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

Lake Lothing THIRD CROSSING

Document 6.3: Environmental Statement Volume 3 Appendices

Appendix 18B

Drainage Strategy

Author: Suffolk County Council

1 Introduction

1.1 Purpose of the Drainage Strategy

1.1.1 This document sets out the drainage strategy to be adopted for the Scheme. It sets the framework for the design and build contractor to undertake the detailed design of the drainage for the Scheme.

1.2 Proposed Design Parameters

1.2.1 The following design parameters for return periods for drainage from the Scheme must be adopted in the detailed design: :

- 1 in 100 years and a 6 hour storm duration for sizing of the pipe networks and storage facilities (63mm/hr);
- 1 in 1 year design period without surcharge; and
- 1 in 5 years without surcharge up to chamber cover level – i.e. no flooding.

1.2.2 The Design will take into account the effects of climate change +30% additional capacity within the system – for the run-off from the new carriageway only.

1.3 Design Standards to be adopted

1.3.1 The following Design Standards will be used in developing the drainage strategy into a detailed design:

- Design Manual for Roads and Bridges – Volume 4 Section 2 based on HD33/16 and HD45/09;
- Sewers for Adoption 7th Edition 2012; and
- Suffolk County Council Specification for Estate Roads 2007.

2 Drainage Strategy

2.1 Drainage Design

2.1.1 The document has been shall be split into the following 4 sections, with a brief description of the drainage works:

- The new bridge deck;
- The carriageway north of the new bridge;
- The carriageway south of the new bridge; and
- The New Access Road

2.1.2 The drainage strategy identified in this document is depicted on the drawings included in Appendix A, and identifies the areas of carriageway discharging to either the north or south of the new bridge

2.1.3 Where the drainage discharges into the Anglian Water network the capacity of the discharge pipe(s) shall be checked (in liaison with Anglian Water pursuant to their protective provisions in the DCO) to ensure that there is still capacity in the pipe network to accommodate the additional volume of water being discharged. If this discharge coincides with a 'High Tide' (tide lock in), then it will be necessary to provide additional storage attenuation within the designed drainage system.

2.1.4 In addition a non-return flap valve shall be fitted to the discharge point if one is not already fitted.

2.2 The New Bridge Deck

2.2.1 The lifting section of the new bridge will not feature any positive drainage as reliable pipework connections between the lifting section and the static crossing sections cannot be achieved. Drainage of the carriageway will be accomplished through a combination of the crossfall on the highway which will drain water laterally towards the kerb line, and the vertical profile of the deck which will drain water longitudinally from the lifting section on to the adjacent fixed spans. This flow will then be collected by the combined kerb drainage system commencing immediately after the joints on each side of the lifting section of the bridge. Provision will be made to collect the run-off that does not flow over the joints via a grating in the kerb line which will feed into transverse channels running across the piers below the deck at each end of the lifting section. These transverse drains will discharge into the positive drainage systems provided as part of the fixed sections of the crossing each side of the lifting section.

2.3 The Carriageway North of the New Bridge

2.3.1 The segregated footway/cycleway, combined footway/cycleway and strip for street furniture to each side of the bascule bridge will drain towards the carriageway.

2.3.2 Run off from the carriageway including the moveable bridge deck will be collected by a combined kerb drainage system for the majority of the crossing as far as the northern

junction.

2.3.3 The run-off from the main carriageway and associated footways/cycleways will discharge into a suitably sized pond(s)/storage facility(ies), before it is discharged into the existing Anglian Water system in Peto Way/Denmark Road. A flow control device will be incorporated into the layout to restrict the discharge to a rate acceptable to Anglian Water, pursuant to the provisions of the DCO. The existing system will need take into account for the effects of Climate change on the network, but only for the area of new carriageway.

2.3.4 A separate system with another pond facility will be provided between Denmark Road and the new bridge to store run-off from the Rotterdam Road area prior to discharge into the existing Anglian Water system in Peto Way/Denmark Road. A flow control device will be incorporated into the layout to restrict the discharge to a rate acceptable to Anglian Water, pursuant to the provisions of the DCO. The existing system will need take into account the effects of Climate change on the network, but only for the area of new carriageway.

2.3.5 The individual ponds will be lined to prevent any historic ground contamination from polluting the water within the ponds themselves, and will be planted to remove hydrocarbons, soluble metals and other sediment bound pollutants from the road drainage.

2.3.6 It is anticipated that the junction area itself and the surrounding area will be served by a conventional kerb and gully/manhole and piped system before the run-off is discharged into the drainage pond(s)/storage facilities.

2.3.7 Penstocks and oil interceptors shall be incorporated into the outfall design to enable the system to be closed down following an accidental spillage on the network.

2.4 The Carriageway South of the New Bridge

2.4.1 The segregated footway/cycleway, combined footway/cycleway and strip for street furniture each side of the crossing will drain to the carriageway.

2.4.2 Run off from the carriageway including the bridge deck will be collected by a combined kerb drainage system for the majority of the new bridge south towards the southern junction.

2.4.3 The run-off from the main carriageway and associated footways and combined footway/cycleway will be discharged at two separate locations:

- South of main bascule bridge and north of the bridge provided to serve Nexen, the run-off will be collected into a storage tank situated below the footprint of the bridge. The tank will be sized to store the run-off from a 1 in 100 year storm with a six hour duration. The tank will then discharge into an existing Anglian Water stormwater sewer via appropriate pollution control at an acceptable discharge rate to Anglain Water, pursuant to the provisions of the DCO. ,
- South of the bridge serving Nexen, the drainage run-off will be captured by oversized pipes within the vicinity of Waveney Drive, before it is discharged in to the existing drainage system in either Riverside Road or Waveney Drive. An existing Anglian Water storm water system is currently present in Riverside Road,

which appears to collect the existing run-off from the Riverside Road area. A flow control device will be incorporated into the layout from the storage pipes which will restrict the discharge into the existing Anglian Water sewer at a rate acceptable to Anglain Water, pursuant to the provisions of the DCO.

2.4.4 At the southern roundabout the carriageway run-off will be collected by a combination of a conventional gully system for the side roads and a kerb drainage system for the roundabout itself. Storage will be via oversized pipe networks, prior to discharge into an existing Anglian Water stormwater sewer, through an appropriate pollution control system and at a discharge rate acceptable to Anglain Water, pursuant to the provisions of the DCO.

2.4.5 Penstocks and oil interceptors shall be incorporated into the outfall design to enable the system to be closed down following an accidental spillage on the network.

2.5 The New Access Road

2.5.1 The drainage for the New Access Road from Waveney Drive to the Riverside Road employment area, and from Riverside Road to Canning Road, will be a conventional manhole, piped network and gully system. These new systems will outfall into the existing Anglian Water storm sewers in either Waveney Drive, and/or the Canning Road/Riverside Road area west of the A12 Lake Lothing Third Crossing, subject to the approval of Anglain Water.

2.5.2 Manholes will be situated in the verge at a maximum spacing of 75m.

2.5.3 Penstocks and oil interceptors shall be incorporated into the outfall design to enable the system to be closed down following an accidental spillage on the network.

2.6 Footway/Cycleways

2.6.1 Footways and cycleways which are provided as part of the works, will either:

- Drain towards the carriageway, or
- Drain into a separate system within the footways, which will be collected prior to discharge into the main drainage system.

2.7 Construction Details

2.7.1 Manholes, gullies and pipe networks used for the construction of the Scheme will be constructed in accordance with either:

- Suffolk County Council's standard drawings; or
- The MCHW Highway Construction details; or
- Sewers for Adoption 7th Edition 2012 construction details

3 Summary

3.1 Summary

3.1.1 The discharge points identified are shown in Appendix A and the General Arrangement plans (document reference 2.2).

Appendix A - Drawings

SCALE BAR
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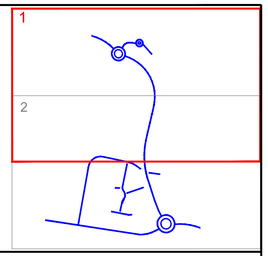
1:1250 (A1)

KEY PLAN



PETO WAY

PETO WAY

ROTTERDAM ROAD

CONVENTIONAL DRAINAGE SYSTEM

PROPOSED POSITION OF STORAGE POND. SIZE TO BE DETERMINED. OUTFALL VIA FLOW CONTROL DEVICE INTO THE EXISTING ANGLIAN WATER NETWORK

ROTTERDAM ROAD / DENMARK ROAD ROUNDABOUT TO BE IMPROVED

WICKES

KERB DRAINAGE SYSTEM TO ROUNDABOUT

PROPOSED POSITION OF STORAGE POND. SIZE TO BE DETERMINED. OUTFALL VIA FLOW CONTROL DEVICE INTO EXISTING ANGLIAN WATER NETWORK

EXISTING RAILWAY

DENMARK ROAD

NORTHERN ROUNDABOUT

KERB DRAINAGE SYSTEM

ABP

LAKE LOTHING

GRAIN SILO BUILDING

SEE DRAWING 1069948-WSP-HDG-LL-DR-CH-0002

NO DRAINAGE PROVISION OVER MOVEABLE SECTION OF BRIDGE DECK

KEY

- DRAINAGE AREA A
- DRAINAGE AREA B
- DRAINAGE AREA C
- DRAINAGE AREA D

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. REFER TO DRAWINGS 1069948-WSP-HGN-LL3X-DR-CH-0103 AND 0104 FOR DETAILS OF PROPOSED CANNING ROAD ACCESS.
3. THE WORKS WILL BE SUBJECT TO DETAILED DESIGN DEVELOPMENT IN ACCORDANCE WITH THE DEVELOPMENT CONSENT ORDER.
4. THESE WORKS PLANS SHOULD BE READ IN CONJUNCTION WITH THE ENGINEERING SECTION DRAWINGS AND PLANS; THE DEVELOPMENT CONSENT ORDER PROVIDES FOR VERTICAL DEVIATION WITH REFERENCE TO THE LEVELS OF THE WORKS SHOWN ON THE ENGINEERING SECTION DRAWINGS AND PLANS.
5. All OUTFALLS TO EITHER LAKE LOTHING, ANGLIAN WATER ASSETS, SUFFOLK COUNTY COUNCIL DRAINAGE ASSETS OR NEW SYSTEMS SHALL HAVE POLLUTION CONTROL DEVICES INSTALLED.

REVISION	DRAWN	CHECKED	APPROVED	DATE

DESCRIPTION

Suffolk County Council

PROJECT TITLE

Lake Lothing THIRD CROSSING

DRAWING TITLE

LAKE LOTHING THIRD CROSSING
DRAINAGE STRATEGY
SHEET 1 OF 2

DRAWING STATUS

FOR DCO SUBMISSION

DRAWN	CHECKED	APPROVED	AUTHORISED	SUITABILITY
GA	PC	PC	JB	S4

SCALE @ A1 SIZE	DATE	REVISION
1:1250	29/06/18	P00

DRAWING NUMBER

Project	Originator	Volume		
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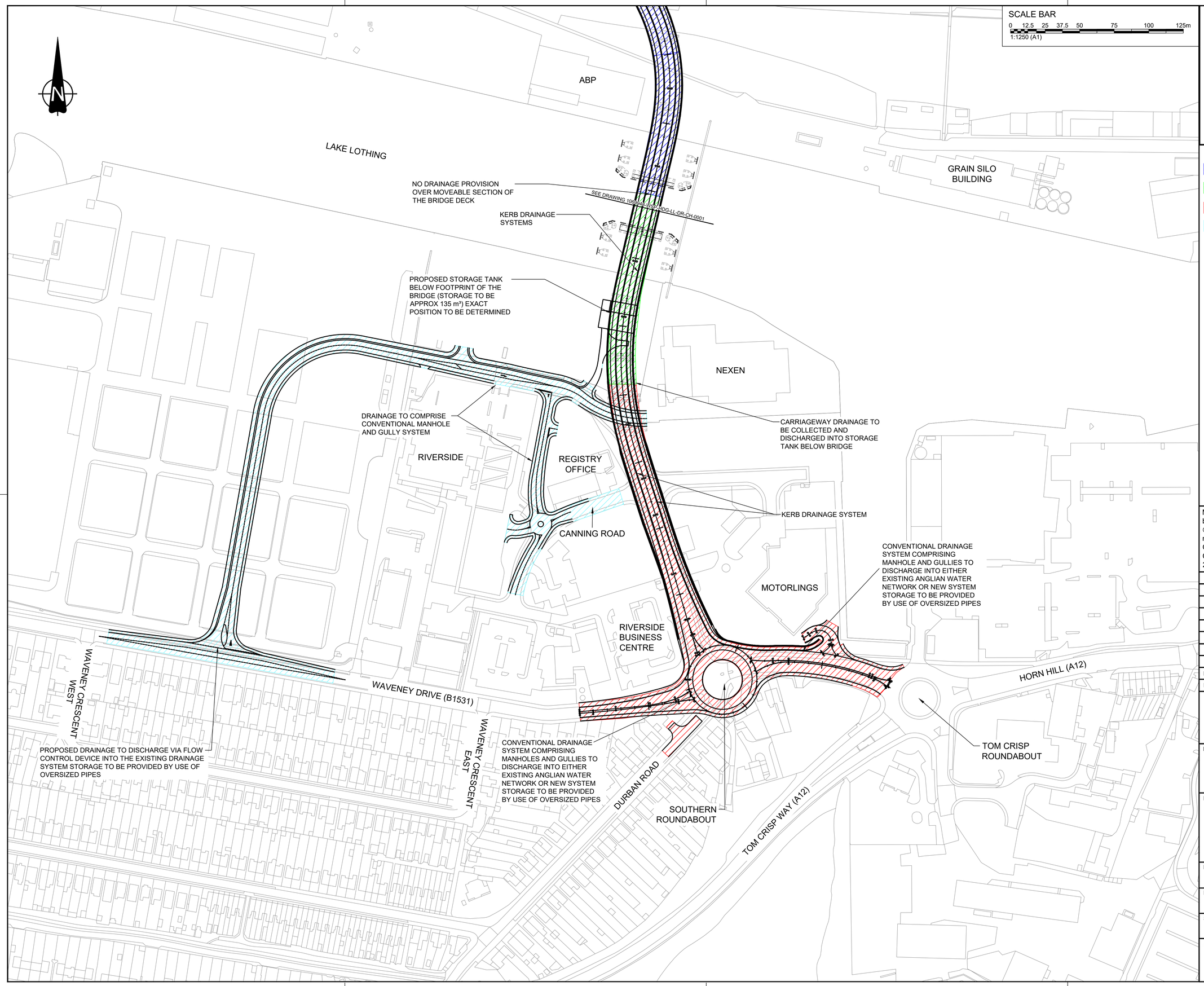
Location	Type	Role	Number	



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DESCRIPTION

Suffolk County Council

PROJECT TITLE

Lake Lothing THIRD CROSSING

DRAWING TITLE

LAKE LOTHING THIRD CROSSING
DRAINAGE STRATEGY
SHEET 2 OF 2

DRAWING STATUS

FOR DCO SUBMISSION

DRAWN	CHECKED	APPROVED	AUTHORISED	SUITABILITY
GA	PC	PC	JB	S4

SCALE @ A1 SIZE	DATE	REVISION
1:1250	29/06/18	P00

DRAWING NUMBER

Project	Originator	Volume		
1069948	WSP	HDG	LL	DR-CH-0002
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