

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

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## **Document 6.4: Environmental Statement – Non-technical Summary**

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**Planning Act 2008**

**Infrastructure Planning**

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

Regulation Number: 5(2)(a)(l)(m)

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## Foreword

This Non-Technical Summary of the Environmental Statement relates to an application ('the Application') submitted by Suffolk County Council ('the Applicant') to the Secretary of State (through the Planning Inspectorate) for a Development Consent Order ('DCO') under the Planning Act 2008.

If made by the Secretary of State, the DCO would grant development consent for the Applicant to construct, operate and maintain a new bascule bridge highway crossing, which would link the areas north and south of Lake Lothing in Lowestoft, and which is referred to in the Application as the Lake Lothing Third Crossing (or 'the Scheme').

This Environmental Statement has been prepared in accordance with the requirements of section 37(3)(d) of the Planning Act 2008 and regulation 5(2)(a)(l)(m) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 ('the APFP Regulations'), and in compliance with relevant guidance.

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# 1 Description of the Scheme

## 1.1 Introduction

The scheme involves the construction, operation and maintenance of a new bascule bridge (an opening bridge with a counterweight that balances the span as it opens) highway crossing linking the areas north and south of Lake Lothing in Lowestoft, hereafter referred to as the Lake Lothing Third Crossing ("the Scheme").

The Scheme would provide a new single-carriageway road crossing of Lake Lothing, consisting of a multi-span bridge with associated approach roads, and would comprise:

- an opening bascule bridge over the Port of Lowestoft, in Lake Lothing;
- on the north side of Lake Lothing, a bridge over Network Rail's East Suffolk Line, and a reinforced earth embankment joining that bridge, via a new roundabout junction, to the C970 Peto Way, between Rotterdam Road and Barnards Way; and
- on the south side of Lake Lothing, a bridge over the northern end of Riverside Road including the existing access to commercial property (Nexen Lift Trucks) and a reinforced earth embankment (following the alignment of Riverside Road) joining this bridge to a new roundabout junction with the B1531 Waveney Drive.

The Scheme would be approximately 1 kilometre long and would be able to accommodate all types of vehicular traffic as well as non-motorised users, such as cyclists and pedestrians.

The opening bascule bridge design would allow large vessels to continue to use the Port of Lowestoft.

A new control tower building would be located immediately to the south of Lake Lothing, on the west side of the new highway crossing, to facilitate the operation of the opening section of the new bascule bridge.

The Scheme would also entail:

- the following changes to the existing highway network:
  - the closure of Durban Road to vehicular traffic at its junction with Waveney Drive;
  - the closure of Canning Road at its junction with Riverside Road, and the construction of a replacement road between Riverside Road and Canning Road to the west of the Registry Office; and
  - a new access road from Waveney Drive west of Riverside Road, to provide access to property at Riverside Business Park;
  - improvements to Kimberley Road at its junction with Kirkley Run; and
  - part-signalisation of the junction of the B1531 Victoria Road / B1531 Waveney Drive with Kirkley Run;

- the provision of a pontoon for use by recreational vessels, located to the east of the new highway crossing, within the Inner Harbour of Lake Lothing; and
- works to facilitate the construction, operation and maintenance of the Scheme, including the installation of road drainage systems; landscaping and lighting; accommodation works for accesses to premises; the diversion and installation of utility services; and temporary construction sites and access routes.

The works required for the delivery of the Scheme are set out in Schedule 1 to the draft DCO (application document reference 3.1), where they are referred to as "the authorised development", with their key component parts being allocated reference numbers, which correspond to the layout of the numbered works as shown on the Works Plans (application document reference 2.4). The General Arrangement Plans (application document reference 2.2) illustrate the key features of the Scheme.

The figure below provides a diagrammatic representation of the Scheme.



*Figure 1: Location of the Scheme in Lowestoft*

## 1.2 Construction Methodology

The Applicant has identified through constructability advice that the Scheme would take approximately two years to build starting in late 2019.

Normal construction hours would be:

- Monday to Friday – 07:00 to 19:00; and
- Saturday – 07:00 to 13:00.

Limited 24 hour construction will be required for the construction of the Bascule Bridge and is assessed in the Environmental Statement. Any further night time work will be only with the prior permission of WDC.

The contractor will be required to implement a number of environmental protection measures which are detailed in the interim Code of Construction Practice (CoCP). This interim CoCP which is appended to the Environmental Statement in Appendix 5A, sets the framework for the full CoCP that the contractor will prepare in detail prior to construction commencing.

Three construction compounds would be required during the construction phase of the Scheme. One on either quay to the north and south of Lake Lothing and one on vacant land to the south of Denmark Road. The contractor may build cofferdams within Lake Lothing (a watertight area that is pumped dry to allow construction) and these would extend from both the north and south quay but would not impede the Navigation Channel except by prior arrangement and notification to ABP.

It is anticipated that HGV deliveries to and from the construction compounds would peak at 108 HGVs per day and these deliveries would be split between the north and south of Lake Lothing.

The Environmental Statement identifies in the air quality, noise and vibration and traffic and transport chapters that this number of vehicle movements does not constitute a significant effect. However, following consultation feedback it has been determined that the contractor will be required to produce a Construction Traffic Management Plan as part of their full CoCP.

## 1.3 Maintenance

Maintenance of the Scheme will be the responsibility of Suffolk County Council as Highway Authority. It is likely that during both routine and exceptional maintenance of the bascule mechanism, it will be necessary to keep the bridge in a closed position for a period of time.



*Figure 2: Photograph showing view of the proposed crossing location from the existing A47 Bascule Bridge looking west*



## 2 The role of the Non-Technical Summary

This document is the Non-Technical Summary (NTS) of the Environmental Statement (ES) prepared by Suffolk County Council (“the Applicant”) as a part of the application for development consent for the Scheme.

SCC is seeking authority to construct, operate and maintain a new bascule bridge highway crossing linking the areas north and south of Lake Lothing in Lowestoft. An Environmental Impact Assessment (EIA) has been undertaken in accordance with The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the EIA Regulations) to identify the impact of the Scheme on the environment during both construction and operation. The findings of the assessment are reported and explained in detail within the Environmental Statement (ES). This NTS refers to significant effects when providing conclusions on the effects upon the environment. The term ‘significant’ is not defined in the EIA Regulations but it is used in this ES to have the same meaning as it would in a non-EIA context. Each individual assessment identifies a further interpretation as to what constitutes a significant effect.

The purpose of this NTS is to provide a high level information on the content and main findings of the ES in a clear and concise manner. The ES is divided into separate chapters related to specific topics. In order that this NTS provides a helpful and accessible account of the ES, it focusses on the main findings likely to be of general relevance and interest.

Throughout this NTS, reference is made to the corresponding chapters of the ES where the full details of the assessment can be found.



*Figure 3: Photomontage of the Scheme from Denmark Road*



### 3 Alternatives

In 2015 SCC submitted an application for funding the construction of the Scheme to the Department of Transport (DfT) identifying a number of objectives (“the Scheme objectives”) that the Scheme would deliver were it to be constructed. This funding application, known as an Outline Business Case (OBC) included a review of the predicted benefits and adverse effects of 16 proposals that could meet the Scheme objectives.

This review identified that three route corridors were suitable for more detailed consideration; namely a western bridge crossing, a central bridge crossing and a western tunnel option.

These three options were assessed against criteria including construction cost, highway and safety benefits and environmental impacts, and this concluded that a central bridge option would most closely align with the scheme objectives and deliver the greatest value for money.

Having adopted a central option as the most appropriate location, the design of the Scheme presented at the OBC stage has undergone further development and alternative structure design and junction arrangements at the north and south of the bridge crossing have been considered before the final design presented in this application was chosen.

Detailed information related to alternatives is presented in Chapter 3 of the ES.



*Figure 4: Photograph showing existing A47 Bascule Bridge while open*

## 4 Air quality

The studies carried out to consider the effects of the Scheme on air quality have considered both its construction and operational phases. In particular, the assessment has considered emissions associated with dust during the construction phase and vehicle emissions when the Scheme is operational.

With regard to construction related traffic, the assessment has identified that the Scheme would not generate HGV vehicle movements that are likely to cause adverse effects upon air quality.

The construction phase air quality assessment has demonstrated that the scale and nature of the construction represents a high risk of dust-related impacts. With mitigation measures in place construction dust is predicted to have slight adverse impacts upon the areas located within the closest proximity to the Scheme. However, these impacts are predicted to be infrequent and temporary for the duration of the most dust generating aspects of the construction. These mitigation measures are included in the interim Code of Construction Practice (CoCP).

The assessment has shown that the roads in the areas of Lowestoft that presently experience the highest nitrogen dioxide levels are forecast to experience a fall in traffic once the Scheme is in place and therefore are likely to experience an improvement in air quality. These areas are predominantly around the A47 Bascule Bridge and its approach roads.

Air quality will deteriorate along roads once the Scheme is operational that are forecast to experience an increase in traffic, mainly along the approaches to the Scheme, but such increases are not at a level where significant effects are expected to arise.

Significant adverse effects have been identified at Kirkley Ham County Wildlife Site which is adjacent to Tom Crisp Way. This is attributable to the increase in nitrogen which could affect the growth of the acid grassland that the County Wildlife Site is allocated for. No other significant effects upon ecological sites have been identified.

A detailed assessment upon air quality is included in Chapter 8 of the ES.



*Figure 5 (left): Photograph showing air quality diffusion tubes*



*Figure 6 (right): Photograph showing Waveney Drive*

## 5 Cultural heritage

The assessment of impacts on the cultural heritage resource has focused on potential impacts on buildings, Conservation Areas, buried archaeology and historic landscapes. The detailed assessment is provided in Chapter 9 of the ES.

The assessment has concluded that the Scheme would not have significant effects on buried archaeology following the proposed programme of mitigation (set out in written schemes of investigation) which forms part of the application being put in place. This will help to identify any previously undiscovered or unknown historical remains that may be present beneath the works area.

With regard to listed buildings the assessment has considered potential impacts of the Scheme on The Port House, The Royal Norfolk and Suffolk Yacht Club near the A47 Bascule Bridge, and Ashurst, Wellington Esplanade, and buildings at Waterloo Road and Victoria Terrace which are all to the south west of the Scheme within the South Lowestoft Conservation Area. The assessment has also considered other non-listed buildings and structures which include buildings of local interest.

The assessment has identified that impacts upon listed buildings and Conservation Areas will be no greater than minor in nature. Other buildings that are of local interest will be adversely affected by the Scheme, including the demolition of 42 Waveney Drive, although these are of low heritage value and there will be no significant effect.

It is also been identified that there will be a minimal impact on the historic landscape of Lake Lothing as a result of the Scheme.



. Figure 7: Photograph of Lowestoft central railway station building which has been subject to an assessment of the change in setting

## 6 Townscape and Visual Impact

The Scheme is likely to be visible from a number of locations around Lake Lothing and the wider area of Lowestoft. The assessment has focused upon two elements; the extent to which the Scheme, particularly the bascule bridge will be visible (visual impacts) and how it may impact on the townscape character of Lowestoft. A detailed assessment of visual impacts and impacts on townscape character is provided in Chapter 10 of the ES.

In conjunction with Suffolk County Council, Waveney District Council, Historic England and The Broads National Park, a total of 15 viewpoints have been identified and agreed as representative views from a variety of receptors within the vicinity of Lake Lothing. Photomontages, that have also been used to identify a Zone of Theoretical Visibility which shows where a view of the Scheme would be possible, have also been prepared to aid the visual impact assessment.

During the construction phase, the visual impacts of the Scheme would adversely affect the view from 13 of the 15 viewpoints and this would constitute a significant adverse effect at five of these viewpoints. These significant effects will occur at those locations where the Scheme would be most dominant, particularly immediately surrounding Lake Lothing.

Once construction of the Scheme is complete, the form, aesthetics and landmark nature of the bridge structure is predicted to be beneficial from those views where the form of the Scheme can be appreciated.

The assessment of effects on townscape character has identified that during the construction phase there will be a moderate adverse impact on the townscape character of Lake Lothing, but when the Scheme is operational there are beneficial effects due to the Lake Lothing area being complimented by the architectural finish of the Scheme and the high quality design that is proposed. There would be no change in the townscape character of any other areas of Lowestoft beyond Lake Lothing once the Scheme is constructed.

The assessment visual amenity has concluded that there will be no significant effects on the view from Key Viewpoints once the Scheme has opened.

There are also no significant effects predicted to arise on views from within The Broads National Park to the west of the Scheme.





*Figure 8: Plan showing the Zone of Theoretical Visibility studied for the Scheme*

## 7 Nature conservation

The assessment of potential effects on nature conservation resources has focused on the potential impacts of the Scheme on designated sites of ecological importance, habitats and protected species.

Nine sites designated for their ecological importance have been assessed within the ES. These sites have included the Broadland and Special Protection Area and Ramsar site as well as the Broads Special Area of Conservation and the Outer Thames Estuary Special Protection Area. Special Protection Areas and Special Areas of Conservation are designated at the European level and so are of international importance.

Closer to the Scheme, the Leathes Ham Local Nature Reserve is located approximately 650m to the north west and there are three County Wildlife Sites that have also been assessed.

The habitats along the route of the Scheme, including the habitats within Lake Lothing, have been assessed for their ecological importance and suitability to support protected species. Habitats at the site have been identified as being suitable to host protected animal species but are not significantly valuable for plant species.

With regard to protected species, studies and assessments have been undertaken for:

- Bats;
- Reptiles;
- Invertebrates;
- Benthic species (species inhabiting the zone at the base of the lake);
- Fish; and
- Wintering and breeding bird species.



*Figure 9: Photograph of Leathes Ham, north of Lake Lothing*



Low numbers of bats have been recorded using the Scheme corridor. Surveys undertaken in 2016 and 2017 have not identified any bat roosts within the Scheme boundary and impacts on bats are predicted to be limited to disturbance during the construction phase of the Scheme and are not significant.

Reptile surveys have been undertaken on land both to the north and the south of Lake Lothing, and these have identified common lizards on grassland adjacent to the East Suffolk Line. A single record of a common lizard was also made on the south side of Lake Lothing.

Bird surveys have been undertaken in both the winter and spring of 2017. These identified a number of species that use Lake Lothing and the surrounding land, including a pair of breeding peregrine falcons on the grain silo building. However, neither peregrine nor any other bird species will be adversely impacted by the Scheme.

Surveys for terrestrial invertebrates have been undertaken on an area of land to the south of Lake Lothing and to the east of the carriageway. This area of rough grassland is a dedicated wildlife area for the five-banded weevil-wasp which is rare in the UK. It is a sand-burrowing insect and Scheme construction will require the permanent removal of supporting habitat for this species which is assessed as a slight adverse impact.

Marine invertebrates have been surveyed in the area of the Scheme Bascule Bridge piers through the analysis of grab samples taken from the sediment at the base of Lake Lothing. No species of conservation concern were identified although a non-native mollusc (*Theora*) was present and control measures during construction will be employed to prevent further spread and colonisation as a result of the construction of the Scheme.

Fish surveys were undertaken with a beam trawler in four locations in Lake Lothing and no species of conservation concern were identified with the exception of a single eel.

The contractor will appoint an Ecological Clerk of Works (ECoW) who will be responsible for implementing the requirements of the interim CoCP.

Mitigation for the effects upon reptiles will include strimming of the vegetation under supervision of the ECoW prior to ground clearance. Any suitable habitat for nesting birds will be cleared outside of the nesting bird season, unless the ECoW confirms that nesting birds will not be affected by the clearance.

New habitat suitable for reptiles will be created as part of the landscaping adjacent to the northern roundabout and given the limited loss of suitable habitat for reptiles from the construction of the Scheme, there would be a slight beneficial effect for reptiles.



*Figure 10: Photograph of a common lizard that was found on site*

## 8 Geology, soils, and contamination

The assessment of impacts upon geology, soils and contamination has focused on identifying whether contaminated ground is present beneath the works area and therefore whether the soil is suitable for reuse during construction or whether it should be disposed of at an appropriate facility. The assessment has also considered the risks to groundwater beneath the site from piling activities.

A ground investigation, comprised of deep boreholes and shallow trial pits has been undertaken to obtain soil and ground water samples that have been subsequently analysed at a laboratory.

The results of the ground investigation has identified that the soil is largely suitable for re-use although some contaminated samples have been identified and the construction contractor will undertake further assessment as this material is excavated to identify the most appropriate form of use. The interim CoCP provides detail on the approach that the contractor must take to managing and mitigating the effects from geology, soils and contamination.

The assessment has also identified that sediment at the base of Lake Lothing that will need to be removed during the construction process is suitable for offshore disposal.

With the mitigation measures included within the interim CoCP in place, no significant effects upon geology and soils have been identified.



*Figure 11: Photograph of ground investigations on site*

## 9 Noise and vibration

Noise and vibration assessments have focused on identifying and mitigating likely significant effects upon residents and business located in the vicinity of the Scheme during construction and once the Scheme opens to traffic.

The assessment has identified three Noise Important Areas (NIA) to the north of Mutford Bridge which are areas designated because homes there are within the noisiest 1% of properties nationwide.

During the construction phase the assessment has identified that, without mitigation, noise from construction plant and machinery will have significant adverse effects on the very closest properties to the Scheme.

Typical mitigation measures that will be implemented during the construction phase include the use of acoustic barriers around noise generating activities and the use of silenced or enclosed machinery. With mitigation measures in place, the majority of the noise from the construction phase can be mitigated but periodic significant adverse effects will remain.

With regard to vibration during the construction of the Scheme, the assessment has identified that with the inclusion of appropriate mitigation measures, it is anticipated, for the majority of the construction phase, that vibrational effects will not be significant. The Contractor will be required to propose mitigation measures to reduce vibration through their working methodology. During the operational phase, the effects of road traffic vibration will not be significant.

Once operational, the Scheme will divert traffic from the existing A47 Bascule Bridge and Mutford Bridge and therefore traffic noise in the vicinity of these crossings and on the approach roads is predicted to reduce. There will be significant beneficial effects to residences within the NIAs to the north of Mutford Bridge

As road traffic will increase along other roads, including Waveney Drive, Rotterdam Road and Tom Crisp Way, residential properties in these areas will experience an increase in road traffic noise which is considered to be a significant adverse effect. The Applicant has considered whether mitigation measures, such as noise barriers and low noise surfacing are appropriate to address the increase in noise at these locations, but due to the nature of the existing roads, mitigation is not possible.

The Environmental Statement has also considered the number of residences that may be eligible for payment through the Noise Insulation Regulations.

The detailed assessment of the impacts of noise and vibration is included in Chapter 13 of the Environmental Statement.





*Figure 12 (left): Photograph of a noise monitoring device*



*Figure 13 (right): Photograph residential properties adjacent to the Scheme*

## 10 Materials

The assessment of effects on material resources has focused on the depletion of non-renewable materials that are required to construct the Scheme, the carbon emissions associated with the use of construction materials and the waste that is likely to be generated during construction.

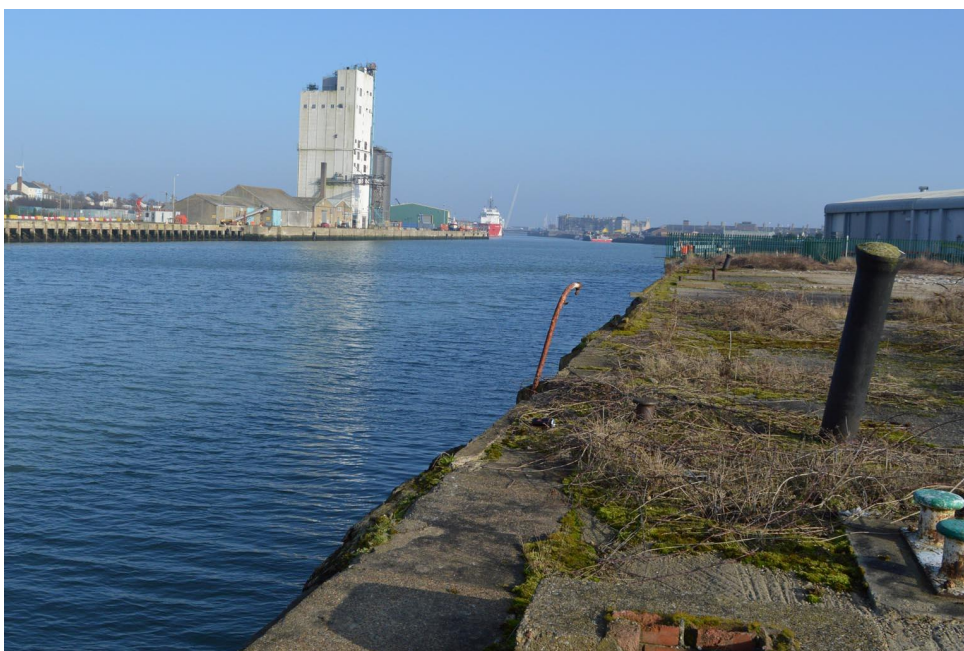
With regard to the material usage that will be needed to construct the Scheme, the assessment has quantified the concrete, fill and road surfacing materials and subsequently identified that the quantity of material that is required to construct the Scheme is not significant in the context of the market for those products and therefore there is no significant effect upon natural resources.

With regard to carbon emissions, the assessment has used a Carbon Tool produced by Highways England to quantify that 11,669 tonnes of carbon dioxide (or equivalent gases) would be produced. Using the criteria provided by Highways England this degree of emission is a minor and not significant effect.

The Environmental Statement has also quantified that, using a worst case approach that all excavated waste is disposed of to landfill, that up to 76,000m<sup>3</sup> of material would need to be disposed of and within the context of nearby landfill capacity this does not constitute a significant effect.

The Scheme will require the excavation and disposal of sediment from Lake Lothing that will be generated during the construction phase. The Applicant has identified that the material is not contaminated and, subject to further testing, is suitable for offshore disposal.

Detailed assessment of the impacts upon materials is included in Chapter 14 of the Environmental Statement.



*Figure 14: Photograph of existing conditions within Order Limits*



## 11 Private assets

The assessment has considered potential impacts on affected landowners and businesses and has focused on the demolition of buildings and land take for the construction, operation and maintenance of the Scheme.

The assessment predicts that there will be direct impacts on residential properties and commercial businesses in the vicinity of Riverside Road and Waveney Drive and that this will constitute a significant adverse effect due to the demolition of property and the loss of business premises.

During the construction of the Scheme it will be necessary to close Lake Lothing to all marine vessels for a period likely to be three weeks whilst the bridge is being positioned and this will constitute a slight adverse but not a significant effect upon the operations of Associated British Ports (ABP). During this time, no vessel will be able to navigate through the area of the bridge, although the eastern inner harbour will remain operational.

At all other times during the construction of the Scheme, the Navigation Channel through Lake Lothing will remain fully open although periodic narrowing may be required.

The placement of the Scheme within Lake Lothing has been modelled in a vessel simulator held at East Coast College which has simulated how marine vessels will navigate along Lake Lothing once it has become open to traffic. This simulation has identified that, with reasonable additional mitigation measures in place, the Scheme does not pose an unacceptable risk to marine vessel safety and that risks are As Low As Reasonably Practicable (ALARP – a term used in the regulation and management of safety-critical and safety-involved maritime systems).

Once constructed, the Scheme will ‘oversail’ the operational port of ABP and the Scheme Bascule Bridge, and its associated fenders, will occupy an area of quay that is used by ABP at present as a berth. The Applicant has assessed the effect of this loss of quay, as well as the effect of the Scheme upon the Port operations and slight adverse impacts will result.

Once constructed, no remaining business will be significantly adversely affected given the limited land take that is required.

The detailed assessment of the impacts upon businesses and land use is set out in Chapter 15 of the Environmental Statement.



*Figure 15: Image taken from vessel simulation*

## 12 Socio-economics and recreation/community assets

The assessment of socio-economics has focused on the likely effects of the Scheme on the local area including employment opportunities, tourism, the use of Lake Lothing as a passage for recreational vessels and the impacts upon local businesses.

Employment during construction is likely to peak at approximately 100 employees per day and the assessment predicts that this can be accommodated within the available labour force in Lowestoft. Therefore demand upon the hotel sector, during the construction phase will be limited and can be accommodated given the relatively low numbers of construction workers that are likely to be required and the fact that they will be drawn generally from within the existing local labour market.

During the construction of the Scheme it will be necessary to close Lake Lothing to all recreational vessels for a limited period likely to be three weeks whilst the bridge is being positioned. During this time, no recreational vessel will be able to navigate through Lake Lothing to or from the North Sea but this does not constitute a significant effect due to the duration of the closure.

Once operational, the Scheme will significantly improve opportunities for local communities to travel across Lake Lothing, due to the greatly improved access to the town centre. This improved access is likely to have benefits to the tourism sector due to a less congested road network.

Once operational, the Scheme has a 12m clearance and will allow a much greater number of recreational vessels to pass underneath, compared to the A47 Bascule Bridge, without requiring the bridge to be closed to road traffic. A scheme of operation for the opening of the Scheme Bascule Bridge is to be agreed and recreational vessels will be able to request a bridge at specific intervals over a 24 hour period.

However, as a recreational vessel cannot be guaranteed a bridge opening, recreational vessels could experience a delay whilst waiting for a bridge opening which as a worst case scenario is a significant adverse effect. Should a recreational vessel be held between the Scheme and the A47 Bascule Bridge a pontoon is provided that will allow a safe mooring until a bridge opening is provided.

Detailed assessment of the socio-economic impacts of the Scheme on the local area is included in Chapter 16 of the Environmental Statement.



*Figure 16: Photograph of recreational vessels*



## 13 Road Drainage and The Water Environment

Lake Lothing is an artificially modified tidal water body connected to the North Sea, which allows marine access to the upstream Oulton Broad, via Mutford Lock. Under the Water Framework Directive it has an ecological status of 'Poor' which can be attributed to its use as a harbour, both in terms of potential contamination of sediments, modifications to the channel and regular dredging regime.

Assessments have been carried out to determine the impacts of the Scheme on the water environment from construction related pollution; surface water and groundwater pollution from highway run-off; pollution from accidental spillages; changes to the patterns of erosion and deposition of sediments; groundwater flows and a Water Framework Directive Assessment.

The assessments have identified that a range of mitigation measures are necessary during construction, including the establishment of prescribed safety distances from watercourses for the storage of materials, methods to reduce the discharge of sediment into the Lake and the need for emergency response equipment to be available should it be required. These measures are presented in the interim CoCP and with the mitigation measures in place, there will be no significant effects upon the water environment.

An assessment of the effects of the Scheme on sediment transport and deposition in Lake Lothing has also been undertaken to identify potential effects on dredging. This assessment has concluded that, due to the speed of tidal flow in Lake Lothing, the Scheme will have a negligible effect on the movement of sediment around Lake Lothing with sediment deposition occurring in a similar pattern as at present.

During the operational phase of the Scheme, surface water runoff from the highway will be managed to reduce the risk of flooding. The drainage proposals are presented in greater detail in the Drainage Strategy which is Appendix 18B of the Environmental Statement.

The detailed assessment of the effects of the Scheme on the water environment is included in Chapter 17 of the Environmental Statement.



*Figure 17: Photograph of Lake Lothing looking east*

## 14 Flooding

The area surrounding Lake Lothing, including a large proportion of the land within the Scheme boundary, is a floodplain as identified by the Environment Agency.

The assessment of flood risk has focused on the risks of the Scheme from extreme flood events and also whether the Scheme will contribute to making flooding worse

In line with standard practice and the guidance from the Environment Agency, surface water discharge from the Scheme will be at a 'greenfield' rate i.e. water will be retained and held in tanks and ponds and only discharged into Lake Lothing at a rate that is equivalent to that from a greenfield. Further information is included in the Drainage Strategy (Appendix 18B of the Environmental Statement).

The assessment of the effects of the Scheme upon flooding has identified that the Scheme will lead to a small increase in existing flooding level within Lake Lothing, but will not lead to new flood risks elsewhere. This assessment includes an additional allowance, as advised by the Environment Agency, for climate change and the resulting potentially increased water levels during flood events.

Detailed assessments are provided in Chapter 18 of the Environmental Statement.

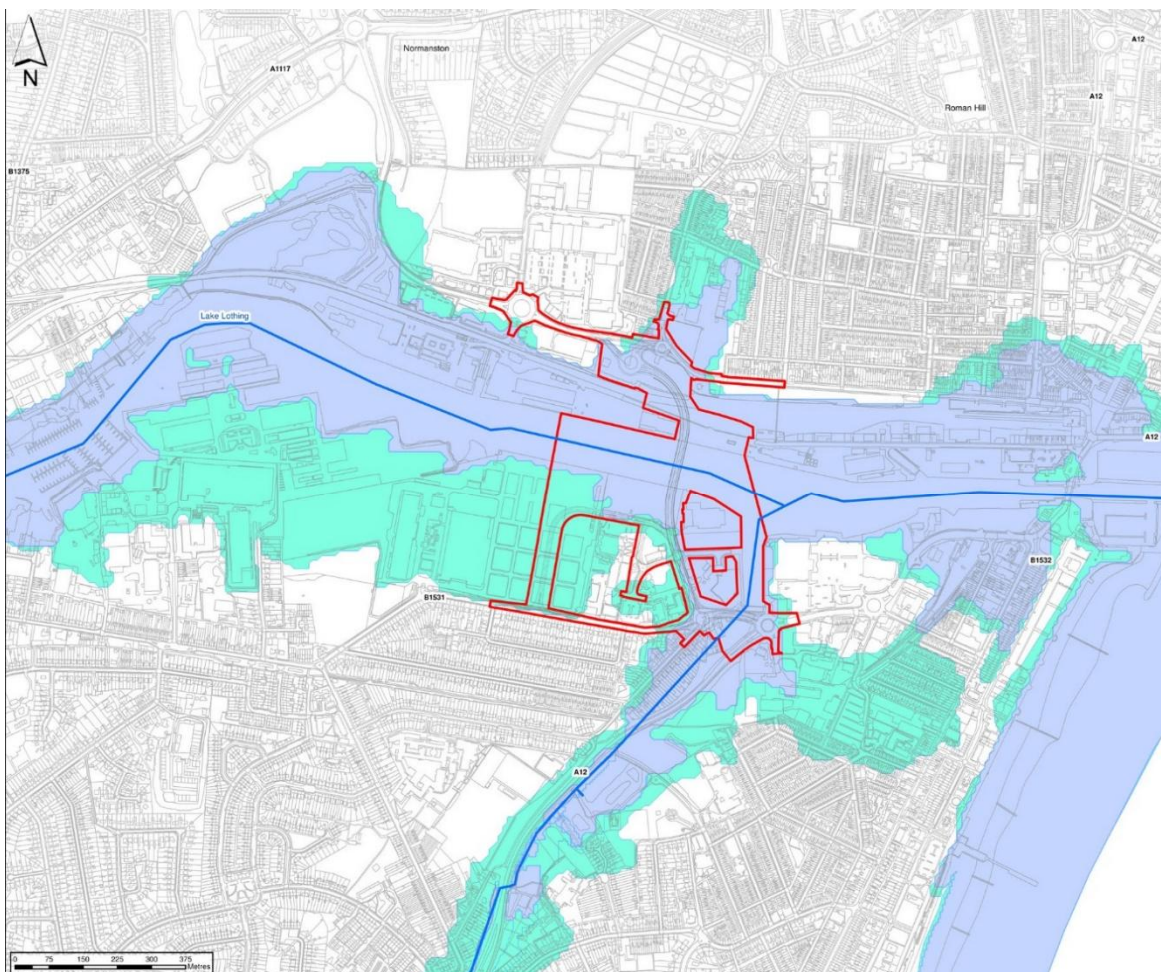


Figure 18: Plan showing the flood zone in Lowestoft



## 15 Traffic and transport

The assessment of traffic effects has considered the capacity of the existing and proposed road junctions and how the Scheme would alter traffic flow through them as well as how non-motorised users, such as pedestrians and cyclists, will be affected.

The assessment confirms that the Scheme would have a positive effect on traffic flow through Lowestoft once construction is complete, particularly at the existing Lake Lothing crossings where there would be a reduction in traffic flow.

Some roads will however see an increase in traffic, such as Peto Way, Tom Crisp Way, Waveney Drive and Rotterdam Road.

With regard to the capacity of existing and proposed road junctions, twenty three junctions have been considered and all have been shown to operate with design capacity during the peak hour with the exception of four junctions which are as follows with mitigation and monitoring proposed as appropriate.

- B1531 Victoria Road / B1531 Waveney Drive / Kirkley Run Mini Roundabout: An advanced traffic signal on the Waveney Drive arm in 2022 and full signalisation in 2037 if proven necessary following monitoring;
- A12 Tom Crisp Way / Blackheath Road signalised junction: Introduction of MOVA (a computerised programme that maximises the efficiency of traffic lights to respond to traffic levels) urban traffic control system in 2022, and further monitoring of junction performance following this:
- A1117 Normanston Drive / A1117 Peto Way roundabout: Minor geometric improvements to Peto Way to provide additional entry capacity.
- A1117 Millennium Way / B1074 Somerleyton Road Signalised Junction: Additional entry lane on Somerleyton Road in 2037, if proven necessary following monitoring.

Following the implementation of these measures there would be no significant effects upon junction capacity.

The assessment has also identified that there will be a significant improvement in highway safety within Lowestoft and it is likely that there will be a reduction in accidents and a significant decrease in driver stress attributable to a decrease in delays.

With regard to non-motorised users, the assessment has concluded that there would be significant beneficial effects upon severance due to the pedestrian and cycling infrastructure that will allow new access across Lake Lothing and significant beneficial effects upon the fear and intimidation experienced by pedestrians when walking along roads where traffic is forecast to fall. There would be a significant adverse effect from fear and intimidation for pedestrians upon Waveney Drive.



*Figure 19: Photograph showing level crossing barriers and lighting on Victoria Road*

## 16 Cumulative Impacts

The assessment of cumulative impacts has considered the impacts of the Scheme in combination with other projects that may be delivered within a similar timeframe.

The assessment has considered cumulative impacts from the following projects which are proposed, or consented, but not completed including:

- East Anglia THREE; a windfarm located offshore in the North Sea;
- Sizewell C New Nuclear Power Station; two new nuclear reactors at the existing Sizewell site;
- Sanyo Development Site; a residential development to the south of Lake Lothing;
- Brooke Peninsula and Jeld Wen Development; a residential and commercial mixed use development to the south of Lake Lothing;
- Great Yarmouth Third River Crossing; a bridge across the River Yare in Great Yarmouth; and
- Lowestoft Tidal Barrier; a proposed barrier in the outer harbour.

The assessment has considered the impact of concurrent construction in respect of air quality, noise, employment and traffic. No significant effects have been identified due to the projects not being constructed concurrently or where there is a cross over, the degree of impact is not sufficient to cause a significant cumulative adverse effect.

Synergistic cumulative effects (those where cross discipline impacts are combined i.e. an increase in dust at a site of ecological importance) have also been considered within the ES within the topic chapters. The assessment has included, amongst other aspects, the effect of change in road noise upon the setting of listed buildings, and the effects of road traffic emissions upon ecologically designated sites.



*Figure 20: Photograph of wind turbine parts awaiting shipping in the Port of Lowestoft*