-01-CU-01	✔	✔	✗	✔	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
			retaining wall north						
Timperley Brook (GB112069061260)	Timperley Brook	Highway drainage outfall	M56 East and West Link Realignment/ Access to Manchester Airport High Speed Station/ Runger Lane Realignment	GB112069061260-MW-01-HD-01	✔	✔	✔	✗	✗
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook	Bored Tunnel	Manchester Tunnel	GB112069061270-T-02-BT-01	✗	✗	✗	✗	✗
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Baguley Brook	Bored Tunnel	Manchester Tunnel	GB112069061270-MW-03-BT-01	✔	✔	✗	✔	✗
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey	Bored Tunnel	Manchester Tunnel	GB112069061030-MW-01-BT-01	✗	✗	✗	✗	✗
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	Tributary of River Mersey 2	Bored Tunnel	Manchester Tunnel	GB112069061030-T-02-BT-02	✔	✔	✔	✔	✗
Fallowfield Brook (GB112069061410)	Cringle Brook	Bored Tunnel	Manchester Tunnel	GB112069061410-MW-01-BT-01	✗	✗	✗	✗	✗
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook	Bored Tunnel	Manchester Tunnel	GB112069061060-MW-01-BT-01	✗	✗	✗	✗	✗

WFD water body (ID)	Watercourse	Scheme component type	Scheme component name	Unique ID	Biological effects	Physico-chemical effects	Specific pollutants effects	Hydromor-phological effects	Chemical effects
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Gore Brook	Bored Tunnel	Manchester Tunnel	GB112069061060-MW-03-BT-02	✗	✗	✗	✗	✗
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	Viaduct	Piccadilly Approach Viaduct	GB112069061152-MW-01-VD-01	✓	✓	✗	✗	✗
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	Clear Span Bridge	Fairfield Street Offline Overbridge	GB112069061152-MW-01-OB-01	✓	✓	✗	✗	✗
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	Daylighting of existing culvert	N/A	GB112069061152-MW-01-DY-01	✓	✓	✗	✓	✗
Rostherne Mere (GB31232650)	Rostherne Mere	Cutting	Millington Cutting	GB31232650-LAKE-01-CU-01	✓	✓	✓	✓	✗
Rostherne Mere (GB31232650)	Rostherne Mere	Cutting with retaining structure	Rostherne Cutting	GB31232650-LAKE-01-CU-01	✓	✓	✓	✓	✗
Rostherne Mere (GB31232650)	Rostherne Mere	Cutting with retaining structure	Hoo Green North Cutting	GB31232650-LAKE-01-CU-01	✓	✓	✓	✓	✗

1.2 Groundwater

The results of the preliminary assessment (scoping) of the likely effects of relevant scheme components on the WFD status elements of groundwater bodies are summarised in Table B 2.

The assessment has identified the relevant impact types of each scheme component (following consideration of mitigation included within the design) and which WFD status elements are likely to be affected. Where impacts types and effects on WFD status elements have been scoped in, these have been carried forward for detailed impact assessment (see Annex C in Part 2 of this report).

Table B 2: Summary of preliminary assessment (scoping) of the likely effects of the Proposed Scheme on the WFD status elements of groundwater bodies

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Crewe Tunnel South porous portal	GB41202G991700-TP-01	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Crewe Tunnel	GB41202G991700-BT-02	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cowley Way vent shaft	GB41202G991700-VT-03	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Middlewich Street vent shaft	GB41202G991700-VT-04	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Crewe Tunnel North porous portal	GB41202G991700-TP-05	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and	Crewe North portal (retained cutting)	GB41202G991700-CR-06	✔	✔	✔	✔

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Gravel Aquifers (GB41202G991700)						
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Parkers Road overbridge	GB41202G991700-OF-07	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Coppenhall Moss cutting	GB41202G991700-C-08	✓	✓	✓	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Footpath Crewe 29/1 overbridge	GB41202G991700-OF-09	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Coppenhall Moss South embankment	GB41202G991700-EM-10	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound embankment No.1	GB41202G991700-EM-11	✗	✗	✗	✗

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound retaining wall	GB41202G991700-RT-12	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound WCML embankment	GB41202G991700-EM-13	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound approach viaduct No.1	GB41202G991700-VF-14	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound box structure No.1	GB41202G991700-RT-15	✓	✓	✓	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound connecting viaduct	GB41202G991700-VF-16	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss northbound WCML embankment	GB41202G991700-EM-17	✗	✗	✗	✗

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound box structure No.2	GB41202G991700-RT-18	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound approach viaduct No.2	GB41202G991700-VF-19	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound embankment No.2	GB41202G991700-EM-20	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss northbound retaining wall No.1	GB41202G991700-RT-21	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss northbound approach viaduct No.1	GB41202G991700-VF-22	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss northbound WCML cutting	GB41202G991700-C-23	✗	✗	✗	✗

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound RSD embankment	GB41202G991700-EM-24	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss southbound RSD cutting	GB41202G991700-C-25	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss northbound box structure	GB41202G991700-RT-26	✓	✓	✓	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss northbound approach viaduct No.2	GB41202G991700-VF-27	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warmingham Moss northbound retaining wall No.2	GB41202G991700-RT-28	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Coppenhall Moss North embankment	GB41202G991700-EM-29	✗	✗	✗	✗

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Footpath Minshull Vernon 8/1 accommodation overbridge	GB41202G991700-OF-30	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Crewe North rolling stock depot (RSD)	GB41202G991700-ST-31	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Walley's Green embankment	GB41202G991700-EM-32	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A530 Nantwich Road overbridge	GB41202G991700-OF-33	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cohesive Borrow Pit MA02-A	GB41202G991700-BP-34	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cohesive Borrow Pit MA02-B	GB41202G991700-BP-35	✔	✔	✔	✔

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green Lane overbridge	GB41202G991700-OF-36	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Shropshire Union Canal offline overbridge	GB41202G991700-OF-37	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green South embankment No.3	GB41202G991700-EM-38	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green Lane Highways Drainage discharge 1	GB41202G991700-HD-38a	✗	✗	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green Lane Highways Drainage discharge 2	GB41202G991700-HD-38b	✗	✗	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green South embankment No.1	GB41202G991700-EM-39	✗	✗	✗	✗

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green South embankment No.2	GB41202G991700-EM-40	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Shropshire Union Canal viaduct No.3	GB41202G991700-VF-41	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Shropshire Union Canal viaduct No.1	GB41202G991700-VF-42	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Shropshire Union Canal viaduct No.2	GB41202G991700-VF-43	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green North embankment No.3	GB41202G991700-EM-44	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green North embankment No.1	GB41202G991700-EM-45	✗	✗	✗	✗

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green North embankment No.2	GB41202G991700-EM-46	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green North cutting	GB41202G991700-C-47	✓	✓	✓	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Clive Green North embankment retaining wall	GB41202G991700-RT-48	✓	✓	✓	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Middlewich box structure	GB41202G991700-RT-49	✓	✓	✓	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Cohesive Borrow Pit MA02-C	GB41202G991700-BP-50	✓	✓	✓	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Stanthorne South embankment retaining wall	GB41202G991700-RT-51	✓	✓	✓	✓

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Stanthorne South embankment No.1	GB41202G991700-EM-52	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Stanthorne South embankment No.2	GB41202G991700-EM-53	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A54 Middlewich Road viaduct	GB41202G991700-VF-54	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Stanthorne North embankment	GB41202G991700-EM-55	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	River Dane viaduct	GB41202G991700-VF-56	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	MA02 Granular Borrow Pit D	GB41202G991700-BP-57	✓	✓	✓	✓

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Dane Valley embankment	GB41202G991700-EM-58	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Puddinglake Brook viaduct	GB41202G991700-VF-59	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Whatcroft embankment south	GB41202G991700-EM-60	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Trent and Mersey Canal viaduct	GB41202G991700-VF-61	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Whatcroft embankment north	GB41202G991700-EM-62	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Gad Brook viaduct	GB41202G991700-VF-63	✗	✓	✗	✓

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Rudheath embankment	GB41202G991700-EM-64	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A556 Shurlach Road drainage	GB41202G991700-HD-64a	✗	✗	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Wade Brook offline overbridge	GB41202G991700-OF-65	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Wade Brook viaduct	GB41202G991700-VF-66	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Lostock Gralam South embankment	GB41202G991700-EM-67	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Lostock Gralam viaduct	GB41202G991700-VF-68	✗	✓	✗	✓

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Lostock Gralam North embankment	GB41202G991700-EM-69	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Smoker Brook viaduct	GB41202G991700-VF-70	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Pickmere embankment	GB41202G991700-EM-71	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Tabley Inferior Footpath 1/1 accommodation underbridge	GB41202G991700-BF-72	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Pickmere Footpath 9/1 underbridge	GB41202G991700-BF-73	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Arley Brook viaduct	GB41202G991700-VF-74	✗	✔	✗	✔

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Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Heyrose embankment	GB41202G991700-EM-75	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Restricted Byway Tabley Superior 4/1 accommodation underbridge	GB41202G991700-BF-76	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	M6 Mere viaduct	GB41202G991700-VF-77	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bridleway Mere 1/1 accommodation underbridge	GB41202G991700-BF-78	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green South embankment No.2	GB41202G991700-EM-79	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and	Hoo Green South embankment No.1	GB41202G991700-EM-80	✗	✗	✗	✗

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Gravel Aquifers (GB41202G991700)						
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green South embankment No.3	GB41202G991700-EM-81	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green South embankment No.2 retaining wall	GB41202G991700-RT-82	✓	✓	✓	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green viaduct	GB41202G991700-RT-83	✓	✓	✓	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green North embankment retaining wall No.2	GB41202G991700-RT-84	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green North embankment retaining wall No.1	GB41202G991700-RT-85	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and	Hoo Green North embankment No.1	GB41202G991700-EM-86	✗	✗	✗	✗

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Gravel Aquifers (GB41202G991700)						
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green North cutting	GB41202G991700-C-87	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green West cutting	GB41202G991700-C-88	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	High Legh cutting retaining wall	GB41202G991700-CR-89	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	High Legh cutting	GB41202G991700-C-90	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A50 overbridge	GB41202G991700-OF-91	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and	Millington Clough offline underbridge	GB41202G991700-BF-92	✗	✗	✗	✗

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Gravel Aquifers (GB41202G991700)						
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Peacock Lane overbridge	GB41202G991700-OF-93	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Millington Clough aqueduct	GB41202G991700-OF-94	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Manchester to Leeds Junction overbridge	GB41202G991700-OF-95	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	M56 West overbridge	GB41202G991700-RT-96	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Agden cutting	GB41202G991700-C-97	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and	Lymm South embankment	GB41202G991700-EM-98	✗	✗	✗	✗

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Gravel Aquifers (GB41202G991700)						
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A56 Lymm Road viaduct	GB41202G991700-VF-99	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Lymm North embankment	GB41202G991700-EM-100	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Bridgewater Canal viaduct	GB41202G991700-VF-101	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Heatley South embankment	GB41202G991700-EM-102	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Spring Lane underbridge	GB41202G991700-BF-103	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and	River Bollin West viaduct	GB41202G991700-VF-104	✗	✔	✗	✔

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Gravel Aquifers (GB41202G991700)						
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Heatley North embankment	GB41202G991700-EM-105	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Warburton cutting	GB41202G991700-C-106	✓	✓	✓	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A6144 Paddock Lane Highways discharge	GB41202G991700-HD-106a	✗	✗	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Footpath Warburton 3 accommodation overbridge	GB41202G991700-OF-107	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A6144 Paddock Lane overbridge	GB41202G991700-OF-108	✗	✓	✗	✓
Weaver and Dane Quaternary Sand and	Warburton embankment	GB41202G991700-EM-109	✗	✗	✗	✗

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Gravel Aquifers (GB41202G991700)						
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Manchester Ship Canal viaduct	GB41202G991700-VF-110	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Glazebrook embankment south	GB41202G991700-EM-111	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Glazebrook (Railway) viaduct	GB41202G991700-VF-112	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Glazebrook embankment north	GB41202G991700-EMR-113	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green South embankment No.2	GB41202G991700-EM-114	✗	✗	✗	✗

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green South cutting retaining wall	GB41202G991700-CR-115	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green South cutting retaining wall	GB41202G991700-CR-116	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green (box) tunnel	GB41202G991700-RT-117	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green North embankment No.2	GB41202G991700-EM-118	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green North cutting retaining wall	GB41202G991700-CR-119	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green North cutting retaining wall	GB41202G991700-CR-120	✔	✔	✔	✔

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hoo Green North cutting	GB41202G991700-C-121	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hulseheath South embankment	GB41202G991700-EM-122	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Peacock Lane viaduct	GB41202G991700-VF-123	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hulseheath North embankment	GB41202G991700-EM-124	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Millington Clough underbridge	GB41202G991700-BF-125	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Agden Brook viaduct	GB41202G991700-VF-126	✗	✔	✗	✔

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Millington cutting	GB41202G991700-C-127	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Manchester to Liverpool junction	GB41202G991700-C-128	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Millington Footpath 7/4 accommodation overbridge	GB41202G991700-OF-129	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A556 Chester Road overbridge	GB41202G991700-OF-130	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Rostherne cutting retaining wall west	GB41202G991700-CR-131	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Rostherne cutting	GB41202G991700-C-132	✔	✔	✔	✔

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Rostherne North cutting	GB41202G991700-C-133	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Yarwood Heath Farm accommodation overbridge	GB41202G991700-OF-134	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Rostherne West embankment	GB41202G991700-EM-135	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Rostherne cutting retaining wall east	GB41202G991700-CR-136	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Rostherne East box structure	GB41202G991700-RT-137	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Blackburn's Brook embankment	GB41202G991700-EM-138	✗	✗	✗	✗

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Blackburn's Brook North viaduct	GB41202G991700-VF-139	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Blackburn's Brook South viaduct provision	GB41202G991700-VF-140	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Birkin Brook embankment	GB41202G991700-EM-141	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Rostherne East embankment	GB41202G991700-EM-142	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Ashley embankment retaining wall	GB41202G991700-RT-143	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Ashley embankment	GB41202G991700-EM-144	✗	✗	✗	✗

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			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Ashley Infrastructure Maintenance Base - Rail (IMB-R)	GB41202G991700-ST-145	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Ashley railhead	GB41202G991700-ST-146	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Mid-Cheshire (railway) viaduct and Mobberley Road viaduct	GB41202G991700-VF-147	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Mobberley Road offline overbridge	GB41202G991700-OF-148	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Thorns Green embankment	GB41202G991700-EM-149	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Back Lane accommodation overbridge	GB41202G991700-OF-150	✗	✔	✗	✔

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Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Thorns Green cutting	GB41202G991700-C-151	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Castle Mill Lane overbridge	GB41202G991700-OF-152	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	River Bollin South embankment	GB41202G991700-EM-153	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	River Bollin East viaduct	GB41202G991700-VF-154	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	River Bollin North embankment	GB41202G991700-EM-155	✗	✗	✗	✗
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Ringway cutting	GB41202G991700-C-156	✔	✔	✔	✔

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Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Sunbank Lane overbridge	GB41202G991700-OF-157	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	M56 cutting retaining wall	GB41202G991700-CR-158	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	M56 East tunnel	GB41202G991700-CCTR-159	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	M56/A538 Wilmslow Road offline underbridge	GB41202G991700-BF-160	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A538 Wilmslow Road offline retaining wall	GB41202G991700-RT-161	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Manchester Airport High Speed Station cutting	GB41202G991700-CR-162	✔	✔	✔	✔

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	retaining wall south					
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Manchester Airport High Speed Station cutting	GB41202G991700-C-163	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Manchester Airport High Speed Station cutting retaining wall north	GB41202G991700-CR-164	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A538 Hale Road overbridge (north)	GB41202G991700-OF-165	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	A538 Hale Road overbridge (south)	GB41202G991700-OF-166	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Hasty Lane NMU underpass extension	GB41202G991700-OF-167	✗	✔	✗	✔

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Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Manchester Airport High Speed Station	GB41202G991700-ST-168	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Davenport Green Wood offline reinforced soil retaining wall	GB41202G991700-RT-169	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Raised Metrolink overbridge	GB41202G991700-OF-170	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Thorley Lane overbridge	GB41202G991700-OF-171	✗	✔	✗	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Manchester Tunnel South porous portal	GB41202G991700-TP-172	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Manchester Tunnel	GB41202G991700-BT-173	✔	✔	✔	✔

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Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Altrincham Road vent shaft access road retaining wall	GB41202G991700-RT-174	✔	✔	✔	✔
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB41202G991700)	Altrincham Road vent shaft	GB41202G991699-VT-175	✔	✔	✔	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Millington cutting	GB41201G101700-C-01	✔	✔	✔	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Millington Lane overbridge	GB41201G101700-OF-02	✗	✔	✗	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Agden cutting	GB41201G101700-C-03	✔	✔	✔	✔

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Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Agden Brook Farm accommodation underbridge	GB41201G101700-BF-04	✗	✗	✗	✗
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Lymm South embankment	GB41201G101700-EM-05	✗	✗	✗	✗
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	A56 Lymm Road viaduct	GB41201G101700-VF-06	✗	✓	✗	✓
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Lymm North embankment	GB41201G101700-EM-07	✗	✗	✗	✗
Lower Mersey Basin and North Merseyside Permo-Triassic	Glazebrook embankment north	GB41201G101700-EMR-08	✓	✓	✓	✓

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Sandstone Aquifers (GB41201G101700)						
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	M62 West viaduct	GB41201G101700-VF-09	✗	✔	✗	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Culcheth South embankment	GB41201G101700-EMR-10	✔	✔	✔	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Risley East accommodation underbridge	GB41201G101700-BF-11	✗	✔	✗	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Croft Footpath 13/1 accommodation underbridge	GB41201G101700-BF-12	✗	✔	✗	✔
Lower Mersey Basin and North Merseyside	Culcheth cutting	GB41201G101700-C-13	✔	✔	✔	✔

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Permo-Triassic Sandstone Aquifers (GB41201G101700)						
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	A574 Warrington Road and Wigshaw Lane Highways discharges	GB41201G101700-HD-13a	✗	✗	✗	✓
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	A574 Warrington Road overbridge	GB41201G101700-OF-14	✗	✓	✗	✓
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Wigshaw Lane retaining wall	GB41201G101700-RT-15	✓	✓	✓	✓
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Wigshaw Lane overbridge	GB41201G101700-OF-16	✗	✓	✗	✓

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Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Culcheth North embankment	GB41201G101700-EM-17	✗	✗	✗	✗
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Croft Footpath 8a/2 and 108/1 overbridge	GB41201G101700-OF-18	✗	✔	✗	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Culcheth North (Railway) viaduct	GB41201G101700-VF-19	✗	✔	✗	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Lowton cutting	GB41201G101700-C-20	✔	✔	✔	✔
Lower Mersey Basin and North Merseyside Permo-Triassic	B5207 Wilton Lane overbridge	GB41201G101700-OF-21	✗	✔	✗	✔

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Sandstone Aquifers (GB41201G101700)						
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	B5207 Wilton Lane highways discharge	GB41201G101700-HD-21a	✗	✗	✗	✓
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	A580 East Lancashire Road overbridge	GB41201G101700-OF-22	✗	✓	✗	✓
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Carr Brook aqueduct	GB41201G101700-OF-23	✗	✓	✗	✓
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	A572 Newton Road overbridge	GB41201G101700-OF-24	✗	✓	✗	✓
Lower Mersey Basin and North Merseyside	Lowton South embankment	GB41201G101700-EM-25	✗	✗	✗	✗

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Permo-Triassic Sandstone Aquifers (GB41201G101700)						
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Slag Lane viaduct	GB41201G101700-VF-26	✗	✔	✗	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Lowton North embankment	GB41201G101700-EM-27	✗	✗	✗	✗
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Golborne Footpath 33/10 accommodation underbridge	GB41201G101700-BF-28	✗	✗	✗	✗
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	A573 Wigan Road viaduct	GB41201G101700-VF-29	✗	✔	✗	✔

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Hey Brook offline overbridge	GB41201G101700-OF-30	✗	✔	✗	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Aye Bridge embankment retaining wall (south)	GB41201G101700-RT-31	✔	✔	✔	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Aye Bridge embankment retaining wall (north)	GB41201G101700-RT-32	✔	✔	✔	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	WCML box structure	GB41201G101700-RT-33	✔	✔	✔	✔
Lower Mersey Basin and North Merseyside Permo-Triassic	Abram embankment retaining wall (south)	GB41201G101700-RT-34	✔	✔	✔	✔

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Sandstone Aquifers (GB41201G101700)						
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Abram embankment retaining wall (north)	GB41201G101700-RT-35	✔	✔	✔	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Ashton-in-Makerfield Footpath 22/20 accommodation underbridge	GB41201G101700-BF-36	✗	✗	✗	✗
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Abram cutting retaining wall	GB41201G101700-CR-37	✔	✔	✔	✔
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	Abram cutting	GB41201G101700-C-38	✔	✔	✔	✔

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Sankey and Glaze Carboniferous Aquifers (GB41202G100100)	Abram cutting	GB41202G100100-C-01	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Manchester Tunnel	GB1201G101100-BT-01	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Palatine Road vent shaft	GB1201G101100-VT-02	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Wilmslow Road vent shaft	GB1201G101100-VT-03	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Birchfields Road vent shaft	GB1201G101100-VT-04	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Manchester Tunnel North porous portal	GB1201G101100-TP-05	✔	✔	✔	✔

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Ardwick South cutting retaining wall	GB1201G101100-CR-06	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Ardwick box structure	GB1201G101100-RT-07	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Ardwick North cutting retaining wall	GB1201G101100-CR-08	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Manchester to Leeds embankment	GB1201G101100-EM-09	✗	✗	✗	✗
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Ardwick North cutting retaining wall	GB1201G101100-CR-10	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Ardwick embankment retaining wall	GB1201G101100-RT-11	✔	✔	✔	✔

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Ardwick embankment	GB1201G101100-EM-12	✗	✗	✗	✗
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Piccadilly Approach viaduct	GB1201G101100-VF-13	✗	✓	✗	✓
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Piccadilly Station viaduct	GB1201G101100-VF-14	✗	✓	✗	✓
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Manchester Piccadilly High Speed Station	GB1201G101100-ST-15	✓	✓	✓	✓
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Ashton Line connection	GB1201G101100-CR-16	✓	✓	✓	✓
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	A635 Mancunian Way southbound retaining wall	GB1201G101100-RT-17	✓	✓	✓	✓

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Piccadilly offline access ramp	GB1201G101100-OF-18	✗	✔	✗	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	B6469 Fairfield Street offline overbridge	GB1201G101100-OF-19	✗	✔	✗	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	St Andrews Street retaining wall	GB1201G101100-RT-20	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Baird Street retaining wall	GB1201G101100-RT-21	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Sparkle Street retaining wall	GB1201G101100-RT-22	✔	✔	✔	✔
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	Store Street retaining wall	GB1201G101100-RT-23	✔	✔	✔	✔

WFD groundwater body (ID)	Scheme component name	Unique ID	Quantitative effects		Chemical effects	
			Lowering of groundwater levels and reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	'Damming' of groundwater flow and reduction in groundwater contributions	Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control	Creating or altering of pathways along which existing poor quality groundwater can migrate
Douglas, Darwen and Calder Carboniferous Aquifers (GB41202G100300)			N/A	N/A	N/A	N/A

2 Likely effects on achievement of status objectives

2.1 Reasons for not achieving good status

The 2015 RBMP RNAG for the quality elements of surface water and groundwater bodies affected by the Proposed Scheme have been considered against the relevant scheme components proposed within each water body.

The RNAG for the surface water and groundwater bodies affected by the Proposed Scheme, together with the relevant scheme components and associated potential effects, are summarised in Table B 3 and Table B 4, respectively.

A precautionary approach has then been taken, whereby the identification of a potential adverse effect (following consideration of mitigation included within the design) is used to highlight a risk where the Proposed Scheme may prevent the future achievement of the status objective of the relevant quality element. Accordingly, these RNAGs have been deemed as potentially at risk from the Proposed Scheme and taken forward for further detailed assessment in consultation with the Environment Agency.

Potential impacts from the Proposed Scheme on the implementation of HMWB Mitigation Measures are covered separately in Table B 6.

Table B 3: Summary of preliminary assessment (scoping) of likely effects of Proposed Scheme on reasons for not achieving good status (RNAG) for relevant WFD surface water bodies

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Wistaston Brook (GB112068055280)	Tributary of Swill Brook 1 Tributary of Gresty Brook 1 Gresty Brook Basford Brook	495880	Macrophytes and Phytobenthos Combined	Water Industry	Point source	Sewage discharge (continuous)	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Wistaston Brook (GB112068055280)	Tributary of Swill Brook 1 Tributary of Gresty Brook 1 Gresty Brook Basford Brook	489411	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Wistaston Brook (GB112068055280)	Tributary of Swill Brook 1 Tributary of Gresty Brook 1 Gresty Brook Basford Brook	514943	Fish	Urban and transport	Point source	Incidents	Other (not in list) (1); Not applicable (2); Other (3)	Yes	Bored tunnel (GB112068055280-MW-03-BT-01) Highways drainage (GB112068055280-MW-02-HD-01)	No effect
Valley Brook (Englesea Brook to Weaver)	Valley Brook	481962	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112068055310)										
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	489415	Phosphate	Agriculture and rural land management	Diffuse source	Livestock	Phosphate (3)	No	Not applicable	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	520327	Fish	Urban and transport	Diffuse source	Unknown (pending investigation)	Other (not in list) (1); Not applicable (2); Other (3)	No	Not applicable	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	489414	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	482077	Phosphate	Agriculture and rural land management	Diffuse source	Poor Livestock Management	Phosphate (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	489548	Invertebrates	Agriculture and rural land management	Diffuse source	Poor Livestock Management	Other (not in list) (1); Not applicable (2); Other (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	481971	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	Yes	Highway realignment and access road culverts (GB112068060460-T-01-CVA-01) Highways drainage (GB112068060460-T-01-HD-01)	Localised, minor adverse - no risk at water body scale
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	489550	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Weaver (Marbury Brook to Dane)	Tributary of River Weaver 2	489543	Invertebrates	Water Industry	Point source	Sewage discharge (continuous)	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112068060460)										
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	527806	Fish	Other	Physical modification	Barriers - ecological discontinuity	Morphology (1); Not applicable (2); Physical modification (3)	Yes	Culvert, access road culvert, highway realignment culverts (GB112068060460-T-01-CV-01, GB112068060460-T-01-CVA-01, GB112068060460-T-01-CVH-01, GB112068060460-T-01-CVH-02, GB112068060460-T-01-CVH-03)	Localised, minor adverse - no risk at water body scale
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	489551	Fish	Water Industry	Point source	Sewage discharge (continuous)	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	518160	Macrophytes and Phytobenthos Combined	Water Industry	Point source	Sewage discharge (continuous)	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	530050	Ammonia (Phys-Chem)	Water Industry	Point source	Sewage discharge (intermittent)	Ammonia (3)	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	532533	Invertebrates	Agriculture and rural land management	Diffuse source	Poor nutrient management	Ammonia (1); Not applicable (2); Ammonia (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	532534	Invertebrates	Agriculture and rural land management	Diffuse source	Poor soil management	Ammonia (1); Not applicable (2); Ammonia (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane)	Tributary of River Weaver 2	532535	Invertebrates	Agriculture and rural land management	Diffuse source	Poor pesticide management	Ammonia (1); Not applicable (2); Ammonia (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112068060460)										
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	518164	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Unknown (pending investigation)	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	518163	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Poor Livestock Management	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	518161	Macrophytes and Phytobenthos Combined	Urban and transport	Diffuse source	Urbanisation - urban development	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	529418	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Point source	Farm/site infrastructure	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	529417	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Poor soil management	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	529415	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Poor pesticide management	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	529416	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Poor nutrient management	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	532536	Invertebrates	Agriculture and rural land management	Point source	Farm/site infrastructure	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect
Weaver (Marbury Brook to Dane)	Tributary of River Weaver 2	529419	Phosphate	Agriculture and rural land management	Diffuse source	Poor pesticide management	Phosphate (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112068060460)										
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	529420	Phosphate	Agriculture and rural land management	Diffuse source	Poor nutrient management	Phosphate (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	529421	Phosphate	Agriculture and rural land management	Diffuse source	Poor soil management	Phosphate (3)	Yes	Realignment (GB112068060460-T-01-RE-01)	Minor, localised beneficial
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	529422	Phosphate	Agriculture and rural land management	Point source	Farm/site infrastructure	Phosphate (3)	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	489546	Invertebrates	Navigation	Physical modification	Recreation	Morphology (1); Not applicable (2); Physical modification (3)	Yes	Culvert (GB112068060460-T-01-CV-01), access road culvert (GB112068060460-T-01-CVA-01), 3 realignment	Localised, minor adverse - no risk at water body scale

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
									culverts (GB112068060460-T-01-CVH-01, GB112068060460-T-01-CVH-02, GB112068060460-T-01-CVH-03)	
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	489547	Invertebrates	Industry	Point source	Trade/Industry discharge	Not applicable (1); Not applicable (2); Chemicals (3)	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	489549	Invertebrates	Urban and transport	Diffuse source	Urbanisation - urban development	Other (not in list) (1); Not applicable (2); Other (3)	Yes	Highway realignment and access road culverts (GB112068060460-T-01-CVA-01) Highways drainage (GB112068060460-T-01-HD-01)	Localised, minor adverse - no risk at water body scale

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	481972	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	489561	Macrophytes and Phytobenthos Combined	Water Industry	Point source	Sewage discharge (continuous)	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	489557	Phosphate	Agriculture and rural land management	Diffuse source	Livestock	Phosphate (3)	Yes	Viaduct (GB112068060470-MW-01-VD-01)	Minor, localised beneficial
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	489559	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	489562	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Livestock	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Viaduct (GB112068060470-MW-01-VD-01)	Minor, localised beneficial
Dane (Wheelock to Weaver)	River Dane	518253	Invertebrates	Urban and transport	Diffuse source	Urbanisation - urban development	Other (not in list) (1); Not	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112068060470)							applicable (2); Other (3)			
Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)	Trent and Mersey Canal	521405	Mercury and Its Compounds	Other	Diffuse source	Contaminated water body bed sediments	Chemicals (3)	No	Not applicable	No effect
Puddinglake Brook (GB112068060220)	Puddinglake Brook	489485	Phosphate	Agriculture and rural land management	Point source	Private Sewage Treatment	Phosphate (3)	No	Not applicable	No effect
Puddinglake Brook (GB112068060220)	Puddinglake Brook	518050	Ammonia (Phys-Chem)	Agriculture and rural land management	Diffuse source	Livestock	Ammonia (3)	Yes	Borrow pit (GB112068060220-MW-01-BP-01), viaduct (GB112068060220-MW-01-VD-01)	Minor, localised beneficial
Puddinglake Brook (GB112068060220)	Puddinglake Brook	489486	Phosphate	Agriculture and rural land management	Diffuse source	Livestock	Phosphate (3)	Yes	Borrow pit (GB112068060220-MW-01-BP-01), viaduct (GB112068060220-MW-01-VD-01)	Minor, localised beneficial

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Puddinglake Brook (GB112068060220)	Puddinglake Brook	483365	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Livestock	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Borrow pit (GB112068060220-MW-01-BP-01), viaduct (GB112068060220-MW-01-VD-01)	Minor, localised beneficial
Puddinglake Brook (GB112068060220)	Puddinglake Brook	518048	Invertebrates	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Other (not in list) (1); Not applicable (2); Other (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation
Puddinglake Brook (GB112068060220)	Puddinglake Brook	489487	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Puddinglake Brook (GB112068060220)	Puddinglake Brook	518047	Ammonia (Phys-Chem)	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Ammonia (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Wade Brook (GB112068060370)	Gad Brook Tributary of Gad Brook 3 Wade Brook	518077	Hydrological Regime	No sector responsible	Suspect data	Not applicable	Abstraction and flow (3)	No	Not applicable	No effect
Wade Brook (GB112068060370)	Gad Brook Tributary of Gad Brook 3 Wade Brook	518112	Phosphate	Agriculture and rural land management	Diffuse source	Livestock	Phosphate (3)	Yes	Viaduct (GB112068060370-MW-04-VD-03), clear span bridge (GB112068060370-MW-04-OB-01)	Minor, localised beneficial
Wade Brook (GB112068060370)	Gad Brook Tributary of Gad Brook 3 Wade Brook	511936	Cadmium and Its Compounds	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Chemicals (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation
Wade Brook (GB112068060370)	Gad Brook Tributary of Gad Brook 3 Wade Brook	489524	Invertebrates	No sector responsible	Invasive non-native species	North American signal crayfish	Invasive non-native species (1); Not applicable (2); Invasive non-native species (3)	No	Not applicable	No effect

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Wade Brook (GB112068060370)	Gad Brook Tributary of Gad Brook 3 Wade Brook	518488	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Livestock	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Viaduct (GB112068060370-MW-04-VD-03), clear span bridge (GB112068060370-MW-04-OB-01)	Minor, localised beneficial
Wade Brook (GB112068060370)	Gad Brook Tributary of Gad Brook 3 Wade Brook	511941	Zinc	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Chemicals (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	482076	Fish	Industry	Physical modification	Barriers - ecological discontinuity	Morphology (1); Not applicable (2); Physical modification (3)	Yes	Viaducts (GB112068060390-T-01-VD-01, GB112068060390-MW-02-VD-02) Realignments (GB112068060390-T-01-RE-01, GB1120680603	Negligible - no risk at water body scale

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
									90-MW-02-RE-01)	
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	489530	Phosphate	Agriculture and rural land management	Diffuse source	Livestock	Phosphate (3)	Yes	Viaducts (GB112068060390-T-01-VD-01, GB11206806039 0-MW-02-VD-02)	Localised, minor adverse - no risk at water body scale
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	489531	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	483385	Macrophytes and Phytobenthos Combined	Water Industry	Point source	Sewage discharge (continuous)	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	489529	Phosphate	Agriculture and rural land management	Point source	Private Sewage Treatment	Phosphate (3)	No	Not applicable	No effect
Peover Eye (Wincham Brook)	Tributary of Peover Eye Peover Eye	489620	Hydrological Regime	Industry	Flow	Surface water abstraction	Abstraction and flow (3)	Yes	Viaducts (GB112068060390-T-01-VD-01, GB1120680603	Negligible - no risk at water body scale

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(GB112068060390)									90-MW-02-VD-02)	
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	483386	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Livestock	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Viaducts (GB112068060390-T-01-VD-01, GB112068060390-MW-02-VD-02)	Localised, minor adverse - no risk at water body scale
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	483387	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Unknown (pending investigation)	Sediment (1); Not applicable (2); Fine sediment (3)	Yes	Viaducts (GB112068060390-T-01-VD-01, GB112068060390-MW-02-VD-02)	Localised, minor adverse - no risk at water body scale
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	518241	Invertebrates	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Other (not in list) (1); Not applicable (2); Other (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation
Peover Eye (Wincham Brook)	Tributary of Peover Eye Peover Eye	489528	Fish	Agriculture and rural land management	Diffuse source	Livestock	Other (not in list) (1); Not applicable (2); Other (3)	Yes	Viaducts (GB112068060390-T-01-VD-01,	Localised, minor adverse - no risk at

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112068060390)									GB112068060390-MW-02-VD-02)	water body scale
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Smoker Brook Waterless Brook/Arley Brook Tabley Brook Tributary of Tabley Brook 3 Tributary of Tabley Brook 9	518178	Phosphate	Agriculture and rural land management	Diffuse source	Livestock	Phosphate (3)	Yes	Realignment (GB112068060410-T-04-RE-01), viaducts (GB112068060410-MW-01-VD-01, GB112068060410-MW-03-VD-02)	Localised, minor adverse - no risk at water body scale
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Smoker Brook Waterless Brook/Arley Brook Tabley Brook Tributary of Tabley Brook 3 Tributary of Tabley Brook 9	519632	Fish	No sector responsible	Suspect data	Not applicable	Other (not in list) (1); Not applicable (2); Other (3)	No	Not applicable	Not possible to assess at this stage - RNAG relating to suspect EA data
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	489843	Phosphate	Agriculture and rural land management	Diffuse source	Livestock	Phosphate (3)	Yes	Viaducts (GB112069061382-MW-06-VD-01, GB112069061382-MW-09-VD-02)	Minor, localised beneficial

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Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	482120	Phosphate	Agriculture and rural land management	Diffuse source	Unknown (pending investigation)	Phosphate (3)	Yes	Viaducts (GB112069061382-MW-06-VD-01, GB112069061382-MW-09-VD-02)	Minor, localised beneficial
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	489845	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	489844	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	507154	Fish	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Not applicable (1); Not applicable (2); Chemicals (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
										further EA investigation
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	507155	Invertebrates	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Other (not in list) (1); Not applicable (2); Other (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	482010	Phosphate	Agriculture and rural land management	Diffuse source	Unknown (pending investigation)	Phosphate (3)	Yes	Viaduct (GB112069061382-MW-06-VD-01, GB112069061382-MW-09-VD-02)	Minor, localised beneficial
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	515518	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	515960	Invertebrates	Water Industry	Point source	Sewage discharge (continuous)	Dissolved oxygen (1); Not applicable (2); Dissolved oxygen (DO) (3)	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	515465	Ammonia (Phys-Chem)	Water Industry	Point source	Sewage discharge (continuous)	Ammonia (3)	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	515959	Invertebrates	Water Industry	Point source	Sewage discharge (continuous)	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	515500	Dissolved oxygen	Water Industry	Point source	Sewage discharge (continuous)	Dissolved oxygen (DO) (3)	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	515275	Dissolved oxygen	Water Industry	Point source	Sewage discharge (intermittent)	Dissolved oxygen (DO) (3)	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	519747	Invertebrates	Water Industry	Point source	Sewage discharge (intermittent)	Dissolved oxygen (1); Not applicable (2); Dissolved oxygen (DO) (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	520770	Dissolved oxygen	Navigation	Physical modification	Inland boating and structures	Dissolved oxygen (DO) (3)	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	520769	Dissolved oxygen	Urban and transport	Diffuse source	Contaminated water body bed sediments	Dissolved oxygen (DO) (3)	Yes	Viaduct (GB112069061011-MW-03-VD-02)	Localised, minor adverse - no risk at water body scale
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	520768	Dissolved oxygen	Industry	Diffuse source	Contaminated water body bed sediments	Dissolved oxygen (DO) (3)	Yes	Viaduct (GB112069061011-MW-03-VD-02)	Localised, minor adverse - no risk at water body scale

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	520767	Dissolved oxygen	Water Industry	Diffuse source	Contaminated water body bed sediments	Dissolved oxygen (DO) (3)	Yes	Viaduct (GB112069061011-MW-03-VD-02)	Localised, minor adverse - no risk at water body scale
Sinderland Brook (GB112069060980)	Red Brook	489701	Ammonia (Phys-Chem)	Water Industry	Point source	Sewage discharge (continuous)	Ammonia (3)	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	492667	Macrophytes and Phytobenthos Combined	Water Industry	Point source	Sewage discharge (continuous)	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	489691	Fish	Water Industry	Point source	Sewage discharge (continuous)	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	482093	Fish	Local and Central Government	Physical modification	Barriers - ecological discontinuity	Morphology (1); Not applicable (2); Physical modification (3)	Yes	Viaduct (GB112069060980-MW-01-VD-01)	Negligible - no risk at water body scale

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Sinderland Brook (GB112069060980)	Red Brook	482094	Morphology	Local and Central Government	Physical modification	Flood protection - water level management	Physical modification (3)	Yes	Viaduct (GB112069060980-MW-01-VD-01)	Negligible - no risk at water body scale
Sinderland Brook (GB112069060980)	Red Brook	482092	Ammonia (Phys-Chem)	Urban and transport	Diffuse source	Urbanisation - urban development	Ammonia (3)	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	489693	Fish	Local and Central Government	Physical modification	Flood protection - structures	Morphology (1); Not applicable (2); Physical modification (3)	Yes	Viaduct (GB112069060980-MW-01-VD-01)	Negligible - no risk at water body scale
Sinderland Brook (GB112069060980)	Red Brook	482095	Morphology	Local and Central Government	Physical modification	Barriers - ecological discontinuity	Physical modification (3)	Yes	Viaduct (GB112069060980-MW-01-VD-01)	Negligible - no risk at water body scale
Sinderland Brook (GB112069060980)	Red Brook	489696	Invertebrates	Urban and transport	Diffuse source	Urbanisation - urban development	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	489698	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Sinderland Brook (GB112069060980)	Red Brook	489697	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	492666	Macrophytes and Phytobenthos Combined	Urban and transport	Diffuse source	Urbanisation - urban development	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	489868	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	482015	Phosphate	Agriculture and rural land management	Diffuse source	Unknown (pending investigation)	Phosphate (3)	Yes	Realignments (GB112069061420-T-09-RE-03, GB112069061420-MW-14-RE-04)	Minor, localised beneficial
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	489869	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4,	511855	Macrophytes and	Water Industry	Point source	Sewage discharge (continuous)	Nutrients (1); Phosphate (2);	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
	Jibcroft Brook, Carr Brook		Phytobenthos Combined				Phosphate (3)			
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	482122	Fish	Industry	Physical modification	Barriers - ecological discontinuity	Morphology (1); Not applicable (2); Physical modification (3)	Yes	Access road culverts (GB112069061420-MW-14-CVA-04, GB112069061420-MW-14-CVA-05); Aqueduct (GB112069061420-MW-14-AQ-01)	Localised, minor adverse - no risk at water body scale
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	482012	Ammonia (Phys-Chem)	Urban and transport	Diffuse source	Urbanisation - urban development	Ammonia (3)	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	516054	Biochemical Oxygen Demand (BOD)	Water Industry	Point source	Sewage discharge (intermittent)	Biochemical Oxygen Demand (BOD) (3)	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	511791	Invertebrates	Water Industry	Point source	Sewage discharge (intermittent)	BOD (1); Not applicable (2); Biochemical Oxygen	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
							Demand (BOD) (3)			
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	511810	Fish	Water Industry	Point source	Sewage discharge (intermittent)	BOD (1); Not applicable (2); Biochemical Oxygen Demand (BOD) (3)	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	511493	Invertebrates	Urban and transport	Diffuse source	Urbanisation - urban development	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	483216	Invertebrates	Urban and transport	Diffuse source	Transport Drainage	Other (not in list) (1); Not applicable (2); Other (3)	No	Not applicable	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	489905	Invertebrates	Water Industry	Point source	Sewage discharge (intermittent)	BOD (1); Not applicable (2); Biochemical Oxygen Demand (BOD) (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	489904	Invertebrates	Mining and quarrying	Diffuse source	Abandoned mine	Other (not in list) (1); Not applicable (2); Other (3)	Yes	Realignments (GB112069064520-T-06-RE-03, GB112069064520-T-07-RE-04, GB112069064520-T-11-RE-05, GB112069064520-T-15-RE-06)	Negligible - no risk at water body scale
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	513250	Macrophytes and Phytobenthos Combined	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Not applicable (1); Not applicable (2); Chemicals (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	518514	Phosphate	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Phosphate (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	507853	Invertebrates	Sector under investigation	Physical modification	Unknown (pending investigation)	Morphology (1); Not applicable (2); Physical modification (3)	Yes	Realignments (GB112069064520-T-06-RE-03, GB112069064520-T-07-RE-04, GB112069064520-T-11-RE-05, GB112069064520-T-15-RE-06); Culverts (GB112069064520-T-06-CV-03, GB112069064520-T-07-CV-04, GB112069064520-T-11-CV-05); Highway realignment culvert (GB112069064520-T-11-CVH-02)	At risk at water body scale - further assessment needed
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	516666	Macrophytes and Phytobenthos Combined	Water Industry	Point source	Sewage discharge (continuous)	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112069061370)										
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	516659	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Unknown (pending investigation)	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Realignment (GB112069061370-T-06-RE-03), viaducts (GB112069061370-MW-01-VD-01, GB112069061370-MW-02-VD-02)	Minor, localised beneficial
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	483546	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	489833	Phosphate	Agriculture and rural land management	Diffuse source	Unknown (pending investigation)	Phosphate (3)	Yes	Realignment (GB112069061370-T-06-RE-03), viaducts (GB112069061370-MW-01-VD-01, GB1120690613	Minor, localised beneficial

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112069061370)									70-MW-02-VD-02)	
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	489832	Dissolved oxygen	Other	Diffuse source	Unknown (pending investigation)	Dissolved oxygen (DO) (3)	Yes	Viaducts (GB112069061370-MW-01-VD-01 GB112069061370-MW-01-VD-02); Highway realignment culvert (GB112069061370-T-04-CVH-04); Highway overbridge (GB112069061370-T-04-OB-02)	Negligible
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	513592	Fish	Agriculture and rural land management	Diffuse source	Livestock	Sediment (1); Not applicable (2); Fine sediment (3)	Yes	Realignment (GB112069061370-T-06-RE-03), viaduct (GB112069061370-MW-01-VD-01, GB112069061370-MW-02-VD-02)	Minor, localised beneficial

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	507152	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Poor Livestock Management	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	530641	Phosphate	Agriculture and rural land management	Diffuse source	Riparian/in-river activities (inc. bankside erosion)	Phosphate (3)	No	Not applicable	No effect
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	530640	Phosphate	Agriculture and rural land management	Diffuse source	Poor soil management	Phosphate (3)	No	Not applicable	No effect
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	530639	Phosphate	Agriculture and rural land management	Diffuse source	Poor nutrient management	Phosphate (3)	No	Not applicable	No effect
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	530638	Phosphate	Agriculture and rural land management	Diffuse source	Poor Livestock Management	Phosphate (3)	No	Not applicable	No effect
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	531822	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Poor nutrient management	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	531823	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Poor soil management	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	531824	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Riparian/in-river activities (inc. bankside erosion)	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin Tributary of River Bollin 2 Tributary of River Bollin 3 Tributary of River Bollin 6	489840	Macrophytes and Phytobenthos Combined	Water Industry	Point source	Sewage discharge (continuous)	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin Tributary of River Bollin 2 Tributary of River Bollin 3 Tributary of River Bollin 6	489836	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Bollin (River Dean to Ashley Mill)	River Bollin Tributary of River Bollin 2	516695	Ammonia (Phys-Chem)	Domestic General Public	Point source	Private Sewage Treatment	Ammonia (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112069061381)	Tributary of River Bollin 3 Tributary of River Bollin 6									
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin Tributary of River Bollin 2 Tributary of River Bollin 3 Tributary of River Bollin 6	489834	Invertebrates	Urban and transport	Diffuse source	Airports	BOD (1); Not applicable (2); Biochemical Oxygen Demand (BOD) (3)	No	Not applicable	No effect
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin Tributary of River Bollin 2 Tributary of River Bollin 3 Tributary of River Bollin 6	489835	Invertebrates	Urban and transport	Physical modification	Land drainage - structures	Morphology (1); Not applicable (2); Physical modification (3)	No	Not applicable	No effect
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin Tributary of River Bollin 2 Tributary of River Bollin 3 Tributary of River Bollin 6	489837	Phosphate	Agriculture and rural land management	Diffuse source	Livestock	Phosphate (3)	Yes	Viaduct (GB112069061381-MW-01-VD-01)	Minor, localised beneficial
Bollin (River Dean to Ashley Mill)	River Bollin Tributary of River Bollin 2	489838	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112069061381)	Tributary of River Bollin 3 Tributary of River Bollin 6									
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin Tributary of River Bollin 2 Tributary of River Bollin 3 Tributary of River Bollin 6	507153	Fish	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin Tributary of River Bollin 2 Tributary of River Bollin 3 Tributary of River Bollin 6	489839	Macrophytes and Phytobenthos Combined	Agriculture and rural land management	Diffuse source	Livestock	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Viaduct (GB112069061381-MW-01-VD-01)	Minor, localised beneficial
Timperley Brook (GB112069061260)	Timperley Brook Tributary of Timperley Brook 1	483271	Invertebrates	Urban and transport	Diffuse source	Urbanisation - urban development	Organic pollution (1); Not applicable (2); Organic pollution (3)	Yes	Highway realignment; Access road; Drainage (GB112069061260-MW-01-HD-01)	At risk at water body scale - further assessment needed

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Timperley Brook (GB112069061260)	Timperley Brook Tributary of Timperley Brook 1	489812	Ammonia (Phys-Chem)	Urban and transport	Diffuse source	Urbanisation - urban development	Ammonia (3)	Yes	Highway realignment; Access road; Drainage (GB112069061260-MW-02-RE-01)	At risk at water body scale - further assessment needed
Timperley Brook (GB112069061260)	Timperley Brook Tributary of Timperley Brook 1	489817	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	Yes	Highway realignment; Access road; Drainage (GB112069061260-MW-02-RE-01)	At risk at water body scale - further assessment needed
Timperley Brook (GB112069061260)	Timperley Brook Tributary of Timperley Brook 1	489815	Dissolved oxygen	Other	Diffuse source	Unknown (pending investigation)	Dissolved oxygen (DO) (3)	Yes	Highway realignment; Access road; Drainage	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation
Timperley Brook (GB112069061260)	Timperley Brook Tributary of Timperley Brook 1	516490	Macrophytes and Phytobenthos Combined	Urban and transport	Diffuse source	Urbanisation - urban development	Nutrients (1); Phosphate (2); Phosphate (3)	Yes	Highway realignment; Access road; Drainage (GB112069061	At risk at water body scale - further assessment needed

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
									260-MW-02-RE-01)	
Timperley Brook (GB112069061260)	Timperley Brook Tributary of Timperley Brook 1	517334	Cadmium and Its Compounds	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Chemicals (3)	Yes	Highway realignment; Access road; Drainage	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	489820	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	517348	Cadmium and Its Compounds	Sector under investigation	Unknown (pending investigat-ion)	Unknown (pending investigation)	Chemicals (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation.

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	515272	Biochemical Oxygen Demand (BOD)	Water Industry	Point source	Sewage discharge (intermittent)	Biochemical Oxygen Demand (BOD) (3)	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	489714	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	489713	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	481985	Phosphate	Agriculture and rural land management	Diffuse source	Livestock	Phosphate (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Fallowfield Brook (GB112069061410)	Cringle Brook	489866	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	518078	Hydrological Regime	No sector responsible	Suspect data	Not applicable	Abstraction and flow (3)	No	Not applicable	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	496464	Ammonia (Phys-Chem)	Urban and transport	Diffuse source	Urbanisation - urban development	Ammonia (3)	No	Not applicable	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	489733	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	483265	Macrophytes and Phytobenthos Combined	Urban and transport	Diffuse source	Urbanisation - urban development	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	516333	Invertebrates	Urban and transport	Diffuse source	Urbanisation - urban development	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	489775	Phosphate	Urban and transport	Diffuse source	Urbanisation - urban development	Phosphate (3)	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	489777	Phosphate	Water Industry	Point source	Sewage discharge (continuous)	Phosphate (3)	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	511214	Invertebrates	Water Industry	Point source	Sewage discharge (continuous)	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell)	River Medlock	507802	Macrophytes and Phytobenthos Combined	Water Industry	Point source	Sewage discharge (continuous)	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB112069061152)										
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	489773	Fish	Water Industry	Point source	Sewage discharge (continuous)	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	482108	Fish	Water Industry	Point source	Sewage discharge (intermittent)	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	511212	Invertebrates	Water Industry	Point source	Sewage discharge (intermittent)	Ammonia (1); Not applicable (2); Ammonia (3)	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	511208	Invertebrates	Water Industry	Point source	Sewage discharge (intermittent)	BOD (1); Not applicable (2); Biochemical Oxygen Demand (BOD) (3)	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	489774	Fish	Industry	Physical modification	Barriers - ecological discontinuity	Morphology (1); Not applicable (2); Physical modification (3)	Yes	Daylighting of existing culvert (GB112069061152-MW-01-DY-01)	Minor, localised beneficial
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	482106	Fish	Urban and transport	Physical modification	Barriers - ecological discontinuity	Morphology (1); Not applicable (2); Physical modification (3)	Yes	Daylighting of existing culvert (GB112069061152-MW-01-DY-01)	Minor, localised beneficial
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	517054	Ammonia (Phys-Chem)	Urban and transport	Diffuse source	Urbanisation - urban development	Ammonia (3)	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	517055	Ammonia (Phys-Chem)	Urban and transport	Diffuse source	Urbanisation - urban development	Ammonia (3)	No	Not applicable	No effect
Rostherne Mere - LAKE (GB312326500)	Rostherne Mere	490492	Macrophytes and Phytobenthos Combined	No sector responsible	Invasive non-native species	Other plants	Invasive non-native species (1); Not applicable	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
							(2); Invasive non-native species (3)			
Rostherne Mere - LAKE (GB31232650)	Rostherne Mere	490495	Total Phosphorus	Water Industry	Point source	Sewage discharge (intermittent)	Phosphate (3)	No	Not applicable	No effect
Rostherne Mere - LAKE (GB31232650)	Rostherne Mere	490497	Total Phosphorus	Sector under investigation	Point source	Private Sewage Treatment	Phosphate (3)	No	Not applicable	No effect
Rostherne Mere - LAKE (GB31232650)	Rostherne Mere	516773	Phytoplankton	Domestic General Public	Point source	Private Sewage Treatment	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Rostherne Mere - LAKE (GB31232650)	Rostherne Mere	516770	Phytoplankton	Water Industry	Point source	Sewage discharge (intermittent)	Nutrients (1); Phosphate (2); Phosphate (3)	No	Not applicable	No effect
Rostherne Mere - LAKE (GB31232650)	Rostherne Mere	490496	Total Phosphorus	Agriculture and rural land management	Diffuse source	Livestock	Phosphate (3)	No	Not applicable	No effect
Rostherne Mere - LAKE	Rostherne Mere	490493	Macrophytes and	Domestic General Public	Point source	Sewage discharge (continuous)	Nutrients (1); Phosphate (2);	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in within water body	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme component(s)
(GB31232650)			Phytobenthos Combined				Phosphate (3)			
Rostherne Mere - LAKE (GB31232650)	Rostherne Mere	490491	Dissolved oxygen	Sector under investigation	Other pressures	Unknown (pending investigation)	Dissolved oxygen (DO) (3)	No	Not applicable	Not possible to assess at this stage - SWMI/activity currently unknown and pending further EA investigation

Table B 4: Summary of preliminary assessment (scoping) of Proposed Scheme on reasons for not achieving good status (RNAG) for relevant WFD groundwater bodies

WFD water body (ID)	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme components
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700)	508582	General Chemical Test	Agriculture - Arable	Diffuse source	Poor nutrient management	Chemicals (3)	N	Not applicable	N/A
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700)	508583	General Chemical Test	Agriculture - Livestock	Diffuse source	Poor nutrient management	Chemicals (3)	N	Not applicable	N/A
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700)	509602	Trend Assessment	-	Suspect data	Not applicable	Other (3)	Unlikely	Not applicable	N/A
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700)	508557	Chemical GWDTEs test	Not applicable	Unknown (pending investigation)	Unknown (pending investigation)	Chemicals (3)	Unlikely	Not applicable	N/A
Weaver and Dane Quaternary Sand and Gravel Aquifers (GB1202G991700)	508540	Chemical Dependent Surface Water Body Status	Not applicable	Unknown (pending investigation)	Unknown (pending investigation)	Chemicals (3)	Unlikely	Not applicable	N/A
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	482921	Chemical Drinking Water Protected Area	Not applicable	Diffuse source	Unknown (pending investigation)	Chemicals (3)	Y	Lowton Cutting (GB41201G101700-C-20)	At risk

WFD water body (ID)	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme components
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	482917	Chemical Drinking Water Protected Area	-	Point source	Private Sewage Treatment	Chemicals (3)	N	Not applicable	N/A
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	509728	Chemical Saline Intrusion	Not applicable	Other pressures	Saline or other intrusion	Chemicals (3)	N	Not applicable	N/A
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	490677	Quantitative Saline Intrusion	Not applicable	Natural	Saline or other intrusion	Abstraction and flow (3)	N	Not applicable	N/A
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	509840	Chemical Dependent Surface Water Body Status	Not applicable	Unknown (pending investigation)	Unknown (pending investigation)	Chemicals (3)	N	Not applicable	N/A
Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers (GB41201G101700)	509720	Trend Assessment	Not applicable	Unknown (pending investigation)	Unknown (pending investigation)	Other (3)	N	Not applicable	N/A
Sankey and Glaze Carboniferous Aquifers (GB41202G100100)	490678	General Chemical Test	Coal Mining	Diffuse source	Abandoned mine	Chemicals (3)	N	Cutting (GB41202G100100-C-01)	No effect

WFD water body (ID)	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme components
Sankey and Glaze Carboniferous Aquifers (GB41202G100100)	509581	Chemical Dependent Surface Water Body Status	Coal Mining	Diffuse source	Abandoned mine	Chemicals (3)	N	Cutting (GB41202G100100-C-01)	No effect
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	509578	Trend Assessment	Not applicable	Unknown (pending investigation)	Unknown (pending investigation)	Other (3)	N	Not applicable	N/A
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	490676	Quantitative Saline Intrusion	Not applicable	Natural	Saline or other intrusion	Abstraction and flow (3)	Y	Bored Tunnel (GB1201G101100-BT-01)	Localised, minor adverse - no risk at water body scale.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	490676	Quantitative Saline Intrusion	Not applicable	Natural	Saline or other intrusion	Abstraction and flow (3)	Y	Vent Shaft (GB1201G101100-VT-02)	Localised, minor adverse - no risk at water body scale.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	490676	Quantitative Saline Intrusion	Not applicable	Natural	Saline or other intrusion	Abstraction and flow (3)	Y	Vent Shaft (GB1201G101100-VT-03)	Localised, minor adverse - no risk at water body scale.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	490676	Quantitative Saline Intrusion	Not applicable	Natural	Saline or other intrusion	Abstraction and flow (3)	Y	Vent Shaft (GB1201G101100-VT-04)	Localised, minor adverse - no risk at water body scale.

WFD water body (ID)	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme components
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	490676	Quantitative Saline Intrusion	Not applicable	Natural	Saline or other intrusion	Abstraction and flow (3)	Y	Tunnel Portal (GB1201G101100-TP-05)	Localised, minor adverse - no risk at water body scale.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	509546	Chemical Saline Intrusion	Not applicable	Other pressures	Saline or other intrusion	Chemicals (3)	Y	Bored Tunnel (GB1201G101100-BT-01)	Localised, minor adverse - no risk at water body scale.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	509546	Chemical Saline Intrusion	Not applicable	Other pressures	Saline or other intrusion	Chemicals (3)	Y	Vent Shaft (GB1201G101100-VT-02)	Localised, minor adverse - no risk at water body scale.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	509546	Chemical Saline Intrusion	Not applicable	Other pressures	Saline or other intrusion	Chemicals (3)	Y	Vent Shaft (GB1201G101100-VT-03)	Localised, minor adverse - no risk at water body scale.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	509546	Chemical Saline Intrusion	Not applicable	Other pressures	Saline or other intrusion	Chemicals (3)	Y	Vent Shaft (GB1201G101100-VT-04)	Localised, minor adverse - no risk at water body scale.
Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (GB41201G101100)	509546	Chemical Saline Intrusion	Not applicable	Other pressures	Saline or other intrusion	Chemicals (3)	Y	Tunnel Portal (GB1201G101100-TP-05)	Localised, minor adverse - no risk at

WFD water body (ID)	RNAG ID	Element not achieving good	Category (business sector)	SWMI	Activity	Pressure (tier)	Potential for scheme to affect RNAG	Relevant scheme component(s)	Likely effect of scheme components
									water body scale.
Douglas, Darwen and Calder Carboniferous Aquifers (GB41202G100300)	Permanent features of Proposed Scheme do not directly cross this WFD groundwater body								

2.2 Programme of measures

The 2015 RBMP PoM for the surface water affected by the Proposed Scheme are provided in Table B 5. These have been considered against the Proposed Scheme in order to identify the potential for measures to be adversely affected.

No PoM have been identified by the Environment Agency under the 2015 RBMP for the groundwater bodies affected by the Proposed Scheme.

Table B 5: Summary of preliminary assessment (scoping) of likely effects of Proposed Scheme on RBMP Programme of measures identified for WFD surface water bodies

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Wistaston Brook (GB112068055280)	Tributary of Swill Brook 1 Tributary of Gresty Brook 1 Gresty Brook Basford Brook	19941	Wistaston Brook 19 - Betley WwTW P Reduction	Reduction in phosphorus concentration in the final effluent from Betley Waste Water Treatment Works (WwTW)	No	Not applicable	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	19932	River Duckow 1	Deliver package of measures to address diffuse agricultural pollution - dairy and beef. Identify and rank all the farms on the catchment and inspect the high risk farms to determine their impact on the catchment and secure improvement, as required. Undertake educational farm campaign across catchment on best practice land management techniques for dairy/livestock farming	No	Not applicable	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	19939	Englesea Brook 16	Deliver package of measures to address diffuse agricultural pollution - dairy and beef. Identify and rank all the farms on the catchment and inspect the high risk farms to determine their impact on the catchment and secure improvement, as required. Undertake educational farm campaign across catchment on best practice land management techniques for dairy/livestock farming	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	19941	Wistaston Brook 19 - Betley WwTW P Reduction	Reduction in phosphorus concentration in the final effluent from Betley WwTW	No	Not applicable	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	19952	Valley Brook (Source to Englesea Brook) - Audley WwTW P Reduction	Reduction in phosphorus concentration in the final effluent from Audley WwTW	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	19935	River Lea 7 - Madeley WwTW P Reduction	Reduction in phosphorus concentration in the final effluent from Madeley WwTW	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	19952	Valley Brook (Source to Englesea Brook) - Audley WwTW P Reduction	Reduction in phosphorus concentration in the final effluent from Audley WwTW	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	25708	River Weaver (Marbury Brook to Barnett Brook) - Wrenbury WwTW P reduction	Reduction in phosphorus concentration in the final effluent from Wrenbury WwTW	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	38494	Additional treatment to reduce concentrations of phosphate from Crewe	Reduction in phosphorus concentration in the final effluent from Crewe WwTW to WFD Standards	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
			wastewater treatment works				
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	38496	Additional treatment to reduce concentrations of phosphate from Nantwich wastewater treatment works	Reduction in phosphorus concentration in the final effluent from Nantwich WwTW to WFD Standards	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	38498	Additional treatment to reduce concentrations of phosphate from Winsford wastewater treatment works	Reduction in phosphorus concentration in the final effluent from Winsford WwTW to WFD Standards	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	39448	River Weaver (Marbury Brook to Dane) 85 - Nantwich WwTW UWWTD P Reduction	Reduction in phosphorus concentration in the final effluent from Nantwich WwTW to Urban Waste Water Treatment Directive (UWWTD) Standards	No	Not applicable	No effect
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	39449	River Weaver (Marbury Brook to Dane) 86 - Crewe WwTW UWWTD P Reduction	Reduction in phosphorus concentration in the final effluent from Crewe WwTW to UWWTD Standards	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Weaver (Marbury Brook to Dane) (GB112068060460)	Tributary of River Weaver 2	39450	River Weaver (Marbury Brook to Dane) 87 - Winsford WwTW UWWTD P Reduction	Reduction in phosphorus concentration in the final effluent from Winsford WwTW to UWWTD Standards	No	Not applicable	No effect
Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210001)	Shropshire Union Canal	No PoM for this water body					
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	19724	Fowle Brook 19	Deliver package of measures to address diffuse agricultural pollution - dairy and beef. All the farms on the catchment will needed to be listed and the high risk farms will need to be inspected to determine their impact on the catchment and to secure improvement. Undertake educational farm campaign across catchment on best practice land management techniques	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	19738	Loach Brook 7	Deliver package of measures to address diffuse agricultural pollution	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	19739	Loach Brook 8	Deliver package of measures to address diffuse urban pollution	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	19740	R Wheelock Fowle Brook Dane 9	Deliver package of measures to address diffuse agricultural pollution. All the farms on the catchment will needed to be listed and the high risk farms will need to be	Yes	Viaduct (GB112068060470-MW-01-VD-01)	Minor, localised beneficial

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
				inspected to determine their impact on the catchment and to secure improvement. Undertake educational farm campaign across catchment on best practice land management techniques			
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	19741	Fowle Brook 21	Deliver package of measures to address diffuse urban pollution	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	19742	R Wheelock inc. Hassell Brook 27	Deliver package of measures to address diffuse agricultural pollution. Water Action Plan identifies measure to rank all the farms on the catchment and inspect the high risk farms to determine their impact on the catchment and secure improvement, as required. Undertake educational farm campaign across catchment on best practice land management techniques	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	19744	River Croco 33	Deliver package of measures to address diffuse agricultural pollution. All the farms on the catchment will needed to be listed and the high risk farms will need to be inspected to determine their impact on the catchment and to secure improvement. Undertake educational farm campaign across catchment on best practice land management techniques	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	19745	R Dane Cow Brook to Wheelock 36	Deliver package of measures to address diffuse agricultural pollution. All the farms on the catchment will needed to be listed and the high risk farms will need to be inspected to determine their impact on the	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
				catchment and to secure improvement. Undertake educational farm campaign across catchment on best practice land management techniques			
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	19746	Puddinglake Brook 40	Deliver package of measures to address diffuse agricultural pollution. All the farms on the catchment will needed to be listed and the high risk farms will need to be inspected to determine their impact on the catchment and to secure improvement. Undertake educational farm campaign across catchment on best practice land management techniques	Yes	Viaduct (GB112068060470-MW-01-VD-01)	Minor, localised beneficial
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	25404	R Dane Cow Brook to Wheelock 35 - Congleton WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Congleton WwTW	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	38565	Kidsgrove inc. Day Green 70 - Kidsgrove WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Kidsgrove WwTW	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	38566	Kidsgrove inc. Day Green 71 - Lawton Gate WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Lawton Gate WwTW	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	38567	Kidsgrove inc. Day Green 72 -	Reduction in phosphorus concentrations in the final effluent from Alsager WwTW	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
			Alsager WwTW P Reduction				
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	38570	Wheelock (including Hassall Brook) 74 - Sandbach WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Sandbach WwTW	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	38571	Biddulph Brook 75 - Biddulph WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Biddulph WwTW	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	38572	River Croco 76 - Middlewich WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Middlewich WwTW	No	Not applicable	No effect
Dane (Wheelock to Weaver) (GB112068060470)	River Dane	38573	River Dane (Cow Brook to Wheelock) 77 - Holmes Chapel WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Holmes Chapel WwTW	No	Not applicable	No effect
Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)	Trent and Mersey Canal	No PoM for this water body					
Puddinglake Brook (GB112068060220)	Puddinglake Brook	39994	Prioritised farm visits for EA in 2016/17	Visit 9 farms out of 18 in the water body, that cover 90% of Ag land and 90% livestock	Yes	Borrow pit (GB112068060220-MW-01-BP-01),	Minor, localised beneficial

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
						Viaduct (GB112068060220-MW-01-VD-01)	
Wade Brook (GB112068060370)	Gad Brook Tributary of Gad Brook 3 Wade Brook	No PoM for this water body					
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	19812	Peover Eye 5	Several large weirs over a meter high, which will prevent the upstream migration and distribution of fish. There is a 1.5m high weir just upstream of fish sample site WNPE20 which cuts the sub-catchment off from the Weaver stock	No	Not applicable	No effect
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	19813	Forge (Kidd) Brook 7	Deliver package of measures to address diffuse agricultural pollution	No	Not applicable	No effect
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	19814	Smoker Brook (Gale Brook to Wincham Brook) 9	Deliver package of measures to address diffuse agricultural pollution	No	Not applicable	No effect
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	19817	Gale Brook 12	Deliver package of measures to address diffuse agricultural pollution	No	Not applicable	No effect
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	19835	Peover eye (Wincham Brook 46)	Deliver package of measures to address diffuse agricultural pollution	Yes	Viaducts (GB112068060390-T-01-VD-01, GB112068060	Localised, minor adverse - no risk at water body scale

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
						390-MW-02-VD-02)	
Peover Eye (Wincham Brook) (GB112068060390)	Tributary of Peover Eye Peover Eye	38575	Snape Brook 60 - Gawsworth WwTW P Reduction	Reduction in phosphorus concentration in the final effluent from Gawsworth WwTW	No	Not applicable	No effect
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Smoker Brook Waterless Brook/Arley Brook Tabley Brook Tributary of Tabley Brook 3 Tributary of Tabley Brook 9	19814	Smoker Brook (Gale Brook to Wincham Brook) 9	Deliver package of measures to address diffuse agricultural pollution	Yes	Realignment (GB112068060410-T-04-RE-01), viaducts (GB112068060410-MW-01-VD-01, GB112068060410-MW-03-VD-02)	Localised, minor adverse - no risk at water body scale
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Smoker Brook Waterless Brook/Arley Brook Tabley Brook Tributary of Tabley Brook 3 Tributary of Tabley Brook 9	19816	Arley Brook (source to Gale Brk) 11 diffuse agri	Deliver package of measures to address diffuse agricultural pollution	No	Not applicable	No effect
Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)	Smoker Brook Waterless Brook/Arley Brook Tabley Brook Tributary of Tabley Brook 3	19817	Gale Brook 12	Deliver package of measures to address diffuse agricultural pollution	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
	Tributary of Tabley Brook 9						
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19674	River Bollin (Source to Dean) 55 Macclesfield WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Macclesfield WwTW	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19675	Mobberley Brook 57 Mobberley WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Mobberley WwTW	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19676	Mobberley Brook 59 Great Warford WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Great Warford WwTW	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19677	Mobberley Brook 62 diffuse agricultural pollution	Deliver package of measures to address diffuse agricultural pollution. Identify and rank all the farms on the catchment and inspect the high risk farms to determine their impact on the catchment and secure improvement, as required. Undertake educational farm campaign on best practice land management techniques for dairy/beef agriculture	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19678	Mobberley Brook 63 Alderley Edge WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Alderley Edge WwTW	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19681	Sugar Brook 66 diffuse agricultural pollution	Deliver package of measures to address diffuse agricultural pollution. Identify and rank all the farms on the catchment and inspect the high risk farms to determine their impact on the catchment and secure improvement, as required. Undertake educational farm campaign within catchment on best practice land management techniques for dairy/livestock farming	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19683	River Dean (Bollington to Bollin) 69 Wilmslow WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Wilmslow WwTW	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19684	Rostherne Brook 71 - diffuse agricultural pollution	Deliver package of measures to address diffuse agricultural pollution. Identify and rank all the farms on the catchment and inspect the high risk farms to determine their impact on the catchment and secure improvement, as required. Undertake a catchment wide approach to deliver campaign for best farming practices across the range of farming activities.	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship	Millington Clough Agden Brook	19708	R. Bollin (Ashley Mill to	Reduction in phosphorus concentrations in the final effluent from Bowdon WwTW	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Canal) (GB112069061382)	River Bollin Trib River Bollin 10 Trib River Bollin 11		Manchester Ship Canal) 79 Bowden WwTW P removal				
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19709	R. Bollin (Ashley Mill to Manchester Ship Canal) 80 agricultural pollution	Deliver package of measures to address diffuse agricultural pollution. Identify and rank all the farms on the catchment and inspect the high risk farms to determine their impact on the catchment and secure improvement, as required. Undertake educational farm campaign across catchment on best practice land management techniques for dairy/livestock farming	Yes	Viaducts (GB112069061382-MW-06-VD-01, GB112069061382-MW-09-VD-02)	Minor, localised beneficial
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19710	R. Bollin (Ashley Mill to Manchester Ship Canal) 81 - diffuse urban pollution	Deliver package of measures to address diffuse urban pollution. Identify and rank all major road outfalls in the catchment and determine their impact and work with Trafford Council to address any issues. Work with Warrington Council, Cheshire East and the Highways Agency to look at surface water runoff issues	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	19711	R. Bollin (Ashley Mill to Manchester Ship Canal) 82. High Legh WwTW P removal	Reduction in phosphorus concentrations in the final effluent from High Legh WwTW	No	Not applicable	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin	25767	Birkin Brook Knutsford WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Knutsford WwTW	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
	Trib River Bollin 10 Trib River Bollin 11						
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib River Bollin 10 Trib River Bollin 11	25769	R. Bollin (Ashley Mill to Manchester Ship Canal) Dunham Massey WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Dunham Massey WwTW	No	Not applicable	No effect
Bridgewater Canal (GB71210001)	Bridgewater Canal	No PoM listed for this water body					
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19674	River Bollin (Source to Dean) 55 Macclesfield WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Macclesfield WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19700	River Mersey (upstream of Manchester Ship Canal) 23 - Nutrient reduction Stockport WwTW	Reduction in phosphorus concentrations in the final effluent from Stockport WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19719	River Irwell (Rossendale STW to Radcliffe) 11 - Bury WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Bury WwTW	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19729	Irwell MSC (Kearsley to Irlam Locks) 16 GB112069061451 - Bolton WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Bolton WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19734	Irwell MSC (Kearsley to Irlam Locks) 6 GB112069061452 - Salford WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Salford WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19735	Irwell MSC (Kearsley to Irlam Locks) 7 GB112069061452 - Eccles WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Eccles WwTW - for the Manchester Ship Canal after the point of discharge is relocated	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19737	Irwell MSC (Kearsley to Irlam Locks) 9 GB112069061452 - Davyhulme WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Davyhulme WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19799	River Goyt (Black Brook to Etherow) 29 - Whaley Bridge WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Whaley Bridge WwTW	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19800	River Goyt (Etherow to Mersey) 35 - Hazel Grove WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Hazel Grove WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19810	River Tame (Swineshaw Bk to Mersey) 57 - Ashton-under-Lyne P Reduction	Reduction in phosphorus concentrations in the final effluent from Ashton-under-Lyne WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19894	River Roch (Spodden to Irwell) 9 - Rochdale WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Rochdale WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19898	Additional treatment to reduce BOD and concentrations of ammonia from Oldham STW	Reduction in BOD and ammonia concentrations in the final effluent from Oldham WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	19910	Wince Brook 3a - Oldham WwTW P Reduction	Reduction in phosphorus concentration in the final effluent from Oldham WwTW	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	25763	Sinderland Brook Altrincham WwTW UWWTD P removal	Reduction in phosphorus concentrations in the final effluent from Altrincham WwTW to UWWTD standards	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	25764	Sinderland Brook Altrincham WwTW P removal to WFD standards	Reduction in phosphorus concentrations in the final effluent from Altrincham WwTW to WFD standards	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	38486	River Mersey (upstream of Manchester Ship Canal - Stretford WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Stretford WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	38487	River Mersey (upstream of Manchester Ship Canal) Sale WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Sale WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	38848	Install in-canal aeration system (Irwell / Manchester Ship Canal - Irk to Mersey)	Installation of in-canal aeration system	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	38855	Additional treatment to reduce concentrations of ammonia from Davyhulme wastewater treatment works.	Reduction in ammonia concentrations in the final effluent from Davyhulme WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	38868	River Tame (Swineshaw Brook to Mersey) Dukinfield WwTW P reduction	Reduction in phosphorus concentrations in the final effluent from Dukinfield WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	38869	River Tame (Swineshaw Brook to Mersey) Hyde WwTW P reduction	Reduction in phosphorus concentrations in the final effluent from Hyde WwTW	No	Not applicable	No effect
Mersey/Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	39165	Pennington Brook (Glaze) 72 - Leigh WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Leigh WwTW	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	19673	Sinderland Brook (Fairywell Bk and Baguley Bk) 52 - diffuse urban	Deliver package of measures to address diffuse urban pollution. Work with Manchester Council, Cheshire East Council, Trafford Council and the Highways Agency to address issues from impacts of surface	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
				water runoff. Identify and rank all major road outfalls in the catchment and determine their impact and work with Trafford Council to address any issues			
Sinderland Brook (GB112069060980)	Red Brook	19697	Sinderland Brook 14 - barriers to fish migration	Deliver appropriate mitigation measures. Investigate feasibility and removal of weir	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	19698	Sinderland Brook 16 - diffuse urban pollution	Deliver package of measures to address diffuse urban pollution. Work with Trafford Council and United Utilities to identify and remediate cross-connections in the Woodhouse area. Identify and rank all major road outfalls in the catchment and determine their impact and work with Trafford Council to address any issues	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	19699	Sinderland Brook 17 Partington WwTW ammonia & BOD	Reduction in ammonia and BOD concentrations in the final effluent from Partington WwTW	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	19707	Timperley Brook 46 - diffuse urban	Deliver package of measures to address diffuse urban pollution. Work with Trafford Council and United Utilities to identify and remediate cross-connections in the above areas. Identify and rank all major road outfalls in the catchment and determine their impact and work with Trafford Council to address any issues	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Sinderland Brook (GB112069060980)	Red Brook	25763	Sinderland Brook Altrincham WwTW UWWTD P removal	Reduction in phosphorus concentrations in the final effluent from Altrincham WwTW to UWWTD standards	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	25764	Sinderland Brook Altrincham WwTW P removal to WFD standards	Reduction in phosphorus concentrations in the final effluent from Altrincham WwTW to WFD standards	No	Not applicable	No effect
Sinderland Brook (GB112069060980)	Red Brook	25765	Sinderland Partington WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Partington WwTW	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	19758	Astley Brook 1	Deliver package of measures to address diffuse agricultural pollution - arable - in agricultural land surrounding Tyldesely and Bedford Moss. Catchment walkover has identified issues in river catchment with land-spreading activities, farm infrastructure and field drains in agricultural areas east of Tyldesley (Garrett Hall) and south of Tyldesely, towards confluence with Moss Brook. Workshop identified issues in river catchment with land-spreading activities, ploughing close to water body edge and field drains in agricultural areas surrounding Moss Brook. Similarly, analysis from A&R found intermittent high P levels continue after ammonia levels have dropped and are sometimes independent of ammonia indicating a source other than sewage infrastructure, likely to be diffuse	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
				agricultural pollution from agriculture around Moss Brook or upstream water body.			
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	19761	Astley Brook 4 - Worsley WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Worsley WwTW	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	19764	Astley Brook 7 - Tyldesley WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Tyldesley WwTW	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	19766	Astley Brook 11	Deliver package of measures to address diffuse urban pollution. Workshop suggested that run off from the A580 (East Lancs Road) is the main cause of diffuse pollution in this catchment. This would need further investigation. High cost applied (£800k capex, £20k opex) as road is major dual carriage way with heavy traffic use	Yes	Track alignment; Highway realignment; Access road; Drainage	Negligible
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	19767	Bedford Brook 12 - WIG0082 CSO Improvements	Deliver improvements to WIG0082 Combined Sewer Overflow	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4,	19770	Pennington Brook (Glaze) 19 -	Deliver improvements to WIG0074 Combined Sewer Overflow	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
	Jibcroft Brook, Carr Brook		WIG0074 CSO Improvements				
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	19771	River Glaze 23 - Glazebury WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Glazebury WwTW	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	19772	River Glaze 25	Deliver package of measures to address diffuse urban pollution in Culcheth. SAGIS suggests urban sources contributing 7.5% of phosphate. Otherwise, little data/information about diffuse urban pollution in this catchment. Urban area of Culcheth was suggested as area for investigation in catchment workshop due to suspect CSW and potential for golf courses to be contributing - further investigations are required.	Yes	Track alignment; Highway realignment; Access road; Drainage	Negligible
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	19774	Westleigh Brook 27	SAGIS model suggests contributing 8.4% of phosphate load in this water body. Urban run-off the is suspected as the main source of urban diffuse pollution from urban areas of Hindley, Atherton, Leigh and Westhoughton. Further investigation is required to identify specific areas and realistic solutions. A medium cost has been applied to reflect semi-urban nature of catchment but also the diversity of measures that might be needed to reduce pathway	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	19775	Westleigh Brook 28	Weir with head of 1.96m at Hydrangea Close and weir with head of 2.35m at Cotton Street.	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	19776	Westleigh Brook 29 - Westhoughton WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Westhoughton WwTW	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	20832	Hey/Borsdane Brook 17 - Hindley Pumping Station CSO Improvements	Deliver improvements to Hindley Pumping Station Combined Sewer Overflow	No	Not applicable	No effect
Glaze (GB112069061420)	Holcroft Lane Brook, Tributary of Glaze Brook 4, Jibcroft Brook, Carr Brook	39165	Pennington Brook (Glaze) 72 - Leigh WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Leigh WwTW	No	Not applicable	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	20832	Hey/Borsdane Brook 17 - Hindley Pumping Station CSO Improvements	Deliver improvements to Hindley Pumping Station Combined Sewer Overflow	No	Not applicable	No effect
Birkin Brook - Mobberley Brook to River Bollin (including	Blackburn's Brook Birkin Brook Tributary of Birkin	19675	Mobberley Brook 57 Mobberley WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Mobberley WwTW	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Rostherne Brook) (GB112069061370)	Brook 1 (Middle House Brook)						
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	19676	Mobberley Brook 59 Great Warford WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Great Warford WwTW	No	Not applicable	No effect
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	19677	Mobberley Brook 62 diffuse agricultural pollution	Deliver package of measures to address diffuse agricultural pollution. Identify and rank all the farms on the catchment and inspect the high risk farms to determine their impact on the catchment and secure improvement, as required. Undertake educational farm campaign on best practice land management techniques for dairy/beef agriculture	No	Not applicable	No effect
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	19678	Mobberley Brook 63 Alderley Edge WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Alderley Edge WwTW	No	Not applicable	No effect
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	19684	Rostherne Brook 71 - diffuse agricultural pollution	Deliver package of measures to address diffuse agricultural pollution. Identify and rank all the farms on the catchment and inspect the high risk farms to determine their impact on the catchment and secure improvement, as required. Undertake a catchment wide approach to deliver	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
				campaign for best farming practices across the range of farming activities			
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	25767	Birkin Brook Knutsford WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Knutsford WwTW	No	Not applicable	No effect
Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)	Blackburn's Brook Birkin Brook Tributary of Birkin Brook 1 (Middle House Brook)	40723	Test: fencing	Measure to decrease sediment entering Birkin Brook	Yes	Realignment (GB112069061370-T-06-RE-03), viaducts (GB112069061370-MW-01-VD-01, GB112069061370-MW-02-VD-02)	Minor, localised beneficial
Sugar Brook (GB112069061350)	Tributary of Sugar Brook	No PoM for this water body					
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin Tributary of River Bollin 2 Tributary of River Bollin 3 Tributary of River Bollin 6	19674	River Bollin (Source to Dean) 55 Macclesfield WwTW P removal	Reduction in phosphorus concentrations in the final effluent from Macclesfield WwTW	No	Not applicable	No effect
Bollin (River Dean to Ashley Mill) (GB112069061381)	River Bollin Tributary of River Bollin 2	19683	River Dean (Bollington to Bollin) 69	Reduction in phosphorus concentrations in the final effluent from Wilmslow WwTW	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
	Tributary of River Bollin 3 Tributary of River Bollin 6		Wilmslow WwTW P removal				
Timperley Brook (GB112069061260)	Timperley Brook Tributary of Timperley Brook 1	19707	Timperley Brook 46 - diffuse urban	Deliver package of measures to address diffuse urban pollution. Work with Trafford Council and United Utilities to identify and remediate cross-connections in the above areas. Identify and rank all major road outfalls in the catchment and determine their impact and work with Trafford Council to address any issues	Yes	Track alignment; Highway realignment; Access road; Drainage	At risk at water body scale - further assessment needed
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	19673	Sinderland Brook (Fairywell Bk and Baguley Bk) 52 - diffuse urban	Deliver package of measures to address diffuse urban pollution. Work with Manchester Council, Cheshire East Council, Trafford Council and the Highways Agency to address the above issues from impacts of surface water runoff. Identify and rank all major road outfalls in the catchment and determine their impact and work with Trafford Council to address any issues	Yes	Track alignment; Highway realignment; Access road; Drainage	Negligible
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	19700	River Mersey (upstream of Manchester Ship Canal) 23 - Nutrient reduction Stockport WwTW	Reduction in phosphorus concentrations in the final effluent from Stockport WwTW	No	Not applicable	No effect
Mersey (upstream of Manchester Ship	River Mersey Tributary of River Mersey 2	19702	River Mersey (upstream of Manchester Ship	Deliver improvements to Stockport WwTW storm Tank overflow	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Canal) (GB112069061030)			Canal) 28 Improvements to Stockport WwTW storm overflow				
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	19797	Black Brook 23 - Chapel-en-le Frith WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Chapel-en-le Frith WwTW	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	19799	River Goyt (Black Brook to Etherow) 29 - Whaley Bridge WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Whaley Bridge WwTW	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	19800	River Goyt (Etherow to Mersey) 35 - Hazel Grove WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Hazel Grove WwTW	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	19804	River Etherow (Glossop Brook to Goyt) 44 - Glossop WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Glossop WwTW	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	19807	River Tame (Chew Brook to Swineshaw Bk) 51 - Saddleworth WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Saddleworth WwTW	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	19808	River Tame (Chew Brook to Swineshaw Bk) 54 - Mossley WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Mossley WwTW	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	19810	River Tame (Swineshaw Bk to Mersey) 57 - Ashton-under-Lyne P Reduction	Reduction in phosphorus concentrations in the final effluent from Ashton-under-Lyne WwTW	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	25401	River Mersey (upstream of Manchester Ship Canal) 30 - MAN0244 CSO Improvements	Deliver improvements to MAN0244 Combined Sewer Overflow	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	25402	River Mersey (upstream of Manchester Ship Canal) 31 TRA0036 Improvements	Deliver improvements to TRA0036 Combined Sewer Overflow discharging to Kickety Brook	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	25669	River Mersey (upstream of Manchester Ship Canal) 21- urban diffuse	Measure has not been included as it is considered given the overall contribution of P from urban sources that it will not give a significant improvement. This added with the size of the receiving catchment there will be diluted benefits d/s	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	38486	River Mersey (upstream of Manchester Ship Canal - Stretford WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Stretford WwTW	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	38487	River Mersey (upstream of Manchester Ship Canal) Sale WwTW P Reduction	Reduction in phosphorus concentrations in the final effluent from Sale WwTW	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	38490	River Mersey (upstream of Manchester Ship Canal) - TRA0056 CSO Improvements	Deliver improvements to TRA0056 Combined Sewer Overflow discharging to Kickety Brook	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	38491	River Mersey (upstream of Manchester Ship Canal) - TRA0052 CSO Improvements	Deliver improvements to TRA0052 Combined Sewer Overflow discharging to Kickety Brook	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	38868	River Tame (Swineshaw Brook to Mersey) Dukinfield WwTW P reduction	Reduction in phosphorus concentrations in the final effluent from Dukinfield WwTW.	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	38869	River Tame (Swineshaw Brook to Mersey) Hyde WwTW P reduction	Reduction in phosphorus concentrations in the final effluent from Hyde WwTW	No	Not applicable	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	39422	River Mersey (upstream of Manchester Ship Canal) - MAN0250 CSO Improvements	Deliver improvements to MAN0250 Combined Sewer Overflow	No	Not applicable	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	19712	Fallowfield Brook 85 diffuse urban pollution	Deliver package of measures to address diffuse urban pollution. Identify and rank all major road outfalls in the catchment and determine their impact and work with Trafford Council to address any issues. Work with Manchester Council to address run off issues. Work with United Utilities to address any misconnection issues	Yes	Track alignment; Highway realignment; Access road; Drainage	Negligible
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	19704	Chorlton Brook (Source to Princess Parkway) 40 diffuse urban	Deliver package of measures to address diffuse urban pollution. Work with Manchester City Council and United Utilities to identify and remediate cross-connections in the above areas. Identify and rank all major road outfalls in the catchment and determine their impact and work with Manchester Council to address any issues	Yes	Track alignment; Highway realignment; Access road; Drainage	Negligible
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	19879	River Medlock (Lumb Brook to Irwell) 11 -	Reduction in phosphorus concentrations in the final effluent from Failsworth WwTW	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
			Failsworth WwTW P Reduction				
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	19881	Improvements to Failsworth wastewater treatment works inlet combined storm overflow	Deliver improvements to Failsworth WwTW Inlet Combined Sewer Overflow	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	19883	Improvements to Failsworth wastewater treatment works storm tanks overflow	Deliver improvements to Failsworth WwTW Storm Tank Overflow	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	19884	Improvements to combined storm overflows	Deliver improvements to MAN0131/TAM0004 Combined Sewer Overflow	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	19885	Additional treatment to reduce concentrations of ammonia from Failsworth wastewater treatment works	Reduction in ammonia concentrations in the final effluent from Failsworth WwTW	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	22707	Improvements to combined storm overflow (OLD0151)	Deliver improvements to OLD0151 Combined Sewer Overflow	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	22710	Improvements to combined storm overflow (OLD00100)	Deliver improvements OLD00100 Combined Sewer Overflow	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	22711	Improvements to combined storm overflow (OLD0109)	Deliver improvements to OLD0109 Combined Sewer Overflow	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	22712	Improvements to combined storm overflow (OLD0120)	Deliver improvements to OLD0120 Combined Sewer Overflow	No	Not applicable	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	25331	River Medlock (Lumb Brook to Irwell) 4	Ammonia moved to good between 2012 and 2013. 65% confidence that ammonia is at good status. So diffuse pollution measures put in place to address P only. From SAGIS approximately 25% of pollution is urban - check this is correct. Upstream water body at high so likely that this water body is main source. SAGIS data incomplete for Medlock. Fish failure likely to be due to ammonia and HMWB. As NH improved there may be delayed improvement in fish or HMWB mitigation measures or restocking may be required. Check consider adding separate row or to FCRM info. Water body is heavily urbanised so high costs of delivery assumed	No	Not applicable	No effect
Rostherne Mere - LAKE (GB31232650)	Rostherne Mere	19684	Rostherne Brook 71 - diffuse	Deliver package of measures to address diffuse agricultural pollution. Identify and rank all the farms on the catchment and	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
			agricultural pollution	inspect the high risk farms to determine their impact on the catchment and secure improvement, as required. Undertake a catchment wide approach to deliver campaign for best farming practices across the range of farming activities			
Rostherne Mere - LAKE (GB31232650)	Rostherne Mere	19713	Rostherne Mere 92 - non-mains drainage	Measures to address non mains drainage. Further investigation of unsewered areas is needed to identify all direct sewage discharges, both consented and un-consented. Engage with Parish Council to secure domestic sewerage and farm improvements. Promote application of 1st time sewerage, Parish Councils to highlight areas to United Utilities to see if they can see if they can be included in AMP schemes. Produce a leaflet to promote management and registration of septic tanks	No	Not applicable	No effect
Rostherne Mere - LAKE (GB31232650)	Rostherne Mere	19714	Rostherne Mere 93 - invasive species	Measures to remove Invasive Non-Native Species. Natural England's yearly condition report advises that within the area of open water, there are large amounts of Cladophora and cyanobacteria together with non-native invasive species i.e. *Elodea canadensis* reflecting the high phosphorus loadings within the mere. It also advises that the adjacent woodland areas have pockets of Himalayan Balsam. This is under a controlled programme of management, which seems to be gradually getting to grips with this invasive non-native species	No	Not applicable	No effect

WFD water body (ID)	Watercourses screened in	CPS Action ID	Title	Description	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effect of scheme component(s)
Rostherne Mere - LAKE (GB31232650)	Rostherne Mere	25770	Rostherne Mere - Mere Platts Pumping Station	Cease the Combined Sewer Overflow discharge from Mere Platts Pumping Station (MAC0145)	No	Not applicable	No effect

2.3 HMWB/AWB mitigation measures

The 2015 RBMP HMWB/AWB Mitigation Measures data for the relevant HMWB/AWB affected by the Proposed Scheme have been considered in order to identify the potential for the scheme to inhibit or prevent the successful implementation of measures. The 2015 RBMP HMWB/AWB mitigation measures identified for the relevant water bodies are provided in Table B 6.

Table B 6: Summary of preliminary assessment (scoping) of likely effects of Proposed Scheme on HMWB/AWB mitigation measures identified by the Environment Agency for the relevant WFD surface water bodies

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.8	VB1: Open up Valley Brook culvert through Queen's Park Golf Course [MMA We1420].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.2.7	VB2: Operational and/or structural changes to Queen's Park lake inlet sluice [MMA We1415].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.4	VB3: Remove stone bank revetment at Tipkinder Park or replace with bioengineering alternative [MMA We1412].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.4	VB4: Remove sheet piling revetment along Valley Brook near Collins Street or replace with bioengineering alternative [MMA We1432].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.4	VB5: Remove sheet piling revetment along Valley Brook near Stewart Street or replace with bioengineering alternative [MMA We1431].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.6.3	VB6: Raise public awareness of the river maintenance responsibilities of landowners [MMA Wo1230].	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.6	VB7: Restore in-channel morphological diversity along Valley Brook at park near Flag Lane [MMA We1429].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.4	VB8: Remove stone bank revetment along Valley Brook at park near Flag Lane or replace with bioengineering alternative [MMA We1428].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.7	VB9: Rehabilitation and restoration of degraded bankside habitats along Valley Brook [MMA We1427].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.8	VB10: Open up Valley Brook culvert from railway to Mill Street.	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.2.3	VB11: Install fish pass at Macon Way Railway Weir [MMA Wo1245].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.3.15	VB12: Implement an active sediment management strategy at Macon Way [MMA Wo1244].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.10	VB13: Set back right (north) embankment of Valley Brook within urban greenspace [MMA We1423].	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.2	VB14: Remove two pipes crossing Valley Brook downstream of University footpath [MMA We1422].	N	N/A	No effect
Valley Brook (Englesea Brook to Weaver) (GB112068055310)	Valley Brook	8.1.2	VB15: Remove the pipe crossing Valley Brook downstream of Crewe Green Road [MMA We1411].	N	N/A	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib Bollin 5 Trib Bollin 6	MM.4	MMA We0123- Sow Brook, remove or soften hard bank reinforcement	N	N/A	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib Bollin 5 Trib Bollin 6	MM.4	MMA We0124-Sow Brook, remove or soften hard bank reinforcement	N	N/A	No effect
Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)	Millington Clough Agden Brook River Bollin Trib Bollin 5 Trib Bollin 6	MM.2	MMA We0125- Sow Brook, remove or soften hard bank reinforcement	N	N/A	No effect
Mersey/ Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB112069061011)	Manchester Ship Canal	MM.36	MMA Wo1210 -Appropriate techniques to prevent transfer of invasive species.	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.11	HBB1: Dog Pool Brook floodplain reconnection	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.2	HBB2: Dog Pool Brook weir removal	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.4	HBB3: Dog Pool Brook redundant toe boarding removal	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.2	HBB4: Dog Pool Brook redundant twin culvert removal	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.2	HBB5: Dog Pool Brook weir removal	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.4	HBB6: Dog Pool Brook. Concrete channel leading up to culvert.	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.4	HBB7: Dog Pool Brook. Redundant and degraded toe boarding	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.2	HBB8: Dog Pool Brook outfall removal	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.6	HBB9: Amberswood Brook river restoration	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.9	HBB10: Amberswood Brook culvert alterations	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.2	HBB11: Amberswood Brook weir removal	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.2	HBB12: Hey Brook culvert removal Pennington Flash	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.2	HBB13: Hey Brook weir removal downstream of Slag Lane and dis-used railway	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.2.3	HBB14: Hey Brook weir fish pass downstream of Slag Lane and dis-used railway.	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.4	HBB15: Hey Brook sheet piling down stream of Slag Lane.	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.4	HBB16: Hey Brook stone embankment downstream of Slag Lane.	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.11	HBB17: Hey Brook river restoration	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.2.3	HBB18: Hey Brook Leeds-Liverpool Canal ulvert.	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.6	HBB19: Hey Brook upstream and parallel to Leeds-Liverpool Canal	Y	Hey Brook channel realignment at Wigan Road (GB112069064520-MW-14-OB-01)	Localised, minor beneficial - no risk at water body scale
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook	8.1.8	HBB20: Hey Brook 100-metre culvert parallel to Lily Lane/A58	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
	Hey Brook Coffin Lane Brook					
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.6	HBB21: Hey Brook Bickershaw Lane Platt Bridge	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.6	HBB22: Borsdane Brook near Creswick Close	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.6	HBB23: Borsdane Brook near Borsdane Bridge.	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.2	HBB24: Borsdane Brook masonry weir removal	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook	8.1.4	HBB25: Borsdane Brook near railway line	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
	Hey Brook Coffin Lane Brook					
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.4	HBB26: Borsdane Brook restoration Rayner Park	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.6	HBB27: Borsdane Brook restoration near Romford Place	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.2	HBB28: Borsdane Brook weir removal Rayner Park	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook Hey Brook Coffin Lane Brook	8.1.2	HBB29: Borsdane Brook weir in Borsdane Wood	N	N/A	No effect
Hey/Borsdane Brook (GB112069064520)	Tributary of Hey Brook 4 Windy Bank Brook Nan Holes Brook	8.1.4	HBB30: Borsdane Brook wall in Borsdane Wood	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
	Hey Brook Coffin Lane Brook					
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.2.3	TPB1: Install fish pass on the weir at Woodcote Road footbridge.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.2	TPB2: Remove weir at Woodcote Road footbridge.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.10	TPB3: Set back or lower both embankments either side of Timperley Brook to allow improved connection with Timperley flood basin.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.10	TPB4: Set back left (west) embankment of Timperley Brook within Navigation Recreation Ground urban greenspace.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.4	TPB5: Remove timber board revetment along Timperley Brook at Navigation Recreation Ground or replace with bioengineering alternative.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.4	TPB6: Remove concrete revetment along Timperley Brook at Altrincham Golf Course or replace with bioengineering alternative.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.4	TPB7: Remove stone revetment along Timperley Brook at Blessed Thomas Holford College or replace with bioengineering alternative.	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.4	TPB8: Remove stone revetment along Timperley Brook opposite King George V Pool or replace with bioengineering alternative.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.2.3	TPB9: Install fish pass on Timperley Brook at the King George V Pool weir.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.2	TPB10: Remove King George V Pool weir.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.4	TPB11: Remove concrete revetment along Timperley Brook at Altrincham Golf Course or replace with bioengineering alternative.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.4	TPB12: Remove stone revetment along Timperley Brook at Altrincham Golf Course or replace with bioengineering alternative.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.7	TPB13: Rehabilitation and restoration of degraded bankside habitats along Timperley Brook at Altrincham Golf Course.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.4	TPB14: Remove timber board revetment along Timperley Brook at Ringway Golf Club or replace with bioengineering alternative.	N	N/A	No effect
Timperley Brook (GB112069061260)	Timperley Brook Trib Timperley Brook 1	8.1.8	TPB15: Open up Timperley Brook culvert parallel to Brooks Drive.	Y	Inverted siphon on Timperley Brook	Negligible

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
					(GB112069061260-MW-02-IS-01)	
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.2	MMA We1281: Remove obsolete structure: concrete abutment	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.2	MMA We1282: Remove obsolete structure: weir	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.19	MMA We1283: Enhance ecology	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.9	MMA We1285: Alter culvert channel bed	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.2	MMA We1286: Remove obsolete structure: drowned weir	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.4	MMA We1299: Remove or soften hard bank: Timber revetments	N	N/A	No effect
Sinderland Brook (Fairywell Bk and	Mill Brook Baguley Brook	MM.19	MMA We1300: Enhance ecology	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Baguley Bk) (GB112069061270)						
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.4	MMA We1301: Remove or soften hard bank: Timber revetments	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.19	MMA We1302: Enhance ecology	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.4	MMA We1303: Remove or soften hard bank: Timber revetments	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.19	MMA We1304: Enhance ecology	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.19	MMA We1305: Enhance ecology	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.6	MMA We1306: In-channel morph diversity	N	N/A	No effect
Sinderland Brook (Fairywell Bk and	Mill Brook Baguley Brook	MM.19	MMA We1307: Enhance ecology	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Baguley Bk) (GB112069061270)						
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.19	MMA We1309: Enhance ecology	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.19	MMA We1310: Enhance ecology	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.8	MMA We1311: Re-opening culverts	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.6	MMA We1314: In-channel morph diversity	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.4	MMA We1315: Remove or soften hard bank: concrete bank	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.4	MMA We1316: Remove or soften hard bank: gabion	N	N/A	No effect
Sinderland Brook (Fairywell Bk and	Mill Brook Baguley Brook	MM.4	MMA We1317: Remove or soften hard bank: concrete	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Baguley Bk) (GB112069061270)						
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.4	MMA We1319: Remove or soften hard bank: stone bank	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.4	MMA We1320: Remove or soften hard bank: concrete bank	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.4	MMA We1322: Remove or soften hard bank: Timber revetments	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.4	MMA We1325: Remove or soften hard bank: straightened	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.6	MMA We1326: In-channel morph diversity	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.19	MMA We1327: Enhance ecology	N	N/A	No effect
Sinderland Brook (Fairywell Bk and	Mill Brook Baguley Brook	MM.19	MMA We1328: Enhance ecology	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Baguley Bk) (GB112069061270)						
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.19	MMA We1329: Enhance ecology	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.4	MMA We1330: Remove or soften hard bank: concrete bank	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.2	MMA We1331: Remove obsolete structure: weirs	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.37	MMA Wo1025: Retain habitats	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.39	MMA Wo1026: Maintenance – minimise habitat impact	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.36	MMA Wo1207: invasive species techniques	N	N/A	No effect
Sinderland Brook (Fairywell Bk and	Mill Brook Baguley Brook	MM.47	MMA Wo1369: align and attenuate flow	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Baguley Bk) (GB112069061270)						
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.33	MMA Wo1383: Selective vegetation control	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.34	MMA Wo1384: Vegetation control	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.35	MMA Wo1385: Vegetation control timing	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.38	MMA Wo1429: sediment management strategy	N	N/A	No effect
Sinderland Brook (Fairywell Bk and Baguley Bk) (GB112069061270)	Mill Brook Baguley Brook	MM.40	MMA Wo1450: Maintenance – prevent sediment transfer	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.4	MMA We0246: Remove or soften hard bank	N	N/A	No effect
Mersey (upstream of Manchester Ship	River Mersey Tributary of River Mersey 2	MM.4	MMA We0252: Remove or soften hard bank: scour protection	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Canal) (GB112069061030)						
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.4	MMA We0256: Remove or soften hard bank: sheet piling	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.6	MMA Wo0202: In channel morphological diversity	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.19	MMA Wo0208: Enhance ecology	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.20	MMA Wo0209: changes to locks etc. : Irlam	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.33	MMA Wo0210: Selective vegetation control	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.34	MMA Wo0211: Vegetation control	N	N/A	No effect
Mersey (upstream of Manchester Ship	River Mersey Tributary of River Mersey 2	MM.35	MMA Wo0212: Vegetation control timing	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Canal) (GB112069061030)						
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.36	MMA Wo0213: Invasive species techniques	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.37	MMA Wo0214: Retain habitats	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.39	MMA Wo0216: Maintenance – minimise habitat impact	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.40	MMA Wo0217: Maintenance – prevent sediment transfer	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.47	MMA Wo0219: align and attenuate flow	N	N/A	No effect
Mersey (upstream of Manchester Ship Canal) (GB112069061030)	River Mersey Tributary of River Mersey 2	MM.54	MMA Wo0220: Educate landowners	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.8	MMA We0080: reopening culvert	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.4	MMA Wo0331: remove of soften hard bank: Cringle Fields Park	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.9	MMA Wo0334: Alter culvert channel bed	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.12	MMA Wo0336: increase flood plain connectivity.	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.33	MMA Wo0337: Selective vegetation control	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.34	MMA Wo0338: Vegetation control	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.35	MMA Wo0339: Vegetation control timing	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.36	MMA Wo0340: Invasive species techniques	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.37	MMA Wo0341: Retain habitats	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.38	MMA Wo0342: sediment management strategy	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.47	MMA Wo0343: align and attenuate flow	N	N/A	No effect
Fallowfield Brook (GB112069061410)	Cringle Brook	MM.54	MMA Wo0344: Educate landowners	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.19	MMA We0553: Enhance ecology	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.2	MMA We0556: Remove obsolete structure	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.2	MMA We0559: Remove obsolete structure	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.2	MMA We0561: Remove obsolete structure	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.19	MMA We0562: Enhance ecology	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.19	MMA We0564: Enhance ecology	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.4	MMA We0566: Remove or soften hard bank: stone revetments	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.6	MMA We0567: In-channel morph diversity	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.19	MMA We0568: Enhance ecology	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.19	MMA We0570: Enhance ecology	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.4	MMA We0572: Remove or soften hard bank: canalised channel	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.6	MMA We0573: In-channel morph diversity	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.19	MMA We0574: Enhance ecology	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.8	MMA We0575: Re-opening culverts	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.2	MMA We2149: Remove obsolete structure: weir	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.19	MMA We2150: Enhance ecology	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.9	MMA We2151: Alter culvert channel bed	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.8	MMA We2153: Re-opening culverts	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.19	MMA We2155: Enhance ecology	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.9	MMA We2156: Alter culvert channel bed	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.36	MMA Wo1116: invasive species techniques	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.37	MMA Wo1177: Retain habitats	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.39	MMA Wo1178: Maintenance – minimise habitat impact	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.33	MMA Wo1180: Selective vegetation control	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.34	MMA Wo1181: Vegetation control	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.35	MMA Wo1182: Vegetation control timing	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.40	MMA Wo1318: Maintenance – prevent sediment transfer	N	N/A	No effect
Platt Brook (Source to Fallowfield Bk) (GB112069061060)	Fallowfield Brook Gore Brook	MM.38	MMA Wo1428: sediment management strategy	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.4	MMA We0246: Remove or soften hard bank	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.4	MMA We0252: Remove or soften hard bank: scour protection	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.4	MMA We0256: Remove or soften hard bank: sheet piling	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.6	MMA Wo0202: In channel morphological diversity	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.19	MMA Wo0208: Enhance ecology	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.20	MMA Wo0209: changes to locks etc. : Irlam	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.33	MMA Wo0210: Selective vegetation control	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.34	MMA Wo0211: Vegetation control	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.35	MMA Wo0212: Vegetation control timing	N	N/A	No effect

Water body (ID)	Watercourses screened in within water body	MMA measure reference code	Measure title	Potential for scheme to affect measure	Relevant scheme component(s)	Likely effects of Proposed Scheme
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.36	MMA Wo0213: Invasive species techniques	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.37	MMA Wo0214: Retain habitats	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.39	MMA Wo0216: Maintenance – minimise habitat impact	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.40	MMA Wo0217: Maintenance – prevent sediment transfer	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.47	MMA Wo0219: align and attenuate flow	N	N/A	No effect
Medlock (Lumb Brook to Irwell) (GB112069061152)	River Medlock	MM.54	MMA Wo0220: Educate landowners	N	N/A	No effect

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