

A47 North Tuddenham to Easton Dualling

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Volume 9

9.13 Outline Water Management and Monitoring Plan

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The A47 North Tuddenham to Easton
Development Consent Order 202[x]

OUTLINE WATER MANAGEMENT AND MONITORING PLAN

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CONTENTS

1	INTRODUCTION.....	1
1.1	Purpose of this Document.....	1
1.2	Purpose of this Outline Water Management and Monitoring Plan.....	1
1.3	Structure and Scope of the Outline Water Management and Monitoring Plan	1
1.4	Scheme Description	2
2	PROJECT TEAM ROLES AND RESPONSIBILITIES	4
3	CONSENTS AND PERMISSIONS.....	5
4	MITIGATION MEASURES.....	7
4.1	Introduction	7
4.2	General Mitigation Measures	8
4.3	Emergency Response Planning	9
4.4	Climate Change Resilience Planning	9
4.5	Environmental Competencies	9
4.6	Training and Site Inductions.....	9
4.7	Toolbox Talks and Induction Supporting Materials.....	10
5	WATER MANAGEMENT PLAN	11
5.1	Water Management Plan Development	11

1 INTRODUCTION

1.1 Purpose of this Document

- 1.1.1 This document is the outline water management and monitoring plan, (hereafter referred to as WMMP) for the A47 North Tuddenham to Easton Dualling Scheme (hereafter referred to as the Scheme).
- 1.1.2 This plan has been prepared by Galliford Try, Highways England's Delivery Integration Partner (DIP), appointed to the A47 east under the Regional Delivery Partnership (RDP) Framework.
- 1.1.3 Galliford Try have appointed Sweco to undertake the preliminary design and application for a Development Consent Order (DCO).
- 1.1.4 Galliford Try are the appointed Principal Designer (PD) and Principal Contractor (PC) for the Scheme, as defined under the Construction (Design and Management) Regulations 2015.
- 1.1.5 This WMMP has been produced to an appropriate level of detail to supplement the DCO submission in March 2021.

1.2 Purpose of this Outline Water Management and Monitoring Plan.

- 1.2.1 The purpose of this WMMP is to set out the construction measures to prevent the risk of pollution and contamination to ground and surface water.
- 1.2.2 This WMMP has been prepared following an application for the Scheme made by Highways England for a Development Consent Order (DCO) under section 37 of the Planning Act 2008 (PA 2008).
- 1.2.3 This WMMP takes into consideration groundwater and surface water management, permitting and monitoring requirements set out in the DCO application documents, such as the Environmental Statement and Environmental Management Plan (EMP), plus Statements of Common Ground with the Environment Agency and Norfolk County Council (as Lead Local Flood Authority).
- 1.2.4 The contractor will manage risk in accordance with best practicable means which include general site management procedures, and control and measures to mitigate any effects of potential adverse effects caused by the construction works.

1.3 Structure and Scope of the Outline Water Management and Monitoring Plan

- 1.3.1 This WMMP is based on the preliminary design of the Scheme, at the time of the submission of the DCO in March 2021.
- 1.3.2 This WMMP will remain a live document throughout construction of the Scheme and will be reviewed and updated at regular intervals.

- 1.3.3 The final WMMP will consider all drainage required during the construction phase and will reference all industry and regulatory pollution prevention guidelines. It shall describe the design of each element of surface water management system required to manage surface water runoff during construction and potential risks to surface waters. This shall include consideration of temporary storage and settlement requirements to manage sediment load of waters. The plan will also include a monitoring plan for groundwater and surface waters.
- 1.3.4 The final WMMP shall be developed prior to construction by using Early Contractor Involvement from specialist supply chain providers and appointed sub-contractors, as the works programme and methodology is further enhanced throughout the detailed design stage. The WMMP forms an annex to the Environmental Management Plan, which will be secured through draft DCO Requirement 4 'Environmental Management Plan'.
- 1.3.5 Towards the end of the construction phase, Galliford Try will prepare a final version of the WMMP for the operational and maintenance phase of the Scheme. This will be included within the Handover Environmental Management Plan (HEMP). The HEMP will be implemented by the maintenance authority responsible for the maintenance of the Scheme during its operational phase.
- 1.3.6 The Environment Agency, Norfolk County Council (as lead local flood authority) and the Norfolk Rivers Internal Drainage Board will be consulted on this plan.

1.4 Scheme Description

- 1.4.1 The A47 forms part of the strategic road network and facilitates a variety of local, medium and long-distance journeys between the A1 and the eastern Coastline. The corridor connects the cities of Peterborough and Norwich, the towns of Wisbech, Kings Lynn, Dereham, Great Yarmouth and Lowestoft and a succession of villages in what is a largely rural environment.
- 1.4.2 The Scheme involves upgrading the A47 between North Tuddenham and Easton in Norfolk to a dual carriageway. This will complete the dual carriageway between Norwich and Dereham. The A47 North Tuddenham to Easton dualling scheme aims to improve safety and manage current and future congestion by creating a free-flowing network whilst supporting economic growth.
- 1.4.3 The North Tuddenham to Easton section of the A47 connects key economic growth areas of Norwich. The current road is unable to cope with the high traffic volume and there are limited opportunities to overtake slower moving vehicles on this single carriageway.
- 1.4.4 The Scheme also includes building two new junctions. The first junction will be at Berrys Lane and Wood Lane, and the second junction will be located at Blind Lane and Taverham Road. In order to achieve the free flowing network, the existing Easton roundabout will be removed. The new junctions will connect side roads into the new dual carriageway, removing the all other direct connections and thereby improving safety.

1.4.5 The Scheme is made up from a multitude of construction/engineering elements. In summary, the Scheme comprises:

- 9km of new dual carriageway, running to the south of the existing A47 at Hockering and north of the existing A47 at Honingham
- two new junctions where the A47 passes over the local roads: one where Berrys Lane meets Wood Lane (Wood Lane junction) and one where Blind Lane meets Taverham Road (Norwich Road junction)
- removal of the existing roundabout at Easton to create a free-flowing road
- building four bridges carrying: the A47 over the new Mattishall Lane Link Road, the proposed Wood Lane junction over the A47, the A47 over the River Tud and the proposed Norwich Road junction over the A47
- Sandy Lane connecting to the A47 via a new side road providing access to Wood Lane junction
- two new lay-bys on the A47 between Fox Lane and the proposed Wood Lane junction
- closure to through traffic of: Church Lane (East Tuddenham), Berrys Lane, Blind Lane and Church Lane (Easton), north the of A47
- widening of the junction of Rotten Row and Church Lane (East Tuddenham)
- converting sections of the existing A47 for local needs, such as
 - a) converting to a Class B road north of Honingham, with a new cycle track between the new Dereham Road link road and Honingham roundabout
 - b) reducing to a single lane in front of St Andrew's church, Honingham, with inclusion of passing places, parking places, turning area and security gate
- alterations to existing public rights of way and provision of new segregated routes for walkers and cyclists, including:
 - a new route for walkers and cyclists linking Honingham with St Andrew's Church across the A47 via the proposed Honingham Church underpass
 - a new route for walkers and cyclists linking Easton with Lower Easton across the A47 via the proposed Easton footbridge
- new drainage systems, including:
 - a) new outfalls to the River Tud
 - b) dry culverts to maintain overland flow paths

- c) new attenuation basins, with pollution control devices, to control discharges to local watercourses
- compounds, material storage areas and temporary vehicle parking located within the scheme boundary when construction is taking place
- diverting or installing new utilities infrastructure, such as gas pipelines, electricity cables, water pipelines and electronic communications cables
- environmental measures embedded into the Scheme design to reduce the environmental effects and deliver wider benefits, such as noise barriers, low noise road surfaces, permanent mammal crossings and new wetland habitats
- temporary closure of access (exit and entry) to Honingham Lane at the junction with Taverham Road, Weston Road and Telegraph Hill until NWL opens.

1.4.6 A full description of the Scheme is provided in ES Chapter 2 (TR010038/APP/6.1).

2 PROJECT TEAM ROLES AND RESPONSIBILITIES

- 2.1.1 Competent managers and key team members will be appointed to work on this plan and support it along the project duration. Additional roles and responsibilities will be developed as the detailed design progresses.
- 2.1.2 The site-based roles and the organisation of responsibilities in relation to environmental management are summarised in the table below.
- 2.1.3 Galliford Try will delegate responsibilities to personnel within key areas of the construction site and compounds. The delegation of responsibility will be clearly identified within relevant documents and site files.
- 2.1.4 The key Scheme contacts for Highways England and Galliford Try are listed in Table 1 below.

Table 1: Key Contacts

Role	Contact	Organisation	Email
Senior Project Manager	Glen Owen	Highways England	[REDACTED]
Project Manager	Glen Owen	Highways England	[REDACTED]
Senior Project Manager	Brian Harrison	Galliford Try	[REDACTED]
Project Manager	TBC	Galliford Try	
SHE Advisor	Mark Roberts	Galliford Try	[REDACTED]

Role	Contact	Organisation	Email
Group Environmental Manager	Paul Thomas	Galliford Try	[REDACTED]
Ecological / Environmental Clerk of Works (ECOW)	TBC	Galliford Try	
Environmental Manager	TBC	Galliford Try	
Environmental Specialist	TBC	Galliford Try	
Stakeholder and Communications Lead	Leonie Owens	Galliford Try	[REDACTED]

3 CONSENTS AND PERMISSIONS

- 3.1.1 The treatment of waters arising from construction activities, including point source discharges resulting from the treatment of materials regulated by mobile plant licence will require regulation by the Environment Agency. An application for an environmental permit (Discharge Consent) will be submitted prior to works commencing. The permit will regulate the discharge of treated contaminated waters to surface water or ground, via re-injection. A separate environmental permit will be required for each location.
- 3.1.2 An Ordinary Watercourse Consent is required for all works carried out over, under or near an ordinary watercourse. Ordinary watercourses include non-main rivers and all ditches, drains, cuts, culverts, dikes, sewers (other than public sewers) and passages through which water flows. The consenting authority for the relevant parts of the Scheme will be Breckland District Council, Broadland District Council or South Norfolk Council.
- 3.1.3 The principal consent for the Scheme will be the DCO.
- 3.1.4 The requirements of the DCO including, where appropriate, the named consultees are set out in the draft DCO. The environmental obligations of the PC and PD are set out in the Environmental Management Plan.
- 3.1.5 The DCO process provides development consent for the works and enables land acquisition, along with many consents and powers to be dealt with at the same time.

3.1.6 Some additional consents and permissions may need to be sought separately from the DCO. These are outlined in the EMP and those relevant to water management and monitoring are listed in Table 2 below.

Table 2: Consents and Permissions

Consent / Permission	Issuing Authority	Requirement
Lead Local Flood Authority (LLFA) Approval	Lead Local Flood Authority (LLFA)	A Sustainable Drainage Strategy (surface water) is a Local List Planning Application Requirement. It should include the detailed design, management and maintenance of the surface water management system including Sustainable Drainage Systems (SuDS).
Water Discharge Permit	Environmental Agency	Must be obtained if there is a need to discharge to surface or groundwater.
Flood Risk Activity Permit (temporary and permanent works affecting a main rivers)	Environmental Agency	Construction activities are planned within 8m of the River Tud and its floodplain (a main river) Principal contractor or subcontractor to apply for permit prior to works starting. Licence must be applied for 12 months in advance of the works.
Ordinary Watercourse Consent (temporary and permanent works affecting ordinary watercourses)	Lead Local Flood Authority (Norfolk County Council)	Construction activities are planned adjacent to and over ordinary watercourses and adjacent to a watercourse managed by a Norfolk County Council. PC to confirm whether required and PC or subcontractor to apply for consent prior to works starting.
Land Drainage Consent (temporary and permanent works affecting internal drainage board watercourses)	Norfolk Rivers IDB	Discharge of surface water into Norfolk Rivers IDB district (directly or indirectly) (Bylaw 3) Works within 9m of Norfolk Rivers IDB adopted watercourse of other drainage or flood risk management infrastructure (Byelaw 10) Alterations to a watercourse (including infilling, culverting, or amending) (byelaw 4 and Section 23, Land Drainage Act 1991) PC or subcontractor to apply for permit prior to works starting.

Consent / Permission	Issuing Authority	Requirement
Abstraction licence for construction dewatering	Environmental Agency	<p>Works within the saturated aquifer may require dewatering. Dewatering volumes above 100m³/day require a transfer or abstraction licence. A licensing exemption limit may be reduced to 50m³/day, depending on whether there are conservation sites within 500m or springs, wells or boreholes used to supply water for any lawful use within 250m of the proposed abstraction.</p> <p>Licensing will be subject to further impact assessments on any identified receptors.</p> <p>PC to confirm whether required and PC or subcontractor to apply for consent prior to works starting.</p>

3.1.7 The above consents and permissions are largely dependent on finalisation of the detailed design, the construction site setup and methodology, and discussions with affected stakeholders.

4 MITIGATION MEASURES

4.1 Introduction

- 4.1.1 On commencement of site mobilisation, Galliford Try will be the site owner and will be responsible for site inductions and ensuring compliance with any required training, of all personnel including visitors, full time staff and supply chain.
- 4.1.2 The following sections describe the proposed water management plan during scheme construction in the context of the proposed drainage strategy for the operational phase of the scheme. The proposed drainage strategy is described in ES Chapter 13 Appendix 13.2 Drainage strategy report.
- 4.1.3 The drainage strategy for temporary works will be further developed at the detailed design and construction stages in line with updates to the Environment Management Plan.
- 4.1.4 Galliford Try will work in accordance with their Business Management System to ensure compliance with the International Organisation for Standardisation (ISO) 14001 requirements.

4.2 General Mitigation Measures

4.2.1 General mitigation measures will be fully developed along with the construction programme and future input from specialist supply chain members. An outline of the main work activities to be carried out throughout the scheme as well as relevant water management proposals currently being considered are described in Annex 1. These commitments will be included in Table 3.1 of the EMP.

4.2.2 Options that are currently being developed with the programme are discussed below.

- Where possible, if programme and existing services permit, the permanent surface water management systems that are part of the final design, will be installed early in the construction sequencing.
- Management of water prior to topsoil strip - tankering water off-site an option proposed on site
- The Scheme crosses three areas of high surface water flood risk (greater than 1 in 30 (3.3%) chance of surface water flooding in any given year) south east of Hockering originating from a drain, running adjacent to the River Tud, east of Hockering (near the Sandy Lane Junction) due to a depression in the land which would collect overland flow and north and east of Honingham originating from the cluster of drains.
- At the eastern part of Honingham, where the new River Tud Crossing S05 is to be constructed a similar approach could be taken using the proposed permanent drainage systems in that area. This area is predicted to be affected by floodwater in the extent of a failure of Colton Reservoir.
- The Wood Lane Junction and Norwood Road Junction underbridges will also be constructed using a similar approach.
- In areas along the length of the Scheme where early installation of permanent drainage is not feasible or available, then temporary surface water management systems will be considered. Temporary infiltration basins can be constructed at strategic locations, based on topography, with temporary grips and ditches cut from the works area. Silt fencing would be placed in select locations to reduce velocity of water flow and volume of silt into the temporary drainage systems and to prevent localised flooding or pollution of surface and groundwater from silt and other contaminants such as silt busters, lined ponds and silt fencing in ditches. Any temporary infiltration basins would be subject to a schedule of silt removal, still to be determined.
- Silt fencing would be employed where required, to reduce any impact of surface run off and silt to the watercourses.

- Narrow filter drains (NFD) / fin drains (FD) in accordance with Manual of Contract Documents for Highway Works (MCHW) are specified to provide sub-formation drainage as part of the Proposed Scheme. These drains are located at the low side of the carriageway where no alternative solution is provided.
- Bridge sub-surface drainage is to be provided and shall be passed over the structure or shall be tied into any back of wall drainage or kerb drainage system to ensure drainage of the road pavement layers. Where the sub-formation drainage is directed to the back of wall drainage, this in turn shall be conveyed via a pipe to an adjacent road network drainage system.

4.2.3 Permanent drainage is naturally one of the first activities to be installed, so as the construction of the scheme progresses, more of the permanent drainage can be utilised to continually reduce the impact of surface and ground water on the surrounding areas.

4.3 Emergency Response Planning

4.3.1 An emergency response plan will be developed in accordance with EA Guidance PPG21- Pollution Incidence Response Planning. The plan will be communicated to all personnel. Emergency spill control equipment such as spill kits, oil booms and absorbent materials, will be held at appropriate locations on site and within site compounds.

4.4 Climate Change Resilience Planning

4.4.1 Galliford Try will consider the potential impacts of extreme weather events during construction. To ensure resilience of the Scheme to such extreme weather events, Galliford Try will use a short to medium-range weather forecasting service from the Met Office or other approved weather forecast provider to manage climate-related risks and inform programme management and impact mitigation measures. Galliford Try will also register with the Environment Agency's Floodline Warnings Direct service.

4.4.2 Galliford Try will implement an Environmental Management System (EMS) which will consider all measures deemed necessary and appropriate to manage extreme weather events and should specifically cover training of personnel and prevention and monitoring arrangements detailed within the EMP.

4.5 Environmental Competencies

4.5.1 Galliford Try will ensure that all personnel conducting environmental tasks are suitably qualified and experienced for the roles and responsibilities that they are employed to undertake.

4.6 Training and Site Inductions

4.6.1 On commencement of site mobilisation, Galliford Try will be the site owner and will be responsible for site inductions and ensuring compliance with any required training, of all personnel including visitors, full time staff and supply chain.

- 4.6.2 Prior to commencing work on site, all personnel will be required to attend a site induction where Galliford Try will communicate the environmental objectives and requirements of the Scheme, as well as the responsibilities of the workforce.
- 4.6.3 The site induction will cover the topics relating to the environment to a level of sufficient detail for the workforce and appropriate to the work being undertaken and will emphasise the sensitivity of the watercourses, surrounding habitat and methods and working practices employed to protect the water environment.
- 4.6.4 Those undertaking any activities that could result in an adverse environmental impact will receive additional training, to be led by the Environmental Manager or Environmental/Ecological Clerk of Works.
- 4.6.5 This training will include reference to the importance of adhering to the contents of this WMMP, and the potential consequences of departure from any specified method statements.

4.7 Toolbox Talks and Induction Supporting Materials

- 4.7.1 Galliford Try will establish a regime of toolbox talks in agreement with the supply chain. GT will target a minimum of one toolbox talk on an environmental topic per month, records of attendance to monitor compliance will be kept.
- 4.7.2 An indicative list of appropriate toolbox talks, relevant to managing ground and surface water, is provided in the table below, more topics will likely be added to this list as construction of the Scheme progresses.

Table 3: List of Toolbox Talk

BMS Reference	Toolbox Talk Title
HS&S-TBT-W01-302	Storage of Waste
HS&S-TBT-W01-303	Waste Segregation
HS&S-TBT-W05-301	Water Pollution Prevention
HS&S-TBT-W05-302	Water Pollution – Silt
HS&S-TBT-W05-303	Water Pollution – Cement and Concrete
HS&S-TBT-W05-304	Pumping and Overpumping
HS&S-TBT-W05-305	Washing Down Plant and Machinery

5 WATER MANAGEMENT PLAN

5.1 Water Management Plan Development

5.1.1 The Water Management Plan will be developed at detail design stage as stipulated in the Environmental Management Plan.

5.1.2 This will include:

- A water features survey to inform monitoring and sampling
- Groundwater level monitoring
- Surface water level and flow gauging
- Surface water and groundwater water quality sampling
- Borehole decommissioning

5.1.3 The Environment Agency and Norfolk County Council will be consulted on the plan.

Annex 1 Water Management Proposals

Item	Objectives	Action (including specific location and any monitoring required)	Assumptions (on which the action is based)	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible organisation	When (Pre-construction, Construction or Operation)
1	Minimise impact of Site Compound Facilities (including Car Parks)	<p>Site compounds will be located away from all surface water features and watercourses and outside of the flood plain.</p> <p>A site drainage plan will be prepared in advance of construction works to identify the location of all watercourses and drains/drainage paths.</p> <p>All drainage on site will be identified and colour coding will be used to distinguish between surface water, foul sewer and combined drainage. This will ensure that all those working on site are aware of the type of drain in the event of a pollution incident. Appropriate pollution control measures such as the use of oil interceptors, the placement of bunds or silt traps will be used to prevent silt run-off entering drains.</p>	Impact of long-term presence of site compounds on local environment.	<p>Installation and use of control measures.</p> <p>SHE audits.</p> <p>Planned compound layouts.</p>	Contractual responsibilities between Highways England and Galliford Try	Galliford Try	Construction
2	Protection of the local network	Wheel washing facilities will be installed at all compounds and material storage areas to mitigate the risk of construction material fouling the local network. This may involve a simple coarse gravel running surface or jet wash, or in the case of a heavily used exit point, wheel washers.	The local road network is used regularly	Installation and use of facilities	Contractual responsibilities between Highways England and Galliford Try	Galliford Try	Construction
3	The protection of ground and	Where piling or penetrative ground improvement is required, the works will be carried out in accordance with the Environment Agency	Not Applicable	Consultation with the Environmental	Contractual responsibilities between	Galliford Try	Construction

Item	Objectives	Action (including specific location and any monitoring required)	Assumptions (on which the action is based)	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible organisation	When (Pre-construction, Construction or Operation)
	surface waters during excavation and foundation works	<p>guidance. If contaminated land is identified in areas of piling or penetrative ground improvement, a foundation works risk assessment will need to be undertaken to determine the likely effects relating to the driving of piles through any contaminated made ground or landfill materials, and to identify what mitigation measures are appropriate for the site.</p> <p>The batching of concrete to only be undertaken in designated impermeable areas with a segregated drainage system, placement of temporary bunds down-slope to contain any spillages, and the development of a spill response protocol.</p> <p>The discharge of potentially contaminated groundwater will be appropriately managed by Galliford Try, through the use of appropriate treatment prior to discharge.</p>		Agency	Highways England and Galliford Try		
4	The protection of site soil and groundwater quality with respect to plant and working methods	<p>Working method statements to be in place during construction, to ensure environmentally safe working practices on site with respect to the underlying ground and groundwaters. These may include (but not be limited to):</p> <ul style="list-style-type: none"> The storage of oil, fuel and other potentially hazardous substances will be within a secure site compound located on a hardstanding area. Storage of these substances will be within an appropriately 	Absence of GI data	<p>Production of working method statements.</p> <p>Daily site audits</p>	Contractual responsibilities between Highways England and Galliford Try	Galliford Try	Pre-construction and construction

Item	Objectives	Action (including specific location and any monitoring required)	Assumptions (on which the action is based)	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible organisation	When (Pre-construction, Construction or Operation)
		<p>bunded area (110% of total capacity volume).</p> <ul style="list-style-type: none"> There will be designated refuelling and maintenance areas and concrete batching areas located on impermeable hardstanding with drainage treated appropriately. Placement of temporary bunds down-slope of potentially polluting activities will contain any spillages. A spill response procedure will be developed. Regular inspections of site plant will be carried out and the use of drip trays and training in the location and use of spill kits and emergency spillage procedures will be provided for site workers. Action Plans will be in place to effectively deal with any contamination issues during construction for example for spillages and leaks from construction plant. Haul routes will be regularly inspected and maintained to minimise silty run-off. 					
5	Obtain Land Drainage Consent for excavations and dewatering activities	<p>Discharge to surface waters will require a Land Drainage Consent for activities such as the following examples:</p> <ul style="list-style-type: none"> Renewal of any existing gateway crossing by means of a culvert or bridge; Creation of any new gateway crossing by 	Excavations and dewatering would be required for certain aspects of the	Consultation with the relevant Drainage Board.	Contractual responsibilities between Highways England and Galliford Try	Galliford Try	Construction

Item	Objectives	Action (including specific location and any monitoring required)	Assumptions (on which the action is based)	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible organisation	When (Pre-construction, Construction or Operation)
		<p>means of a culvert or bridge;</p> <ul style="list-style-type: none"> • Piping a watercourse for a length of 8 metres or less; • All structures or modifications in or within 9 metres of a watercourse (Headwalls, Sluices and Fencing); and • Any Temporary Works in or within 9 metres of a watercourse, that will be in place for less than 6 months. 	Scheme				
6	Surface water run-off/Silt from earthworks and bridge abutment works.	<p>Where possible permanent drainage will be incorporated into the works at the earliest opportunity in preference to temporary drainage systems.</p> <p>Oil interceptors, bunds or silt traps will be used to prevent polluted run-off entering drains.</p> <p>Areas of exposed sediment deemed at risk of erosion during heavy rainfall or flood inundation should be protected using either temporary measures (e.g., sheeting) or semi-permanent measures (for example coir matting) until vegetation is able to establish on these surfaces.</p> <p>If appropriate, the use of cut-off drains or ditches to channel water around the site and/or prevent silty water entering excavations and watercourses. These should discharge to</p>	Certain construction activities have potential to create increased water runoff and silt.	Daily site audits	Contractual responsibilities between Highways England and Galliford Try	Galliford Try	Construction

Item	Objectives	Action (including specific location and any monitoring required)	Assumptions (on which the action is based)	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible organisation	When (Pre-construction, Construction or Operation)
		<p>settling ponds/tanks.</p> <p>Silty water treated to allow suspended solids to settle out before disposal.</p> <p>Infiltration ponds or tanks should be constructed to promote the removal of silt from site runoff. Ponds should be designed for the maximum predicted site runoff using a 1 in 100 year event and should be large enough to ensure sufficient residence time for particulates to settle out, prior to discharge of the water.</p> <p>All water pumped from excavations would be pumped via a pipe and gravel sump in order to prevent silt being agitated from the base of the excavation and to provide rudimentary filtration to the water prior to abstraction.</p> <p>For low volume pumping, water would either be pumped into a vegetated area remote from surface water drainage or into a small attenuation lagoon prior to being directed into the drainage system.</p> <p>For high volume pumping (100mm or above) water would be passed through an attenuation tank with a capacity of not less than 8m³. The outlet from the tank could be placed directly into site drainage, provided the water is free from silt contamination.</p>					
7	Topsoil	Wherever possible, topsoil will be left in place to	Removal of	Daily site audits	Contractual	Galliford Try	Construction

Item	Objectives	Action (including specific location and any monitoring required)	Assumptions (on which the action is based)	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible organisation	When (Pre-construction, Construction or Operation)
	stripping and storage	<p>minimise the amount of unprotected ground exposed to runoff. Where topsoil removal is required it would take place as late as possible prior to other works in the area. Topsoil will be stored outside of the floodplain.</p> <p>In advance of vegetation clearance and soil stripping operations commencing within 10m of a watercourse, appropriate control measures would be implemented to prevent contamination.</p> <p>Topsoil stockpiles would be created and managed in accordance with best practice guidance. The sides of stockpiles would be graded to prevent ponding and to help shed rainwater.</p> <p>Silt fencing would be installed around the margins of topsoil mounds to minimise the risk of sediment-laden runoff reaching watercourses.</p>	topsoil and formation of topsoil stockpiles may create surface water management challenges.		responsibilities between Highways England and Galliford Try		
8	To mitigate potential adverse effects upon surface waters and groundwater during the construction	<p>Construction activities must be managed in accordance with CIRIA Guidelines. Guidance on best practice in relation to pollution prevention and water management is set out in the following documents:</p> <ul style="list-style-type: none"> • CIRIA's Environmental good practice on site; • CIRIA's Control of water pollution from linear construction projects; Technical Guidance; and 	Watercourses and sensitive ecological sites within the vicinity of the Scheme	Daily site audits	Contractual responsibilities between Highways England and Galliford Try	Galliford Try	Construction

Item	Objectives	Action (including specific location and any monitoring required)	Assumptions (on which the action is based)	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible organisation	When (Pre-construction, Construction or Operation)
	phase	<ul style="list-style-type: none"> Environment Agency's Protect groundwater and prevent groundwater pollution. 					
9	To mitigate potential adverse effects upon surface waters and groundwater during the construction phase	<p>All construction workers to be briefed on the importance of maintaining water quality, the location of surface water features, and the location and use of spill kits as part of the site induction;</p> <p>The construction drainage network to incorporate measures (for example interceptors) to prevent the discharge of hydrocarbons to surface or groundwater systems.</p> <p>In areas where there is increased risk of hydrocarbon / chemical spillage and around hazardous substance stores, additional precautions to be taken. These include bunding, impermeable bases, suitable drainage systems, and siting away from any open drainage channels;</p> <p>Any stockpiled materials to be stored within enclosed areas to enable the runoff to be stored and treated where required;</p> <p>It is advised that soil storage is kept a minimum of 12 metres away from a watercourse to avoid unnecessary pollution run-off into the watercourses;</p> <p>Any concrete works to be carefully controlled and where required, any concrete tankers will</p>	Watercourses and sensitive ecological sites within the vicinity of the Scheme	<p>Daily site audits</p> <p>TBT's</p> <p>Briefing records</p> <p>Plant maintenance records</p>	Contractual responsibilities between Highways England and Galliford Try	Galliford Try	Construction

Item	Objectives	Action (including specific location and any monitoring required)	Assumptions (on which the action is based)	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible organisation	When (Pre-construction, Construction or Operation)
		<p>be washed out in controlled areas;</p> <p>Plant and machinery to be maintained in a good condition and any maintenance required will be undertaken within safe areas;</p> <p>Pollution prevention and spill response procedures (in the form of an Incident Control Plan) to be developed by the contractor and a spill kit and clean up equipment maintained on site;</p> <p>Wheel washers and dust suppression measures to be used to prevent the migration of pollutants;</p> <p>Monitoring of the surface watercourses to be carried out before, during, and after construction to ensure no adverse impact on water quality; and</p> <p>Manually operated penstocks to be provided immediately prior to all outfalls leading to a watercourse and upstream of attenuation pond flow control devices.</p>					