

The Lake Lothing (Lowestoft) Third Crossing Order 201[*]



Lake Lothing
**THIRD
CROSSING**

**Document 6.3: Environmental Statement
Volume 3 Appendices**

Appendix 17A

WFD Assessment

Appendix 17A: Water Framework Directive Assessment

17.1 Introduction

- 17.1.1 The Water Framework Directive (WFD) is an EU legislative instrument which has been transposed into national legislation in England to ensure surface water and groundwater are protected and monitored. This assessment against WFD criteria is undertaken based on medium to long term status, rather than any temporary, short term effects or deterioration in status. The Scheme has the potential to cause adverse effect upon surface water and groundwater, and the Environment Agency request such proposals to undertake a WFD Assessment process in order to establish potential effects and measures anticipated to mitigate any such effects.
- 17.1.2 The Scheme comprises the construction of a new single carriageway road crossing of Lake Lothing consisting of a multi-span bridge crossing Lake Lothing, the East Suffolk Railway Line and Northern Road. There are changes to the road network to the north and south of Lake Lothing to accommodate the new crossing. A full description of the Scheme is provided in ES Chapter 5.
- 17.1.3 The Scheme is located within the Anglian River Basin District. The Anglian River Basin Management Plan (EA, 2015) lists a number of environmental objectives under the Water Framework Directive which it seeks to achieve. The design of the Scheme includes road drainage management comprising drainage outfalls to Lake Lothing either directly or via the existing surface water drainage network, and potentially construction into the groundwater aquifer. These scheme components, individually or cumulatively, could potentially impact upon local waterbodies and influence Anglian River Basin WFD status and objectives, either by downgrading the current status or preventing improvements to reach target status during the construction or operational phase.
- 17.1.4 This assessment is accompanied by the following worksheets:
- Water Framework Directive Worksheets (Annex A);
 - Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters (Annex B).

17.2 WFD Directives, Statutes and Policy

The Water Framework Directive – Directive 2000/60/EC

- 17.2.1 The overall objective of the Water Framework Directive is to bring about the effective co-ordination of water environment and policy across Europe. The main aims are to ensure that all surface water and groundwater reaches 'good' status (in terms of ecological and chemical quality), promote sustainable water use, reduce pollution and contribute to the mitigation of flood and drought. Chemical status is determined from compliance with environmental standards for chemicals that are classed as 'priority hazardous substances'. The ecological status of a surface waterbody is measured through a range of biological quality elements, supported by measurements of physicochemistry, hydromorphology and compliance with environmental standards for chemicals that are classed as 'specific pollutants'. It is

determined by the lowest scoring of these elements. For groundwater the overall status has a quantitative and a chemical component.

- 17.2.2 The aim is to achieve at least 'good' status for all water bodies by 2015 (where this is not possible and subject to the criteria set out in the Directive, aim to achieve good status by 2021 or 2027) and prevent deterioration of status of surface waters and groundwater. Certain surface waterbodies may be classified as artificial/heavily modified and will have less stringent targets to meet, however these will still need to demonstrate 'good ecological potential'. The status classifications are Bad, Poor, Moderate, Good and High for both chemistry and ecology.

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

- 17.2.3 The WFD is transposed into law in England and Wales by the England and Wales by The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. It places a general duty on the Secretary of State and the Environment Agency (in England) to secure compliance with the WFD. This takes the form of the preparation and revision of River Basin Management Plans and supplementary plans.

- 17.2.4 River Basin Management Plans (RBMP) have been produced regionally, which set out the characteristics of the waterbodies in that region, the pressures upon them and management measures that seek to maintain and improve the ecological status/potential of those waterbodies. The objectives set out in the RBMP are based on those from the WFD. Guidance published by the Environment Agency (EA) provides further information on assessing the risk of activities in relation to the River Basin Management Plan (RBMP) objectives.

National Policy Statement for National Networks (January 2015)

- 17.2.5 Specific policies for Nationally Significant Infrastructure Projects (NSIP) for which particular considerations apply are set out in national policy statements. The key document for this Scheme is the National Policy Statement for National Networks. In relation to water quality and resources, this policy recognises that infrastructure development can have a direct adverse effect on all waterbody types as defined in the WFD. It also requires that "*any environmental statement should describe any impacts of the proposed project on water bodies or protected areas under the Water Framework Directive*".

17.3 Hydrological and Hydrogeological Overview

- 17.3.1 The Scheme is located within the Lake Lothing water body catchment. Under the Water Framework Directive, the EA have determined that Lake Lothing lies within the 'Bure & Waveney & Yare & Lothing' surface water body (GB510503410700), classified as a heavily modified, transitional water body. The water body is heavily modified due to flood protection, navigation, ports and harbours pressures. Within Lake Lothing sediment is managed through regular dredging and the water body has a hydromorphology status of 'supports good'. Details of the receptors, elements and their corresponding classifications for this waterbody are provided in the worksheets at the end of this report.

- 17.3.2 This estuarine water body is evaluated as having a current overall status of 'Moderate' due to ecological results, based on the 2016 dataset. It has a status of 'poor' for the angiosperm element of the biological results (the cause of this status is unknown) and a status of

'moderate' for dissolved inorganic nitrogen. It has a status of 'Good' for chemical results. It should be noted that this water body catchment is large and encompasses river sub-catchments with differing characteristics, including estuarine and freshwater broads.

- 17.3.3 Lake Lothing does not support any higher or lower sensitivity habitats, however there are protected areas approximately 1.3km downstream; Outer Thames Estuary SPA (non-breeding red-throated divers qualifying feature) and proposed Southern North Sea SAC (harbour porpoise qualifying features). Figure 17.1 illustrates the WFD Protected Areas Search Area.
- 17.3.4 The Bure & Waveney & Yare & Lothing waterbody is linked to protected areas for the Conservation of Birds Directive, Habitats and Species Directive, Urban Waste Water Treatment Directive and Nitrates Directive although none of the protected areas are hydraulically connected to Lake Lothing as they are upstream and separated by Mutford Lock; therefore they are not considered further.
- 17.3.5 This water body catchment lies within the Anglian River Basin District, and the Broadlands rivers catchment. The Anglian River Basin Management Plan (2015) states that the priority issues in the Broadlands catchment are 'diffuse pollution from rural areas', 'physical modification of rivers and lakes', and 'pollution from wastewater'. The priority issues and measures within the Broadlands catchment relate predominantly to the pressures on the broads, as further emphasised through the list of sub-catchment plans which are for the Bure, Waveney, Wensum and Yare alone; Lothing does not have a separate sub-catchment plan. Lake Lothing is separated from the broads by Mutford Lock and is an estuarine tidal waterbody in a predominantly urbanised environment. As such pressures from 'diffuse pollution from rural areas' are unlikely to be relevant here, although 'physical modification' and 'pollution from waste water' do potentially apply.
- 17.3.6 The Scheme overlies the 'Broadland Rivers Chalk & Crag' groundwater body (GB40501G400300), classified as holding a 'Poor' status for both quantitative and chemical classifications based on the 2016 dataset. This was due to a poor status for Quantitative GWDTE test and Chemical Drinking Water Protected Area. The main pressures were either from agricultural and rural land management or 'no sector responsible'. Levels of saline intrusion are recorded as 'Good'. This waterbody is linked to protected areas under the Drinking Water Directive and Nitrates Directive. There are no abstractions within 1 km of the proposed scheme, nor does it lie within a Source Protection Zone (SPZ); the nearest is within 250m to the northwest (SPZ 3).
- 17.3.7 Further information the baseline conditions are reported in Chapter 17.

17.4 WFD Assessment Scope and Approach

- 17.4.1 The WFD assessment is based on guidance provided in the EA's documents 'Water Framework Directive Risk Assessment' (April 2016), and 'Water Framework Directive assessment: estuarine and coastal waters' (December 2016, updated June 2017) and The Planning Inspectorate 'Advice Note Eighteen: Water Framework Directive' (June 2017).
- 17.4.2 Assessment against WFD criteria is undertaken based on medium to long term status, rather than any temporary, short term effects or deterioration in status, either chemical or ecological. The temporary effects for the Scheme are associated with the construction phase and are assessed in detail in Chapter 17 of this ES; Figure 17.3 illustrates the

construction footprint. The construction period is scheduled to take approximately two years. Recovery is anticipated to occur over the short term due to the proposed construction good practice and mitigation measures minimising construction impacts set out in the interim CoCP and will be in the full CoCP; high dilution capacity and tidal movements of this large waterbody. Lake Lothing is subject to a regular dredging regime (twice a year) which creates baseline conditions where it is routinely disturbed.

17.4.3 A WFD Screening exercise was undertaken which concluded that the Scheme could not be screened out from WFD assessment. A WFD Scoping exercise was undertaken using the EA 'Activities in estuarine and coastal waters' scoping template which is part of the EA 'Clearing the Waters for All' guidance. The scoping document accompanies this appendix. The EA was consulted in the scoping of this assessment and responded on the 31st July 2017. The resulting elements that require to be assessed are as follows:

- Hydromorphology: Due to the potential for the new piers in the estuary to alter the sediment transport regime in the estuary;
- Water Quality: Due to the potential for introduction of pollutants from routine road run-off and accidental spillage;
- Invasive non-native species: Whilst not an aquatic plant, there are records of Japanese knotweed in the area and watercourses and construction activity provide recognised pathways for spread of this species.

17.4.4 The WFD scoping document in Annex B has been updated to reflect the comments from the EA and has been fixed at that point. No further updates have been made.

17.4.5 Potential impacts on fish during construction from suspended sediments and potential entrapment in cofferdam have also been identified as a risk. Mitigation measures included in Chapter 17 set out to manage this risk include the use of screens/'Fish friendly' pumps, or an electrofishing exercise and removal of fish prior to removal of seawater from the cofferdam; and sediment management measures. As this is a managed temporary, short-term impact it is not significant or considered further within this assessment.

17.4.6 Following an assessment of the potential impacts of these elements, the results were compared against the Anglian RBMP objectives as follows:

1. to prevent deterioration of the status of surface waters and groundwater
2. to achieve objectives and standards for protected areas
3. to aim to achieve good status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status
4. to reverse any significant and sustained upward trends in pollutant concentrations in groundwater
5. the cessation of discharges, emissions and losses of priority hazardous substances into surface waters
6. progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants

- 17.4.7 Objective 5 relates to existing discharges and is therefore omitted from the assessment.
- 17.4.8 In addition to these objectives, measures for enhancement of the waterbody are also considered, which could contribute to the improvement of the waterbody status.
- 17.4.9 An assessment has also been undertaken against the four WFD objectives:
- W1. To prevent deterioration in the ecological status of the water body;
 - W2. To prevent the introduction of impediments to the attainment of Good WFD status for the water body;
 - W3. To ensure that the attainment of the WFD objectives for the water body are not compromised; and
 - W4. To ensure the achievement of the WFD objectives in other water bodies within the same catchment are not permanently excluded or compromised.

17.5 Proposed Scheme

Design Components

- 17.5.1 The components identified for the Scheme relevant to this WFD assessment are as follows:
- Bridge including two in-channel piers and directional fenders;
 - Recreational craft pontoon;
 - New road infrastructure with associated drainage;
 - Retention ponds constructed either side of the roundabout to the north of the crossing. Outfall to the existing drainage network will be via a flow control device and a penstock, and then an oil interceptor before formal discharge. The ponds will be lined to prevent historic ground contamination from polluting the water within the ponds. The ponds will offer treatment of surface water run-off through sediment settlement and biological uptake through vegetation;
 - A storage tank to the south of the crossing will collect surface water run-off from the road and southern section of the bridge and will include a catch pit to catch sediment prior to entry into the tank. The water will discharge from the tank to an existing drainage network with appropriate flow control, an oil interceptor and a penstock installed; and
 - Three other road drainage discharges to the existing road drainage network are proposed. They will discharge either directly, or via storage within oversized pipes and with flow control devices; the provision of oil interceptors has been included on all three and an additional penstock will be provided on the Riverside Road discharge. The outfalls will have flap valves incorporated to prevent back-flow during high tide.

Good Practice Design Measures

- 17.5.2 Embedded mitigation measures include the provision of surface water run-off treatment in the form of two ponds with settlement and vegetation to remove hydrocarbons, soluble metals, sediment and sediment-bound pollutants from road drainage discharges; lined ponds to prevent historic ground contamination from polluting the water within the ponds; oil

interceptors into all new surface water outfalls and three penstocks to cater for accidental spillage scenarios. These measures are set out in the Drainage Strategy.

- 17.5.3 Opportunities for enhancement will be considered by the Applicant during the detailed design stage as secured by the interim CoCP.
- 17.5.4 Standard good practice design measures would be applied during the design, construction and operation of each component with potential watercourse interactions, as set out in the interim CoCP and will be in the full CoCP. Comprehensive embedded mitigation information is provided in Chapter 17 - Road Drainage and Water Environment.

17.6 WFD Assessment

17.6.1 The topics being considered within this WFD assessment have been assessed in the following chapters:

- Hydromorphology and water quality are presented in Chapter 17; and
- Management of invasive non-native species is covered in Chapter 11 and the Interim Code of Construction Practice.

17.6.2 The hydromorphology assessment concluded that there is negligible change in the overall flow of sediment around Lake Lothing following the addition of the Scheme.

17.6.3 The water quality assessment concluded that impact on water quality from routine run-off and accidental spillage is negligible. Oil interceptors and penstocks have been included as a protection although this was not a requirement to meet the DMRB water quality standards; the surface water discharges are DMRB compliant without their installation.

17.6.4 The interim CoCP includes a commitment to provide, within the full CoCP, methodologies that will prevent the spread of non-native species.

17.6.5 Assessment against the WFD Objectives

17.6.6 Two WFD assessment data sheets accompany this document, which summarise the baseline condition, features of the Scheme and the findings of the WFD assessment.

- WFD Assessment: Surface Waterbody: Bure & Waveney & Yare & Lothing (2 pages)
- WFD Assessment: Groundwater body: Broadland Rivers Chalk and Crag (2 pages)

17.6.7 Assessment against the Local Anglian RBMP Objectives

17.6.8 With the standard good practice and applicable mitigation measures installed, the assessment of the Scheme is detailed in the work sheets and discussed below, with respect to the six aforementioned WFD objectives detailed within the Anglian River Basin Management Plan as follows:

1. To prevent deterioration of the status of surface waters and groundwater

17.6.9 The potential impact of the Scheme on hydromorphology and water quality is assessed as being negligible. The Sediment Transport Study (Appendix 17C) concludes that the baseline and do something scenarios shows a negligible change in the flow of sediment around Lake Lothing and therefore we can conclude that there is no impact upon Protected Areas. Additionally there are no sensitive habitat receptors within the influence of the Scheme (Chapter 11).

17.6.10 The only medium to long term feature which has the potential to impact groundwater is potentially the presence of the piles. The assessment has concluded that the impact of these piles on groundwater flows is negligible considering the respective size of individual piles and density of intrusion.

17.6.11 On this basis there is a high level of confidence that the Scheme will support this WFD objective.

2. To achieve objectives and standards for protected areas

17.6.12 The Bure & Waveney & Yare & Lothing water body is linked to protected areas for the Conservation of Birds Directive, Habitats and Species Directive, Urban Waste Water Treatment Directive and Nitrates Directive although none of the protected areas relate to the Lake Lothing region. The Broadland Rivers Chalk and Crag groundwater body is linked to protected areas for the Drinking Water Directive and Nitrates Directive, and has a chemical status of 'Poor'.

17.6.13 The Scheme is unlikely to impact the status associated with these protected areas in terms of water quality, as the proposed mitigation is sufficient to treat any discharge prior to entry to surface waters, and there are no discharges to groundwaters. The potential impact of the Scheme on water quality is assessed as being negligible. On this basis there is a high level of confidence that the Scheme will support this WFD objective.

3. To aim to achieve good status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status

17.6.14 The Bure & Waveney & Yare & Lothing water body currently has a 'Good' chemical status but a 'moderate' ecological potential. This is due to a status of 'poor' for the angiosperm element of the biological results (the cause of this status is unknown) and a status of 'moderate' for dissolved inorganic nitrogen.

17.6.15 The potential impact of the Scheme on water quality is assessed as being negligible and therefore is not anticipated to adversely impact dissolved inorganic nitrogen. Saltmarsh habitats which are favourable to angiosperms are not present in the vicinity of Lake Lothing and as the water quality impacts are considered to be negligible, impacts on angiosperms from surface water run-off is considered unlikely.

17.6.16 To further support this objective, opportunities for enhancement will be considered by the Applicant during the detailed design stage

17.6.17 On this basis there is a high level of confidence that the scheme will support this WFD objective.

4. To reverse any significant and sustained upward trends in pollutant concentrations in groundwater, and

6. Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants;

17.6.18 The Broadland Rivers Chalk and Crag groundwater body has a quantitative status of 'Poor', relating to GWDTE where there is an impact on flow due to agricultural and rural land management groundwater abstractions. The chemical status is also 'Poor' under Drinking Water Protected Area, however the cause is unknown.

17.6.19 There are no discharges to groundwater associated with the operation of the Scheme and construction mitigation measures set out in the CoCP are in place to manage potential pollutant mobilisation during construction. The potential impact of the Scheme on groundwater quality is assessed as being negligible. On this basis there is a high level of confidence that the Scheme will support this WFD objective by not compromising other measures to meet this objective, nor contributing to groundwater pollutant concentrations.

17.7 Conclusion

17.7.1 As detailed in the assessment in Chapter 17 the application of the recommended drainage design and construction mitigation measures shall minimise the likelihood and/or scale of any incident on surface water bodies and groundwater aquifers.

Scheme assessment against local Anglian RBMP WFD Objectives


17.7.2 Any residual waterbody impact would be expected to be of small scale and short term in duration. With the proposed mitigation measures in place, we have a high level of confidence that the Anglian RBMP WFD objectives listed above will not be adversely impacted by the Scheme.

Scheme assessment against overall WFD Objectives


17.7.3 The assessments on surface waterbodies and groundwater bodies detailed in each datasheet in Appendix A, coupled with the results against the Anglian RBMP WFD Objectives as discussed above, illustrate that the overall WFD objectives will be met with the implementation of standard good practice mitigation measures secured through the CoCP.

17.7.4 Given the above, no locations on the Scheme require the provision of a WFD Article 4.7 exemption.

Annex A - Water Framework Directive Worksheets

WATERCOURSE BASELINE	Watercourse Name	Bure & Waveney & Yare & Lothing / GB510503410700
	WFD Catchment Centroid Grid Ref	412305 453981
	Watercourse Description and Geomorphology	Lake Lothing is a saltwater lake, connected to the North Sea, allowing marine access to the upstream Oulton Broad, via Mutford Lock, and the wider Broads National Park area to the west of Lowestoft. Historically Lake Lothing was an enclosed inland lake, although in more recent times it has been physically adapted to create a link between the North Sea with the harbour of Lowestoft. Where the Scheme crosses the water body, it spans approximately 100m with artificial banks existing on either side. It is classified as a Heavily Modified Waterbody, has a tidal regime and is subject to regular dredging.
	Watercourse Data	Water body total area 887.85 ha. 
	Ecology Features	None
	Protected Areas (<1km)	Conservation of Wild Birds Directive – Adjacent to an SPA (> 1km) Habitats Directive – Adjacent to an SAC (> 1km) Nitrates Directive - within a nitrate vulnerable zone Urban Waste Water Treatment Directive
	Abstractions (<1km)	None
	Component Description	<p>Bridge including two in-channel piers, the base of which will sit above the river bed and be supported by piles; directional fenders; and pontoon supported by piles;</p> <p>New road infrastructure with associated drainage;</p> <p>Two retention ponds to the north of the crossing to outfall to the existing drainage network via a flow control device and a penstock, and then an oil interceptor before formal discharge. The ponds will be lined to prevent historic ground contamination from polluting the water within the ponds. The ponds will offer treatment of surface water run-off through sediment settlement and biological uptake through vegetation;</p> <p>A storage tank to the south of the crossing will collect surface water run-off and will include a catch pit to catch sediment prior to entry into the tank. The water will discharge to an existing drainage network with appropriate flow control, an oil interceptor and a penstock installed;</p> <p>Three other road drainage discharges to the existing road drainage network are proposed. They will discharge either directly, or via storage within oversized pipes and with flow control devices; the provision of oil interceptors has been included on all three and an additional penstock will be provided on the Riverside Road discharge.</p> <p>Opportunities for enhancement will be considered by the Applicant during the detailed design stage.</p>
PROPOSED SCHEME INFORMATION	Potential Impacts on WFD Status	<p>Integral good practice design measures applied to the bridge and outfalls during construction and operation shall avoid significant impact upon the waterbody and prevent a deterioration in WFD status for all elements.</p> <p>The angiosperm biological element is currently classified as having a Poor status, the installation of the proposed scheme components, following good practice, shall not impede improvements to the status of this elements as angiosperm habitat (saltmarsh) is not currently identified within the Study Area and therefore it is not anticipated to be affected by the Scheme.</p>
	Further Mitigation (beyond Standard Good Practice Design Measures)	No further mitigation required.

WFD BASELINE	WFD Waterbody Name / ID		Bure & Waveney & Yare & Lothing / GB5105034107000			
	Overall Status - 2016		Moderate			
	Objective by 2027		Moderate			
	RBMP					
<p>Anglian RBMP (2015), Broadlands rivers catchment. The priority issues in this catchment are diffuse pollution from rural areas, physical modification of rivers and lakes, and pollution from wastewater. Catchment-wide measures to improve diffuse pollution are via a 'Slow the flow' campaign with farmers. Restoration strategies for shallow lakes and wetlands within the Broads SAC is being worked on. Individual sub-catchment (Bure, Waveney, Wensum, Yare) plans to facilitate strategic self-sustaining river restoration and invasive species recording and control.</p>						
WFD ASSESSMENT	WFD Element		Current Status (2016)	Assessed Post Works Status	Proposed Scheme Influence on WFD Status	
	Biological	Angiosperms	Poor	Poor	Applying good practice design will not cause deterioration of status, nor prevent improvement	
		Macroalgae	High	High	Applying good practice design will not cause deterioration of status	
		Invertebrates / Phytoplankton	Good	Good	Applying good practice design will not cause deterioration of status	
	Physico-Chem	Dissolved Inorganic Nitrogen	Moderate	Moderate	Not influenced by proposed scheme	
		Dissolved Oxygen	High	High	Applying good practice design will not cause deterioration of status	
	Specific Pollutants	Arsenic, copper, iron, un-ionised ammonia, zinc	High	High	Applying good practice design will not cause deterioration of status	
	Hydro-morph	Hydrological Regime	Supports Good	Supports Good	Applying good practice design will not cause deterioration of status	
	Priority Hazardous Substances	Cadmium and its compounds; Mercury and its compounds; Nonylphenol	Good	Good	Not influenced by proposed scheme	
	Priority Substances	Lead and its compounds; Nickel and its compounds; Trichloromethane	Good	Good	Not influenced by proposed scheme	
WFD COMPLIANCE	Does the Proposed Scheme comply with WFD Objectives 1, 2, 3 and 4?				WFD Obj 1	Yes (J)
	No - No, do not proceed or complete Article 4.7 Assessment				WFD Obj 2	Yes (J)
	Yes (J) – Yes, with justification provided within integral environmental management good practice				WFD Obj 3	Yes (J)
	Yes (M) – Yes, with specific mitigation details provided on this datasheet				WFD Obj 4	Yes (J)

WATERBODY BASELINE	Waterbody Name / ID	Broadland Rivers Chalk and Crag / GB40501G400300
	WFD Catchment Centroid Grid Ref	651409 308672
	BGS Aquifer Characteristics within scheme area	<p>Bedrock Geology - The bedrock geology is Crag Group. The bedrock aquifers are classed as Principal aquifers; having layers of rock or drift deposits that have high intergranular and/or fracture permeability.</p> <p>Superficial Geology – Lake Lothing’s floodplain is largely underlain with superficial alluvium deposits, although smaller areas of Happisburgh Glacigenic. Formation sands are found locally, set further back from the banks of Lake Lothing. These superficial deposits are cited as Secondary A aquifers</p> <p>Groundwater Vulnerability – Major Aquifer High</p>
	Catchment Extent	<p>Scheme falls entirely within this WFD catchment</p> 
	Waterbody Data	Area: 307593 ha
	Quantitative Features	None
	Linked Protected Areas (<1km)	Drinking Water Directive Nitrates Directive - within a nitrate vulnerable zone
	Abstractions (<1km)	Active groundwater abstraction at NGR 652350 294230 which has a Source Protection Zone 3 (Total catchment) within 250 m of the site. It is used as a source of process water. Historical Groundwater abstraction at NGR 652810 292540 south of the waterbody.
PROPOSED SCHEME INFORMATION	Component Description:	
	<p>Cuttings: None</p> <p>Bridge: Bridge over Lake Lothing will require the construction of two supporting piers, the base of which will sit above the river bed and be supported by piles. And minor constructions of fenders to direct the boats beneath the central section of the bridge.</p> <p>Pontoon supported by piles</p> <p>Ponds (2 in total) : Two lined retention ponds will be constructed either side of the roundabout to the north of the crossing. They will not interact with groundwater.</p> <p>Storage Tanks (1 in total): A storage tank will be located under the footprint of the bridge at the southern end of the bridge which will not interact with groundwater</p> <p>Outfalls: No outfalls discharge to groundwater.</p>	
	Potential Impacts on WFD Status	
<p>Direct intrusion into groundwater is limited to piling activities associated with the bridge supports. This has the potential to locally affect groundwater flows and act as a preferential pathway for contamination if contamination is shown to be present in soils and sediments at the piling locations.</p> <p>As superficial deposits are highly permeable, there is the potential for contamination of groundwater from accidental spillage during construction.</p>		

	Further Mitigation (beyond Standard Good Practice Design Measures)				
	No further mitigation required.				
WFD BASELINE	WFD Waterbody Name / ID		Broadland Rivers Chalk and Crag / GB40501G400300		
	Overall Status - 2015		Poor		
	Objective by 2027/ Burdens		Good / Groundwater status recovery times (natural conditions)		
	RBMP				
<p>Anglian RBMP (2015), Broadlands rivers catchment. The priority issues in this catchment are diffuse pollution from rural areas, physical modification of rivers and lakes, and pollution from wastewater. Catchment-wide measures to improve diffuse pollution are via a 'Slow the flow' campaign with farmers. Restoration strategies for shallow lakes and wetlands within the Broads SAC is being worked on. Individual sub-catchment plans (Bure, Waveney, Wensum, Yare) to facilitate strategic self-sustaining river restoration and invasive species recording and control.</p>					
WFD ASSESSMENT	WFD Element		Current Status (2016)	Assessed Post Works Status	Proposed Scheme Influence on WFD Status
	Quantitative Status Element	Dependent Surface Water Body Status	Good	Good	Not influenced by proposed scheme
		GWDTes test	Poor	Poor	Not influenced by proposed scheme
		Saline Intrusion	Good	Good	Not influenced by proposed scheme
		Water Balance	Good	Good	Applying good practice design will not cause deterioration of status
	Chemical Status Element	Dependent Surface Water Body Status	Good	Good	Not influenced by proposed scheme
		Drinking Water Protected Area	Poor	Poor	Not influenced by proposed scheme
		GWDTes test	Good	Good	Not influenced by proposed scheme
		Saline Intrusion	Good	Good	Not influenced by proposed scheme
		Chemical Test	Poor	Poor	Applying good practice design and mitigation measures will not cause deterioration of status, nor prevent improvement
WFD COMPLIANCE	Does the Proposed Scheme comply with WFD Objectives?			WFD Obj 1	Yes (J)
	No, do not proceed or complete Article 4.7 Assessment			WFD Obj 2	Yes (J)
	Yes (J) – Yes, with justification provided within integral environmental management good practice			WFD Obj 3	Yes (J)
	Yes (M) – Yes, with specific mitigation details provided on this datasheet			WFD Obj 4	Yes (J)

Annex B - Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Use this template to record the findings of the scoping stage of your Water Framework Directive (WFD) assessment for an activity in an estuary or coastal water.

If your activity will:

- take place in or affect more than one water body, complete a template for each water body
- include several different activities or stages as part of a larger project, complete a template for each activity as part of your overall WFD assessment

The [WFD assessment guidance for estuarine and coastal waters](#) will help you complete the table.

Your activity	Description, notes or more information
Applicant name	<i>Suffolk County Council</i>
Application reference number (where applicable)	<i>N/A</i>
Name of activity	<i>Lake Lothing Third Crossing</i>
Brief description of activity	<i>Construction of two bridge piers using a cofferdam to separate the activity from the estuary. Excavated materials will not be disposed of in the estuary or at sea. Construction of a temporary jetty to facilitate construction of the bridge. Construction of directional dolphins. Road Run-off discharge into estuary</i>
Location of activity (central point XY coordinates or national grid reference)	<i>Centre point of the bridge 065389 292771</i>
Footprint of activity (ha)	<i>The main structures within the estuary are two bridge piers which will have a footprint of 426m² each (with the current design). The construction method for the permanent pier is not yet defined.</i>
Timings of activity (including start and finish dates)	<i>At some point between 2020 - 2022</i>
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	<i>n/a</i>

Your activity	Description, notes or more information
Use or release of chemicals (state which ones)	No chemicals to be released into the estuary. The road run-off discharge to be assessed using HAWRAT assessment and mitigation is to be incorporated as required.

Water body¹	Description, notes or more information
WFD water body name	<i>Bure & Waveney & Yare & Lothing</i>
Water body ID	<i>GB510503410700</i>
River basin district name	<i>Anglian</i>
Water body type (estuarine or coastal)	<i>Estuarine (Transitional)</i>
Water body total area (ha)	<i>887.85</i>
Overall water body status (2015)	<i>Poor</i>
Ecological status	<i>Poor</i>
Chemical status	<i>Good</i>
Target water body status and deadline	<i>Moderate, 2027</i>
Hydromorphology status of water body	<i>Supports Good</i>
Heavily modified water body and for what use	<i>Yes – Flood protection and Navigation, ports and harbours</i>
Higher sensitivity habitats present	<i>None within Lake Lothing extent or downstream coastal area, which also defines the extent to which sediment could potentially travel during construction and operation. (13.63 ha saltmarsh within wider water body encompassing Bure, Waverney and Yare).</i>
Lower sensitivity habitats present	<i>None within Lake Lothing extent or downstream coastal area, which also defines the extent to which sediment could potentially travel during construction and operation. (453.78 ha intertidal soft sediment; 3.46 ha subtidal soft sediment within wider water body encompassing Bure, Waverney and Yare)</i>
Phytoplankton status	<i>Good</i>

Water body ¹	Description, notes or more information
History of harmful algae	<i>Not monitored</i>
WFD protected areas within 2km	Outer Thames Estuary SPA (non-breeding red-throated divers qualifying feature) and proposed Southern North Sea SAC (harbour porpoise qualifying features) approximately 1.3km downstream.

¹ Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

Specific risk information

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider invasive non-native species (INNS).

Section 1: Hydromorphology

Consider if hydromorphology is at risk from your activity.

Use the water body summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

Consider if your activity:	Yes	No	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status	Requires impact assessment	Impact assessment not required	<i>No. Hydromorphology status for this waterbody is not high. It is already heavily modified and this development is not anticipated to downgrade current status or prevent attainment of target status in the wider context of urban dock environment</i>
Could significantly impact the hydromorphology of any water body	Requires impact assessment	Impact assessment not required	<i>Yes. Construction of two piers in the estuary may impact currents and sediment transport, which may in turn impact sensitive habitats.</i>
Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	Impact assessment not required	<i>Not modified for the same activity</i>

Record the findings for hydromorphology and go to section 2: biology.

Section 2: Biology

Habitats

Consider if habitats are at risk from your activity.

Use the water body summary table and Magic maps, or other sources of information if available, to find the location and size of these habitats.

Higher sensitivity habitats ²	Lower sensitivity habitats ³
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

² Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

³ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

Consider if the footprint ⁴ of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5km ² or larger	Yes to one or more – requires impact assessment	No to all – impact assessment not required	<i>No: Footprint of the piers is less than 0.5km²</i>
1% or more of the water body's area			<i>No: Footprint of the piers is less than 1% of water body area</i>
Within 500m of any higher sensitivity habitat			<i>No: Footprint not within 500 m</i>
1% or more of any lower sensitivity habitat			<i>No: Footprint not 1% or more of any lower sensitivity habitat</i>

⁴ Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

Fish

Consider if fish are at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary	Continue with questions	Go to next section	<p>Previous consultation with the EA has indicated that Lake Lothing is not sensitive in relation to fish due to its high turbidity and the presence of Mutford Lock making it unsuitable for migratory species.</p> <p>Although the construction phase will give rise to temporary underwater noise, this is not considered to be a risk factor of concern.</p> <p>During the installation of the temporary cofferdam small amounts of sediment will be disturbed. Measures will be identified to reduce sediment input into the system when the water and material is pumped out of the dam including the type of pump and use of filters.</p> <p>If work is carried out during warmer weather monitoring of dissolved oxygen levels will be considered, particularly if sediment is being disturbed. Consideration will also be given to the restriction of work during slack water times to ensure that there is adequate flow to flush sediment seaward.</p> <p>Once operational the piers would be inert objects in the water and would not affect fish passage.</p> <p>Road run-off discharge may contain small quantities of contaminants harmful to fish, however the design will incorporate measures to manage pollutions following DMRB HAWRAT assessment and guidance.</p>
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or	Requires impact assessment	Impact assessment not required	<p>Previous consultation with the EA has indicated that Lake Lothing is not sensitive in relation to fish due to its high turbidity and the presence of Mutford Lock making it</p>

Consider if your activity:	Yes	No	Biology fish risk issue(s)
flow)			<p>unsuitable for migratory species.</p> <p>Although the construction phase will give rise to temporary underwater noise, this is not considered to be a risk factor of concern.</p>
Could cause entrainment or impingement of fish	Requires impact assessment	Impact assessment not required	Potential for fish entrapment when pumping water from cofferdam. Although this is a short-term temporary construction activity.

Record the findings for biology habitats and fish and go to section 3: water quality.

Section 3: Water quality

Consider if water quality is at risk from your activity.

Use the water body summary table to find information on phytoplankton status and harmful algae.

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	Requires impact assessment	Impact assessment not required	A broad range of potential pollutants, such as hydrocarbons i.e. fuel and lubricants, fuel additives, metal from corrosion of vehicles, de-icer and gritting material, can accumulate on road surfaces. These can subsequently be washed off the road during rainfall events, polluting the receiving waterbodies.
Is in a water body with a phytoplankton status of moderate, poor or bad	Requires impact assessment	Impact assessment not required	<i>No</i>
Is in a water body with a history of harmful algae	Requires impact assessment	Impact assessment not required	<i>Not monitored</i>

Consider if water quality is at risk from your activity through the use, release or disturbance of chemicals.

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment	Impact assessment not required	Not known whether there are contaminated sediments in the estuary however the excavated sediments will not be released in the estuary or disposed of at sea. The installation of the cofferdam will disturb small amounts of sediment. Tests are being undertaken.
It disturbs sediment with contaminants above Cefas Action Level 1	Requires impact assessment	Impact assessment not required	Not known whether there are contaminated sediments in the estuary however the excavated sediments will not be released in the estuary or disposed of at sea. The installation of the cofferdam will disturb small amounts of sediment. Tests are being undertaken.

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment ⁵	Impact assessment not required	Road run-off discharge may contain chemicals in small quantities although the dilution capacity of Lake Lothing should be ample to make the impacts of this effect negligible. Assessment method for contaminants has been discussed with the EA and EQSD values advised.

⁵ Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

Record the findings for water quality go on to section 4: WFD protected areas.

Section 4: WFD protected areas

Consider if WFD protected areas are at risk from your activity. These include:

- special areas of conservation (SAC)
- special protection areas (SPA)
- shellfish waters
- bathing waters
- nutrient sensitive areas

Use Magic maps to find information on the location of protected areas in your water body (and adjacent water bodies) within 2km of your activity.

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area ⁶	Requires impact assessment	Impact assessment not required	Outer Thames Estuary SPA (non-breeding red-throated divers qualifying feature) and proposed Southern North Sea SAC (harbour porpoise qualifying features) approximately 1.3km downstream. A Habitat Regulations Assessment Screening Study has been undertaken which concludes that there are no significant direct or indirect effects on the qualifying features of these designated sites. No further assessment is required.

⁶ Note that a regulator can extend the 2km boundary if your activity has an especially high environmental risk.

Record the findings for WFD protected areas and go to section 5: invasive non-native species.

Section 5: Invasive non-native species (INNS)

Consider if there is a risk your activity could introduce or spread INNS.

Risks of introducing or spreading INNS include:

- materials or equipment that have come from, had use in or travelled through other water bodies
- activities that help spread existing INNS, either within the immediate water body or other water bodies

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS	Requires impact assessment	Impact assessment not required	There are records of Japanese knotweed in the area, whilst not an aquatic plant, watercourses and construction activity provide potential pathways for spread of this species.

Record the findings for INNS and go to the summary section.

Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	Yes	Construction of two piers in the estuary may impact currents and sediment transport, which may in turn impact sensitive habitats. Sediment transport modelling is being carried out and will be included within the assessment.
Biology: habitats	No	Not applicable
Biology: fish	Yes	Potential risks during construction from suspended sediments and potential entrapment in cofferdam, however the site is not sensitive in relation to fish and this is a temporary, short-term construction activity.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Water quality	Yes	Pollution from routine run-off and accidental spillage. The assessment will follow DMRB assessment methodology and mitigation measures will be included dependent on the findings
Protected areas	No	Not applicable
Invasive non-native species	Yes	There are records of Japanese knotweed in the area, whilst not an aquatic plant, watercourses and construction activity provide potential pathways for spread of this species.

If you haven't identified any receptors at risk during scoping, you don't need to continue to the impact assessment stage and your WFD assessment is complete.

If you've identified one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Include your scoping results in the WFD assessment document you send to your activity's regulator as part of your application for permission to carry out the activity.