In Parliament – Session 2021 - 2022

HS2

High Speed Rail (Crewe – Manchester) Environmental Statement

Volume 5 Appendix: WR-001-00000_Part 2

Water Framework Directive compliance assessment - Part 2 of 2

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Annex C: Detailed impact assessment

1 Current status (surface water)

The detailed impact assessment results for the surface water bodies affected by the Proposed Scheme are summarised here in Table C 1 to Table C 23.

Table C 1: Wistaston Brook (GB112068055280) detailed impact assessment - effects on current status

Wistaston Brook (GB112068055280)					Detailed impact assessment	Detailed impact assessment outcome				
Water body type:	River			**Watercourse (receptor value):**	Basford Brook (High)	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Hydromorphological designation:	Not A/HMWB			**Scheme component (Unique ID):**	David Whitby Way - highway drainage outfall (GB112068055280-MW-02-HD-01)					
Overall status (2015):	Bad			**Description of scheme component:**	*Road drainage outfalls from David Whitby Way; increased traffic load during construction. Drains to Basford Brook. Fails HEWRAT assessment due to existing high background concentrations above EQS in the watercourse, and requires additional assessment/mitigation.*					
Overall status objective:	Good by 2027			**Impact type from scheme component:**						
Overall status (2019)	Bad	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**	**Drainage (changes in water quantity or quality due to discharge of surface water runoff to surface water body);**					
WFD status element	**WFD Quality Element**									
Biological	**Fish**	Bad	Good by 2027	Bad	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
	Macroinvertebrates	Good	Good by 2015	Good	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
	Macrophytes and phytobenthos - combined	Poor	Good by 2027	Moderate	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
Physicochemical	**Dissolved oxygen**	Moderate	Good by 2015	Moderate	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Poor	Good by 2027	Poor	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2016	High	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	N/A (high)	N/A	-	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table 7.8: Weaver (Harbour Brook to Dane) (GB112069060460) detailed impact assessment - effects on current status

| Waterbody Name & Waterbody ID | Weaver (Harbour Brook to Dane) (GB112069060460) | Detailed impact assessment | | |

Table C 3: Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133) detailed impact assessment - effects on current status

Shropshire Union Canal, Market Drayton to Ellesmere Port (GB71210133)					**Detailed impact assessment**				**Detailed impact assessment outcome**				
Water body type:	Canal			**Watercourse (receptor value):**	Shropshire Union Canal (Very high)								
Hydromorphological designation:	Artificial			**Scheme component (Unique ID):**	Shropshire Union Canal Offline Overbridge (GB71210133-MW-01-OB-01)	Shropshire Union Canal Viaduct No.2 (GB71210133-MW-01-VD-01)	Shropshire Union Canal Viaduct No.1 (GB71210133-MW-01-VD-02)	Shropshire Union Canal Viaduct No.3 (GB71210133-MW-01-VD-03)	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Overall status (2015):	Moderate			**Description of scheme component:**	*Clear Span Bridge approx. 126m long, 20m wide*	*An 8.0m wide x 84.5m long RC box girder viaduct, approx. 7m max height.*	*An 8.0m wide x 84.5m long RC box girder viaduct, approx. 7m max height.*	*A 14.0m wide x 84.5m long RC box girder viaduct, up to 7.6m in height above existing ground level.*					
Overall status objective:	Good by 2021			**Impact type from scheme component:**									
Overall status (2019)	Moderate	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**	**Shading**	**Shading**	**Shading**	**Shading**					
WFD status element	**WFD Quality Element**												
Biological	**Fish**	**N/A**	**N/A**	**N/A**	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	**N/A**	**N/A**	**N/A**	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	**N/A**	**N/A**	**N/A**	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	High	Good by 2015	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	High	Good by 2015	N/A	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 4: Dane (Wheelock to Weaver) (GB112068060470) detailed impact assessment - effects on current status

Dane (Wheelock to Weaver) (GB112068060470)					Detailed impact assessment		Detailed impact assessment outcome				
Water body type:	River			**Watercourse (receptor value):**	River Dane (Very high)						
Hydromorphological designation:	Not A/HMWB			**Scheme component (Unique ID):**	River Dane viaduct (GB112068060470-MW-01-VD-01)						
Overall status (2015):	Bad			**Description of scheme component:**	*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.*						
Overall status objective:	Moderate by 2027			**Impact type from scheme component:**							
Overall status (2019)	Moderate										
WFD status element	**WFD Quality Element**	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**	**Shading**	**Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Biological	**Fish**	Good	Good by 2015	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	Bad	Good by 2027	Good	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	Moderate	Moderate by 2015	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Poor	Poor by 2015	Poor	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	High	High by 2015	High	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 5: Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247) detailed impact assessment - effects on current status

Trent and Mersey Canal, summit to Preston Brook Tunnel (GB71210247)					**Detailed impact assessment**			**Detailed impact assessment outcome**				
Water body type:	Canal			**Watercourse (receptor value):**	Trent and Mersey Canal (Very High)							
Hydromorphological designation:	Artificial			**Scheme component (Unique ID):**	River Dane viaduct (GB71210247-MW-01-VD-01)	Puddinglake Brook viaduct (GB71210247-MW-01-VD-02)	Trent and Mersey Canal viaduct (GB71210247-MW-01-VD-03)					
Overall status (2015):	Moderate			**Description of scheme component:**	*A 14.0m wide x 1,13km RC box girder viaduct comprising 26 spans up to a max. height of 28.9m.*	*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*	*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.*					
Overall status objective:	Moderate by 2015			**Impact type from scheme component:**								
Overall status (2019)	Moderate											
WFD status element	**WFD Quality Element**	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**	**Shading**	**Shading**	**Shading**	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Biological	**Fish**	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	N/A	N/A	N/A	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	N/A	N/A	N/A	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Fail	Fail by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 6: Puddinglake Brook (GB112068060220) detailed impact assessment - effects on current status

Puddinglake Brook (GB112068060220)					**Detailed impact assessment**				**Detailed impact assessment outcome**				
Water body type:	River			**Watercourse (receptor value):**	Puddinglake Brook (High)								
Hydromorphological designation:	Not A/HMWB			**Scheme component (Unique ID):**	Puddinglake Brook Viaduct (GB112068060220-MW-01-VD-01)	MA02 Granular borrow pit D (GB112068060220-MW-01-BP-01)	Puddinglake Brook Overbridge (GB112068060220-MW-01-OB-01)	A530 King Street - Highway Drainage Outfall GB112068060220-MW-01-HD-01)	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Overall status (2015):	Poor			**Description of scheme component:**	*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.*	*Borrow pit assumed average extraction depth 3m, and maximum extraction depth 5m. The excavation will be in glaciofluvial sheet deposits.*	*Whatcroft Hall Lane temporary road realignment*	*Road drainage outfalls from A530 King Street; increased traffic loading. Drains to Puddinglake Brook. Fails HEWRAT assessment due to existing high background concentrations above EQS in the watercourse, and requires additional assessment/mitigation*					
Overall status objective:	Good by 2027			**Impact type from scheme component:**		**Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**		**Drainage (changes in water quantity or quality due to discharge of surface water runoff to surface water body);**					
Overall status (2019)	Poor	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**	**Shading**		**Shading**						
WFD status element	**WFD Quality Element**												
Biological	**Fish**	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Dewatering abstraction will be discharged into Puddinglake Brook to mitigate dewatering impacts and Borrow Pit restoration strategy will be implemented to ensure infill does not permanently alter gw-sw connectivity. Further development of mitigation, including any additional land will be required to confirm that residual effects can be reduced. Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
	Macroinvertebrates	Moderate	Good by 2027	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Dewatering abstraction will be discharged into Puddinglake Brook to mitigate dewatering impacts and Borrow Pit restoration strategy will be implemented to ensure infill does not permanently alter gw-sw connectivity. Further development of mitigation, including any additional land will be required to confirm that residual effects can be reduced. Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
	Macrophytes and phytobenthos - combined	Poor	Good by 2027	Poor	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Dewatering abstraction will be discharged into Puddinglake Brook to mitigate dewatering impacts and Borrow Pit restoration strategy will be implemented to ensure infill does not permanently alter gw-sw connectivity. Further development of mitigation, including any additional land will be required to confirm that residual effects can be reduced. Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
Physicochemical	**Dissolved oxygen**	High	Good by 2015	Poor	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	Localised adverse effect anticipated when additional mitigation applied. No deterioration in status of quality element anticipated at water body scale.	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Poor	Good by 2027	Poor	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	Moderate	Good by 2021	Poor	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Dewatering abstraction will be discharged into Puddinglake Brook to mitigate dewatering impacts and Borrow Pit restoration strategy will be implemented to ensure infill does not permanently alter gw-sw connectivity. Further development of mitigation, including any additional land will be required to confirm that residual effects can be reduced.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Dewatering abstraction will be discharged into Puddinglake Brook to mitigate dewatering impacts and Borrow Pit restoration strategy will be implemented to ensure infill does not permanently alter gw-sw connectivity. Further development of mitigation, including any additional land will be required to confirm that residual effects can be reduced.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
	River continuity				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 7: Wade Brook (GB112068060370) detailed impact assessment - effects on current status

Wade Brook (GB112068060370)					Detailed impact assessment												Detailed impact assessment outcome				
Water body type:	River			Watercourse (receptor value):	Gad Brook (Moderate)		Tributary of Gad Brook 3 (Moderate)			Wade Brook (High)							Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies	Overall effect on quality element at water body scale	Additional mitigation requirements	Residual effect on quality element at water body scale	WFD compliance outcome - potential for deterioration of current status of quality element at water body scale
Hydromorphological designation:	Not A/HMWB			Scheme component (Unique ID):	Gad Brook viaduct (GB112068060370-T-01-VD-01)	A530 King Street - highway drainage outfall GB112068060370-T-01-HD-01)	Gad Brook viaduct (GB112068060370-T-02-VD-02)	A530 King Street - highway drainage outfall (GB112068060370-T-02-HD-01)	Penny's Lane realignment - highway drainage outfall (GB112068060370-T-02-HD-02)	Wade Brook viaduct (GB112068060370-MW-04-VD-03)	Extension of existing culvert (GB112068060370-MW-04-CVX-01)			A556 Shurlach Road realignment - highway drainage outfall (GB112068060370-MW-04-HD-01)	Wade Brook overbridge (GB112068060370-MW-04-OB-01)						
Overall status (2015):	Poor			Description of scheme component:	*A 14.0m wide x 980.0m RC box girder viaduct comprising 28 x 35.0m spans up to a max. height of 17.6m.*	*Road drainage outfalls from A530 King Street; increased traffic load. Drains to Gad Brook. Fails HEWRAT assessment due to existing high background concentrations above EQS in the watercourse, and requires additional assessment/mitigation.*	*A 14.0m wide x 980.0m RC box girder viaduct comprising 28 x 35.0m spans up to a max. height of 17.6m.*	*Road drainage outfalls from A530 King Street; increased traffic load. Drains to Tributary of Gad Brook 3. Fails HEWRAT assessment due to existing high background concentrations above EQS in the watercourse, and requires additional assessment/mitigation.*	*Road drainage outfalls from Penny's Lane Realignment. Drains to Tributary of Gad Brook 3. Fails HEWRAT assessment due to existing high background concentrations above EQS in the watercourse, and requires additional assessment/mitigation.*	*A 14.0m wide x 285.0m long RC box girder viaduct comprising 2 x 30.0m spans, 4 x 35.0m spans, 50.0m and 35.0m span up to a max. height of 17.5m.*	*Access road follows route of existing road and crosses watercourse. No culvert in design drawings, but assumed that in worst-case precautionary basis this will require extension of existing culvert.*			*Road drainage outfalls from A556 Shurlach Road Realignment. Drains to Wade Brook. Fails HEWRAT assessment due to existing high background concentrations above EQS in the watercourse, and requires additional assessment/mitigation*	*Offline Overbridge for A556 Shurlach Road over Wade Brook, approximately 105.0m in length.*						
Overall status objective:	Good by 2027			Impact type from scheme component:	Shading	Drainage (changes in water quantity or quality due to discharge of surface water runoff to surface water body);	Shading	Drainage (changes in water quantity or quality due to discharge of surface water runoff to surface water body);	Drainage (changes in water quantity or quality due to discharge of surface water runoff to surface water body);	Shading	Footprint	Shading	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Drainage (changes in water quantity or quality due to discharge of surface water runoff to surface water body);	Shading	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream					
Overall status (2019)	Poor	RBMP cycle 2 2015 status	RBMP cycle 2 status objective	2019 status																	
WFD status element	WFD Quality Element																				
Biological	Fish	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
	Macroinvertebrates	Poor	Good by 2027	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
	Macrophytes and phytobenthos - combined	Poor	Good by 2027	Poor	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
Physicochemical	Dissolved oxygen	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Moderate	Good by 2027	Moderate	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	Moderate	Good by 2027	Bad	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	Good	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	Copper, Triclosan, Zinc	Moderate	High by 2027	Moderate	Impacts on element screened out at preliminary assessment stage.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Impacts on element screened out at preliminary assessment stage.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Due to failure of HEWRAT toxicity test (high existing background EQS levels therefore additional drainage may make this worse), additional mitigation for highway drainage runoff will need to be identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
Hydromorphological	Quantity and dynamics of water flow	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	Priority substances	Fail	Good by 2027	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C.8: Pevover Eye (GB112068066390) detailed impact assessment - effects on current status

Pevover Eye (GB112068066390)					Detailed impact assessment									Detailed impact assessment outcome			
Water body type:	River			Watercourse (receptor value):	Tributary of Pevover Eye (Moderate)				Pevover Eye (High)								
Hydromorphological designation:	Not A/HMWB			Scheme component (Unique ID):	Smoker Brook viaduct (GB112068060390-T-01-VD-01)		Tributary of Pevover Eye - watercourse realignment (GB112068060390-T-01-RE-01)		Smoker Brook viaduct		Pevover Eye - watercourse realignment (GB112068060390-MM-02-RE-01)						
Overall status (2015):	Poor			Description of scheme component:	*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.*		*Two realignments of Tributary of Pevover Eye of 46m and 20m in length respectively, to avoid viaduct piers*		*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.*		*Realignment of Pevover Eye for 44m to avoid viaduct pier.*						
Overall status objective:	Good by 2027			Impact type from scheme component:													
Overall status (2019):	Bad	RBMP cycle 2 2015 status	RBMP cycle 2 status objective	2019 status	Shading	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Footprint	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Shading	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Footprint	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies	Overall effect on quality element at water body scale	Additional mitigation requirements	Residual effect on quality element at water body scale	WFD compliance outcome - potential for deterioration of current status of quality element at water body scale
WFD status element	WFD Quality Element																
Biological	Fish	Poor	Good by 2027	Bad	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	High	Good by 2015	Good	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	Moderate	Good by 2027	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	Dissolved oxygen	High	Good by 2015	Good	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Moderate	Good by 2027	Moderate	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	Copper, Triclosan, Zinc	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	Quantity and dynamics of water flow	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	Priority substances	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	No impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 9: Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410) detailed impact assessment - effects on current status

Smoker Brook (Gale Brook to Wincham Brook) (GB112068060410)					Detailed Impact Assessment															Detailed impact assessment outcome				
Water body type:	River			Watercourse (receptor value):	Smoker Brook (High)		Waterless Brook / Arley Brook (High)	Tabley Brook	Tributary of Tabley Brook 2					Tributary of Tabley Brook 3			Tributary of Tabley Brook 9			Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies	Overall effect on quality element at water body scale	Additional mitigation requirements	Residual effect on quality element at water body scale	WFD compliance outcome - potential for deterioration of current status of quality element at water body scale
Hydromorphological designation:	Not A/HMWB			Scheme component (Unique ID):	Smoker Brook viaduct (GB112068060410-MW-01-VD-01)		Arley Brook viaduct (GB112068060410-MW-03-VD-02)	Site access clear span bridge over Tabley Brook (GB112068060410-T-01-OB-01)	Bongs Wood culvert (GB112068060410-T-04-CV-01)			Realignment (GB112068060410-T-04-RE-01)		Extension of existing culvert (GB112068060410-T-05-CVX-01)			Hoo Green short tunnel (GB112068060410-T-10-TP-01)	Hoo Green south cutting retaining wall (GB112068060410-T-10-CU-01)	Hoo Green north cutting (GB112068060410-T-10-CU-02)					
Overall status (2015):	Poor			Description of scheme component:	*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.*		*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.*	*Overbridge / clear span bridge associated with temporary access road crossing Tabley Brook*	*Bongs Wood Culvert approx.. 70m in length*			*15m length realigned to flow through Bongs Wood Culvert. Total length of realignment including culvert is 85m.*		*Access road (no existing road) crossing tributary. Assumed that in worst-case this will require extension of existing culvert.*			*297m long box structure Up to 8.7mbgl*	*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.*	*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.*					
Overall status objective:	Good by 2027			Impact type from scheme component:																				
Overall status (2019)	Bad	RBMP cycle 2 2015 status	RBMP cycle 2 status objective	2019 status	Shading	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Shading	Shading	Footprint	Shading	Changes to hydromorphology leading to changes in process and habitat upstream /downstream	Footprint	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Footprint	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Shading	Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream					
WFD status element	WFD Quality Element																							
Biological	Fish	Poor	Good by 2027	Bad	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	Dissolved oxygen	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Moderate	Good by 2027	Moderate	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	High	Good by 2015	Good	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	Copper, Triclosan, Zinc	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	Quantity and dynamics of water flow	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	Priority substances	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 10: Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382) detailed impact assessment - effects on current status

Bollin (Ashley Mill to Manchester Ship Canal) (GB112069061382)					**Detailed impact assessment**								**Detailed impact assessment outcome**				
Water body type:	River			**Watercourse (receptor value):**	Millington Clough (High)		Agden Brook (Moderate)		Tributary of River Bollin 10 (Moderate)	Tributary of River Bollin 11 (Moderate)		River Bollin (Very High)	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Hydromorphological designation:	HMWB			**Scheme component (Unique ID):**	Millington Clough underbridge (GB112069061382-MW-05-UB-01)	Millington Clough offline underbridge (GB112069061382-MW-05-UB-02)	Agden Brook viaduct (GB112069061382-MW-06-VD-01)	Millington cutting (GB112069061382-MW-06-CU-01)	Millington cutting (GB112069061382-T-07-CU-01)	Millington cutting (GB112069061382-T-08-CU-01)	Rostherne cutting retaining wall west (GB112069061382-T-08-CU-02)	River Bollin West viaduct (GB112069061382-MW-11-VD-02)					
Overall status (2015):	Moderate			**Description of scheme component:**	*Millington Clough Underbridge approx. 58m in length and max. 5.6m above existing ground level (Confirm component naming and height)*	*Offline Overbridge for Peacock Lane Access Track over Millington Clough*	*A 119.0m long concrete box girder viaduct, up to 13.7m high, comprising 5 x 27.17m spans.*	*1.46km long* *Up to a depth of 11.4mbgl* *Connects with Manchester to Liverpool Junction*	*1.46km long* *Up to a depth of 11.4mbgl* *Connects with Manchester to Liverpool Junction*	*1.46km long* *Up to a depth of 11.4mbgl* *Connects with Manchester to Liverpool Junction*	*110m long* *Varying in depth up to 6.8mbgl*	*A 14m wide x 400.0m long precast 'W' type pre-stressed precast beams and in-situ deck viaduct comprising 2 x 17.5m spans and 17 x 25.0m spans, ranging from 10.2m to 6.3m in height.*					
Overall status objective:	Moderate by 2015			**Impact type from scheme component:**	**Shading**	**Shading**	**Shading**	**Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**	**Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**	**Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**	**Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**	**Shading**					
Overall status (2019)	Moderate	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**													
WFD status element	**WFD Quality Element**																
Biological	**Fish**	Poor	Good by 2027	Poor	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	Moderate	Good by 2027	Good	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	N/A	N/A	N/A	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	High	Good by 2015	Good	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Poor	Moderate by 2027	Poor	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	Good	Good by 2027	Good	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 11: Bridgewater Canal (GB71210001) detailed impact assessment - effects on current status

Bridgewater Canal (GB71210001)					**Detailed impact assessment**	**Detailed impact assessment outcome**				
Water body type:	Canal			**Watercourse (receptor value):**	Bridgewater Canal (Very High)	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Hydromorphological designation:	Artificial			**Scheme component (Unique ID):**	Bridgewater Canal viaduct (GB71210001-MW-01-VD-01)					
Overall status (2015):	Moderate			**Description of scheme component:**	*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.*					
Overall status objective:	Good by 2027			**Impact type from scheme component:**						
Overall status (2019)	Moderate	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**	**Shading**					
WFD status element	**WFD Quality Element**									
Biological	**Fish**	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	N/A	N/A	N/A	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	N/A	N/A	N/A	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	N/A	N/A	N/A	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	N/A	N/A	N/A	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 12: Mersey/ Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB11206906101l) detailed impact assessment - effects on current status

Mersey/ Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin) (GB11206906101l)					**Detailed impact assessment**			**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Detailed impact assessment outcome**			
Water body type:	River			**Watercourse (receptor value):**	Manchester Ship Canal (Very high)				**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Hydromorphological designation:	HMWB			**Scheme component (Unique ID):**	Manchester Ship Canal Viaduct (GB11206906101l-MW-03-VD-02)							
Overall status (2015):	Moderate			**Description of scheme component:**	*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.*							
Overall status objective:	Moderate by 2015			**Impact type from scheme component:**								
Overall status (2019)	Moderate				**Footprint**	**Shading**	**Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**					
WFD status element	**WFD Quality Element**	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**								
Biological	**Fish**	N/A	N/A	N/A	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	Bad	Bad by 2015	Bad	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	Good	Good by 2015	Good	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	Good	Moderate by 2021	Bad	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Poor	Poor by 2015	Poor	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	Moderate	Moderate by 2015	Moderate	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	Moderate	N/A	High	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 13: Sinderland Brook (GB112069060980) detailed impact assessment - effects on current status

Sinderland Brook (GB112069060980)					Detailed impact assessment	Detailed impact assessment outcome				
Water body type:	River			**Watercourse (receptor value):**	Red Brook (High)	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Hydromorphological designation:	Not A/HMWB			**Scheme component (Unique ID):**	Manchester Ship Canal viaduct (GB112069060980-MW-01-VD-01)					
Overall status (2015):	Poor			**Description of scheme component:**	*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.*					
Overall status objective:	Moderate by 2015			**Impact type from scheme component:**						
Overall status (2019)	Poor									
WFD status element	**WFD Quality Element**	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**	**Shading**					
Biological	**Fish**	Moderate	Good by 2027	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	Moderate	Good by 2027	Poor	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	Poor	Moderate by 2015	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	Good	Good by 2015	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Moderate	Moderate by 2015	Poor	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	Moderate	Good by 2027	Good	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	High	High by 2015	High	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table 1 - for Wave 1 WFD Compliance only: description of impact assessment - effects on current status

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Table C 16: Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370) detailed impact assessment - effects on current statu

Birkin Brook - Mobberley Brook to River Bollin (including Rostherne Brook) (GB112069061370)					Detailed impact assessment											Detailed impact assessment outcome				
Water body type:	River	Watercourse (receptor value):			Blackburn's Brook (Moderate)	Birkin Brook (High)	Tributary of Birkin Brook 1 (Middle House Brook) (Moderate)													
Hydromorphological designation:	Not A/HMWB	Scheme component (Unique ID):			Blackburn's Brook Viaduct (GB112069061370-MW-01-VD-01)	Birkin Brook Viaduct (GB112069061370-MW-02-VD-02)	Realignment (GB112069061370-T-06-RE-03)		Mobberley Road Offline Overbridge (GB112069061370-T-06-OB-02)	Extension of existing culvert (GB112069061370-T-06-CVX-03)			Ashley Road Offline East Culvert (GB112069061370-T-06-CVH-04)							
Overall status (2015):	Bad	Description of scheme component:			*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*	*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*	*Approx. length of realignment 680m - permanent realignment proposed due to Ashley Railhead being in place for c.5years*		*Bridge over realigned channel*	*Tributary crosses track at location of existing culvert. No additional culvert shown in Gigi, so assumed to be extension of existing culvert*			*Ashley Road Offline East Culvert approx. 22m in length*							
Overall status objective:	Moderate by 2027	Impact type from scheme component:																		
Overall status (2019)	Bad																			
WFD status element	WFD Quality Element	RBMP cycle 2 2015 status	RBMP cycle 2 status objective	2019 status	Shading	Shading	Footprint	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Shading	Footprint	Shading	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Footprint	Shading	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies	Overall effect on quality element at water body scale	Additional mitigation requirements	Residual effect on quality element at water body scale	WFD compliance outcome - potential for deterioration of current status of quality element at water body scale
Biological	Fish	Bad	Good by 2027	Bad	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	Moderate	Moderate by 2015	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	Dissolved oxygen	Poor	Good by 2027	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Moderate	Moderate by 2015	Good	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	Copper, Triclosan, Zinc	High	High by 2015	High	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	Quantity and dynamics of water flow	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	Priority substances	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 17: Rostherne Mere (GB31232650) detailed impact assessment - effects on current status

Rostherne Mere (GB31232650)					**Detailed impact assessment**						**Detailed impact assessment outcome**				
Water body type:	Lake			**Watercourse (receptor value):**	Rostherne Mere (Very high)						**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Hydromorphological designation:	Not A/HMWB			**Scheme component (Unique ID):**	Millington cutting (GB31232650-LAKE-01-CU-01) including:		Rostherne cutting (GB31232650-LAKE-01-CU-02) including:		Hoo Green North cutting (GB31232650-LAKE-01-CU-03) including:						
Overall status (2015):	Bad			**Description of scheme component:**	*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*		*Rostherne Cutting Is approx. 0.8km in length, with a maximum 7.8m cutting depth. The cutting will penetrate the glacial till. The bored piles associated with Rostherne east*		*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*						
Overall status objective:	Moderate by 2027			**Impact type from scheme component:**	**Changes in lake hydrological regime / Changes to water body hydromorphology**	**Changes in water quality due to discharge of groundwater to surface water**	**Changes in lake hydrological regime / Changes to water body hydromorphology**	**Changes in water quality due to discharge of groundwater to surface water**	**Changes in lake hydrological regime / Changes to water body hydromorphology**	**Changes in water quality due to discharge of groundwater to surface water**					
Overall status (2019)	Bad	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**											
WFD status element	**WFD Quality Element**														
Biological	**Fish**	N/A	N/A	N/A	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates (Chironomids)	Good	Good by 2015	Good	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phytoplankton	Poor	Good by 2027	Poor	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and Phytobenthos - combined	Bad	Good by 2027	Bad	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	Poor	Good by 2027	Poor	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Acid neutralising capacity	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Total Phosphorus	Bad	Poor by 2027	Bad	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Salinity	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific Pollutants	**Copper**	High	High by 2015	High	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Hydrological Regime**	Supports Good	Supports Good by 2015	High	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Morphology	High		High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 18: Sugar Brook (GB112069061350) detailed impact assessment - effects on current status

Sugar Brook (GB112069061350)					**Detailed impact assessment**				**Detailed impact assessment outcome**			
Water body type:	River	**Watercourse (receptor value):**			Tributary of Sugar Brook (Moderate)							
Hydromorphological designation:	Not A/HMWB	**Scheme component (Unique ID):**			Extension of existing culvert (GB112069061350-T-02-CVX-01)							
Overall status (2015):	Moderate	**Description of scheme component:**			*Tributary crosses Ashley. Railhead footprint adjacent to existing railway culvert.*							
Overall status objective:	Good by 2027	**Impact type from scheme component:**										
Overall status (2019)	Moderate	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**	**Footprint**	**Shading**	**Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
WFD status element	**WFD Quality Element**											
Biological	**Fish**	N/A	N/A	N/A	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	Good	Good by 2015	High	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	Moderate	Good by 2027	Moderate	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Moderate	Good by 2027	Moderate	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by2015	High	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	High	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 19: Bollin (River Dean to Ashley Mill) (GB112069061381) detailed impact assessment - effects on current status

Bollin (River Dean to Ashley Mill) (GB112069061381)					**Detailed impact assessment**					**Detailed impact assessment outcome**			
Water body type:	River			**Watercourse (receptor value):**	River Bollin (Very High)	Tributary of River Bollin 2	Tributary of River Bollin 3	Tributary of River Bollin 6	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Hydromorphological designation:	Not A/HMWB			**Scheme component (Unique ID):**	River Bollin East viaduct (GB112069061381-MW-01-VD-01)	M56 East tunnel (GB112069061381-T-02-BT-01)	M56 East tunnel (GB112069061381-T-03-BT-01)	Thorns Green cutting (GB112069061381-T-05-CU-01)					
Overall status (2015):	Moderate			**Description of scheme component:**	*A 100.0m long viaduct comprising 1x 21.3m span and 1 x 32.4m span and 1x25.4m span, up to a max. height of 12.3m.*	*133m long box structure Up to a maximum depth of 11m*	*133m long box structure Up to a maximum depth of 11m*	*1km in length, with a maximum cutting depth of 11m and width of 76m.*					
Overall status objective:	Moderate by 2015			**Impact type from scheme component:**									
Overall status (2019)	Moderate	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**	**Shading**	**Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**	**Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**	**Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**					
WFD status element	**WFD Quality Element**												
Biological	**Fish**	Moderate	Good by 2027	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	N/A	N/A	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	N/A	N/A	Good	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Poor	Moderate by 2027	Poor	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	Poor	Good by 2027	Moderate	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C.20: Timperley Brook (GB112069061260) detailed impact assessment - effects on current status

Waterbody ID: (GB112069061260)					Detailed impact assessment								Detailed impact assessment outcome				
Waterbody type:	River			Watercourse (receptor value):	Timperley Brook (Moderate)												
Hydromorphological designation:	HMWB			Scheme component (Unique ID):	Timperley Brook inverted siphon (GB112069061260-MW-01-IS-01)			Timperley Brook realignment (GB112069061260-MW-01-RE-01)		Manchester Airport High Speed Station cutting retaining wall (GB112069061260-MW-01-CU-01)	Highway Drainage - M56 East and West Link realignment/ Access to Manchester Airport High Speed Station/ Runger Lane realignment (GB112069061260-MW-01-HD-01)		Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies	Overall effect on quality element at water body scale	Additional mitigation requirements	Residual effect on quality element at water body scale	WFD compliance outcome - potential for deterioration of current status of quality element at water body scale
Overall status (2015):	Moderate			Description of scheme component:	*Timperley Brook Culvert would be constructed as an inverted siphon under the station, rejoining the existing watercourse west of the station. Siphon expected to be approximately 170m in length, plus additional realignment of up to 120m.*			*Timperley Brook realigned (approx. length 330m) downstream of Brooks Drive (which has a currently culverted length of watercourse) as offsite mitigation for impact of inverted siphon. This will also provide a flood compensation area.*		*Manchester Airport High Speed cutting is approx. 250m in length, with a maximum of 15.5m cutting depth. The cutting will penetrate the glacial till and the Mercia Mudstone Group. The Manchester Airport High Speed cutting retaining wall north is 230m in length, of which part will be below ground level.*	*Road drainage outlet 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*					
Overall status objective:	Good by 2027			Impact type from scheme component:													
Overall status (2019):	Moderate				Footprint	Shading	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Footprint	Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream	Drainage (changes in water quantity or quality due to discharge of surface water runoff to surface water body):						
WFD status element	**WFD Quality Element**	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**													
Biological	**Fish**	N/A	N/A	N/A	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	The impact of lost open channel from the siphon footprint will be mitigated by creating an area of new open channel of approximately 300-350m length downstream, where the brook is currently culverted under and along a road. Due to failure of HEWRAT toxicity test, additional mitigation for highway drainage runoff (holding tanks and swales) has been identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
	Macroinvertebrates	Moderate	Good by 2027	Moderate	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	The impact of lost open channel from the siphon footprint will be mitigated by creating an area of new open channel of approximately 300-350m length downstream, where the brook is currently culverted under and along a road. Due to failure of HEWRAT toxicity test, additional mitigation for highway drainage runoff (holding tanks and swales) has been identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
	Macrophytes and phytobenthos - combined	Moderate	Good by 2027	Moderate	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	The impact of lost open channel from the siphon footprint will be mitigated by creating an area of new open channel of approximately 300-350m length downstream, where the brook is currently culverted under and along a road. Due to failure of HEWRAT toxicity test, additional mitigation for highway drainage runoff (holding tanks and swales) has been identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
Physicochemical	**Dissolved oxygen**	Good	Good by 2015	Good	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Moderate	Good by 2027	Moderate	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	Good	Good by 2015	Moderate	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	High	High by 2015	High	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Widespread adverse effect anticipated despite embedded mitigation. There is a risk that there could be deterioration in the status of the quality element at the water body scale. Requires consideration of additional mitigation and residual effect.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Due to failure of HEWRAT toxicity test, additional mitigation for highway drainage runoff (holding tanks and swales) has been identified and included in the design. Water quality data to determine background concentration levels in relation to EQS is required and the assessment will be ongoing during passage of the hybrid Bill. Further investigations will be undertaken in consultation with the Environment Agency and other stakeholders, to identify appropriate mitigation measures to mitigate any significant effects on water quality. On a precautionary basis, until such time as these investigations are carried out, a residual	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non compliant - risk of deterioration of current status
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Widespread adverse effect anticipated when scheme component effects considered in combination. There is a risk that there could be deterioration in the status of the quality element at a water body scale. Requires consideration of additional mitigation and residual effect.	The impact of lost open channel from the siphon footprint will be mitigated by creating an area of new open channel of approximately 300-350m length downstream, where the brook is currently culverted under and along a road.	Localised adverse effect anticipated after additional mitigation. No deterioration in status of quality element anticipated at the water body scale.	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	None	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 21: Sinderland Brook (Fairywell Brook and Baguley Brook) (GB112069061270) detailed impact assessment - effects on current status

Sinderland Brook (Fairywell Brook and Baguley Brook) (GB112069061270)					Detailed impact assessment			Detailed impact assessment outcome			
Water body type:	River			**Watercourse (receptor value):**	Baguley Brook (Moderate)	Mill Brook (Moderate)					
Hydromorphological designation:	HMWB			**Scheme component (Unique ID):**	Manchester tunnel GB112069061270-MW-03-BT-01 Altrincham Road vent shaft	Manchester tunnel GB112069061270-T-02-BT-01					
Overall status (2015):	Moderate			**Description of scheme component:**	*Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages.* *Altrincham Road Vent Shaft has a 24.0m internal diameter and is up to 48.6mbgl*	*Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages.*	**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Overall status objective:	Good by 2027			**Impact type from scheme component:**							
Overall status (2019)	Moderate	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**	**Changes in flow velocity and volume**	**Impacts from bored tunnel are scoped out of detailed impact assessment at Preliminary Assessment stage, unless flagged as a risk in Groundwater WFD assessment**					
WFD status element	**WFD Quality Element**										
Biological	**Fish**	N/A	N/A	N/A	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	N/A	N/A	Poor	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	N/A	N/A in 2015	N/A	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	N/A	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Moderate	Good by 2027	Poor	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	High	High by 2015	High	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	N/A	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	N/A	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 22: Mersey (upstream of Manchester Ship Canal) (GB112069061030) detailed impact assessment - effects on current status

Mersey (upstream of Manchester Ship Canal) (GB112069061030)					**Detailed impact assessment**			**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Detailed impact assessment outcome**			
Water body type:	River			**Watercourse (receptor value):**	River Mersey (Very high)	Tributary of River Mersey 2 (Moderate)			**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Hydromorphological designation:	HMWB			**Scheme component (Unique ID):**	Manchester tunnel GB112069061030-MW-01-BT-01	Manchester tunnel GB112069061030-T-02-BT-01						
Overall status (2015):	Moderate			**Description of scheme component:**	*Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages.*	*Consists of twin bored tunnels 12.8km in length, 7.55m internal diameter, and max. 43.0m deep. There are 37 cross passages. Palatine Road Vent Shaft is 41.5m by 51.0m internal diameter and depth of 36.6mbgl*						
Overall status objective:	Moderate by 2015			**Impact type from scheme component:**	**Impacts from bored tunnel are scoped out of detailed impact assessment at Preliminary Assessment stage, unless flagged as a risk in Groundwater WFD assessment**	**Changes in flow velocity and volume / Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**	**Changes in water quality due to discharge of groundwater to surface water body**					
Overall status (2019)	Moderate	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**									
WFD status element	**WFD Quality Element**			**2019 status**								
Biological	**Fish**	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	N/A	N/A	N/A	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	N/A	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Poor	Poor by 2015	Poor	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	Good	Good by 2015	Good	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	High	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	High	High by 2015	High	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2015	Supports Good	Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	N/A	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	N/A	Element is insensitive to impact. No measurable change to quality element.	N/A	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	Good	Good by 2015	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	N/A	Impacts on element screened out at preliminary assessment stage.	N/A	N/A	Compliant - no deterioration in quality element status anticipated

Table C 23: Medlock (Lumb Brook to Irwell) (GB112069061152) detailed impact assessment - effects on current status

Medlock (Lumb Brook to Irwell) (GB112069061152)					Detailed impact assessment						Detailed impact assessment outcome				
Water body type:	River	**Watercourse (receptor value):**			**River Medlock (High)**						**Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies**	**Overall effect on quality element at water body scale**	**Additional mitigation requirements**	**Residual effect on quality element at water body scale**	**WFD compliance outcome - potential for deterioration of current status of quality element at water body scale**
Hydromorphological designation:	HMWB	**Scheme component (Unique ID):**			Piccadilly approach viaduct (GB112069061152-MW-01-VO-01)	Fairfield Street offline overbridge (GB112069061152-MW-01-OB-01)	Daylighting of existing culvert (GB112069061152-MW-01-DY-01)								
Overall status (2015):	Moderate	**Description of scheme component:**			*A 420.0m long post tensioned voided RC deck, varying in width from 25.0m to 47.0m before reducing to two 12.7m wide viaducts as it enters the station structure.*	*Offline overbridge (clear span bridge) for realigned Fairfield Street. Approx. 30m in length and 16m wide.*	*Deculverting of approx. 100m of River Medlock beneath the Piccadilly Approach Viaduct, in conjunction with creating flood compensation areas adjacent to the watercourse*								
Overall status objective:	Moderate by 2015	**Impact type from scheme component:**			**Shading**	**Shading**	**Changes to water body hydromorphology leading to changes in river processes and habitats upstream and downstream**	**Shading**	**Footprint**	**Creation of new habitats**					
Overall status (2019)	Moderate														
WFD status element	**WFD Quality Element**	**RBMP cycle 2 2015 status**	**RBMP cycle 2 status objective**	**2019 status**											
Biological	**Fish**	Poor	Moderate by 2027	Poor	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	None	Localised beneficial effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	Macroinvertebrates	Moderate	Good by 2021	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	None	Localised beneficial effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	Macrophytes and phytobenthos - combined	Moderate	Moderate by 2015	Moderate	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Localised adverse effect anticipated when balanced against embedded mitigation. However, no deterioration in status of quality element anticipated at the water body scale. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	None	Localised beneficial effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	NA	N/A	Compliant - no deterioration in quality element status anticipated
Physicochemical	**Dissolved oxygen**	High	Good by 2015	High	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	pH	High	Good by 2016	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	Phosphate	Poor	Poor by 2015	Poor	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	Ammonia	Moderate	Good by 2027	High	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Element is insensitive to impact. No measurable change to quality element.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	Temperature	High	Good by 2015	Good	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Element is insensitive to impact. No measurable change to quality element.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Negligible effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	NA	N/A	Compliant - no deterioration in quality element status anticipated
Specific pollutants	**Copper, Triclosan, Zinc**	High	High by 2015	High	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	NA	N/A	Compliant - no deterioration in quality element status anticipated
Hydromorphological	**Quantity and dynamics of water flow**	Supports Good	Supports Good by 2027	Supports Good	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	None	Localised beneficial effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	Connection to groundwater bodies				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Impacts on element screened out at preliminary assessment stage.	Element is insensitive to impact. No measurable change to quality element.	Element is insensitive to impact. No measurable change to quality element.	None	Element is insensitive to impact. No measurable change to quality element.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	River continuity				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	None	Localised beneficial effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	River depth and width variation				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	None	Localised beneficial effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	Structure and substrate of the river bed				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	None	Localised beneficial effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	NA	N/A	Compliant - no deterioration in quality element status anticipated
	Structure of the riparian zone				Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Negligible effect anticipated when balanced against embedded mitigation. No measurable change in quality element anticipated. Additional mitigation not required.	Impacts on element screened out at preliminary assessment stage.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	Localised beneficial effect anticipated. However, no increase in quality element status anticipated at the water body scale.	None	Localised beneficial effect anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	NA	N/A	Compliant - no deterioration in quality element status anticipated
Chemical	**Priority substances**	N/A	N/A	Fail	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	Impacts on element screened out at preliminary assessment stage.	None	Impacts on element screened out at preliminary assessment stage.	NA	N/A	Compliant - no deterioration in quality element status anticipated

2 Current status (groundwater)

The detailed impact assessment results for the groundwater bodies affected by the Proposed Scheme are summarised here in Table C 24 to Table C 27.

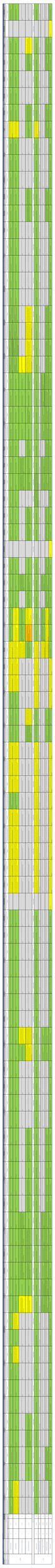

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Table C 26: Sankey and Glaze Carboniferous Aquifers (GB41202G100100) detailed impact assessment - effects on current status

Sankey and Glaze Carboniferous Aquifers (GB41202G100100) (Secondary aquifer (Undifferentiated))			Detailed Impact Assessment
EA management catchment:	North West GW	**Scheme component (ID):**	GB41202G100100-C-01
Overall status (2015):	Poor	**Scheme component type:**	Cutting
		Scheme component name:	Abram cutting
Overall status objective:	Poor by 2015	**Impact type from scheme component:**	

WFD status element	WFD Quality Element	2015 RBMP cycle 2 status	2015 RBMP cycle 2 status objective	2019 status	Lowering of groundwater levels and potential reduction in groundwater contributions to surface water bodies, GWDTE or groundwater abstractions by temporary dewatering/permanent groundwater control	Cumulative effects - effects on quality element from scheme component(s) located in other WFD water bodies	Overall effect on quality element at water body scale	Additional mitigation requirements	Residual effect on quality element at water body scale	WFD compliance outcome - potential for deterioration of current status of quality element at water body scale
Quantitative	**Quantitative saline intrusions**	Good	Good by 2015	Good	No measurable change from saline intrusions given shallow depth of proposed cutting (0.6m) within boulder clay (Devensian Till), works unlikely to require extensive dewatering.	None identified	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	Additional mitigation not required.	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated.	Compliant - no deterioration in quality element status anticipated
	Quantitative water balance	Good	Good by 2015	Good	No measurable change to water balance given shallow depth of proposed cutting (0.6m) within boulder clay (Devensian Till) as works unlikely to require extensive dewatering.	None identified	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	Additional mitigation not required.	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated.	Compliant - no deterioration in quality element status anticipated
	Groundwater dependent terrestrial ecosystems (GWDTEs) test	Good	Good by 2015	Good	None present within or in close proximity down-hydraulic gradient of ROI.	None identified	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	Additional mitigation not required.	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated.	Compliant - no deterioration in quality element status anticipated
	Quantitative dependent surface water body	Good	Good by 2015	Good	Tributary of Coffin Lane Brook 1 is within the ROI and may receive reduced baseflow due to the lowering of groundwater levels. The drainage for the cutting will discharge into Coffin Lane Brook downstream of the Proposed Scheme. A short 250m section of Tributary of Coffin Lane Brook 1 may receive reduced baseflow leading to minor localised impacts.	None identified	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale. Additional mitigation not required.	Additional mitigation not required.	Localised adverse effect anticipated when scheme component effects considered in combination. However no deterioration in status of quality element anticipated at water body scale.	Compliant - no deterioration in quality element status anticipated
				Impact type from scheme component:	**Disturbing or mobilising existing poor quality groundwater by temporary dewatering or depressurisation and permanent groundwater control**					
Chemical	**Chemical saline intrusions**	Good	Good by 2015	Good	Cutting 0.6m deep and made in boulder clay (Devensian Till). Unlikely that significant recharge or groundwater flow occurs through boulder clay, hence unlikely that poor quality groundwater may be disturbed or mobilised by any form of groundwater control. Unlikely that significant groundwater present at all so no risk to chemical quality elements. No measurable change anticipated as cutting is unlikely to impact waterbody status due to embedded mitigation.	None identified	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	Additional mitigation not required.	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated.	Compliant - no deterioration in quality element status anticipated
	Chemical drinking water protected areas (DrWPAs)	Good	Good by 2015	Good	None in Sankey and Glaze Carboniferous Aquifers in community area MA05.	None identified	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	Additional mitigation not required.	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated.	Compliant - no deterioration in quality element status anticipated
	Chemical groundwater dependent terrestrial ecosystems (GWDTEs) test	Good	Good by 2015	Good	None present within or in close proximity down-hydraulic gradient of ROI.	None identified	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	Additional mitigation not required.	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated.	Compliant - no deterioration in quality element status anticipated
	Chemical dependent surface water body	Poor	Good by 2027	Poor	The temporary construction works have the potential to affect groundwater quality to Tributary of Coffin Lane Brook 1. No measurable change expected as the risk will be mitigated through the implementation of the draft CoCP.	None identified	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	Additional mitigation not required.	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated.	Compliant - no deterioration in quality element status anticipated
	General chemical test	Poor	Poor by 2015	Poor	Some localised effects may be anticipated but these are unlikely to impact waterbody status due to embedded mitigation.	None identified	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated. Additional mitigation not required.	Additional mitigation not required.	No measurable change anticipated when scheme component effects considered in combination. No measurable change in quality element anticipated.	Compliant - no deterioration in quality element status anticipated

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3 Future objectives (surface water and groundwater)

The detailed impact assessment results for the surface water bodies affected by the Proposed Scheme are summarised here in Table C 28 to Table C 32.

Table C 28: Hey/Borsdane Brook (GB112069064520) detailed impact assessment - effects on future status objectives

Hey/Borsdane Brook (GB112069064520)				Effects on attainment of status objectives (Test B)										Outcome				
WFD status objective element	RNAGs / Measures scoped in as potentially at risk from Proposed Scheme			Tributary of Hey Brook 4 (Moderate)		Windy Bank Brook (Moderate)			Nan Holes Brook (Moderate)			Hey Brook (High)	Coffin Lane Brook (Moderate)			Cumulative effects - effects on RNAG / Measure from scheme component(s) located in other WFD water bodies	Overall effect at water body scale	Additional mitigation requirements	Residual overall effect at water body scale following consideration of additional mitigation	WFD compliance outcome - potential to prevent future attainment of status objective of quality element.
	RNAG/measure ID	Relevant WFD quality element/(RNAG(s)	Title/details	Critchley culvert (GB112069064520-T-06-CV-03)	Realignment (GB112069064520-T-06-RE-03)	Realignment (GB112069064520-T-07-RE-04)	Windy Bank culvert (GB112069064520-T-07-CV-04)	Extension of existing culvert (GB112069064520-T-07-CVX-02)	Nan Holes Brook culvert (GB112069064520-T-11-CV-05)	Nan Holes Brook offline culvert (GB112069064520-T-11-CVN-02)	Realignment (GB112069064520-T-11-RE-05)	Hey Brook offline overbridge (GB112069064520-MW-13-OB-01)	Coffin Lane Brook culvert (GB112069064520-T-15-CVX-03)	Realignment (GB112069064520-T-15-RE-06)	Abram cutting (GB112069064520-T-15-CU-03)				
Reasons for not achieving good (RNAG)	480175 / 480174	Mitigation Measures Assessment	Physical modification	There is a localised risk of exacerbating existing physical modification pressures due to the culvert.	Localised beneficial effect anticipated.	Localised beneficial effect anticipated.	There is a risk of exacerbating existing physical modification pressures due to the length of the culvert.	There is a localised risk of exacerbating existing physical modification pressures due to the potential culvert extension.	There is a localised risk of exacerbating existing physical modification pressures due to the culvert.	There is a localised risk of exacerbating existing physical modification pressures due to the culvert.	Localised beneficial effect anticipated.	There is a localised risk of exacerbating existing physical modification pressures due to the bridge.	There is a risk of exacerbating existing physical modification pressures due to the length of the culvert.	Localised beneficial effect anticipated.	Unlikely to increase direct physical modification - negligible effect anticipated.	N/A	Risk to achieving RNAG	Additional mitigation identified through an initial review of net loss/gain of river habitats has identified locations and types of mitigation that could be included. Mitigation is partially included within the design but further investigation into feasibility is required to achieve net gain. On a precautionary basis, until such time as these investigations are carried out, a residual significant effect will remain.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non Compliant - risk of preventing future attainment of quality element status objective.
RBMP Programme of measures (PoM)	No Programme of Measures are considered to be at risk from the Proposed Scheme for this water body																			
A/HMWB Mitigation Measures	HBB19	Mitigation Measures Assessment	Hbb19: Hey Brook upstream and parallel to Leeds-Liverpool Canal - Improve in-channel habitats through river restoration along 475 metres of current straight channel parallel to the Leeds-Liverpool Canal. High ecological benefit. Medium cost. Medium complexity.									Potential for the meander / flood bypass to contribute to this measure				N/A	Localised beneficial effect anticipated.	N/A	N/A	Compliant - risk of prevention of future attainment of quality element status objective.

Table C 29: Timperley Brook (GB112069061260) detailed impact assessment - effects on future status objectives

Timperley Brook (GB112069061260)				Effects on attainment of status objectives (Test B)				Outcome				
	RNAGs / Measures scoped in as potentially at risk from Proposed Scheme			Timperley Brook (Moderate)								
WFD status objective element	RNAG/measure ID	Relevant WFD quality element/RNAG(s)	Title/details	Timperley Brook inverted siphon (GB112069061260-MW-01-IS-01)	Timperley Brook realignment (GB112069061260-MW-02-IS-01)	Manchester Airport High Speed Station cutting retaining wall (GB112069061260-MW-01-RW-01)	Highway Drainage - M56 East and West Link realignment/ access to Manchester Airport High Speed Station/ Runger Lane realignment (GB112069061260-MW-01-HD-01)	Cumulative effects - effects on RNAG / Measure from scheme component(s) located in other WFD water bodies	Overall effect at water body scale	Additional mitigation requirements	Residual overall effect at water body scale following consideration of additional mitigation	WFD compliance outcome - potential to prevent future attainment of status objective of quality element.
Reasons for not achieving good (RNAG)	480146 / 480147	Mitigation Measures Assessment	Physical modification	Risk to RNAG - Additional physical modification pressure on the waterbody due to siphon although localised to short section of upper catchment which is partly already impacted by culvert.	Scheme element does not directly affect any RNAG	Scheme element does not directly affect this RNAG		None	Localised risk to RNAG	Proposed mitigation is a new open channel (linked with floodplain to create flood storage), which will reduce an existing culverted length downstream of Brooks Drive.	N/A	Compliant - no prevention of future attainment of quality element status objective.
	483271 / 489812 / 489817 / 489815 / 516490 / 517334	Various	Urban diffuse source pollution	Scheme element does not directly affect this RNAG			Risk to RNAG - Additional contribution to urban diffuse pollution pressure due to road runoff (as calculated by HEWRAT) - requires mitigation over and above standard drainage design.	None	Risk to RNAG	Additional mitigation identified through HEWRAT includes swale and holding tank, however further water quality baseline data and assessment is to be completed before the impacts and mitigation can be confirmed.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non Compliant - risk of preventing future attainment of quality element status objective.
RBMP Programme of measures (PoM)	19708	Various	Timperley Brook 46 - diffuse urban: Reduce diffuse pollution pathways (i.e. control entry to water environment): 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.	Scheme element does not directly affect any PoMs			Risk to POM - Additional contribution to urban diffuse pollution pressure due to road runoff (as calculated by HEWRAT) - requires mitigation over and above standard drainage design.	None	Risk to POM delivery	Additional mitigation identified through HEWRAT includes swale and holding tank, however further water quality baseline data and assessment is to be completed before the impacts and mitigation can be confirmed.	Widespread adverse effect anticipated until mitigation is confirmed. Potential deterioration in status of quality element at water body scale.	Non Compliant - risk of preventing future attainment of quality element status objective.
A/HMWB Mitigation Measures	TPB15	480146 - Mitigation Measures Assessment	TPB15: Open up Timperley Brook culvert parallel to Brooks Drive. Open up the 285-metre long Timperley Brook culvert parallel to Brooks Drive to restore natural riverine processes and improve the waterbody's ecological value. High ecological benefit. High cost. Medium complexity.	Scheme element does not directly affect delivery of any identified HMWB mitigation measures	Benefit to HMWB MM - watercourse realignment is in section of watercourse identified for delivery of this measure	Scheme element does not directly affect delivery of any identified HMWB mitigation measures		None	Localised beneficial effect	N/A	N/A	Compliant - no prevention of future attainment of quality element status objective.

Table C 30: Medlock (Lumb Brook to Irwell) (GB112069061152) detailed impact assessment - effects on future status objectives

Medlock (Lumb Brook to Irwell) (GB112069061152)				Effects on attainment of status objectives (Test B: River Medlock (High)			Cumulative effects - effects on RNAG / Measure from scheme component(s) located in other WFD water bodies	Outcome			
WFD status objective element	RNAGs / Measures scoped in as potentially at risk from Proposed Scheme			Piccadilly approach viaduct (GB112069061152-MW-01-VD-01)	New Fairfield Street offline overbridge (GB112069061152-MW-01-OB-01)	Daylighting of existing culvert (GB112069061152-MW-01-DY-01)		Overall effect at water body scale	Additional mitigation requirements	Residual overall effect at water body scale following consideration of additional mitigation	WFD compliance outcome - potential to prevent future attainment of status objective of quality element.
	RNAG/measure ID	Relevant WFD quality element/RNAG(s)	Title/details								
Reasons for not achieving good (RNAG)	480131 / 480132	Mitigation Measures Assessment	Physical Modification			Removal of existing culvert helps reduce morphological pressure	N/A	Localised beneficial effect	N/A	N/A	Compliant - no prevention of future attainment of quality element status objective.
RBMP Programme of measures (PoM)	No POMS affected by scheme proposals						N/A				Compliant - no prevention of future attainment of quality element status objective.
A/HMWB Mitigation Measures	No specific measures	Mitigation Measures Assessment	No specific HMWB MMs identified at the location on the Medlock or related to culvert removal				N/A				Compliant - no prevention of future attainment of quality element status objective.

Table C 32: Manchester and Cheshire East Permo-Triassic Sandstone Aquifers (GB12829191100) detailed impact assessment - effects on future status objectives

Manchester and Cheshire East Permo-Triassic Sandstone Aquifers (GB12829191100) (Principal aquifer)				Effects on attainment of status objectives (Test B)												Outcome				
WFD status objective element	RNAGs/measures scoped in as potentially at risk from Proposed Scheme			Manchester tunnel	Palatine Road vent shaft	Wilmslow Road vent shaft	Birchfields Road vent shaft	Manchester Tunnel North portal	Ardwick South cutting retaining wall	Ardwick box structure	Ardwick North cutting retaining wall	Ardwick North cutting retaining wall	Ardwick embankment retaining wall	Piccadilly approach viaduct	Piccadilly Station viaduct	Manchester Piccadilly High Speed Station	Cumulative effects - effects on RNAGs/Measure from scheme component(s) located in other WFD water bodies	Overall effect at water body scale	Additional mitigation requirements	Residual effect at water body scale following consideration of additional mitigation	WFD compliance outcome - potential to prevent future attainment of status objective of quality element
	RNAG/measure ID	Relevant WFD quality element/RNAG(s)	Title/details																	
Reasons for not achieving good (RNAG)	RNS76	Quantitative Saline Intrusion	Saline or other intrusion - Abstraction and flow	No effect when balanced against embedded mitigation.	With construction methodology (diaphragm walls to base) dewatering volumes will be minimal and the risk of upwelling of saline water to draw in poorer quality water from the Collyhurst Formation or Coal Measures is minimised.	With the construction methodology the DCL will be installed to the Sherwood Sandstone Group shortly after construction and will seal off the groundwater from the ventilation shafts, limited period of dewatering and the shallow depth compared to the saline boundary, dewatering volumes will be minimal and the risk of upwelling saline water or drawing in poor quality water from the Collyhurst Formation or Coal Measures is minimised.	With the construction methodology the SCL will be installed to the Collyhurst Sandstone Formation (Appleby Group) shortly after construction and will seal off the groundwater from the ventilation shafts, limited period of dewatering and the shallow depth compared to the saline boundary, dewatering volumes will be minimal and the risk of upwelling saline water or drawing in poor quality water from the Coal Measures is minimised.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	N/A	**Localised adverse effect anticipated.** No risk of prevention of future attainment of quality element status objective.	Further ground investigation needed to refine understanding of groundwater flow in the area considering uncertainties with fracturing and faulting. Construction methodology has been refined to restrict the dewatering to internal methods (diaphragm walls etc), grouting and consideration of diaphragm walls etc).	**Localised adverse effect anticipated.** No risk of prevention of future attainment of quality element status objective.	Compliant - no risk of prevention of future attainment of quality element status objective
Reasons for not achieving good (RNAG)	SW546	Quantitative Saline Intrusion	Saline or other intrusion - Chemicals	No effect when balanced against embedded mitigation.	With construction methodology (diaphragm walls to base) dewatering volumes will be minimal and the risk of upwelling saline water to draw in poorer quality water from the Collyhurst Formation or Coal Measures is minimised.	With the construction methodology the DCL will be installed to the Sherwood Sandstone Group shortly after construction and will seal off the groundwater from the ventilation shafts, limited period of dewatering and the shallow depth compared to the saline boundary, dewatering volumes will be minimal and the risk of upwelling saline water or drawing in poor quality water from the Collyhurst Formation or Coal Measures is minimised.	With the construction methodology the SCL will be installed to the Collyhurst Sandstone Formation (Appleby Group) shortly after construction and will seal off the groundwater from the ventilation shafts, limited period of dewatering and the shallow depth compared to the saline boundary, dewatering volumes will be minimal and the risk of upwelling saline water or drawing in poor quality water from the Coal Measures is minimised.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	No effect when balanced against embedded mitigation.	N/A	**Localised adverse effect anticipated.** No risk of prevention of future attainment of quality element status objective.	Further ground investigation needed to refine understanding of groundwater flow in the area considering uncertainties with fracturing and faulting. Construction methodology has been refined to restrict the dewatering to internal methods (diaphragm walls etc), grouting and consideration	**Localised adverse effect anticipated.** No risk of prevention of future attainment of quality element status objective.	Compliant - no risk of prevention of future attainment of quality element status objective
RBMP Programme of measures (PoM)	There are no Programme of measures for this water body.																			