Norfolk County Council

~~Document Reference: 6.13~~

Great Yarmouth
Third River Crossing Order 202[*]
~~Application for Development Consent Order~~

Document NCC/GY3RC/EX/0154~~6.13~~:
Update to Mitigation Schedule
(Tracked Changes Version)

Planning Act 2008

Infrastructure Planning

The Infrastructure Planning (Examination Procedure) Rules 2010

~~The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) ("APFP")~~

~~APFP regulation Number: 5(2)(q)~~

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Foreword

This Mitigation Schedule accompanies an application ("the Application") submitted by Norfolk County Council ("the Applicant") to the Secretary of State for a Development Consent Order ('DCO') under the Planning Act 2008[1].

If made by the Secretary of State, the DCO would grant development consent for the construction, operation and maintenance of a new bascule bridge highway crossing of the River Yare in Great Yarmouth, which is referred to in the Application as the Great Yarmouth Third River Crossing ("the Scheme").

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) require that an application for a DCO be accompanied by the documents specified at Regulation 5(2)(a) to (r). This is one of those documents and is specified at Regulation 5(2)(q).

[1] References to legislation in this document are to that legislation as amended at the date of this document.

CONTENTS

PAGE No.

Foreword ..... **i**
Tables ..... **iii**
Glossary of Abbreviations and Defined Terms ..... **iv**

Defined Terms iv

Acronyms v

1 Purpose **1**
2 Structure of this Document **2**
3 Proposed Mitigation, Monitoring or Other Measures **3**

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Tables

Table 3.1: Air Quality - Summary of Mitigation, Monitoring or Other Measures..... 3
Table 3.2: Noise & Vibration - Summary of Mitigation, Monitoring or Other Measures 11106
Table 3.3: Nature Conservation - Summary of Mitigation, Monitoring or Other Measures..... 15139
Table 3.4: Cultural Heritage - Summary of Mitigation, Monitoring or Other Measures 221713
Table 3.5: Townscape & Visual - Summary of Mitigation, Monitoring or Other Measures..... 251915
Table 3.6: Road Drainage & Water Environment - Summary of Mitigation, Monitoring or Other Measures..... 272116
Table 3.7: Flood Risk - Summary of Mitigation, Monitoring or Other Measures 312420
Table 3.8: Climate Change - Summary of Mitigation, Monitoring or Other Measures 342722
Table 3.9: People and Communities - Summary of Mitigation, Monitoring or Other Measures..... 362924
Table 3.10: Materials (Operation Scoped Out) - Summary of Mitigation, Monitoring or Other Measures..... 393126
Table 3.11: Geology & Soils - Summary of Mitigation, Monitoring or Other Measures 403227
Table 3.12: Traffic & Transport - Summary of Mitigation, Monitoring or Other Measures..... 443529
Table 3.13: Major Accidents & Disasters - Summary of Mitigation, Monitoring or Other Measures..... 463731

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Glossary of Abbreviations and Defined Terms

Defined Terms

Term	Definition
Application Site	The land bounded by the Order Limits, as shown by a red line on the Land Plans (document reference 2.5) and the Works Plans (document reference 2.6) and being land within which the authorised development may be carried out.
Crossing	The combined double-leaf bascule bridge and the Southtown Road bridge structure (i.e. from its junction with the new roundabout on William Adams Way to the new junction on South Denes Road).
Opening Span	Length of bridge structure that opens.
Order Limits	Limits of land within which the authorised development may be carried out, as shown on the Land Plans (document reference 2.5) and the Works Plans (document reference 2.6).
Principal Application Site	The land comprised in the Application Site but excluding the Satellite Application Sites.
Proposed Consultation Scheme Boundary	The boundary of the land within which the Consultation Scheme was proposed to be carried out, as delineated by a red line on Figure 2.3 of the PEIR (dDocument rReference 5.2 – Consultation Report Appendix G-05; Planning Inspectorate Reference APP-045).
Scheme	The Great Yarmouth Third River Crossing project for which the Applicant seeks development consent.
Southtown Road Bridge	Bridge structure over Southtown Road.
The Applicant	Norfolk County Council (in its capacity as Highway Authority and promoter of the Scheme).
The Planning Act	The Planning Act 2008.

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Acronyms

Acronym	Definition
BPM	Best Practical Means
BS	British Standard
CoCP	Code of Construction Practice
CO_2	Carbon dioxide
DCO	Development Consent Order
EA	Environment Agency
ES	Environmental Statement
FRA	Flood Risk Assessment
GHG	Greenhouse Gas
GYBC	Great Yarmouth Borough Council
GYTRC	Great Yarmouth Third River Crossing
IAQM	Institute of Air Quality Management
MMP	Materials Management Plan
NMU	Non-motorised user
NSR	Noise Sensitive Receptor
PRoW	Public Rights of Way
SWMP	Site Waste Management Plan
SuDS	Sustainable Drainage Systems
VMS	Variable Message Sign

1 Purpose

1.1.1 The purpose of this document is to summarise the proposed mitigation, monitoring or other measures to prevent, offset and/or minimise the effects of the Scheme. The measures proposed have been drawn from the following documentation:

- Environmental Statement (ES) (document reference 6.1);
- Equalities Impact Assessment (EqIA) (document reference 6.15);
- Outline Code of Construction Practice (CoCP) (document reference 6.16); and
- The Requirements included in the draft DCO (document reference 3.1).

2 Structure of this Document

2.1.1 The proposed mitigation, monitoring or other measures are summarised in Table 3.1 through to Table 13.13 for the construction and operation phases.

2.1.2 Each table is divided into specific environmental topics. Each topic refers to the relevant chapter of the ES (document reference 6.1) and/or Outline CoCP (document reference 6.16), where detailed information is provided. Proposed mitigation, monitoring or other measures from the EqIA (document reference 6.15) are presented in the 'People and Communities' table (Table 3.9).

2.1.3 Each table consists of five separate columns including:

- Column 1 – The specific environmental topic receptors;
- Column 2 – The phase of the Scheme (construction/operation);
- Column 3 – The likely effects prior to mitigation, and if said effects are significant;
- Column 4 – Outlines the specific mitigation measures in response to the identified effects on said receptors;
- Column 5 – The residual effects on said receptors, once mitigation has been implemented, and if said effects are significant;
- Column 6 – Any proposed monitoring to take place in relation to said effects and receptors; and
- Column 7 – Details on how the mitigation and/or monitoring measures will be secured.

3 Proposed Mitigation, Monitoring or Other Measures

Table 3.1: Air Quality - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
Air Quality Sensitive Receptors (including residential receptors and other air quality sensitive buildings and ecological receptors)	Construction	Moderate adverse (significant)	• The mitigation measures focus on controlling fugitive releases of construction-phase dust and should be implemented by the Contractor through the full CoCP. Such measures should include, but are not limited to: • Dust-generating activities (e.g. cutting, grinding and sawing) to be minimised and weather conditions considered prior to conducting potentially dust-emitting activities. Cutting, grinding or sawing equipment will be fitted or used in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems where practicable. • Fine material will not be stockpiled to an excessive height in order to prevent exposure to wind or dust nuisance; • Scabbling (roughening of concrete surfaces) will be avoided if possible; • Sand and other aggregates will be stored in bunded areas and not allowed to dry out, unless this is required for a	Negligible to slight adverse (not significant)	Monitoring of dust and PM_{10}. Monitoring locations to be agreed with the county planning authority in consultation with GYBC. Baseline monitoring to take place at least three months before construction work commences. Dust and PM_{10} monitoring for medium-to-high-risk sites, as defined by IAQM, including: • regular onsite and offsite inspection where receptors are nearby and accessible, to monitor dust, record inspection results, and make the log available to the local authority when requested; • -increasing the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions; and • -agreeing dust deposition or real-time continuous PM_{10} monitoring locations with the county planning authority in consultation with GYBC, with baseline monitoring taking place at least three months before construction work commences. The monitoring is required to form part of the full CoCP.	The Outline CoCP (document reference 6.16) requires that the full CoCP stipulates the following to ensure the aforementioned mitigation is implemented effectively, continually monitored and updated accordingly: • Identification of a responsible environmental manager; • Notification procedures where potentially significant dust generating activities are required; • Method statements for the control of dust in such locations; and • Management procedures to ensure issues are addressed should they be raised by the public. The full CoCP is secured through Requirement 5 of the draft DCO (document reference 3.1).

	particular process, in which case ensure that appropriate additional control measures are in place; • Bulk cement and other fine powder materials are to be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; • For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust; • Roads and accesses to be kept clean; • Where practicable, plant to be located away from site boundaries that are close to residential areas; • Water will be used as a dust suppressant, where applicable; • Drop heights from excavators to crushing plant to be kept to a minimum; • Distances from crushing plant to stockpiles to be kept to the minimum practicable to control dust generation associated with the fall of materials. Use enclosed chutes and conveyors and covered skips. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or	

handling equipment and use fine water sprays on such equipment wherever appropriate. Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;~~.~~

- Skips will be securely covered;
- Soiling, seeding, planting or sealing of completed earthworks to be completed as soon as reasonably practicable, following completion of earthworks;
- Dust suppression and the maintenance of the surface of access routes to be appropriate to avoid dust as far as practicable, taking into account the intended level of trafficking;
- Wheel wash facilities to minimise trackout of dust;
- Material will not be burnt on site; and
- Engines to be switched off when not in operation.
- Further measures to focus on controlling fugitive releases of demolition dust are to be incorporated in the full CoCP. Such measures should include:
- Soft strip inside buildings before demolition (retaining walls and

	windows in the rest of the building where practicable, to provide a screen against dust). • Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. • Avoid explosive blasting, using appropriate manual or mechanical alternatives. • Bag and remove any biological debris or damp down such material before demolition. • Further measures to focus on controlling fugitive releases from dust due to trackout are to be incorporated in the full CoCP. Such measures should include: • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use; • Avoid dry sweeping of large areas;	

- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Record all inspections of haul routes and any subsequent action in a site log book;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable);
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and
- Access gates to be located at least 10m from receptors where practicable.
- The following measures regarding preparing and maintaining the site should be included in the full CoCP:

	• The site layout will be optimized so that machinery and dust causing activities are located away from receptors, as far as is possible; • Solid screens or barriers will be erected around dusty activities or the site boundary that are at least as high as any stockpiles on site; • Where applicable for specific operations where there is a high potential for dust production and the site is actives for an extensive period full enclosure may be required; • Measures will be taken to avoid site runoff of water or mud; • Site fencing, barriers and scaffolding will be kept clean using wet methods; • Materials that have a potential to produce dust will be removed from site as soon as possible, unless being re-used on site; and • Stockpiles will be covered to prevent wind whipping. • Further measures to focus on controlling fugitive releases of dust due to earthworks are to be incorporated in the full CoCP. Such measures should include: • Re-vegetate earthworks and exposed areas/soil	

		stockpiles to stabilise surfaces as soon as practicable; • Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and • Only remove the cover in small areas during work and not all at once. • In submitting the full CoCP, the Contractor should stipulate the following to ensure the aforementioned mitigation is implemented effectively, continually monitored and updated accordingly: • Identification of a responsible environmental manager; and • Method statements for the control of dust in such locations. • The full CoCP should stipulate that the Contractor should ensure that the Environment Agency's Pollution Prevention Guidelines (PPGs) are followed and that all sub-contractors are aware of control measures. Site management will be applied to: • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely	

		manner, and record the measures taken; • Make the complaints log available to the local authority when asked; • Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book; • Hold regular liaison meetings with other high-risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised; and • It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.			
Operation	Negligible (not significant)	*Embedded Mitigation* In order to prevent emissions from idling river traffic, Requirement 14 of the draft DCO (document reference 3.1) requires signs instructing masters of vessels utilising the vessel waiting facilities to switch off vessel engines whilst vessels are moored. *Additional Mitigation*	Negligible (not significant)	N/A	Embedded mitigation secured through Requirement 14 of the draft DCO (document reference 3.1).

			There are no appropriate mitigation measures for operational air quality effects.			

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Table 3.2: Noise & Vibration - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
Sensitive Receptors during Construction (residential properties and other noise and vibration sensitive buildings)	Construction	Noise: Neutral (not significant) to Very Large (significant) Vibration: Neutral (not significant) to Very Large (significant)	*Embedded Mitigation* The core working hours for construction operations will be programmed to be between 07:00 and 19:00, Monday to Friday, and to be between 07:00 and 13:00 on Saturdays. The Contractor should endeavour to undertake all noisy activities that are likely to lead to disturbance within the core working hours. The activities detailed in Appendix 7C (document reference 6.2) must be carried out within those core working hours. Deviations to the core working hours may be required for some activities and these must be agreed pursuant to an application for prior consent from GYBC under section 61 of the Control of Pollution Act 1974. *Additional Mitigation* In addition, and based on the principles of BPM, appropriate noise and vibration mitigation measures will be implemented and are set out in the Outline CoCP (document reference 6.16) including: • Maintaining good public relations with residents that may be affected by noise from the construction works. Effective means of communication will be established, keeping residents informed of the type and timing of works involved by following the processes noted in the Outline CoCP (document reference 6.16);	Noise: Neutral (not significant) to Very Large (significant) Vibration: Neutral (not significant) to Large (significant)	The Contractor will complete a programme of noise and vibration monitoring for the following reasons: • To measure the performance of noise and vibration control measures; and • To ascertain noise and vibration from items of plant. • To provide confirmation that noise and vibration thresholds are not exceeded A proposed programme of monitoring is required to form part of the full CoCP.	Compliance with BPM shall be ensured through the adoption and development of the Outline CoCP (document reference 6.16), which could also include the derived construction noise mitigation measures. The Outline CoCP (document reference 6.16) will be developed further by the Contractor prior to construction works commencing. The full CoCP is secured through Requirement 5 of the draft DCO (document reference 3.1).

- Careful planning of construction activities and selection of appropriate plant to reduce noise emissions;

- ~~Careful planning of construction activities and selection of appropriate plant to reduce noise emissions;~~

- ~~When~~ever possible noisy activities should be undertaken during core working hours;

- Where reasonably practicable, fixed items of construction plant should be electrically powered in preference to diesel or petrol driven;

- Whenever reasonably practicable, fabrication would be undertaken off site;

- Noisy plant would be kept as far away as reasonably practicable from sensitive areas (and may need localised acoustic and visual screening);

- As far as reasonably practicable the noise from reversing alarms would be controlled or limited. This would be undertaken through following a hierarchy of techniques:

  (a) The site layout would be designed to minimise reversing.

  (b) Banksmen would be utilised to avoid so far as reasonably practicable the use of reversing alarms.

  (c) Reversing alarms would incorporate, where reasonably practicable, features such as broadband signals to reduce the level of noise.

- All plant, equipment and noise control measures applied to plant and equipment will be maintained in good working order and operated such that noise emissions are minimised as far as reasonably practicable. Every effort would be made to not operate until repaired plant, equipment or items fitted with noise control equipment found to be defective;

	• Shutting down equipment when not in use; • A toolbox talk and information leaflet would be provided to operatives when working outside of the core working hours set out in the Outline CoCP (document reference 6.16) to brief them on the requirements to be considerate to local residents and any specific control measures required with each specific task being undertaken; • Use of construction hoardings around the noise generating activity up to a height appropriate to ensure attenuation of noise is achieved; • Where reasonably practicable, use of temporary barriers to screen noisy activities; • Using silenced equipment where reasonably practicable, in particular, silenced power generators if night-time power generation is required for site security or lighting; • Ensuring that vehicles do not park or queue for long periods outside Noise Sensitive Receptors (NSRs) with engines running unnecessarily; • Generators and water pumps required for 24-hour operation would be silenced and/or screened, as appropriate; and • Where reasonably practicable, soft start procedures for terrestrial piling would be used. For working outside core hours, where practicable, silenced equipment and plant will be used, and/or temporary barriers will be installed to reduce noise at NSRs to below BS 522/-1:2009+A1:2014 threshold values where practicable. During construction works, the mitigation measures to control and reduce noise and vibration emissions to ecological receptors will be included within the Outline CoCP (document reference 6.16) will be followed. Mitigation measures will include the adoption of the measures set out in the Joint Nature	

		Conservation Committee (JNCC) document entitled 'Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise' (2010).			
Operation	Negligible (not significant) to Very Large Adverse (significant)	No embedded or additional mitigation is proposed.	Negligible (not significant) to Very Large Adverse (significant)	None required.	Not applicable.

Table 3.3: Nature Conservation - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Embedded Mitigation Measures	Specific Additional Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
Statutory Protected Sites	Construction	Negligible (not significant)	• For advanced works such as site clearance activities, ecological mitigation to be undertaken prior to the main start of works supervised by suitably qualified specialists; • Provision for site clearance to take place outside the birds' breeding season, (March-September inclusive) or, if this not possible, include measures, including ornithological survey as necessary, to ensure breeding birds remain unaffected by the de-vegetation and demolition activities; • Temporary drainage arrangements will be constructed ahead of the construction works commencing to ensure that surface run-off will not directly enter existing water courses; • Protection of maintained water vole habitat alongside watercourses through construction buffering of 3-5m; • Provision for pre-construction emergence / re-entry survey for bats of 22 properties due for demolition where the potential for a roost has not unequivocally been ruled out (Appendix 8G); • Landscaping works will be undertaken as soon as practicable upon completion of the earthworks. The optimum amount of planting will be undertaken at the end of the first year of	No additional mitigation is proposed.	Negligible (not significant)	None required.	An Outline CoCP (document reference 6.16) accompanies this ES and outlines the mitigation and monitoring measures that the contractor would be required to adopt during the construction phase of the Scheme. The full CoCP is secured through Requirement 5 of the draft DCO (document reference 3.1).
Bats		Negligible to Minor Adverse (not significant)			Negligible to minor adverse (not significant)	None required.	
Breeding Birds		Negligible to Minor Adverse (not significant)		To minimise the risk of disturbing breeding birds, the removal of suitable nesting material as part of site clearance activities would normally be undertaken outside of the typical bird breeding season (March to July inclusive). If tree and vegetation removal is needed during this period, the vegetation shall be checked for the presence of nests by the ECoW, prior to removal. If nests that are in use are present, it may be necessary to delay work in immediate proximity of the nest until the young have fledged. ~~To ensure legal compliance pertaining to black redstart is maintained, de-vegetation and demolition activities should avoid disturbing these species during the breeding season. If construction overlaps with the breeding season, the actual nest sites would be identified before work commences and a suitably sized exclusion zone established around the nesting area.~~ ~~The provision of artificial nest sites and appropriate landscaping (and thus providing feeding sites for the species) would be focused on black redstart.~~	Negligible (not significant)	A watching brief for the presence of black redstart should be maintained by the ECoW, as appropriate, during the construction period. Should black redstart be present and be disturbed by the construction of the Scheme, the ECoW would advise appropriate action in the interests of its protection.	

Benthic ecology and fish	Negligible (not significant)	construction. No works will take place within the root protection zone of any retained trees and all trees will be protected according to best practice as according to the arboricultural assessment provided in Appendix 8H (document reference 6.2); • To minimise the risk of effects on foraging and commuting bats, the use of artificial lighting during construction must be kept to a minimum. Where temporary artificial lighting is used, only the immediate area of works shall be illuminated by using as sharp an angle of lighting as possible and avoiding light being directed at, or close to adjacent vegetation. Shields or hoods shall be used to control or restrict the area to be lit; • To ensure legal compliance is maintained pertaining to black redstart, de-vegetation and demolition activities must avoid disturbing these species during the breeding season. If construction overlaps with the breeding season, the actual nest sites will be identified before work commences and a suitably sized exclusion zone established around the nesting area; • There will be provision of artificial nest sites for bird species and appropriate landscaping (and thus providing feeding sites for the species); and • In order to prevent emissions from idling river traffic Requirement 14 of the draft DCO (document reference 3.1) requires signs instructing masters of	No additional mitigation is proposed.	Neutral to negligible (not significant)	None required.
Water voles	Negligible (not significant) to Moderate Adverse (significant)		Additional Mitigation Prior to commencement of construction works, surveys for water voles will need to be undertaken within the Scheme and adjacent watercourses. Particular focus should be given to watercourses 1, 2 and 4 where water voles have been confirmed to be currently present (see ES Volume II Technical Appendix 8F (document reference 6.2) and ES Volume III Figure 8.4 for location of these watercourses). The surveys will confirm precise conditions prior to construction starting on site. Work that directly impacts upon protected species, including water voles, would be subject to a mitigation or conservation licence(s) from Natural England to avoid an offence under the Wildlife and Countryside Act 1981 (as amended). These licences will be in place prior to the commencement of work, and work would be undertaken in line with the mitigation requirements and conditions of the licence(s). The Applicant is in ongoing consultation with Natural England in order to secure a Letter of No Impediment (LONI) regarding water voles – with a view to confirming with Natural England that there is no impediment to the DCO application being approved. As detailed in the General Arrangement Plan for the Scheme (document reference 2.2), realignment of the eastern and northern sections of watercourse 1 is proposed. The northern section of watercourse 1 supported water voles	Negligible to Minor Adverse (not significant)	The water vole populations within retained or newly created habitat would be monitored following construction of the Scheme to confirm if the relocation of the population has been a success. This would enable remedial measures to be implemented where necessary.

vessels utilising the vessel waiting facilities to switch off vessel engines whilst vessels are moored.

Should any part of the River Yare need to be impounded during construction then a fish translocation ~~should~~will be carried out to remove fish from the impoundment and return them back to the estuary. The following measures should be in place:

- The translocation of fish should be carried out by suitable trained fisheries scientists/aquatic ecologists;
- Any such operation would need careful co-ordination with the operation to set-up and drain the impoundment;
- Once the water within the impoundment has been lowered to a suitable level (approx. 0.5 m) fish should be translocated by netting;
- During the netting process the water level should be gradually and continuously reduced; and
- The intake of the pump/s used to lower the water levels within the impoundment, prior to the translocation of fish, should be covered with mesh to prevent the entrainment of fish.
- ~~The intake of the pump/s used to lower the water levels within the impoundment, prior to the translocation of fish, should be covered with mesh to prevent the entrainment of fish.~~

as detailed in ES Volume III Figure 8.7. The following measures should therefore be implemented by the Contractor in the full CoCP:

- Habitat occupied by water vole would be retained, wherever possible, within the Scheme design and areas of retained habitat should remain connected to other habitat areas, within or beyond the Application Site;
- Retained habitat would be appropriately buffered through a width of 3-5 m in order to protect such areas through construction;
- Where habitat cannot be retained, alternative habitat will be prepared and habitat enhanced appropriately in advance of the commencement of construction to support water voles if translocation might be required. To mitigate for the realignment works at watercourse 1, enhanced habitat in the northern subsection of watercourse 2 (which is directly connected to water course 1) will be provided. Following standard guidance, this site is less than 500 m from the affected habitat, not already supporting a water vole population, and is well connected to other suitable habitat. This receptor habitat will be enhanced to form a complex wetland habitat resource, as increased watercourse complexity has been shown to enable water voles to evade predators more effectively. It will aim to achieve an overall increase in habitat available in the local area for water voles. If alternative habitats are required these would be located within the Application Site;
- ~~construction;~~

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- ~~Where habitat cannot be retained, a receptor site would be identified within the Application Site. This would be identified in advance of the commencement of construction to enable the receptor site to be prepared, and the habitat enhanced appropriately to support water voles, if translocation is required. The habitat should follow best practice and be up to 500m from the affected habitat, not already supporting a water vole population and be well connected to other suitable habitats;~~
- ~~The potential for enhancement of habitat to act as receptor sites has been identified in Chapter 8 of the ES (document reference 6.1) for watercourses 1, 2, 5 and 6. This receptor habitat would be created or enhanced to form a complex wetland habitat resource as increased watercourse complexity has been shown to enable water voles to evade predators more effectively. It should achieve an overall increase in habitat available in the local area for water voles;~~
- ~~Habitat enhancement work would include: the planting~~

~~of native wetland plants, reeds, grasses, rushes and sedges along new channels; the removal of areas of dense woody vegetation on existing watercourses, to allow increased light to reach watercourses and thereby enable an increase in in-stream and marginal wetland plants; and the restoration of water channels, with deepening or alteration of bank profile where appropriate to maximise their suitability for water voles;~~

~~construction: Where habitat cannot be retained, alternative habitat will be prepared and habitat enhanced appropriately in advance of the commencement of construction to support water voles if translocation might be required. To mitigate for the realignment works at watercourse 1, enhanced habitat in the northern subsection of watercourse 2 (which is directly connected to water course 1) will be provided. Following standard guidance, this site is less than 500 m from the affected habitat, not already supporting a water vole population, and is well connected to other suitable habitat. This receptor~~

		~~habitat will be enhanced to form a complex wetland habitat resource, as increased watercourse complexity has been shown to enable water voles to evade predators more effectively. It will aim to achieve an overall increase in habitat available in the local area for water voles. If alternative habitats are required these would be located within the Application Site:~~ Enhancement work would include: the planting of native wetland plants, reeds, grasses, rushes and sedges along new channels; and the removal of areas of dense woody vegetation on existing watercourses, to allow increased light to reach watercourses and thereby enable an increase in in-stream and marginal wetland plants. Work would also include restoration of water channels, with deepening or alteration of the bank profile where appropriate to maximise their suitability for water voles; ~~Enhancement work would include: the planting of native wetland plants, reeds, grasses, rushes and sedges along new channels; and the removal of areas of dense woody vegetation on existing watercourses, to allow increased light to reach watercourses and thereby enable an increase in in-stream and marginal wetland plants. Work would also include restoration of water channels, with deepening or alteration of the bank profile where~~

~~appropriate to maximise their suitability for water voles;~~

- Further enhancement of habitats for water voles will be provided in watercourses 5 and 6;
- Watercourse crossing points associated with the Scheme would be designed to maximise permeability to water voles, with a preference for bridges rather than pipes or small culverts; the height of the structure above the water should be maximised and preferably an area of watercourse bank should also run through the structure;
- At watercourse 1, where realignment is required, water voles from within the construction footprint would be relocated to newly created or enhanced habitat in the receptor site. To reduce effects on the population of water voles and enable successful adaptation to the new environment the timing of works would need to coincide with seasonal periods when water voles are least likely to be breeding. Relocation of animals, if required, would need to be carried out between mid-March and mid-June, prior to the main breeding season;
- Watercourse 2 will be subject to desilting works which are not expected to disturb water voles if they are undertaken with appropriate timing (i.e. when they are least active over winter months). Desilting works can be undertaken in parallel with enhancement mitigation;
- Following trapping out of all water voles from the construction footprint, and before realignment works begin a destructive search of the construction footprint should be carried out under the supervision of a suitably qualified ecologist.

				During the destructive search suitable habitat (vegetation and burrows) should be progressively removed to capture any remaining water voles.			
Statutory Protected Sites	Operation	Negligible (not significant)	Design elements the form aspects of embedded mitigation are also detailed in Chapter 2: Description of the Scheme of the ES (document reference 6.1).	No additional mitigation is proposed.	Negligible (not significant)	None required.	Not applicable.
Bats		Negligible (not significant)			Negligible (not significant)	None required.	
Breeding Birds		Negligible (not significant)			Negligible (not significant)	None required.	
Benthic Ecology and Fish		Negligible (not significant)			Negligible (not significant)	None required.	
Water Voles		Negligible to Minor Adverse (not significant)			Negligible to Minor Adverse (not significant)	None required.	

Table 3.4: Cultural Heritage - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
Non-designated Below-Ground Archaeological Remains	Construction	Slight (not significant) to Large Adverse (significant)	A programme of archaeological evaluation is required to determine whether potential features identified from the assessment survive as below-ground assets within the Principal Application Site to confirm the presence or absence of currently unknown below-ground remains. The Acting Historic Environment Team Leader (Strategy and Advice) at NCC has agreed this could be undertaken post-decision due to the constraints of the Principal Application Site. The	Neutral (not significant) to Slight Adverse (not significant)	Monitoring arrangements during the evaluation phase for the below ground heritage assets, paleoenvironmental deposits and non-designated built heritage assets within the Principal Application Site are set out in the WSI (document 6.9, Section 6.1). This provides for monitoring visits by NCC County Archaeologist during the course of the fieldwork. Any monitoring arrangements required during the mitigation	Secured by Requirement 12 of the draft DCO (document reference 3.1) which states that construction work must be carried out in accordance with the WSI.

			aim of the evaluation would be to determine the importance, extent, date, level of survival of the assets, and to inform a mitigation strategy which would be implemented either prior to or during the construction phase. The scope of the evaluation is presented in a WSI (document reference 6.9). Current legislation draws a distinction between archaeological remains of national or international importance and other remains considered to be of lesser importance. Any below-ground archaeological remains identified which are judged to be of very high or high importance may require preservation in situ, whilst those of lesser importance may undergo archive recording, where they are of medium or low value. This would be in the form an archaeological excavation which would ensure preservation by record. The design and methodology for any subsequent archaeological mitigation would be presented in further WSIs and detailed method statements. The WSI would also outline the approach to post-excavation assessment, reporting, dissemination of the results of the work and archiving. The WSI would be produced in consultation with the NCC County Archaeologist and GYBC, before being approved by the county planning authority.	phase would be set out in subsequent WSI(s).
Paleoenvironmental Remains	Moderate to Large Adverse (significant)	Further evaluation is required to determine the nature of the deposits identified from the GI borehole logs where they would be disturbed within the Principal Application Site. A dedicated geoarchaeological borehole survey would be undertaken as part of the pre-construction evaluation stage and is set out in the WSI (document 6.9).	Neutral (not significant) to Moderate Adverse (significant)	

		The aim of the borehole survey is to recover undisturbed core samples from the Breydon Formation deposits. The cores would be split and each cleaned and recorded. Dependent upon the results, sub-sampling and palaeoenvironmental assessment (pollen, diatoms and foraminifera) may be required. Depending on the nature of deposits recovered, further paleoenvironmental works may be recommended to ensure preservation by record of any important deposits. These would be set in subsequent WSIs and method statements. Where possible, any sensitive deposits would be preserved in situ.			
Built Heritage Assets and Above-Ground Assets	Moderate Adverse (significant)	A level 1 historic building assessment would be undertaken, in accordance with Historic England's 2016 guide, titled 'Understanding Historic Buildings. A Guide to Good Recording Practice', ahead of demolition. The aim of the building assessment would be to determine the condition and value of any historic elements terraced housing, determine if additional, more detailed, building recording or monitoring is required prior to or during demolition; and to produce an archive for deposition with an appropriate museum, and to provide information for accession to the NHER, to ensure the long-term survival of the excavated data. The scope of the historic building assessment is set out in the WSI (Document 6.9).	Slight Adverse (not significant)		
Setting of Built Heritage Assets	Moderate Adverse (Significant)	No mitigation is proposed.	Moderate Adverse (Significant)	None required.	Not applicable.

Below-Ground archaeological assets and paleoenvironmental deposits~~Heritage Assets~~	Operation	Negligible (not significant) to Large Adverse (significant)	*Additional Mitigation* The pre-construction archaeological and paleoenvironmental evaluation set out in the WSI (document reference 6.9) would provide more information to assess the presence or absence of below-ground assets which could be impacted upon by changes in the local groundwater levels. Depending on the nature of heritage assets identified in the archaeological and paleoenvironmental evaluation, additional works may be required to ensure preservation by record of any important deposits which cannot be preserved in-situ. These would be set in subsequent WSIs and method statements.	Neutral (not significant) to Moderate Adverse (Significant)	None required.	Secured by Requirement 12 of the draft DCO (document reference 3.1).
Setting of Built Heritage Assets and Above-Ground Assets		Moderate Adverse (significant)	No mitigation is proposed.	Moderate Adverse (significant)	None required.	Not applicable.

Table 3.5: Townscape & Visual - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
Townscape Character and Visual Amenity	Construction	Neutral (not significant) to moderate adverse (significant)	*Embedded Mitigation* Hard and soft landscaping works in general accordance with the landscaping plans (document reference 2.9). *Additional Mitigation* No additional mitigation is proposed for the construction phase of the Scheme.	Neutral (not significant) to moderate adverse (significant)	No monitoring is proposed.	The embedded mitigation will be secured through the Landscaping Requirement in Schedule 2 to the draft DCO (document reference 3.1).
Townscape Character	Operation	Slight Beneficial (not significant) to Moderate	*Embedded Mitigation* Public realm including landscape planting incorporated within the Scheme would be implemented and maintained, by the Applicant, as	Slight Beneficial (not significant) to	No monitoring is proposed.	The embedded mitigation will be secured through the Landscaping Requirement in

and Visual Amenity	Adverse (significant)	the Highway Authority, for a 15-year period commencing with the date of completion of the landscaping works, as per Requirement 6(h) of the draft DCO (document reference ~~3~~6.1). *Additional Mitigation* No additional mitigation is proposed for the operation phase of the Scheme.	Moderate Adverse (significant)	Schedule 2 to the draft DCO (document reference 3.1).

Table 3.6: Road Drainage & Water Environment - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
River Yare	Construction	Neutral (not significant) to Slight ~~Moderate~~ Adverse (not significant)	*Embedded Mitigation* • The use of cofferdams to exclude work areas from the main River Yare waterbody, thus reducing the risk of increased sediment loads or hazardous substances entering the main water flow; • The use of soft start piling techniques to minimise the disturbance and subsequently mobilisation of contaminated sediment within the River Yare during construction of the bridge substructures; • Temporary drainage arrangements will be employed to ensure existing IDB drainage routes are maintained during construction; • The use of silt fences, silt traps, filter bunds, settlement ponds and/or proprietary units such as a 'siltbuster' to treat sediment laden water generated on site before discharge; • Oil absorbent booms will be made available on site and deployed in the event of a significant spillage; • Procedures to control dust and contain debris associated with demolition works; • Temporary cut-off drains will be used uphill and downhill of the working areas to prevent clean runoff entering and dirty water leaving the working area without appropriate treatment; • Control and treatment measures will be regularly inspected to ensure they are working effectively; • Emergency response plans will be developed by the Contractor and spill kits made available on Site; • Fuels and potentially hazardous construction materials will be stored in bunds that have areas with external cut-off drainage; fuel will be stored in double skinned tanks with 110% capacity; • Fuelling and lubrication of construction vehicles and plant will generally be on hardstandings, where reasonably practical, with appropriate cut-off drainage and located away from watercourses. In the event of plant breakdown drip trays will be used during any emergency maintenance and spill kits will be available on site; • Construction plant will be checked regularly for oil and fuel leaks, particularly when construction works are undertaken in or near the existing site waterbodies;	Neutral to Slight Adverse (not significant)	Regular monitoring of quality of dewatered / discharge water during the construction phase may be required to ensure compliance with permitting and consent requirements, as included in the Outline CoCP (document reference 6.16).~~No monitoring is proposed.~~	An Outline CoCP (document reference 6.16) accompanies this ES and outlines the mitigation measures that the contractor would be required to adopt during the construction phase of the Scheme. The full CoCP is secured through Requirement 5 of the draft DCO (document reference 3.1).
River Bure		Neutral (not significant)		Neutral (not significant)		
Breydon Water		Neutral (not significant)		Neutral (not significant)		
North Sea		Neutral (not significant)		Neutral (not significant)		
Ditches and Watercourses (within marshland upstream of Great Yarmouth)		Neutral (not significant)		Neutral (not significant)		
Ditches and Watercourses (within urban area of Great Yarmouth)		Neutral to Slight Adverse (not significant)		Neutral to Slight Adverse (not significant)		
Surface water ponds located within the MIND Centre and Grounds (directly affected by the Scheme)		Large Adverse (significant)		Neutral (not significant)		
Crag Group		Slight to Moderate Adverse (significant)		Neutral to Minor Adverse (not significant)		

Superficial Deposits	Neutral to Slight Adverse (significant)	• Avoid pumping or similar processes of concrete over or adjacent to open water where possible and close observation to swiftly shut off any pumps if a spillage occurs; • Waste fuels and other fluid contaminants will be collected in leak-proof containers prior to removal from construction site to an approved recycling processing facility~~;~~ ~~and~~ • Sewage generated from site welfare facilities will be disposed of appropriately. This may be by discharge to the foul sewer or by collection in septic tank for disposal off site; and~~.~~ • Cofferdam dewatering rates would be such that the spread of saline intrusion would not infringe upon the licensed abstractor zone of influence. Prior to the commencement of regulated activities, the contractor will: • Follow the Environment Agency's Approach to groundwater protection guidance to avoid saline water spread in the aquifers and risks to the groundwater abstractors. Cofferdam groundwater dewatering rates and saline intrusion spread are intrinsically linked; the greater the dewatering rate the larger spread of potential saline intrusion(s). • Ensure that dewatering rates will be such that the spread of saline intrusion will not infringe upon the licensed abstractor zone of influence for both the construction and post-construction (6 months post-construction) phases. • The construction dewatering method of discharge has yet to be determined. The groundwater collected will either be discharged to surface water, sewer, disposed of off-site or a combination of these three methods. If the water is to be discharged to sewer or a surface waterbody then (a) discharge consent(s) may be required. The permitting process will be completed by the Contractor once a dewatering and discharge management methodology has been agreed upon. The Contractor will be responsible for acquiring the relevant consents and adhering to the conditions of said consents. The Contractor should include within the full CoCP, and implement, standard good practice pollution prevention measures in construction to protect the surrounding water environment. These would include: • A temporary surface water drainage strategy to be prepared for the construction stage to ensure that surface run-off would not directly enter existing watercourses; • The use of soft start piling techniques to minimise the disturbance and subsequently mobilisation of contaminated sediment within the River Yare during construction of the bridge substructures; • Temporary cut-off drains would be used uphill and downhill of the working areas to prevent clean runoff entering and dirty water leaving the working area without appropriate treatment;	Neutral (not significant)
Water Users	Neutral (not significant) to Moderate Adverse (significant)		Neutral to Minor Adverse (not significant)

- All drains within the Scheme Extent would be identified and labelled and measures implemented to prevent polluting substances from entering them;
- Areas with a greater risk of spillage (e.g. vehicle maintenance and storage areas for hazardous materials) would be carefully sited (e.g. away from drains or areas where surface waters may pond);
- Emergency response plans would be developed and spill kits made available on site;
- Measures to be put in place to prevent pollution from construction plant, vehicles and machinery including refuelling in designated areas, on an impermeable surface, with appropriate cut-off drainage located away from watercourses; plant to be maintained in a good condition with wheel washing in place, all refuelling would be supervised and carried out in a designated area. In the event of plant breakdown, drip trays would be used during any emergency maintenance and spill kits would be available on site;
- Fuels and potentially hazardous construction materials would be stored in bunds that have areas with external cut-off drainage; fuel would be stored in double-skinned tanks with 110% capacity;
- Construction plant would be checked regularly for oil and fuel leaks, particularly when construction works are undertaken in or near the existing site waterbodies;
- Waste fuels and other fluid contaminants would be collected in leak-proof containers prior to removal from construction site to an approved recycling processing facility;
- Oil absorbent booms would be made available on site and deployed in the event of a significant spillage;
- Procedures to control dust and contain debris associated with demolition works;
- Control and treatment measures will be regularly inspected to ensure they are working effectively;
- Concrete wash out would only take place at designated concrete washout areas;
- Surface water run-off and excavation dewatering would be captured and settled out prior to disposal to sewer as appropriate. Any contaminants to be removed prior to disposal.
- The use of cofferdams to exclude work areas from the main River Yare waterbody, thus reducing the risk of increased sediment loads or hazardous substances entering the main water flow;
- The use of silt fences, silt traps, filter bunds, settlement ponds and/or proprietary units such as a ‘siltbuster’ to treat sediment laden water generated on site before discharge; and
- Sewage generated from site welfare facilities would be disposed of appropriately. This may be by discharge to the foul sewer or by collection in septic tank for disposal off site.

			The proposed intrusive works design and requirements for groundwater dewatering will be completed by the designer. The management of this water and potential permits required to manage this water would be completed by the Contractor.			
River Yare	Operation	Neutral to Moderate Adverse (significant)	*Embedded Mitigation* Embedded mitigation measures to be incorporated into the Scheme will include the provision of treatment of highway runoff as detailed in the Drainage Strategy (Appendix 12C, document reference 6.2). The vortex separator is effective in the removal of fine sediment, sediment-bound pollutants and hydrocarbons, whilst the pond/wetland feature is efficient in removing soluble metals as well as suspended solids. Penstocks are proposed as control of spillages and they have the potential to reduce the risk of a serious pollution incident by 60%. Due to high groundwater levels in the Principal Application Site, any drainage features will be lined to limit any infiltration of polluted runoff to the underlying groundwater. In addition to the provision of pollution treatment, the existing IDB watercourse to the north of Queen Anne's Road and a small section along the A47 will be de-silted as part of the Scheme.	Neutral (not significant) to Moderate Adverse (significant)	No monitoring is proposed.	Requirement 10 of the draft DCO (document reference 3.1) requires a surface water drainage system, in general accordance with the Drainage Strategy (Appendix 12C, document reference 6.2) to be approved by the county planning authority, following consultation with Great Yarmouth Borough Council, the LLFA and the IDB.
River Bure		Neutral to slight adverse (not significant)		Neutral to Slight Adverse (not significant)		
Breydon Water		Neutral to Slight Adverse (not significant)		Neutral to Slight Adverse (not significant)		
North Sea		Neutral to Slight Adverse (not significant)		Neutral to Slight Adverse (not significant)		
Ditches and Watercourses (marshland upstream of Great Yarmouth)		Neutral (not significant)		Neutral (not significant)		
Ditches and Watercourses (within urban area of Great Yarmouth)		Neutral (not significant)		Neutral (not significant)		
Surface Water Ponds located within the MIND Centre and Grounds (directly affected by the Scheme)		Large Adverse (significant)		Large Adverse (significant)		
Crag Group		Neutral (not significant)		Neutral (not significant)		

Superficial Deposits	Neutral (not significant)		Neutral (not significant)
Water Users	Neutral (not significant)		Neutral (not significant)

Table 3.7: Flood Risk - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
All Residential and Commercial Properties (close to the Scheme)	Construction	Neutral to Slight Adverse (not significant)	The Contractor should prepare a flood management plan to form part of the full CoCP that should include: • A list of important contacts, including Floodline, building services, suppliers and evacuation contacts for staff; • A description or map showing locations of key property, protective materials and service shut-off points; • Basic strategies for protecting property, preventing business disruption and assisting recovery; and • Checklists of procedures that can be quickly accessed by staff during a flood. The full CoCP should include measures to minimise flood damage during large return period events. It is expected that in most instances there would be sufficient warning due to tide level predictions to implement the measures outlined in the full CoCP. This includes time for removal of plant and equipment from the site to higher ground upon receiving a flood warning. This would limit damage and ensure that any hazardous materials with the potential to float would be moved. Given the low likelihood of a significant flood event occurring during the construction phase, the implementation of a flood management plan is sufficient mitigation and would be provided within the full CoCP. There is a potential risk of groundwater flooding during construction, any residual groundwater flooding risk during construction should be managed using the flood management plan and anyone working on site should be made aware that there is potential for groundwater flooding to the Principal Application Site. The Contractor will consider suitable locations for plant and materials and suitable protection measures that would be employed to protect against flooding.	Neutral to Slight Adverse (not significant)	No monitoring is proposed.	An Outline CoCP (document reference 6.16) accompanies the ES and outlines the mitigation measures that the contractor would be required to adopt during the construction phase of the Scheme. The full CoCP is secured through Requirement 5 of the draft DCO (document reference 3.1).

			A detailed review of buildings and equipment on site should be completed by the Contractor to ascertain what may cause a hazard in the event of flooding. Care will be taken with any equipment that could potentially contaminate the flood water such as fuel or chemicals. In developing the flood management plan consideration will be given to the following: • Plant, vehicles and equipment that can be removed from the site in the event of a flood warning being received; • Potential for any equipment to be raised above the tidal level or anchored down to prevent floating (noting some element of risk remains); • Other measures that lower floating probability, opening doors in cabins to allow flood water in for example. These measures and any other measures in the flood management plan should be implemented in advance and all personnel on site would be made aware of them. Where appropriate, site personnel would sign up to the Environment Agency Flood Warning service to receive flood warnings. Tidal forecasts would also be monitored for advance warning of high tidal events. The site management team should ensure sufficient numbers of people are signed up to receive warnings to allow for rapid dissemination to all staff. The team would familiarise themselves with the flood warning types, what they mean and appropriate advice to follow.			
All Residential and Commercial Properties (close to the Scheme)	Operation	Moderate Beneficial to Moderate Adverse (significant)	~~Given the Baseline level of flood risk within Great Yarmouth, it is not possible to completely remove the risk of flooding to the access roads during a tidal flood event. As safe access/egress cannot be achieved, an emergency flood plan must be considered. Due to the existing significant flood hazard to Great Yarmouth, there will already be emergency procedures in place to be implemented during times of flood. However, any existing emergency procedures will not address the issues specific to the Scheme. Therefore, it is recommended that the bridge deck of the Scheme is closed for public use during major flooding events in order to prevent vehicles or people becoming stranded. It should be noted that as the major risk of flooding in Great Yarmouth is from tidal sources, which can be predicted 24-48 hours in advance, there is time for event specific appropriate action to be taken. Once the bridge has been closed, the existing measures to be taken during a flood event in Great Yarmouth as set out in the existing emergency plan will apply.~~Given the Baseline level of flood risk within Great Yarmouth, it is not possible to completely remove the risk of flooding to the access roads during a tidal flood event. As safe access/egress cannot be achieved, it is proposed that no part of the Scheme is to be opened to the public until an emergency preparedness and response plan has been developed in consultation with GYBC, NCC and the EA and this should be approved in writing by the county planning authority (NCC). Due to the existing significant flood hazard to Great Yarmouth, there are already emergency procedures in place to be implemented during times of flood including the Norfolk Strategic	Moderate Beneficial to Slight Adverse (significant)	No monitoring is proposed.	Requirement 10 of the draft DCO (document reference 3.1) requires a surface water drainage system, in general accordance with the Drainage Strategy (Appendix 12C (document reference 6.2)) to be approved by the county planning authority, following consultation with Great Yarmouth Borough Council, the LLFA and the IDB. Requirement 9 of the draft DCO (document reference 3.1) secures the preparation and implementation of an emergency preparedness and response plan.

Flood Plan (Ref 12B.23) and the Norfolk Tactical Flood Plan (Ref 12B.24). The response to significant flood events is coordinated by the Norfolk Resilience Forum (made up of the emergency services, local authorities, volunteer organisations and PPGY), any response is based on the predicted severity of the flood event. However, any existing emergency procedures will not address the issues specific to the Scheme and additional mitigation is recommended. It is recommended that the bridge deck of the Scheme is closed for public use during major flooding events in order to prevent vehicles or people becoming stranded. It should be noted that as the major risk of flooding in Great Yarmouth is from tidal sources, which can be predicted 24-48 hours in advance, there would be time for event specific appropriate action to be taken to reduce risk to life and property

The Drainage Strategy (Appendix 12C, document reference 6.2) explains how surface water on the Principal Application Site will be managed, and how embedded mitigation will be included in the design for the Scheme to reduce the risk of surface water flooding to the Scheme and prevent an increase in surface water runoff as a result of the Scheme. The surface water runoff calculations above assume that the Principal Application Site is wholly permeable pre-development to understand the surface water storage required should discharge from the Principal Application Site need to be limited to the greenfield runoff rate. However, the Principal Application Site is not currently wholly greenfield, as 10.44ha of the total 17.33ha Application Site area is currently impermeable.

Where limiting runoff from the Application Site to greenfield runoff rates is not achievable, the post-development runoff rates should not exceed the existing runoff rates from the area. The Drainage Strategy (Appendix 12C, document reference 6.2) explains how the preferred option to manage runoff from the site is to discharge to IDB watercourses and Anglian Water sewers. However, discharging to the River Yare has not been ruled out to allow flexibility in the drainage design for the Scheme. Where it is proposed to discharge into Anglian Water sewers, the runoff rates will be restricted to Anglian Water requirements to ensure the Scheme does not cause any sewer flooding. As the post-development runoff is increased compared to the pre-development scenario, it is necessary to provide storage within the Application Site area to limit runoff. Storage will be included in the design of the Scheme as embedded mitigation, as discussed in the Drainage Strategy.

The Great Yarmouth Local Plan strongly recommends the use of sustainable drainage systems (SuDS) to manage surface water. There are a range of SuDS options available that could be considered and implemented where appropriate including swales and attenuation ponds. The use of any SuDS features within the Scheme is dependent on the site constraints and underlying ground conditions. The Drainage Strategy document considers this in detail and discusses the proposed

			mitigation for additional surface water runoff. ~~The Great Yarmouth Local Plan and the EA recommend the use of SuDS to manage surface water runoff. There are a range of SuDS options available that could be considered and implemented where appropriate, including swales and attenuation ponds. The use of any SuDS features within the Scheme is dependent on the site constraints, underlying ground conditions and available funding for the Scheme. The Drainage Strategy document considers this in detail and discusses the proposed mitigation for additional surface water runoff.~~ The proposed SuDS features to be used as part of the Scheme are detailed in the Drainage Strategy (Appendix 12C, document reference 6.2).			

Table 3.8: Climate Change - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	*Specific Mitigation Measures*	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring Is Secured
Greenhouse Gas (GHG) Emissions	Construction	Neutral (not significant)	*Embedded Mitigation* A number of embedded mitigation measures to reduce the impact of GHG emissions during construction have been identified: • Introduction of seeding on embankments and landscaping to absorb CO_2e emissions as secured by the landscaping Requirement in the draft DCO (document reference 3.1); • Re-using site-won arisings where practicable, minimising transportation and manufacture of raw materials as secured by the Outline CoCP (document ref 6.16); • Minimising the number and journey lengths of construction-related transport movements and maximising river transport for key items where practicable. Implemented through the Framework Construction Traffic Management Plan (Framework CTMP) (appended to the CoCP (document reference 6.16)); • Maximising local sourcing of materials, suppliers and waste management facilities where practicable as secured by the Outline CoCP (document ref 6.16); • Review GHG emissions from transportation and seek to minimise GHG emissions through a no-idling policy, reducing travelling during peak congestion and reviewing the best mode of transport for products; implemented through the Framework CTMP (appended to the CoCP (document reference 6.16)); • Operating a well-maintained fleet of construction vehicles and using mains electricity or battery-powered equipment over diesel- and petrol-powered equipment where practicable; implemented by the Framework CTMP (appended to the CoCP (document reference 6.16)); and	Neutral (not significant)	No monitoring is proposed.	The full CoCP is secured through Requirement 5 of the draft DCO (document reference 3.1). The landscaping mitigation is secured through Requirement 6 of the draft DCO (document reference 3.1).

			• Implementing a Framework CWTP (appended to the CoCP (document reference 6.16)) to minimise GHG emissions from employees and sub-contractors.			
	Operation	Neutral (not significant)	No embedded or additional mitigation has been identified.	Neutral (not significant)	No monitoring proposed.	Not applicable.
The Scheme (Climate Change Resilience)	Construction / Operation	Significant	*Embedded Mitigation* • The double-leaf bascule bridge and associated abutments are designed to be above flood level and account for climate change. This is as described in the environmental assessment (Chapter 2: Description of the Scheme (document reference 6.1)). • Sea level rise may increase incidence of flooding in Great Yarmouth, but the bridge is significantly above the surrounding ground as described in the environmental assessment (Chapter 2: Description of the Scheme (document reference 6.1)). • The double-leaf bascule bridge will be supported on piles. The design includes driven piles which will be of sufficient depth to ensure structural integrity, which is resistant to scour arising from climate change as described in the environmental assessment (Chapter 2: Description of the Scheme (document reference 6.1)). • Where appropriate, ground improvements will be undertaken in accordance with a suitable remediation strategy as secured through Requirement 8 of the draft DCO (document reference 3.1). • The equipment for the double-leaf bascule bridge will be mounted above mean high water level and covered to protect it from precipitation, where appropriate, as secured by the Outline CoCP (document reference 6.16). • Where appropriate, reinforced soils will be used in embankments to accommodate changes in precipitation, runoff and soil stability as secured by the Outline CoCP (document reference 6.16). • The contractor will ensure the design of the structure(s) and surfacing, and the specification of equipment, where applicable, includes all allowances for changes in climate conditions (i.e. thermal cracking) as secured by the Outline CoCP (document reference 6.16), in the open position for an extended period. • The Drainage Strategy (presented in Appendix 12C (document reference 6.2)) and secured by Requirement 10 in Schedule 2 of the DCO incorporates climate change allowance. • Ensure that the structure(s) associated with the bridge are designed to account for differential settlement as secured by the Outline CoCP (document reference 6.16). • The double-leaf bascule bridge will be supported on piles. The design includes driven piles which will be of sufficient depth to	Not Significant	No monitoring proposed.	The embedded mitigation with be secured through design features of the Scheme included in the Application. The remediation strategy is secured by Requirement 8 of the draft DCO (document reference 3.1). The full CoCP is secured through Requirement 5 of the DCO (document reference 3.1). Requirement 10 of the draft DCO (document reference 3.1) requires a surface water drainage system, in general accordance with the Drainage Strategy (Appendix 12C (document reference 6.2)) to be approved by the county planning authority, following consultation with Great Yarmouth Borough Council, the LLFA and the IDB.

			ensure the structural integrity is resistant from scour arising from climate change. • Where applicable, ensure the Scheme is designed in accordance with the appropriate Eurocodes (European standards specifying how structural design should be carried out within the EU) associated with temperature range and wind speeds as secured by the Outline CoCP (document reference 6.16). • The contractor will ensure that the design incorporates snow loading measures as well as the potential for snow falling or sliding off the lifting bascule leaves, as secured by the Outline CoCP (document reference 6.16). • Ensure that lightning protection measures are included in the design as secured by the Outline CoCP (document reference 6.16). • Ensure that, where appropriate soil specifications will reduce susceptibility to changes in soil moisture as secured by the Outline CoCP (document reference 6.16).			

Table 3.9: People and Communities - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
Economic Receptors **Community Receptors** **Recreational Receptors (including terrestrial)** **Residential Properties** **Commercial Properties** **Community Assets** **Non-Motorised Users (NMU) Receptors (including pedestrian and cyclist users of the local PRoW and non-designated public routes)** **Vehicle User Receptors (including drivers along the highway network)**	Construction	Slight Beneficial (not significant) to Moderate Adverse (significant)	*Embedded Mitigation* An Outline CoCP has been submitted with the application (document reference 6.16). As required by the DCO, this Outline CoCP will be developed into a full CoCP which will provide more details on these measures. The CoCP must be in accordance with the outline CoCP and be submitted to the county planning authority for approval. The following measures are included: • During temporary road closures, maintain pedestrian and cycle access throughout and provide reasonable adjustments for inclusive access. • ~~During temporary road closures the provision of appropriate and quality diversions which are established prior to construction and clear directions for any alternative routes and appropriate alternative diversions would be clearly publicised to maintain public access. When diversions are in place any changes or amendments to public transport services because of the Scheme construction should be clearly communicated in advance to the local community.~~ The provision of appropriate and quality diversions which are established prior to construction and clear directions for any alternative routes and appropriate alternative diversions would be clearly publicised by the Contractor to maintain public access. • Public notices would be issued in advance so to inform local residents and businesses of dates and durations of road and rights of way closures. The Contractor would ensure provision and maintenance of suitable and sufficient	Slight Beneficial (not significant) to Moderate Adverse (significant)	No monitoring proposed.	The full CoCP is secured through Requirement 5 of the DCO (document reference 3.1).

signs and barriers indicating temporary and permanent closures to public accesses and rights of way.

- When diversions are in place the Contractor should ensure that the following measures are implemented:
- Advance notice of any road or footpath closures and/or diversions to be communicated to the local community;
- Footpaths (including diversions) would be maintained for pedestrians and cyclists affected by the Scheme, including reasonable adjustments to maintain or achieve inclusive access;
- Inclusive access (including for people with reduced mobility) would be maintained to community facilities where they have been temporarily disrupted during construction. If additional measures or reasonable adjustments are identified through the community liaison process to ensure accessibility by persons with a disability or reduced mobility, routes and/or diversions should be reviewed;
- Where the usual means of access must be diverted or blocked off, alternative safe routes for persons with reduced mobility would be identified, considering existing hazards and obstructions such as pavement kerbs; and
- Any changes or amendments to public transport services because of the Scheme construction would be clearly communicated in advance to the local community.

The public and businesses will be informed of the nature, timing and duration of particular construction activities and the duration of the construction works through distribution of letters.

Works which may have an adverse impact on local residents and road users during the construction phase would be advised to the PCLO who would be the liaison between the Contractor and residents. The distributed letters would have a 24-hour helpline number on it to ensure there is someone available at all times to deal with communications and public relation.

Where tenants of commercial properties are subject to compulsory acquisition of their premises they will be assisted in finding alternative premises by use of local agents.

Construction plant that is not in use would be separated from public access points. Where practicable, NMU movements would be separated from construction activity and vehicle/machinery movements.

A Framework CTMP has been submitted as an appendix to the Outline CoCP (document reference 6.16) which sets out measures for the management of construction traffic and the management of effects to pedestrians and access from construction. The Framework CTMP will be developed into a full Construction Traffic Management Plan post-DCO to be approved by the county planning authority. The Framework CTMP includes the following measures:

		• Where there are temporary right of way closures proposed public notices would be issued in advance informing local residents and businesses of dates and durations of rights of way closures. • Where there are right of way closures proposed provision and maintenance of suitable and sufficient signs and barriers indicating temporary and permanent closures to public accesses and rights of way. • The Contractor should ensure that advance notice of any road or footpath closures and/or diversions to be communicated to the local community. In addition, inclusive access (including for people with reduced mobility) would be maintained to community facilities where they have been temporarily disrupted during construction. If additional measures or reasonable adjustments are identified through the community liaison process to ensure accessibility by persons with a disability or reduced mobility, routes and/or diversions should be reviewed. • Access from the public highway to affected residences should be allowed during the construction of the Scheme. • Where commercial properties are to be acquired for the scheme the commercial tenants would be financially compensated pursuant to the Compensation Code as part of the Scheme and assisted in finding alternative premises through the use of local agents. • The pedestrian route from Suffolk Road over Williams Adams Way would be maintained once the footway has been removed. The route would be via the controlled crossings at the traffic signals at the junction with Southtown Road. *Additional Mitigation* No additional mitigation is proposed.			
Operation	Moderate Beneficial (significant) to Slight Adverse (not significant)	No embedded or additional mitigation is proposed.	Moderate Beneficial (significant) to Slight Adverse (not significant)	No monitoring proposed.	Not applicable.

Table 3.10: Materials (Operation Scoped Out) - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Monitoring / Mitigation is Secured
Depletion of Natural Resources (including waste Arisings)	Construction	Materials: Slight Adverse (not significant) Waste: Slight Adverse (not significant)	*Embedded Mitigation* Materials: An Outline CoCP has been submitted with the application (document reference 6.16). As required by the DCO, this Outline CoCP will be developed into a full CoCP which will provide more details on these measures. The CoCP must be in accordance with the outline CoCP and be submitted to the county planning authority for approval. The following measures are included: • Preparation of a Materials Management Plan (MMP) (or equivalent); • Committing to the use of off-site manufacture and prefabrication of materials and products, for example bascule leaves–sections as road transportable sections; • Ensuring reuse of all suitable uncontaminated excavated materials. Where material requires improvement to allow its use, this will be undertaken; and • Excavated materials taken off-site may be restricted to earthworks, topsoil (made ground), organic peats and contaminated materials which cannot be stabilised. Waste: An Outline CoCP has been submitted with the application (document reference 6.16). As required by the DCO, this Outline CoCP will be developed into a full CoCP which will provide more details on these measures. The CoCP must be in accordance with the outline CoCP and be submitted to the county planning authority for approval. The following measures are included: • Preparation of a Site Waste Management Plan (SWMP); • Reduction of materials wastage through good storage and handling; • Use of modern methods of construction and logistics, encouraging waste reduction and improved materials resource efficiency; • Entering into agreements with waste contractors to maximise the recovery of segregated site wastes (e.g. timber, brick, plasterboard, metal); • Ensuring that all suppliers of materials provide returnable or practicably recyclable packaging; • Providing waste minimisation inductions and tool box talks throughout the construction phase; • Ensuring adequate storage facilities are provided for raw materials and waste streams; and	Materials: Slight Adverse (not significant) Waste: Slight Adverse (not significant)	The MMP shall be used to manage and monitor the reuse of natural soils and arisings including made-ground (contaminated or otherwise) during the design and construction stages of the Scheme. The SWMP shall be used to manage and monitor site waste effectively to reduce potential harm to the sensitive receptors during the design and construction stages of the Scheme.	The full CoCP is secured through Requirement 5 of the draft DCO (document reference 3.1).

			• Contaminated arisings and hazardous waste: a site waste management strategy will be implemented by the Contractor to ensure all hazardous wastes are collected, transported, stored and disposed of in a manner that protects the environment, noting that region capacity is currently zero.			

Table 3.11: Geology & Soils - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
Human Health (including site users, adjacent site users and construction and maintenance workers)	Construction	Moderate Adverse (significant)	*Embedded Mitigation* Embedded mitigation during construction comprises the following which will be included as part of the outline CoCP (document reference 6.16): • Risks to human health from contamination will be managed through the CDM Regulations and will include the development of method statements and risk assessments for the various construction activities and use of good construction practices. • Good working practices and housekeeping during construction such as sealing or covering stockpiles of contaminated soils to minimise the risk of generating dust. • The Scheme will adhere to pollution prevention guidance and good practice during the construction phase. • Discharges to watercourses from dewatering activities will be controlled via existing pollution control legislation. • Temporary shoring to be used in excavations where there is a risk of collapse of excavations. • Construction workers to wear appropriate personal protective equipment (PPE), monitoring equipment and Respiratory Protective Equipment (RPE) where required to mitigate the potential risk of exposure to hazardous gas / vapour and / or depleted oxygen levels when working in excavations or confined spaces. • Areas with a greater risk of spillage (e.g. vehicle maintenance and storage areas for hazardous materials) would be carefully sited (e.g. away from drains or areas where surface waters may pond); • Measures would be put in place to prevent pollution from construction plant, vehicles and machinery including refuelling in designated areas, on an impermeable surface, away from drains and watercourses; plant to be maintained in a good condition with wheel washing in place, all refuelling would be supervised and carried out in a designated area; • Concrete wash out would only take place at designated concrete washout areas;	Neutral (not significant)	No monitoring is considered to be required	Mitigation measures will be included as part of the Outline CoCP (document reference 6.16) which will be secured by Requirements on agreement with the Applicant followed by consultation with the Environment Agency and GYBC. The full CoCP is secured through Requirement 5 of the draft (document reference 3.1). The remediation strategy is secured by Requirement 8 of the draft DCO (document reference 3.1).
Controlled Waters (the River Yare and aquifers)		Neutral to Large Adverse (significant)		Slight Adverse to Neutral (not significant)		
Infrastructure (including piled foundations and the control room)		Neutral to Slight Adverse (not significant)		Neutral to Slight Adverse (not significant)		

- Surface water run-off and excavation dewatering would be captured and settled out prior to disposal to sewer as appropriate. Any contaminants would be removed prior to disposal; and
- All fuel, oil and chemicals would be stored in a designated secure area, with secondary containment provided.

Additional Mitigation

These will be included as part of the outline CoCP (document reference 6.16) which will be secured by Requirement 5 of the draft DCO (document reference 3.1) and agreed following consultation with the Environment Agency and GYBC.

- Earthworks would be completed in accordance with a MMP or similar protocol to ensure re-used material does not present a risk to human health or the environment. This would ensure any contaminated materials are re-used suitably as part of the cut and fill earthworks associated with the Scheme.
- Earthworks to be undertaken in accordance with a suitable Remediation Strategy, which is to include the provision for a 'clean' validated topsoil / subsoil to be placed in landscaping areas.
- A temporary surface water drainage strategy will be prepared for the construction stage;
- All drains within the Principal Application Site ~~would~~will be identified and labelled and measures implemented to prevent polluting substances from entering them;
- All temporary stockpiles will be sealed and/or covered if comprising contaminated soils so as not to give rise to a significant increase in sediment load to the drainage network or dust generation risk to human health.

The construction Contractor will have a watching brief during the works (excavation and piling in particular) to identify any unforeseen potential contamination. If encountered, the Local Authority Environmental Health Department (for soil contamination) and the Environment Agency (for water contamination) shall be contacted. Depending on the site operations occurring where the contamination is encountered, works may need to temporarily cease in that area and samples taken for chemical testing to inform a remediation strategy to deal with the issue. The remediation strategy shall be prepared by an appropriately qualified Environmental Consultant and agreed with the Regulator prior to implementation.

~~The following mitigation measures (implemented during the construction phase to mitigate risks to controlled waters) will be included as part of the Outline CoCP (document reference 6.16) and secured by Requirement 5 of the draft DCO (document reference 3.1):~~

			~~A temporary surface water drainage strategy will be prepared for the construction stage;~~ ~~All drains within the Principal Application Site would be identified and labelled and measures implemented to prevent polluting substances from entering them;~~ ~~All temporary stockpiles will be sealed and/or covered if comprising contaminated soils so as not to give rise to a significant increase in sediment load to the drainage network or dust generation risk to human health.~~ On the basis of the piling risk assessment (Appendix 16D, document reference 6.2) the requirements detailed in the Outline CoCP (document reference 6.16) are to be implemented: • Use of appropriate pile materials to be resistant to the chemical composition of soil encountered on the Application Site including the potential presence of saline water. • Due to limited soil contamination (predominantly in the near surface soils and groundwater), appropriate dust suppression measures should be undertaken and site workers should wear suitable PPE/ RPE. • Quality Assurance and Quality Control (QA/QC) measures should be identified and adopted prior to piling works being undertaken. These are primarily for construction quality and structural performance. However, they are also equally relevant to mitigate environmental risk, for example spillages of oil/hydrocarbons during the construction process (re-fuelling). The relevant measures should ensure that the foundation pile solution techniques are carried out correctly and in an appropriate manner so that the risk assessment and conclusions remain valid. Such QA/QC procedures will normally be agreed between the contractor, client, and relevant regulators.			
Human Health (including site users, adjacent site users and construction and maintenance workers)	Operation	Moderate Adverse (significant)	*Embedded Mitigation* • The concrete for all foundations will be designed to an appropriate concrete class for the sulphate and groundwater regimes. *Additional Mitigation*	Neutral (not significant)	No monitoring is considered to be required.	The remediation strategy is secured by Requirement 8 of the draft DCO (document reference 3.1).
Controlled Waters (the River Yare and aquifers)		Neutral (not significant)	• Remediation strategy to include where necessary / appropriate, geotextile membrane, clean validated topsoil and subsoil in landscaping areas.	Neutral (not significant)		
Infrastructure (including piled foundations and the control room)		Neutral (not significant)	~~Measures~~measures to mitigate spillage and leak impacts to controlled waters from the operational phase of the Scheme are discussed in detail in Table 3.6.	Neutral (not significant)		

Table 3.12: Traffic & Transport - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
Non-Motorised Users (bus users, pedestrians and cyclists)	Construction	Slight Adverse (not significant)	*Embedded Mitigation* It is proposed to produce a Framework CTMP and Framework CWTP as part of the embedded mitigation for the construction phase, as requested during Scoping. These documents will be developed by the Contractor and agreed with the local highway authority and Highways England before construction commences, as required by the Outline CoCP (document reference 6.16). • The Framework CTMP sets out high level principles of the management and control strategy related to NMUs and vehicular movements during construction and the FWTP will include measures to minimise the number of single occupancy car trips by promotion of other sustainable modes, and control of car parking. • Frameworks of both of these documents are appended to the Outline CoCP (document reference 6.16). In accordance with standard working methods detailed in the Framework CTMP (document reference 6.16A) and Framework CWTP (document reference 6.16B), the Contractor will: • Minimise the number of single occupancy car trips; • Seek to minimise delays and control queues by providing manual control of the contraflow signals during the busier morning and evening peak periods; • Provide advance notification of the works ~~would~~ will be provided, in order to allow bus operators to make any necessary adjustments to timetabling and to ensure users are aware and can plan their journeys in advance to allow additional time; • Implement all reasonably practicable measures to avoid/limit and mitigate the deposition of mud and other debris on the highway, which could obscure road markings and lead to an increase in skidding or present a hazard to pedestrians and cyclists crossing the carriageway; • Be tidy and safe with a clutter-free site so it is safe for pedestrians, cyclists and other road users; • Have clear and consistent signage to explain what is happening; • Take up as little road/pavement space as possible with a compact working area and eliminating the unnecessary use of cones, safety barriers and storage of materials;	Slight Adverse (not significant)	No monitoring is considered to be required.	The Framework CTMP and the Framework CWTP will be developed by the contractor throughout the detailed design and construction phases of the Scheme as referenced in the Outline CoCP (document reference 6.16). The full CoCP is secured through Requirement 5 of the draft DCO (document reference 3.1).

		• Give particular consideration to the needs of pedestrians and cyclists to ensure that safe (and where necessary signed) routes remain available where possible and commensurate with demand. This ~~would~~ will include HGV safety standards to ensure cyclist and pedestrian safety such as the use of a banksman; • Manage and schedule deliveries involving HGVs to ensure that these vehicles operate during the agreed hours and only use the specified routes to and from the strategic road network; and • Plan and manage works in order to maintain safe, protected routes for pedestrians and cyclists with minimal diversions. The Framework Workforce Travel Plan has been developed in liaison with the NCC Travel Plan team. The Contractor ~~would~~ will produce a full Workforce Travel Plan prior to the works commencing. This ~~would~~ will include measures to minimise the number of single occupancy car trips by promotion of other sustainable modes, and control of car parking. The full Workforce Travel Plan ~~would~~ will include information regarding: • Availability of live travel information online, and how to access it; • Discount schemes available for public transport; • Cycling initiatives such adult cycling seminars and a cycle to work scheme; • Liftshare scheme; • Car Club; and • Personalised journey planning; A Travel Information Pack ~~would~~ will be made available to all Staff, Contractors and Sub-Contractors and a copy provided within the site offices. The Travel Information Pack shall contain details of local travel and transport facilities and local interchange facilities. All staff, Contractors, Sub-Contractors and site visitors ~~would~~ will be made aware of the travel plan and its main points during their induction training/site visit briefing and advised on how to travel to the site sustainably, and where to obtain more information to support their choices. Maintaining pedestrian access to existing businesses wherever practicable during the works on Sutton Road and Swanstons Road.			
Operation	Slight Beneficial to Large Beneficial (significant)	*Embedded Mitigation* • New junctions on each side of the River which have been designed to tie into the surrounding road network according to relevant design standards; • The new junctions include controlled crossing facilities for pedestrians and cyclists and will incorporate amendments to the existing static signage in	Slight Beneficial to Large Beneficial (significant)	None required.	Not applicable.

			order to direct motorised and non-motorised users to the most appropriate route depending on their destination; and • The Scheme also includes new Variable Message Signs (VMS) at six key locations which will be activated in the event of a bridge opening in order to provide drivers with an alternative route and thus minimise the risk of long delays and queueing.			

Table 3.13: Major Accidents & Disasters - Summary of Mitigation, Monitoring or Other Measures

Receptor	Construction / Operation	Likely Effects Prior to Mitigation	Specific Mitigation Measures	Residual Effects	Proposed Monitoring	How the Mitigation / Monitoring is Secured
Members of the Public and Local Communities **Infrastructure and the Built Environment** **The Natural Environment (including ecosystems, land and soil quality, air quality, surface and groundwater resources and landscape)** **Interaction Between the Above Factors**	Construction	Significant (in regard to flooding (coastal/tidal), severe weather (storm, gales and wave surges), industrial/urban accidents and unexploded ordnance)	*Embedded Mitigation* • Emergency procedures and processes (Outline CoCP (document reference 6.16)). • Emergency Flood Plan Measures ((document reference 6.2)). • Mitigation Measures (Outline CoCP (document reference 6.16)). • Measures outlined in the Drainage Strategy (document reference 6.2). • Mitigation Measures (Chapter 12: Flood Risk (document reference 6.1) and the FRA (document reference 6.2)). • Existing H&S legislation (document reference 6.2). • A response to a significant flood event is coordinated by the Norfolk Resilience Forum (all category 1 responders together with Peel Ports Great Yarmouth). The response is based on the predicted severity of the flood event (using information from the EA) but will include closure of river crossings as appropriate to protect life. • Procedures outlined in Peel Ports Marine Safety Management Systems (see Appendix 18.A (document reference 6.2)). • Ground conditions mitigation (Outline CoCP (document reference 6.16)); • Hygiene and contaminants measures (Outline CoCP (document reference 6.16)). • Framework CTMP (appended to document reference 6.16). • Public information measures (Chapter 14: People & Communities (document reference 6.1)). • Naval channel access obligations (Outline CoCP (document reference 6.16)). • Construction mitigation measures (pNRA) (document reference 6.14).	Significant (in regard to flooding (coastal/tidal) and industrial/urban accidents)	None required.	An Outline CoCP (document reference 6.16) accompanies the ES and outlines the mitigation measures that the Contractor would be required to adopt during the construction phase of the Scheme. The full CoCP is secured through Requirement 5 of the draft DCO (document reference 3.1). The applicant is currently undergoing consultation with the operators of two COMAH sites (Transco and ASCO) regarding potential impacts and interactions between the Scheme and the two sites. The following mitigation measures are proposed: • The construction methodology to detail measures to mitigate risks associated with COMAH sites (in the Outline CoCP (document reference 6.16)); and • Preparation of a management plan or equivalent with the operators of the COMAH sites to mitigate the risks arising as a result of the operational Scheme. The management plan is to be prepared prior to the Scheme becoming operational.

		• Explosion control mitigation measures (Outline CoCP (document reference 6.16)). • Implementation of standard good practice pollution control measures (Outline CoCP (document reference 6.16)). • Pollution prevention guidance and best practice (Outline CoCP (document reference 6.16)). • Watching brief during works (Outline CoCP (document reference 6.16)). • Water environment protection measures (Outline CoCP (document reference 6.16)). • Dewatering and groundwater controls measures (Chapter 11: Road Drainage and the Water Environment (document reference 6.1)). • Restriction of access to construction site (Outline CoCP (document reference 6.16)). *Additional Mitigation* • Additional emergency procedures and processes for industrial accident risks, urban fires, public disorder and malicious attacks/terrorism (Outline CoCP (document reference 6.16)). • Construction methodology to detail measures to mitigate any identified risks associated with COMAH sites (the ASCO and Transco Sites) (Outline CoCP (document reference 6.16)).			
Operation	Significant (in regard to flooding (coastal/tidal) and industrial/urban accidents)	*Embedded Mitigation* • Sea level rise adaptation measures (see Chapter 13: Climate Change (document reference 6.1)). • Measures outlined in the Drainage Strategy (document reference 6.2). • Emergency Flood Plan Measures (FRA (document reference 6.2) and Chapter 12: Flood Risk (document reference 6.1)). • Sustainable Drainage Systems (SuDS) implementation (Chapter 12: Flood Risk (document reference 6.1)). • Adaptation measures (Chapter 13: Climate Change (document reference 6.1)). • VMS (TA document reference 7.2) and Design Report (document reference 7.4). • Design Codes (Chapter 2: Description of the Scheme (document reference 6.1)). • A response to a significant flood event is coordinated by the Norfolk Resilience Forum (all category 1 responders together with Peel Ports Great Yarmouth). The response is based on the predicted severity of the	Significant (in regard to flooding (coastal/tidal) and industrial/urban accidents).	None required.	Requirement 9 of the draft DCO (document reference 3.1) secures the preparation and implementation of an emergency preparedness and response plan.

	flood event (using information from the EA) but will include closure of river crossings as appropriate to protect life. • Flood event measures (Chapter 12: Flood Risk (document reference 6.1)). • Navigational Lighting (Design Report Appendix A (document reference 7.4a). • Procedure outlined in Peel Ports Marine Safety Management Systems (see Appendix 18.A (document reference 6.2)). • Maintenance obligations (Chapter 2: Description of the Scheme (document reference 6.1)). • Improvements to resilience of road network as a result of the Scheme (TA (document reference 7.2)). • Vehicle and access safety measures (Design Report (document reference 7.4)). • Highways Lighting (Design Report Appendix D (document reference 7.4d)). • Mitigation Measures (Chapter 17: Traffic and Transport (document reference 6.1)). • Operation mitigation measures (pNRA (document reference 6.14)). • Control tower and safety measures (Design Report (document reference 7.4)). *Additional Mitigation* • Preparation and implementation of emergency preparedness and response plan (bridge closure, evacuation etc.); emergency (terrorism) response plans. • Security provisions (communication and agreement with the police etc.) These provisions and agreements are to be prepared, and the consultation with the police completed, prior to the Scheme becoming operational.	