



A17/2d - Volume 2d: Technical Report: Traffic and Transport

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Quality Assurance

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EIA Quality Mark



This Environmental Statement, and the Environmental Impact Assessment (EIA) carried out to identify the significant environmental effects of the proposed development, was undertaken in line with the EIA Quality Mark Commitments.

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1 Introduction

1.1 Overview

1.1.1 This report forms part of the Technical Reports (Volume 2a – 2d) that support the Boston Barrier Project Environmental Statement (ES) (Volume 1). Volume 2 reports the EIA for the Project, identifying all the predicted effects, irrespective of their significance. Whereas Volume 1 discusses only those effects, both temporary and permanent, deemed significant under the EIA regulations.

1.2 The Project

1.2.1 The purpose of the Project is to improve the standard of protection from tidal flooding. The proposals would not affect the existing standards of fluvial flood protection provided upstream within the River Witham and South Forty Foot Drain (SFFD). In January 2015 water level management (WLM) was removed from the scope of this current Project. In making the decision, the Environment Agency, Lincolnshire County Council (LCC) and Boston Borough Council (BBC) confirmed that it remains the vision to provide WLM at a later date through a standalone project and consenting process.

1.2.2 The Project would connect to the existing defences downstream of the town. The Project would consist of water-based works (the barrier structure) and land-based work (along the Haven).

1.2.3 Defences immediately downstream of the barrier structure would be improved to a 1 in 300 standard of protection as a part of the barrier structure works. This level of protection is to ensure protection against a 0.33% (1 in 300) annual probability of flooding over the 100 year project life.

1.2.4 The Project would be constructed south of the town of Boston across the area of the River Witham known as 'the Haven' (see ES (Volume 1): Appendix A; Figure 1.1). It would be approximately 100m downstream of Black Sluice, adjacent to the Starch Berth (on the Port of Boston (PoB) estate - left bank) and existing residential properties (along Wyberton Low Road - right bank).

1.2.5 It should be noted that, references to left and right bank of the Haven are described in a downstream facing direction. Therefore, the left bank (north side) is on the left side when facing downstream and the right bank (south side) is on the right side when facing downstream.

1.2.6 A detailed description of the project is included in the ES (Volume 1): Chapter 2.

1.3 Purpose of assessment

- 1.3.1 The purpose of this traffic and transport assessment is to identify the traffic and transport impact relevant to the Project and assess the potentially significant issues scoped in as part of the Project's Updated Scoping Report (outlined in Section 2.4). The assessment includes consideration of traffic and transport impacts and environmental receptors associated with the construction of the Project. Due to the small number of vehicles associated with the Project during operation, this assessment only considered potential impacts during the construction phase with no impacts having been identified for the operational stage as explained in Section 2.4.
- 1.3.2 A separate assessment has been undertaken to consider impacts on navigation and this is reported within ES (Volume 2d): Navigation Impact Assessment Technical Report.
- 1.3.3 The assessment identifies the predicted environmental effects of the Project and proposes management and mitigation measures to negate or minimise those effects.
- 1.3.4 A draft Construction Traffic Management Plan (CTMP) has been prepared to document measures which will be implemented by the contractor to control construction vehicle movements (see Appendix B of this Technical Report).

1.4 Report structure

- 1.4.1 This Technical Report comprises the following key sections:
- Methodology: Outlines the methodology employed to carry out the assessment;
 - Legislation and planning policy: Outlines the key legislation and policies relevant to this topic;
 - Baseline conditions: Presents the baseline scenario and current local road users and transport modes available, including data on locations with relevant importance, public transport, public rights of way and cycle routes;
 - Impact assessment: Identifies and assesses the potential traffic and transport impacts of the proposed development during construction and operation;
 - Summary: Describes the predicted residual significant effects following the implementation of mitigation measures; and
 - References: Contains references and source materials relating to construction traffic flows.

2 Assessment methodology

2.1 Study area

2.1.1 The Project is located to the south of Boston, Lincolnshire. It includes a stretch of the Haven, between Black Sluice and Maud Foster Sluice, and its left and right banks. Land uses adjacent to the Project include commercial, industrial and residential areas along both left and right banks.

2.1.2 In defining the study area, consideration has been given to the primary routes and locations to be impacted by traffic generated by the Project. These were discussed and agreed with Lincolnshire County Council (LCC) highways officers (see Section 2.3).

2.1.3 On this basis, the study area is bounded by:

2.1.4 Left Bank:

- A52 over Haven Bridge;
- East A16 along John Adams Way; and
- South along A1138 South End and onto St. John's Road towards the PoB.

2.1.5 Right Bank:

- A16 south to roundabout with Marsh Lane; and
- East along Marsh Lane to junction with Wyberton Low Road.

2.1.6 These are shown in Appendix A: Figure 2.1, Traffic Survey Locations and Study Area.

2.2 Sources of information

Desktop Study

2.2.1 A desktop study has been carried out to inform this assessment. The desktop study has informed the baseline traffic and transport conditions and enabled potential constraints to be identified prior to the field survey.

2.2.2 Information used as part of this study included:

- Interactive mapping of geographic information about Public Rights of Way (PRoW), Bus stop locations and cycle routes within the study area (<http://row.lincolnshire.gov.uk/map.aspx?act=Walking>, accessed September 2015);
- Boston Public Footpath No.14 (Macmillan Way) mapping and walk information (http://www.macmillanway.org/index_files/route_national.htm, accessed September 2015); and
- National Cycle Route mapping and information (<http://www.sustrans.org.uk/ncn/map/national-cycle-network>, accessed September 2015).

Surveys

- 2.2.3 A field survey was undertaken on 10 September 2015 around the site and within the study area. The survey informed the baseline transport and traffic conditions and enabled potential constraints to be identified.

2.3 Consultation

- 2.3.1 Consultation has been carried out with LCC Highway Development Control Department on 4 September 2015; Council Officers advised on the suitability of locations for traffic survey positions and the suitability of the study area related to the Project.
- 2.3.2 During personal communication with LCC officers (4 September 2015) specific reference was made to the local traffic conditions when Boston Market takes place every Wednesday and Saturday in the Market Place. It was also noted that Bargate Green Market also takes place every Wednesday, which is north of the Boston Market (personal communication with LCC officers, 4 September 2015).

2.4 Scoping assessment

- 2.4.1 The scoping process for this Project has been carried out using information from Original (2011) and Updated Scoping Reports (Environmental Agency, 2014) and professional judgement, based on our understanding of the baseline conditions and how the Project would be constructed and operated.
- 2.4.2 An updated scoping opinion request was submitted to the Secretary of State for the Environment, Food and Rural Affairs by the Environment Agency in October 2014. Section 5.6 of Updated Scoping Report covered Traffic, Transport and Recreational effects and noted that the A52 over the Haven Bridge, a principal road route into Boston, was currently congested with heavy traffic which was typical of traffic levels over the bridge. The scoping assessment concluded that important issues relating to road transport would be scoped out of the EIA due to 100% delivery of construction materials via barge along the Haven.
- 2.4.3 However, following the preparation of the Project's construction methodology, it was concluded that the EIA should consider the construction impacts on local road networks associated with construction vehicle movements required to deliver certain Project components (namely premixed concrete/ reinforcement) and the removal of sediment from capital dredging¹ by road transport. The Updated Scoping Report scoped out transport impacts during the operational phase as there will be very little operational traffic

¹ Capital dredging can be considered as dredging carried out to increase depths in the area, usually, but not always, for the first time. Maintenance dredging can be considered dredging that occurs on a reasonably regular basis, to maintain depths.

(approximately two vehicle movements per month) and the position with regards to this remains unchanged.

2.5 Impact assessment methodology

2.5.1 National and local policies and guidance have been used to inform the assessment methodology and further details of these can be found in Section 3 of this Technical Report.

2.5.2 This assessment has used structured, informed and reasoned professional judgement, taking into account a combination of quantitative and qualitative data, derived from desktop study and fieldwork. This provided the information against which to predict levels of potential impacts and assess the significance of these impacts.

2.5.3 Following a desktop study and subsequent site visit to the study area a number of receptors were identified which could potentially be impacted by the Project during the construction phase. The receptors considered relevant to this assessment are as follows:

- Local amenity, including –
 - Residential properties
 - Local businesses
 - Recreational areas
 - Education facilities
- Cyclists (including National Cycle Routes);
- Pedestrians (including PRoW and footways);
- Public transport users (including bus routes and bus stops); and
- Equestrians.

2.5.4 The value of the 'receptor' (or 'baseline asset') associated with each impact is scored, using professional judgement, as being either 'high', 'medium' or 'low' as shown in Table 2.1.

Table 2.1: Receptor value information (traffic and transport)

Value of receptor	Receptor
High	Local amenity – to include residential properties, local businesses, recreation areas and education facilities Pedestrians (including PRoW and footways) Cyclists (including National Cycle Routes) Public transport users (including bus routes and bus stops) Equestrians
Medium	N/A
Low	N/A

Source: Mott MacDonald (2016)

2.5.5 IEMA guidance outlines a number of key or determining factors which are relevant to the assessment of impacts associated with traffic and transport, and include the following:

- Driver delay;
- Pedestrian delay;
- Fear and intimidation;
- Severance; and
- Pedestrian amenity.

2.5.6 For the purpose of this assessment, the magnitude of impact on the receptors has been broadly reviewed against the following categories:

- Capacity – including driver delay;
- Routing – including severance, driver delay and pedestrian delay; and
- Amenity and access - including pedestrian amenity and fear and intimidation.

2.5.7 The level of magnitude of each impact identified is assessed and categorised using the categories in Table 2.2 which defines the level of magnitude for different transport-related impact categories.

Table 2.2: Magnitude of impact

Magnitude of impact	Capacity	Routing and access	Amenity
High adverse	Major change to total link flow over +10%	Significant change and major adverse variation to travel time or major detour from route with perceived 'substantial' severance	Major loss of provision, impact upon receptors travel behaviour
Medium adverse	Moderate change to total link flow between +5% to +10%	Moderate change and minor adverse variation to travel time or minor detour from route with perceived 'moderate' severance	Moderate loss of provision with minimal impact upon receptors travel behaviour
Low adverse	Minor change to total link flow up to +5%	Minor change with minimal adverse variation to travel time or directness of route with perceived 'slight' severance	Temporary minimal loss of amenity with full re-provision
Negligible			
Low beneficial	Minor change to total link flow up to -5%	Minor change with minimal positive variation to travel time or directness of route	Temporary minimal loss of amenity with minor enhancement on completion
Medium beneficial	Moderate change to total link flow between -5% to -10%	Moderate change with moderate positive variation to travel time or minor improvement to route length	Moderate loss of provision with moderate enhancement to receptors travel behaviour
High beneficial	Major change to total link flow over -10%	Significant change with major improvements to travel time or directness of route	No loss of amenity provision with major improvements

Source: Mott MacDonald (2016)

2.5.8 The sensitivity and magnitude of each impact is categorised in Table 2.3, which evaluates the level of significance of each impact. For the purpose of this assessment, major or moderate impacts, whether adverse or beneficial, are classified as ‘significant’.

Table 2.3: Definition of significance

Magnitude of impact (adverse or beneficial)	Sensitivity of receptor		
	High	Medium	Low
High	Major*	Major*/moderate*	Moderate*/minor
Medium	Major*/moderate*	Moderate*	Moderate*/minor
Low	Moderate*/minor	Minor	Minor
Negligible	Minor/negligible	Minor/negligible	Negligible

Note: * represents impacts considered as significant
 Source: Mott MacDonald (2016)

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3 Legislation and planning policy

3.1 Legislative requirements

3.1.1 This section outlines transport-related national and local policies which have particular relevance to the Project.

3.2 Planning policy

National planning policy

National Planning Policy Framework

3.2.1 The National Planning Policy Framework (NPPF) (2012) framework provides policies for sustainable transport modes, safe and suitable access to sites, and giving people a choice about how they travel. The sections of the NPPF (from Paragraph 32) relevant to the Project are as follows:

- “All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:
- Opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- Safe and suitable access to the site can be achieved for all people; and
- Improvements can be undertaken within the transport network that cost effectively limits the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.”

Local planning policies

South East Lincolnshire Local Plan 2011 – 2036

3.2.2 It has been noted that the South East Lincolnshire Local Plan 2011-2036 was submitted as a draft for Public Consultation between January and April 2016. As this Plan is still a draft, it currently carries a limited material weight, but reference to the policies relevant to this report are outlined below:

- P1 – Presumption in favour of sustainable development;
- P30 – Promoting safe, accessible open space, sport and recreational facilities; and
- P31.D – Delivering a more sustainable transport network.

Lincolnshire Local Transport Plan

3.2.3 The Lincolnshire Local Transport Plan (LTP) (4th edition) sets out a vision over a 10 year period from 2013/14 to 2022/2023. The LTP serves as a strategy building on previous policies adopted within the LTP (3rd edition).

- 3.2.4 The overarching aims of the LTP are to:
- Assist the sustainable economic growth of Lincolnshire, and the wider region, through improvements to the transport network;
 - Maintain the transport system to standards which allow safe and efficient movement of people and goods;
 - Protect and enhance the built and natural environment of the county by reducing the adverse impacts of traffic, including heavy goods vehicles (HGVs);
 - Improve the quality of public spaces for residents, workers and visitors by creating a safe, attractive and accessible environment;
 - Improve the quality of life and health of residents and visitors by encouraging active travel and tackling air quality and noise problems; and
 - Minimise carbon emissions from transport across the country.

Boston transport strategy

- 3.2.5 The Boston transport strategy (2006), a 15-year strategy from 2006 to 2021, focuses on the importance of transport in supporting corporate initiatives at a local and regional level. Lincolnshire County Council (LCC) and its partner Boston Borough Council (BBC) commissioned a multi-modal transportation study for the Boston area.
- 3.2.6 The aims of the Boston transport strategy considered most relevant to the Project are to:
- Reduce car usage for journeys wholly within Boston;
 - Reduce delays for traffic on A52/A16 corridor with safe facilities for vulnerable users;
 - Improve public transport provision;
 - Improve road safety for pedestrians and cyclists, especially near schools;
 - Improve air quality in the designated AQMA; and
 - Improve cycling and pedestrian management in the town centre.

Guidance

- 3.2.7 The following guidance documents have been used to inform this assessment:
- 'Guidelines for the Environmental Assessment of Road Traffic' - Institute of Environmental Assessment (IEA), 1993. The IEA is now recognised as the Institution of Environmental Management and Assessment (IEMA).

4 Baseline conditions

4.1 Introduction

4.1.1 This baseline characterises the local transport network within the study area (see Appendix A of this Technical Report, Figure 2.1).

4.2 Existing highway infrastructure

4.2.1 The A52 and the A16 form the primary routes through Boston. The A52 runs in a predominantly east to west direction and provides connections to the nearby towns of Grantham and Skegness.

4.2.2 The A16 runs in a primarily north to south direction with links to Louth and Spalding. The A16 and A52 are both of a good standard and accommodate large volumes of HGV movements.

4.2.3 Some congestion was observed at junctions within the town during the survey (10 September 2015), and LCC officers have advised that the routes operate close to capacity. Both the A52 and A16 provide connections to the A17 which runs in an east to west direction to the south of the town providing wider access to East Anglia along with Sleaford and towns to the west.

4.2.4 On the left bank, vehicular access into the PoB is from the A16 John Adams Way which crosses the Haven. This connects with the A1138 South End at a signalised junction. South End leads directly onto St. John's Road which continues to the gated access to the PoB (see Plate 4.1).

Plate 4.1: St John's Road entrance to PoB



Source: Mott MacDonald (2016)

4.2.5 At the time of the site visit (10 September 2015), an experimental traffic order was in place which only allowed vehicles on the A1138 to turn left onto the A16 John Adams Way. This necessitated vehicles intending to head east on the A16 to do a U-turn manoeuvre at the A16/A52 roundabout to the west of the Haven. Access to the A1138 South End is permitted from all directions. Following discussions with LCC officers, it is understood that a review of the junction performance is to be undertaken to understand whether the experimental traffic order would be made permanent. Whilst the restrictions provide additional traffic signal capacity, they would cause some vehicles to travel additional distances.

4.2.6 On the right bank, vehicular access to the Boston Barrier Community Hub (open every Wednesday to provide an opportunity for the local community and organisations to meet project representatives), is primarily via the A16 and Marsh Lane. There is a 7.5 tonne vehicle restriction in place along Wyberton Low Road, south of its junction with Marsh Lane, which restricts access by goods vehicles from other directions. Marsh Lane provides access to a large industrial area to the east of the Project and a number of HGVs were observed in this area.

4.2.7 Plate 4.2 shows the land parcel in which the Boston Barrier Community Hub is located.

Plate 4.2: Existing Industrial Estate land on Marsh Lane (adjacent to right bank)



Source: Mott MacDonald (2016)

4.2.8 Vehicular access between the left and right banks is via the A16 Spalding Road.

4.2.9 Roads within the study area have various speed limits. The A roads generally have a 40mph speed limit, with the exception of the A16 (south of the roundabout junction with Marsh Lane)

which has a 60mph speed limit. Other roads have speed limits between 30 and 40mph. Most roads have footways² and street lighting is provided throughout.

4.2.10 Vehicular access into the PoB is currently restricted to authorised personnel for operational and maintenance purposes.

Baseline traffic flow

4.2.11 Traffic flow data for sites around the study area was collected over a one week period for 24 hours a day between the 12 and 18 September 2015 using automatic traffic count (ATC) equipment. Appendix A of this Technical Report: Figure 2.1 outlines the traffic survey locations and the baseline traffic flow data is shown in Table 4.1.

4.2.12 Due to some damage to a small number of the pneumatic tubes, to provide a complete dataset some additional data collection was undertaken over the period from 18 to 24 September 2015 and is also included in Table 4.1.

Table 4.1: Baseline traffic data (2015)

Description	Survey ID	2015 (24 hour ADT*)	2015 (24 hour ADT* HDV %)
Marsh Lane opposite Audi Garage between Wyberton Low Road and Marsh Avenue	1	5516	6%
Marsh Lane outside VW Garage	2	8428	4%
A16 south of roundabout junction with Marsh Lane	3	19596	4%
A16 north of roundabout with Marsh Lane, south of roundabout with B1397	4	24416	5%
A16 Spalding Road south of Nelson Way slip road	5	28238	3%
A52 Liquorpond Street west of roundabout with A17	6	27571	2%
A16 John Adams Way on bridge between High Street and South End	7	38549	7%
A16 John Adams Way between South End and Rowley Road	8	27784	8%
A1138 South End between A16 and Boston Royal Mail Depot	9	11883	4%
St John's Road between Skirbeck Road and PoB	10	828	20%
A16 John Adams Way between roundabout with A52 and junction with High Street	11	42300	5%

Note: ADT* Average daily traffic flow representative during a neutral month (September)
 HDVs include HGVs, buses and coaches
 Source: Mott MacDonald, (2016)

² Footways: a footway is a strip for pedestrians along the side of the road. A footpath is a formally designated pedestrian provision across land not within the highway boundary.

4.3 Local amenity

Local businesses

- 4.3.1 During the site visit, a number of local businesses were identified within the study area which are summarised within the following section.
- 4.3.2 A Royal Mail depot is located along the A1138 on the South End, north of the left bank construction compound, (see Plate 4.3). It was observed that there is a large car park on site with no on-road parking. There are other small businesses along South End and St. John's Road.
- 4.3.3 The PoB is at the end of St. John's Road (Plate 4.4) and no on-road parking was observed. However, there is a large car park available on site sufficient for HGVs and non HGV vehicles.
- 4.3.4 The Boston River Industrial Estate is located along Marsh Lane south of the right bank. There is a large car park available on site, no on-road parking was observed on the estate. There are also various businesses along Marsh Lane, including three car garages, all of which have car parking available on site.

Plate 4.3: Royal Mail depot on St John's Road



Source: Mott MacDonald (2016)

Education facilities

4.3.5 Boston College is on Skirbeck Road, which connects to the A1138 South End on the left bank. Students can attend classes during the day and there are also evening classes. The College is opened from approximately 8:00 and closes around 20:00 and provides residential accommodation for around 129 students at this location.

Residential properties

4.3.6 A recreational area is located along St. John’s Road opposite the PoB. There is pedestrian access to the park along St. John’s Road and Skirbeck Road.

4.3.7 ‘Bath Gardens’ residential area is situated off St. John’s Road along South Terrace, west of the left bank. There are approximately 78 residential properties along Wyberton Low Road in the vicinity of the right bank.

4.4 Public transport

4.4.1 Bus services to the left bank run on South End and Skirbeck Road. Service IT5 and the IT6 connect Skirbeck Road with the Bladon Estate and run hourly.

4.4.2 Bus service 58 runs along London Road connecting Boston with Kirton. The service B13 also runs along London Road connecting Boston to Spalding (see Appendix A: Figure 4.1).

Table 4.2: Details of local bus services

Service ID	Key route locations	Start time	End time	Average frequency	Nearest stop to site
IT5	Bladon Estate	07:00	18:26	60 mins	Skirbeck Road
IT6	Bladon Estate	07:30	18:56	60 mins	Skirbeck Road
58	Boston Bus Station - Kirton	08:20	16:55	60 mins	London Road
B13	Boston Bus Station - Spalding	06:45	19:44	60 mins	London Road

Source: Mott MacDonald, (2016)

4.5 Public Rights of Way

4.5.1 The Boston Public Footpath No.14 (Macmillan Way) starts in Boston and follows London Road over the Haven before turning east along the Haven banks, adjacent to the Project right bank, (see Plate 4.5). There is a footpath and staircase linking the Boston Public Footpath No.14 (Macmillan Way) to the residential area around Wyberton Low Road, (see Plate 4.6). A plan of the route is included in Appendix A: Figure 4.2.

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- 4.5.2 The Boston Public Footpath No.14 (Macmillan Way) was observed by Mott MacDonald staff on the 10 September 2015 as a grass path with no formal paving.

Plate 4.4: Boston Public Footpath No.14 (Macmillan Way) on the Haven (right bank)



Source: Mott MacDonald (2016)

Plate 4.5: Step access onto Wyberton Low Road from the Boston Public Footpath No.14 (Macmillan Way)



Source: Mott MacDonald (2016)

- 4.5.3 Site visit observations also identified a significant pedestrian flow from Boston College between 15:00 – 16:00 along Skirbeck Road and along the A1138 towards Boston town centre. No formal record was made of pedestrian totals at the time of the site visit.
- 4.5.4 Significant pedestrian volumes were also observed on the left bank around John Adams Way and Skirbeck Road. These movements would appear to be associated with access between residential areas and the commercial/retail premises within the town centre to the north.
- 4.5.5 The Boston River Industrial Estate adjoins the Project (right bank). A moderate pedestrian flow was observed during local business shift changes with pedestrians also using the Public Right of Way along Marsh Lane.
- 4.5.6 The footways along St. John's Road, Wyberton Low Road, Marsh Lane, the A16 and London Road were all observed to be in good condition. The A16 has pedestrian crossing facilities, including dropped kerbs for informal crossings and signalised pedestrian crossings. Wyberton Low Road also has a number of shared pedestrian and cycle paths.

4.6 Cycle routes

- 4.6.1 National Cycle Network Route number 1 is a long distance route connecting Dover and the Shetland Islands. It passes through Boston along both Wyberton Low Road and London Road. The route follows Wyberton Low Road on the south side of the Haven before turning onto Marsh Lane and then London Road.
- 4.6.2 In this area, the cycle route is accommodated as part of shared use footways. There is a segregated cycle lane at the junction from London Road onto Wyberton Low Road. Cycle routes are shown in Appendix A of this technical Report, Figure 4.3.

4.7 Equestrian routes

- 4.7.1 No formal equestrian routes exist in the study area.

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5 Impact assessment

5.1 Introduction

- 5.1.1 This section reports the traffic and transport effects considered to arise during the construction of the Project on the sensitive receptors identified in the baseline conditions. It also identifies the mitigation measures proposed to minimise adverse effects.
- 5.1.2 The impact assessment methodology is set out in Section 2.5 of this Technical Report.

5.2 Assumptions

Baseline traffic flows

- 5.2.1 Traffic flow data for sites around the study area was predominantly collected over a one week period for 24 hours a day between the 12 and 18 September 2015. Due to damaged equipment, additional surveys were carried over a one week period for 24 hours a day from 18 to 24 September 2015. Surveys used automatic traffic count (ATC) equipment.
- 5.2.2 Requests made to Lincolnshire County Council for existing available survey data in the local area confirmed that no long term data was available from which to make an assessment of annual traffic flow profiles. Therefore, for the purposes of this assessment, it has been assumed that the data collected during this neutral survey period is representative of an Average Annual Daily Traffic (AADT) flow.

Forecast traffic flows

- 5.2.3 Growth factors have been derived using the Department for Transport's (DfT) Road Traffic Forecasts 2015 (RTF15), which provide traffic growth forecasts from the National Transport Model (NTM) for each of the regions of England and Wales. The RTF15 factors have been locally adjusted using TEMPRO (v6.2) traffic forecasts. These factors have been applied to the September 2015 survey to forecast traffic flows for the 2018 future year assessment.

Construction traffic trip generation assumptions

- 5.2.4 Current forecasts for construction related movements have been based on information provided by an independent contractor, appointed by the Environment Agency to provide objective advice on the current construction programme including delivery requirements for the Project.
- 5.2.5 It is currently assumed that river barges would bring approximately 90% of deliveries to the site (excluding premixed concrete); the effects of this have been considered in the ES (Volume 2d): Navigation Impact Assessment Technical Report.

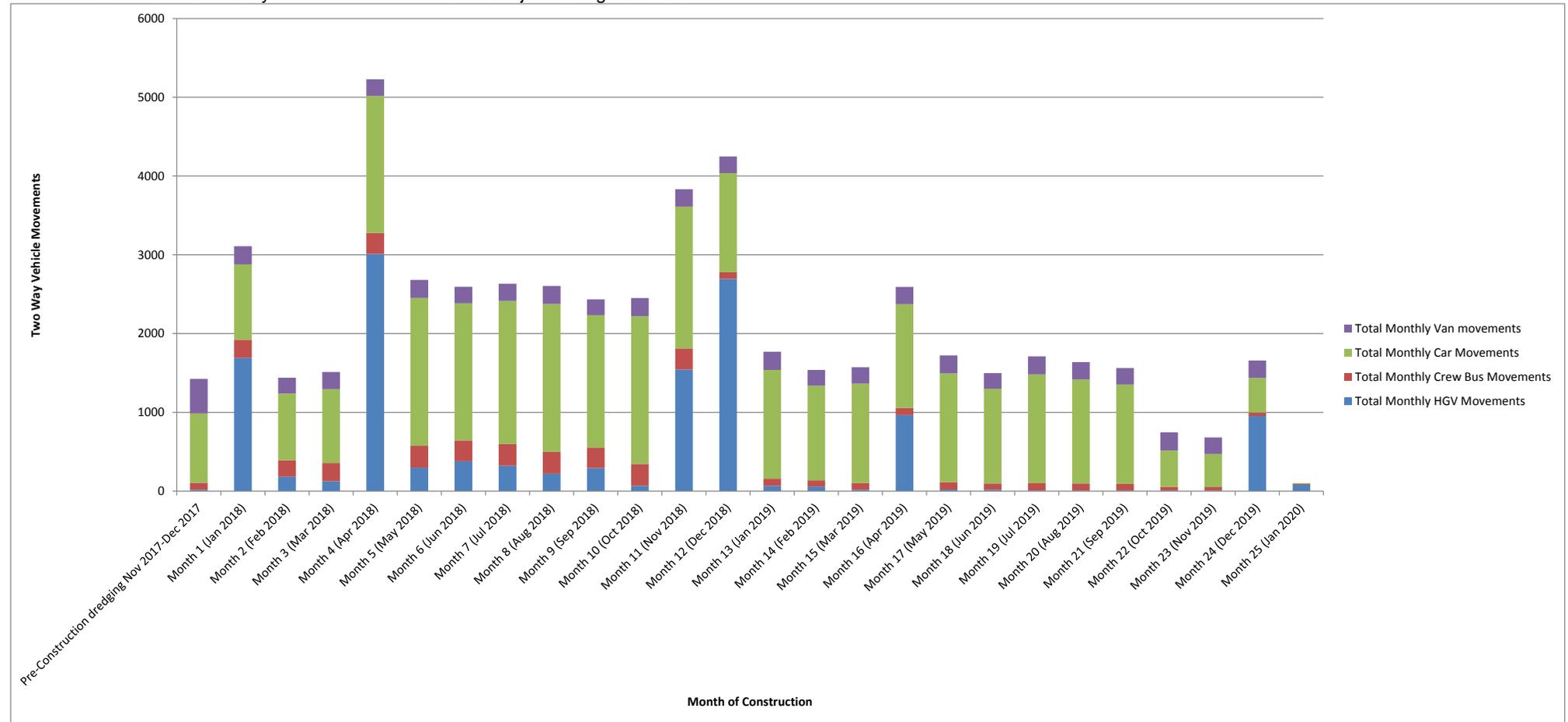
- 5.2.6 Road-based construction traffic would be generated by deliveries of premixed cement, deliveries of reinforcement materials and for the removal of de-watered dredged material to a landfill site. The numbers of road vehicles expected are considered as a worst case scenario.
- 5.2.7 The current assumptions used regarding the construction programme are indicative and would be subject to review during the detailed design stage but, for the purpose of this assessment, it is considered to represent a worst case view of traffic movements.
- 5.2.8 The assessment has focused on construction activities during 2018, which has been identified as the year during which the highest concentration of trip generations associated with construction is likely to arise.
- 5.2.9 The construction period is based on a five day week with working hours from 7:30 to 18:30. However, between January 2018 - November 2018 construction also includes a 24 hour 7 day a week period for activities associated with the construction at the wet dock, on the left bank, only. During this time, all other construction activities would retain the 7:30 to 18:30 working hours. It is assumed, no night piling will take place at any point.
- 5.2.10 Within this chapter all trip generations forecast for the construction period are in addition to existing baseline traffic conditions.

Monthly profile of construction related trip generation assumptions

- 5.2.11 The monthly vehicle estimates take into account all deliveries and removals made by HGV including premixed concrete, de-watered dredged material and other construction materials and waste, as well as site personnel and non HGV delivery vehicles. During the first full year of construction in 2018 a total of approximately 34,800 total two way vehicle movements are estimated, and broken down as follows:
- 53% cars;
 - 31% HGVs;
 - 8% crew bus; and
 - 8% delivery vans.
- 5.2.12 The profile of monthly vehicle movements across the construction period, including pre-construction capital dredging (Phase 1) has been estimated and is summarised in Plate 5.1.

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Plate 5.1: Predicted monthly vehicle movements to the Project during construction



Source: Mott MacDonald (2016)

- 5.2.13 During 2018 approximately 34,800 two way additional traffic movements associated with the construction of the Project are predicted to occur, with approximately 18,700 two way trips forecast in 2019. The impacts forecast during 2018 represent a worst case scenario for the number of trips generated during the construction process.
- 5.2.14 Month 4 (April 2018) is predicted to be the busiest month, in terms of total construction vehicle movements, as a result of the 24 hour/7 day a week phase and the removal of de-watered dredged material to landfill. A maximum of 480 HGV combined total two way daily vehicle movements (240 HGVs making journeys to and from the site) associated with the removal of dewatered dredged material from the left bank, is forecast for a period of up to 6 days (24 hour operation) with an average of 44 combined total two way movements associated with the construction workforce and 18 combined total two way movements associated with the other construction process during this month.
- 5.2.15 The delivery of construction material and removal of waste associated with the Project is forecast to generate a maximum of three additional vehicle movements per day throughout 2018 and up to February 2019, as 10% of material delivery is forecast to be associated with HGVs. From March 2019 onwards it is forecast that additional trips would only be associated with the removal of waste which would equate to an average of one additional trip movement per day.
- 5.2.16 It is forecast that premixed concrete would be delivered to site between April 2018 and June 2019 with a maximum of approximately 12 combined total two way HGV movements per day occurring on big pour days, with an average of seven two way HGV movements throughout this period. Premixed concrete deliveries associated with the wet dock are forecast to be an average of two two-way vehicle movements per day between January 2018 and June 2018.

Removal of dewatered dredged material assumptions

- 5.2.17 It has been assumed that the process of de-watering dredged material would be carried out through a combination of a mechanical and natural dewatering processes (at a site on the left bank) and through drying material naturally over a large designated parcel of land (on the right bank). Both areas of land are situated within the red line boundary for the Project and have been included within the submission for the TWAO.
- 5.2.18 It is proposed that material that is dredged and deposited to the left bank of the Haven by barge would be dewatered using a mechanical process which would allow the material to be dewatered and removed from site within 24 hours of it being dredged. It has been assumed that material processed in this way would be on a 24/7 basis, with trucks removing material throughout the duration of the day to landfill, two proposed routes from the site to identified landfills are detailed in Appendix A of this Technical Report; Figure 5.1.

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5.2.19 Dredged material deposited by barges on the right bank of the Haven would be dewatered without the use of machinery and would be dried over a period of 12 months, and removed from the site using HGVs. Dewatered material from the right bank would be removed during week days only over a 12 hour period each day.

5.2.20 It has been assumed that during the removal of de-watered dredged material from both construction compounds to landfill that each HGV can carry up to 20 tonnes of material (due to vehicle weight limits) and is expected to make 10 deliveries an hour over either a 12 hour or 24 hour period.

5.2.21 As shown in Table 5.1, seven separate months have been identified to remove de-watered dredged material associated with four separate instances (phases) of dredging.

Table 5.1: Removal of de-watered dredged material over construction period

Side of the Haven	Phase	Weight of de-watered dredged material (tonnes)	Number of HGV's required	Number of hours to complete deliveries	Number of days (rounded to nearest whole day)	Removal month	Total number of two way HGV movements in month
Left Bank	Phase 1	14,802	740	74	3*	Jan 2018	1480
	Phase 2	26,325	1316	132	6*	Apr 2018	2633
	Phase 3	9,450	473	47	2*	Apr 2019	945
	Phase 4	810	41	4	1*	Jan 2020	81
Right Bank	Phase 1	14,802	740	74	6**	Nov 2018	1480
	Phase 2	26,325	1316	132	11**	Dec 2018	2633
	Phase 3	9,450	473	47	4**	Dec 2019	945
	Phase 4	0	0	0	0	-	0

* Assumes 24 hour 7 days a week ** Assumes 12 hour working day 5 days a week
Source: Mott MacDonald (2016)

5.2.22 The maximum number of additional HGV movements which are forecast during these periods of removal is 20 two way movements per hour, which equates to 480 additional HGV movements per day when 24/7 operations is required.

- 5.2.23 Due to the drying time required for the dredged material it has been necessary to assume that some de-watered dredged material would be removed once the construction of the barrier has been completed in 2020. The amount of material to be removed is associated with the final, smallest (volumetrically) phase of dredging and could be removed within one working week.

Construction staff assumptions

- 5.2.24 Assumptions have been made as to the mode of transport that construction workers would use to access the site and how construction deliveries and staff would be distributed between the left and the right bank.
- 5.2.25 According to good construction practices, it is envisaged that a crew bus would be used (by the nominated contractor) to transport the majority of construction workers from designated meeting points to the construction compounds, which would be further outlined within the CTMP (see Appendix B of this report) which the Environment Agency has committed to delivering.
- 5.2.26 In order to provide a robust scenario of the maximum number of staff related trip generation, it has been assumed that a certain percentage of workers would come to the site using their own private vehicles, based on the assumption that approximately 30 work force members would be travelling to site from outside of Boston. A crew bus for approximately 120 (80%) workers is considered to be a realistic aim which would help minimise construction related traffic on local roads during the construction period.
- 5.2.27 Vehicle movements associated with private car arrivals and departures would equate to an additional 60 two way vehicle movements per week day, with it being assumed that staff would be split equally between the left and right bank construction compounds. The use of a crew bus would generate an additional six two way vehicle movements per day. Using these figures it is forecast that St John's Road (from right bank construction compound) and Marsh Lane (from left bank construction compound) would each see an average increase of 33 additional combined total two way vehicle movements per day associated with the weekday construction workforce.
- 5.2.28 With the workforce currently anticipated to work from 7:30 to 18:30, the arrival and departure of staff would occur outside of traditional highway peak hours (considered to be 8:00 – 9:00 and 17:00 – 18:00) and as such would be present on the highway network during relatively quieter traffic periods and in isolation would not significantly exacerbate existing highway network congestion issues.
- 5.2.29 During 2018, when it is anticipated that 24/7 working would be in operation in relation to the wet dock, a maximum of 16 combined total two way vehicle movements associated with staff using private cars and 6 two way movements associated with the crew bus per day have been forecast.

Construction traffic routing assumptions

- 5.2.30 As stipulated in the draft CTMP (Appendix B of this Technical Report), it has been suggested that HGV traffic would be encouraged to follow major highway links (i.e. A roads, motorways). This is particularly the case where it is anticipated that HGV traffic from the left bank construction compound would follow St John's Road onto the A16 and A52, and HGV traffic from the right bank construction compound would follow Marsh Lane onto the A16. The EAP ensures the finalised CTMP would be followed.
- 5.2.31 Appendix A of this Technical Report: Figure 5.2 provides a summary of the currently anticipated routes that would be followed by construction related traffic within the study area.
- 5.2.32 The removal of material to landfill by vehicles represents a worst case scenario whereby very little material can be incorporated for reuse within the construction process of the Project resulting in the generation of additional movements by HGVs.
- 5.2.33 Landfill sites which have been identified within the local area are as follows:
- Braucewell Quarry, Sleaford, Lincolnshire (approx. 22 miles);
 - Colsterworth Landfill, Grantham, Lincolnshire (approx. 36 miles);
 - Harmston Quarry, Lincoln, Lincolnshire (approx. 30 miles); and
 - South Witham Quarry, Grantham, Lincolnshire (approx. 38 miles).

Electricity cable diversion

- 5.2.34 It has been assumed, following the advice of the independent contractor, that a diversion of existing 11kV electricity cables is expected to occur between the 3rd and 4th Quarters in 2017 (up to 10 weeks). The proposed route would divert the cables from the right embankment, south along Wyberton Low Road for 200m, before heading back north onto the right embankment and tying into the existing services adjacent to Black Sluice. It is expected that no construction traffic would be routed along this section of Wyberton Low Road throughout the construction of the Project.

Construction vehicle assumptions

- 5.2.35 Barges would be required for the majority of the construction material being delivered and for dredged material to be moved to the specific de-watering sites. Two potential sites have been identified to hold the removed dredged material where it can be de-watered. One is located on the left bank site, in currently unoccupied warehouses accessed through the PoB and the other is located on the right bank site, which is accessed along Lealand Way. These sites have been identified due to their proximity to both construction sites and the capacity of dredged material they can hold.
- 5.2.36 It has been assumed that the use of barges would deliver up to 90% of construction materials required for the Project reduces the need to use HGV vehicles on the road network, however

10% of construction vehicles associated with the Project would be added to the road network. In terms of impact to in-channel Navigation please see the ES (Volume 2d): Navigation Impact Assessment Technical Report.

Average daily construction traffic trip generation assumption

- 5.2.37 Table 5.1 summarises Average Daily Traffic (ADT) and percentage of Heavy Duty Vehicle (HDV) forecast flow changes at each survey site location during construction in 2018.

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Table 5.1: 2018 Average Daily Traffic Forecasts

Location	Link ID	2018 24 hour ADT NP*	2018 24 hour ADT % HDV NP*	2018 24 hour ADT WP**	2018 24 hour ADT % HDV WP**	% Increase between NP and WP
Marsh Lane opposite Audi Garage between Wyberton Low Road and Marsh Avenue	1	5712	6%	5750	6%	0.66%
Marsh Lane outside VW Garage opposite Honda Garage	2	8728	4%	8765	4%	0.43%
A16 south of roundabout junction with Marsh Lane	3	20312	4%	20325	4%	0.06%
A16 north of roundabout with Marsh Lane, south of roundabout with B1397	4	25308	5%	25348	5%	0.16%
A16 Spalding Road south of Nelson Way slip road	5	29269	3%	29305	3%	0.12%
A52 Liquorpond Street west of roundabout with A17	6	28578	2%	28609	2%	0.11%
A16 John Adams Way on bridge between High Street and South End	7	39957	7%	40021	7%	0.16%
A16 John Adams Way between South End and Rowley Road	8	28799	8%	28819	8%	0.07%
A1138 South End between A16 and Boston Royal Mail Depot	9	12317	4%	12373	4%	0.45%
St John's Road between Skirbeck Road and Port of Boston	10	857	20%	915	20%	6.68%
A16 John Adams Way between roundabout with A52 and junction with High Street	11	43845	5%	43909	5%	0.15%

Source: Mott MacDonald (2016)

*No project, **With Project

Witham Sailing Club and recreational river user facilities

- 5.2.38 During the construction of the facilities on the left bank, it has been assumed that no diversions of existing PROW facilities are required and that pedestrians would be able to continue to access Boston Footpath 13/3 during the both the construction and operation of these facilities. The number of construction related traffic movements associated with the provision of these sailing club facilities is considered to be minimal, and as such it would be the responsibility of the contractor to allocate Banksmen to either side of the Footpath 13/3 in order to delay pedestrians crossing the path when construction vehicles visit the site.
- 5.2.39 No assessment of the impact on pedestrian receptors using PROWS in the vicinity of the proposed new sailing club facilities are included within this assessment.

5.3 Limitations

- 5.3.1 A limitation of this assessment is the currently unknown location of the preferred concrete batching plant that would be used to supply the construction compounds which has led to the assumption of equal distribution of movements between both compound sites.

5.4 Assessment

Capacity

- 5.4.1 Forecasts of construction traffic detailed in Section 5.2, have been used to inform the assessment of highway capacity changes on the receptors during the busiest year of construction in 2018.
- 5.4.2 The average daily traffic flow forecasts detailed in Table 5.1 have been used to inform this assessment, with consideration also being given to periods of peak construction movements associated with intense periods of construction activity where appropriate.

Businesses on A1138

- 5.4.3 The forecast daily average increase in traffic flow along the A1138 during the construction period has been calculated to be less than 1%, resulting in a low adverse impact on the highly sensitive business receptors. This is therefore assessed, using Table 2.3, as being of temporary minor significance and is not deemed a significant effect.

Recreational area and businesses on St John's Road

- 5.4.4 The forecast average daily increase in traffic flow along St John's Road during the construction period has been calculated to be around 7%, resulting in a medium adverse

impact on the highly sensitive recreational area and business receptors on St John's Road. This is therefore assessed, using Table 2.3, as being of temporary moderate significance and is deemed a significant effect.

Businesses on Marsh Lane (Boston Industrial Estate)

- 5.4.5 The forecast average daily increase in traffic flow along Marsh Lane during the construction period has been calculated to be less than 1% during the construction period, resulting in a low adverse impact on the highly sensitive business receptors on Marsh Lane. This is therefore assessed, using Table 2.3, as being of temporary minor significance and is not deemed a significant effect.

Residential properties on South Terrace (Bath Gardens)

- 5.4.6 No increases in traffic flow are forecast to occur on South Terrace as a result of the construction of the Project.
- 5.4.7 However, due to intense periods of construction activities such as big pour concrete days and the removal of dewatered dredged material over 24 hour periods it is considered that general disturbances (such as additional noise, dust and regular views of vehicles) caused by increased frequency of up to 480 two way HGV movements during these specific periods could have a temporary negative impact on the surrounding roads including St John's Road which could negatively impact these local residents.
- 5.4.8 These intense periods of construction activities lead to the generation of larger numbers of HGV movements in the area local to the properties, resulting in a medium adverse impact on these highly sensitive residential receptors. This is therefore assessed, using Table 2.3, as being of temporary moderate significance and is deemed a significant effect.

Residential properties on Wyberton Low Road and Marsh Lane

- 5.4.9 No increases in traffic flow are forecast to occur on Wyberton Low Road as a result of the construction of the Project, resulting in a negligible impact on these highly sensitive residential receptors. This is therefore assessed, using Table 2.3, as being of negligible significance and is not deemed a significant effect.
- 5.4.10 The forecast average daily increase in traffic flow along Marsh Lane during the construction period has been calculated to be less than 1% during the construction period. However, due to intense periods of construction activities such as big pour concrete days and the removal of dewatered dredged material over 24 hour periods it is considered that general disturbances caused by increased frequency of up to 480 two way HGV movements during these specific periods could have a temporary negative impact on the capacity of Marsh Lane.

- 5.4.11 These intense periods of construction activities lead to the generation of larger numbers of HGV movements on Marsh Lane, resulting in a medium adverse impact on these highly sensitive residential receptors. This is therefore assessed, using Table 2.3, as being of temporary moderate significance and is deemed a significant effect.

Routing and access

Access to businesses along St John's Road and A1138

- 5.4.12 A Royal Mail Depot and a number of other small local businesses are located along the A1138 on South End, north of the left bank construction compound. The A1138 is of sufficient width for incoming and outgoing construction vehicle movements and as such should not provide any obstructions to vehicles associated with the local depot.
- 5.4.13 As the removal of dewatered material from the left bank would be processed over a 24/7 period, the impact on the 'normal' working day would be reduced through the use of overnight deliveries thus reducing the number of days required to complete this task during each phase of removing dewatered dredged material.
- 5.4.14 It is expected that there would be an increase of a maximum of 480 two way HGV movements over a 24 hour period during the removal of de-watered dredged material occurring over four specific months stated in Table 5.1 resulting in a low adverse impact on these highly sensitive business receptors concerning the perception of delay to journeys associated with normal business activities. This is therefore assessed, using Table 2.3, as being of temporary minor significance and is not deemed a significant effect.

Access to Boston College

- 5.4.15 Boston College is on Skirbeck Road and access to Boston College would not be physically affected during the construction phase. Due to higher traffic flows in the area, pupils and staff perception of severance for pedestrians may increase to slight, particularly when trying to cross St John's Road away from the controlled pedestrian crossing during months where dewatered dredged material is being removed.
- 5.4.16 The impact on access to Boston College, which is a highly sensitive receptor, is considered to be a low adverse impact, with a temporary minimal loss of amenity across the duration of the construction period. This is therefore assessed, using Table 2.3, as being of temporary minor significance and is not deemed a significant effect.

Routing Access to Boston River Industrial Estate

- 5.4.17 The Boston River Industrial estate is located on the right side of the river, along Marsh Lane. Access to the estate would not be affected during construction. A maximum increase of 240 total two way combined HGV movements associated with the removal of de-watered dredged

material in November 2018, December 2018 and December 2019 on Marsh Lane could potentially lead to deliveries associated with other businesses on the Industrial Estate incurring minor delays during these specific months.

- 5.4.18 The impact on access to highly sensitive business receptors on the Industrial Estate is considered to be low adverse. This is therefore assessed, using Table 2.3, as being of minor significance and is not deemed a significant effect.

Access to Port of Boston

- 5.4.19 The PoB estate is located at the end of St. John's Road, on the left bank of the Haven. Construction traffic and normal vehicles associated with the operation of the PoB would use the port entrance on St John's Road. It is expected that there would be a notable increase of HGV movements during the removal of de-watered dredged material occurring over four specific months stated in Table 6.1 which may affect the perception of delay to normal PoB business activities, particularly related to deliveries.

- 5.4.20 The actual increase in HGVs would be a maximum of 480 two way vehicle movements over a 24 hour period. As the removal of dewatered material from the left bank would be processed over a 24/7 period the impact on the 'normal' working day would be reduced through the use of overnight deliveries thus reducing the number of days required to complete this task during each phase of dredging. The impact on access to the highly sensitive PoB receptor has been assessed to be low adverse, with minor change to travel time or directness of the route. This is therefore assessed, using Table 2.3, as being of minor significance and is not deemed a significant effect.

Access to Witham Sailing Club

- 5.4.21 During construction of the Project it is assumed that access to a local sailing club within the Port of Boston, Witham Sailing Club (WSC), would temporarily move downstream to be located on the left bank downstream of the barrier location. This temporary access would include construction of temporary facilities including welfare, storage, mooring and slipway provision for the WSC. An unnamed road which provides access to a timber yard would become incorporated within the proposed area.

- 5.4.22 The impact on the WSC has been assessed as being low adverse with a temporary minor change to the directness of the route for the duration of the construction period. This is therefore assessed, using Table 2.3, as being of minor significance and is not deemed a significant effect.

Access to residential properties

- 5.4.23 Residential properties are located on both left and right banks. Physical access to right bank residential properties, along Marsh Lane would be maintained during the construction phase.

Access to left bank residential properties on South Terrace including Bath Gardens would also be maintained.

- 5.4.24 Access to residential properties located along Wyberton Low Road, adjacent to the Black Sluice, would be restricted during the diversion of existing 11kV electricity cables, which is expected to occur over 10 weeks in the 3rd and 4th quarter of 2017. A diversion and / or parking restrictions would be agreed upon and put in place for residents accessing residential properties along Wyberton Low Road.
- 5.4.25 There is an increase in construction vehicular movements and potential for additional delay for residents seeking access to their properties during the Project construction period (particularly during the 10 weeks where existing 11kV cables are to be diverted) and the months where dewatered dredged material is being removed.
- 5.4.26 These access restrictions, which would lead to changes in residents travel behaviour throughout the duration of the construction period, have been assessed to be a medium adverse impact on the highly sensitive residential property receptors. This is therefore assessed, using Table 2.3, as being of moderate significance and is deemed a significant effect.

Access to recreational area

- 5.4.27 There is publically accessible recreational area on land between St John's Road and Skirbeck Road which can be accessed via footpaths from both of these roads. Whilst access to this park space would not be affected during the construction period, the increased number of construction vehicles on St John's Road and the proximity of these movements to the park may affect users' perception of road safety and lead to a reduction in general enjoyment of the park space. The impact on the highly sensitive recreational area amenity receptor has been assessed to be medium adverse. This is therefore assessed, using Table 2.3, as being of moderate significance and is deemed a significant effect.

Boston Public Footpath No.14 (Macmillan Way)

- 5.4.28 The Boston Public Footpath No.14 (Macmillan Way) would be temporarily closed during construction a diversion put in place. The Boston Public Footpath No.14 (Macmillan Way) would be re-routed during the construction period south of the right bank construction compound following along Wyberton Low Road, through residential areas, onto Marsh Lane, passing through the Industrial Estate, then back onto the original route along Lealand Way, as shown in Appendix A, Figure 4.2 of this Technical Report.
- 5.4.29 The diversion would affect pedestrians by re-routing them off the designated route onto local roads, within closer proximity of construction traffic vehicles, thus decreasing the relative pleasantness of the journey with a moderate increase in perception of severance for pedestrians. The impact on highly sensitive pedestrian receptors during the closure and

diversion of the PROW route Boston Public Footpath No.14 (Macmillan Way) is considered to be medium adverse, due to a temporary moderate loss of provision. This is therefore assessed, using Table 2.3, as being of moderate significance and is deemed a significant effect.

Amenity

Bus routes

- 5.4.30 Bus routes serving London Road and Skirbeck Road would not be impacted by the proposed development. It is not anticipated that there would be any diversions required during the construction period that would impact local bus services. As a result the impact on highly sensitive public transport users has been assessed to be negligible. This is therefore assessed, using Table 2.3, as being of negligible significance and is not deemed a significant effect.

Bus stops

- 5.4.31 During the construction process there are no proposed closures to bus stops on any local roads within the study area. As a result the impact on highly sensitive public transport users has been assessed to be negligible. This is therefore assessed, using Table 2.3, as being of negligible significance and is not deemed a significant effect.

PRoW

- 5.4.32 Other than that outlined above, there are no further temporary closures or diversions of any other PRoWs within the study area; however consideration has been given to the likelihood of severance being perceived where PRoWs in the study area cross highways.
- 5.4.33 Guidance provided by IEMA acknowledges the complexity of defining and assessing severance. Increases in traffic flows of 30%, 60% and 90% have been considered in the guidance with impacts associated regarded as 'slight', 'moderate' and 'substantial'. It is, however, noted that the perception or experience of severance affects different groups in a community in a range of ways.
- 5.4.34 Whilst average traffic increases are assessed to be minimal on average across the construction period, it is expected that there would be an increase in HGV movements within the specific months identified for removal of de-watered dredged material which may increase perception of severance for users of footpaths on Marsh Lane and St John's Road. The presence of controlled pedestrian crossings on both of these roads does however significantly reduce the likelihood that pedestrians would be physically prevented from crossing the road during the busiest periods of construction related traffic activity.

- 5.4.35 Table 5.1 indicates that average total increases in traffic flow are minimal, however pedestrians attempting to cross St John's Road away from the controlled crossing at the junction of St John's Road and John Adams Way, may perceive additional severance during the construction period. This is also to be expected along Marsh Lane, if pedestrians are to cross away from the controlled crossing junction of Marsh Lane and Wyberton Low Road.
- 5.4.36 As a result of these minimal changes to PROW amenity, the impact on highly sensitive pedestrian receptors is assessed to be low adverse. This is therefore assessed, using Table 2.3, as being of minor significance and is not deemed a significant effect.

Cycle Routes

- 5.4.37 For 10 weeks during the 3rd and 4th Quarters of 2017, three 11kv electricity cables would be diverted along Wyberton Low Road from the right bank embankment. During this time Wyberton Low Road would be restricted for vehicular traffic; however, cyclists' access would be maintained to reduce disruption to users of the National Cycle Network Route 1. The construction works would negatively alter the relative pleasantness of the cyclists' journey along this section of the route and therefore it is anticipated to result in a minor adverse effect for these receptors.

5.5 Impacts during construction pre mitigation measures

- 5.5.1 Impacts on receptors related to traffic and transport that could potentially occur during the construction phase of the Project, are summarised in Table 5.3. The significance of the impacts has been defined using professional judgement in accordance with the significance matrix and assessment methodology set out within Section 2.5 of this report.

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Table 5.3: Summary of impacts during construction before implementation of mitigation measures

Receptor	Description	Value of receptor	Magnitude of impact	Effect of impact	Significance of impact
Capacity					
Businesses on A1138	General disturbances caused by increased frequency of HGV movements particularly during 24/7 wet dock construction and removal of de-watered dredged material	High	Low adverse	Minor change and minor adverse variation to travel time or minor detour from route with perceived 'minor' severance	Not significant
The local recreational area and businesses on St John's Road	General disturbances caused by increased frequency of HGV movements particularly during 24/7 wet dock construction and removal of de-watered dredged material	High	Medium adverse	Moderate change and minor adverse variation to travel time or minor detour from route with perceived 'moderate' severance	Significant
Businesses on Marsh Lane (Boston Industrial Estate)	General disturbances caused by increased frequency of HGV movements particularly during 24/7 wet dock construction and removal of de-watered dredged material	High	Low Adverse	Minor change and minor adverse variation to travel time or minor detour from route with perceived 'minor' severance	Not significant
Residential properties on South Terrace (Bath Gardens)	General disturbances caused by increased frequency of HGV movements particularly during 24/7 wet dock construction and removal of de-watered dredged material	High	Medium adverse	Moderate change and minor adverse variation to travel time or minor detour from route with perceived 'moderate' severance	Significant
Residential properties on Wyberton Low Rd and Marsh Lane	General disturbances caused by increased frequency of HGV movements particularly during removal of de-watered dredged material.	High	Medium adverse	Moderate change and minor adverse variation to travel time or minor detour from route with perceived 'moderate' severance	Significant
Routing and access					
Access to businesses along St. John's Rd and A1138	Potential requirement to prohibit parking on highway outside of business properties during high frequency load deliveries, Traffic and pedestrian safety implications arising from increases in construction traffic and traffic delays arising from increased traffic flows with a potential severance ³ issue	High	Low adverse	Temporary minimal loss of amenity with full re-provision	Not significant

³ IEMA Guidelines for the Environmental Assessment of Road Traffic. '4.27 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities.'

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Receptor	Description	Value of receptor	Magnitude of impact	Effect of impact	Significance of impact
Access to Boston College	Traffic and pedestrian safety implications arising from increases in construction traffic and traffic delays arising from increased traffic flows with a potential severance issue	High	Low adverse	Temporary minimal loss of amenity with full re-provision	Not Significant
Access to Boston River Industrial Estate via Marsh Lane	Traffic and pedestrian safety implications arising from increases in construction traffic and traffic delays arising from increased traffic flows with a potential severance issue	High	Low adverse	Temporary minimal loss of amenity with full re-provision	Not significant
Access to PoB	Traffic and pedestrian safety implications arising from construction traffic, traffic delays arising from increased traffic flows particularly during removal of de-watered dredged material	High	Low adverse	Temporary minimal loss of amenity with full re-provision	Not Significant
Access to residential properties along Wyberton Low Road	Restricted access to properties along Wyberton Low Rd adjacent to Black Sluice during the diversion of the existing 11kV electricity cables.	High	Medium adverse	Moderate change and minor adverse variation to travel time or minor detour from route with perceived 'moderate' severance with a moderate loss of provision with minimal impact upon receptors travel behaviour	Significant
Access to Witham Sailing Club	Re-provision of facilities for Witham Sailing Club during the construction period which would involve increased route length to access the facilities	High	Low adverse	Temporary change in location of facilities which increases route length for users with minimal impact upon receptors travel behaviour	Not significant
Access to recreational area	Traffic and pedestrian safety implications arising from increases in construction traffic and traffic delays arising from increased traffic flows with a potential severance issue	High	Medium adverse	Moderate change and minor adverse variation to travel time or minor detour from route with perceived 'moderate' severance with a moderate loss of provision with minimal impact upon receptors travel behaviour	Significant
Public footpath along the Haven banks - Boston	Public footpath along river banks would be closed and diverted onto local road for the duration of construction. Leading to increase in route length which can be	High	Medium adverse	Moderate change and minor adverse variation to travel time or minor detour	Significant

Boston Barrier Tidal Project

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Receptor	Description	Value of receptor	Magnitude of impact	Effect of impact	Significance of impact
Public Footpath No.14 (Macmillan Way)	considered inconvenient due to restricted access to PROW users			from route with perceived 'moderate' severance with a moderate loss of provision with minimal impact upon receptors travel behaviour	
Amenity					
Bus routes along Skirbeck Road and London Road	Traffic delays arising from increased traffic flow and need for diversion	High	Low adverse	Minor change with minimal adverse variation to travel time or directness of route with perceived 'slight' severance	Not significant
Bus stops on Skirbeck Road and London Road	Delays for public transport users from higher traffic flow frequency due to construction movements. Disturbances to public transport users caused by severance where access to stops may be decreased due to higher traffic flows	High	Low adverse	Minor change with minimal adverse variation to travel time or directness of route with perceived 'slight' severance including temporary minimal loss of amenity with full re-provision	Not significant
PROWs and National Cycle Route 1	Disturbance to walkers and cyclists cause by proximity to construction vehicles and general construction activities	High	Low adverse	Minor change with minimal adverse variation to travel time or directness of route with perceived 'slight' severance including temporary minimal loss of amenity with full re-provision	Not significant

Source: Mott MacDonald (2016)

- 5.5.2 Five receptors have been identified from Table 5.3 as incurring significant effects during the construction phase before implementation of mitigation measures which are as follows (see Appendix A, Figure 5.4 for the mapped five significant receptors):
- Residential properties on South Terrace (Bath Gardens);
 - The recreational area and businesses located on St John's Road;
 - Residential properties on Wyberton Low Rd and Marsh Lane concerning capacity;
 - Residential properties on Wyberton Low Rd concerning access; and
 - Public footpath along the Haven bank Boston Public Footpath No.14 (Macmillan Way).

5.6 Mitigation measures

- 5.6.1 Potentially adverse effects arising during construction were identified above and summarised in Table 5.3. It is proposed that the following measures are implemented in order to prevent or reduce these effects. Potentially significant residual effects arising post mitigation are summarised in Table 5.4.

Capacity

- It is proposed that the construction of the in-channel works and associated land-based works would be undertaken where possible in parallel to minimise the overall construction period;
- There would be restrictions on deliveries during peak hours (timings to be outlined in the CTMP).

Routing and access

- On-site parking at the construction compounds would be provided for site personnel and visitors to prevent the parking of cars on public highway.
- The use of a crew bus for construction staff would reduce the number of additional vehicle trips associated with the construction of the Project.
- Appropriate signage would be put in place within the park on St John's Road providing information concerning the Project.
- Temporary access to WSC would be provided for the duration of the construction period for the Project.
- The frequency and routing of construction traffic movements would be tailored to ensure they to minimise effects on pedestrians around Boston College and the recreational area;
- A temporary suitable diversion and car parking restrictions for residents would be put in place during the diversion of 11kV cables on Wyberton Low Rd. Alternative parking arrangements for residents to be offered to residents in agreement with BBC during enabling works.
- The diversion of the Boston Public Footpath No.14 (Macmillan Way) would be agreed as part of the TWAO and, where appropriate, information on arrangements would be distributed to local residents and businesses; and

- Existing pedestrian and cyclist crossing facilities would be maintained throughout construction with temporary signage provided at crossings.

Amenity

- Existing public transport facilities would be maintained throughout construction with temporary signage provided as necessary.

- 5.6.2 A mitigation measure which would be used to monitor the impact of construction traffic over the whole construction period is the CTMP. The CTMP outlines the full range of mitigation measures that would be implemented to regulate the flow of vehicles required for the construction period of the Project. The CTMP would cover the following key measures:
- Vehicle movements would be scheduled wherever possible to avoid peak traffic periods to reduce traffic delays;
 - Appropriate signage would be used to ensure drivers use the agreed routes to and from the construction sites in order to prevent impact on local side roads;
 - All delivery vehicles would be unloaded within the site compound boundaries to avoid disruption on adjacent public highways to both sites; and
 - An appropriate area within or close to the site compounds would be identified for HGV delivery vehicles to layover and turnaround in order to limit disturbances outside the site.
- 5.6.3 A draft CTMP (see Appendix B of this Technical Report) would be submitted as part of the Environmental Statement. On appointment of a contractor, all information in the CTMP would be finalised and agreed with BBC.
- 5.6.4 It is proposed that the appointed contractor should supply the appropriate number of crew bus(es) depending on the construction period to pick up workers (local and regional) and bring them to and from both construction compounds.
- 5.6.5 If any modifications or diversions are required to the highway, any PRoW and access routes during the construction phase, they would be returned to their existing condition or better upon completion of the Project.

Enhancement

- 5.6.6 The Environment Agency would work with BBC to erect 1.2m high wrought iron (or similar) fencing to fill in the gaps along the boundary of the recreation area adjacent to St John's Road. This would enhance the safety for the users of the recreational area by reducing the risk associated with traffic travelling along St John's Road both during construction of the Project and the continued operation of PoB Estate.

Boston Barrier Tidal Project

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Table 5.4: Summary of impacts post mitigation

Receptor/ baseline asset	Description of issue	Value of receptor pre mitigation	Magnitude of Impact pre mitigation	Significance pre mitigation	Proposed mitigation	Magnitude of Impact post mitigation	Significance post mitigation
Capacity							
Businesses on A1138	General disturbances caused by construction related traffic including increased frequency of HGV movements particularly during 24/7 wet dock construction and removal of de-watered dredged material	High	Low Negative	Not Significant	Appropriate signage to be introduced raising awareness of construction activity and slow speeds to be adopted by delivery vehicles. Timing of deliveries to be outside of peak times where possible.	Negligible	Not significant
The recreational area and businesses located on St John's Road	General disturbances caused by increased frequency of HGV movements particularly during 24/7 wet dock construction and removal of de-watered dredged material	High	Medium Negative	Significant	Appropriate signage to be introduced raising awareness of construction activity and slow speeds to be adopted by delivery vehicles, temporary fencing to be erected at entrance to park opposite the PoB	Negligible	Not significant
Businesses on Marsh Lane (Boston Industrial Estate)	General disturbances caused by increased frequency of HGV movements particularly during 24/7 wet dock construction and removal of de-watered dredged material	High	Low Negative	Not Significant	Appropriate signage to be introduced raising awareness of construction activity and slow speeds to be adopted by delivery vehicles. Timing of deliveries to be outside of peak times where possible.	Negligible	Not significant
Residential properties on South Terrace (Bath Gardens) located on St John's Road	General disturbances caused by construction related traffic including increased frequency of HGV movements particularly during 24/7 wet dock construction and removal of de-watered dredged material	High	Medium Negative	Significant	Timing of deliveries to be outside of peak times where possible. Noise and light to be kept at a minimum during 24 hour construction and removal of de-watered dredged material phase	Negligible	Not significant

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Receptor/ baseline asset	Description of issue	Value of receptor pre mitigation	Magnitude of Impact pre mitigation	Significance pre mitigation	Proposed mitigation	Magnitude of Impact post mitigation	Significance post mitigation
Residential properties on Wyberton Low Road and Marsh Lane	General disturbances caused by construction related traffic including increased frequency of HGV movements particularly during removal of de-watered dredged material	High	Medium Negative	Significant	Timing of deliveries to be outside of peak times where possible. Noise and light to be kept at a minimum during removal of de-watered dredged material phase	Negligible	Not significant
Routing and Access							
Access to businesses along Marsh Ln, St John's Rd and A1138	Potential requirement to prohibit parking at properties during abnormal load deliveries	High	Low Negative	Not significant	Parking restrictions would be kept to a minimum and businesses given plenty of warning	Negligible	Not significant
Access to Boston College	Traffic and pedestrian safety implications arising from construction traffic, traffic delays arising from increased traffic flows	High	Low Negative	Not significant	Timing of deliveries and frequency of construction movements to be outside of peak times where possible	Negligible	Not significant
Access to Boston River Industrial Estate via Marsh Lane	Traffic and pedestrian safety implications arising from construction traffic, traffic delays arising from increased traffic flows	High	Low Negative	Not significant	Timing of deliveries and frequency of construction movements to be outside of peak times where possible	Negligible	Not significant
Access to PoB	Traffic and pedestrian safety implications arising from construction traffic, traffic delays arising from increased traffic flows significantly during removal of de-watered dredged material	High	Low Negative	Not significant	Timing of deliveries and frequency of construction movements to be outside of peak times where possible.	Negligible	Not significant
Access to WSC	Traffic and pedestrian safety implications arising from construction traffic, traffic delays arising from increased	High	Low Negative	Not significant	Suitable highway route to be included as part of the re-provision of facilities to maintain access for users	Negligible	Not significant

Boston Barrier Tidal Project

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Receptor/ baseline asset	Description of issue	Value of receptor pre mitigation	Magnitude of Impact pre mitigation	Significance pre mitigation	Proposed mitigation	Magnitude of Impact post mitigation	Significance post mitigation
traffic flows							
Access to residential properties along Wyberton Low Road	Potential requirement for temporary diversion and to prohibit parking at properties during diversion of 11 kV cables and closure of road during duration of diversion.	High	Medium Negative	Significant	Parking restrictions would be kept to a minimum and residents given plenty of warning. Diversion route onto local roads to be maintained and provided with sufficient signing.	Negligible	Not Significant
Access to recreational area	Traffic and pedestrian safety implications arising from construction traffic, traffic delays arising from increased traffic flows	High	Medium Negative	Significant	Timing of deliveries and frequency of construction movements to be outside of peak times where possible	Negligible	Not Significant
Public Footpath along the Haven banks, Boston Public Footpath No. 14 (Macmillan Way)	Public footpath along river banks would be closed for the duration of construction	High	Medium Negative	Significant	Diversion route onto local roads to be maintained and provided with sufficient signing	Negligible	Not significant
Amenity							
Bus routes along Skirbeck Road and London Road	Traffic delays arising from increased traffic flows	Medium	Low Negative	Not significant	Timing of deliveries to be outside of peak times where possible	Negligible	Not significant
Bus stops on Skirbeck Road and London Road	Delays for public transport users from higher traffic flow frequency due to construction movements.	High	Low Negative	Not significant	Timing of deliveries to be outside of peak times where possible	Negligible	Not significant
PRoW and National Cycle Route 1	Disturbances to and cyclists walkers cause by proximity to construction vehicles	High	Low Negative	Not significant	Alternative routes to be maintained.	Negligible	Not significant

Source: Mott MacDonald (2016)

5.7 Residual effects

5.7.1 No residual effects are expected during the construction of the Project after mitigation measures have been implemented, there would be no significant traffic and transport effects from the Project once the barrier is operational.

5.8 Cumulative and in-combination effects

Inter-project cumulative effects

5.8.1 The inter-project cumulative effects have been assessed based on the current information available and a number of assumptions for the Environment Agency schemes. Should the final designs be different from the assumptions made here, the relevant project/scheme would revise the potential cumulative effects, as necessary.

5.8.2 Table 5.5 identifies five housing development sites which have been identified within 500m of the Project boundary as being reasonably foreseeable future developments.

Table 5.5: Reasonably foreseeable future developments

ID	Development/ planning reference	Location	Brief description	Certainty	Construction dates (if applicable)	Date operational
1	Residential development (B/15/0213)	Broadfield Lane; west of site boundary	75 dwellings	Near certain	TBC	50 dwellings by September 2020
2	Residential development (B/15/0009)	London Road; south west of site boundary	60 dwellings	More than likely	TBC	30 dwellings by September 2020
3	Residential development (B/15/0100)	Boston College De Montfort Campus, Mill Road; north east of site boundary	108 dwellings	Near certain	TBC	108 dwellings by Summer 2020
4	Residential development (B13.0162)	Land off Sir Isaac Newton Drive; south of site boundary	32 dwellings	Near certain	TBC	Currently unknown
5	Residential development (B/15/0196)	Land off St Thomas Drive; west of site boundary	26 dwellings	More than likely	TBC	Currently unknown

Source: Boston Borough Council (2015), Environment Agency (2015) and Mott MacDonald (2016)

- 5.8.3 At the time of writing the construction dates for these developments were unknown, however due to the relatively small number of dwellings which are proposed to be completed by September 2020 for each of these developments it is assumed that construction traffic flows would not have a significant impact on the surrounding highway network. This is supported by the details included in the planning application for each development with no data related to construction traffic impacts being included, which suggests it has been scoped out in agreement with the Local Highway Authority (LCC).
- 5.8.4 The majority of construction related movements would occur on the A16 and A52 and it is anticipated that consideration would be given by the contractor for each development on arranging construction related deliveries outside of peak network hours in line with considerate construction good practise.
- 5.8.5 A potential development downstream of the Grand Sluice has also been identified, which would install a piled toe revetment along the river bank to protect the bank from repeated slippage, which has occurred over the last 20 years. At the time of writing there were no details about the construction timeline, however it is expected that this potential work would not require a significant number of construction vehicles to be on the highway network.
- 5.8.6 The EA intends to progress additional defence works at the frontage of the Western Power Distribution (WPD) substation, which is adjacent to Project on the right bank, at the same time as constructing the Project. At the time of writing, no additional need for dredging had been identified associated with this Project and no forecasts of required construction materials and associated vehicle movements had been calculated. There is potential for efficiencies to be introduced in terms of delivering construction material to supply both schemes during this period; however due to the current stage of the WPD project it is not possible to define these efficiencies.

In-combination effects

- 5.8.7 No in-combination cumulative effects were identified for traffic and transport.

5.9 Climate change

- 5.9.1 The identified mitigation measures would reduce the impacts of the project on climate change. To lower the environmental impacts on local road networks a crew bus for construction workers would be implemented to lower CO₂ (Carbon Dioxide) emissions from using personal cars to get to and from the site.
- 5.9.2 Due to the anticipated use of barges delivering up to 90% of the construction material, there would be a significant reduction in the potential impacts of emissions from construction road vehicles.

6 Summary

- 6.1.1 This traffic and transport assessment has considered the traffic and transport impacts associated with the Project. Significant effects concerning traffic and transport were identified pre-mitigation, during the construction periods only, these included five receptors:
- Residential properties on South Terrace (Bath Gardens);
 - The recreational area and businesses located on St John's Road;
 - Residential properties on Wyberton Low Rd and Marsh Lane concerning capacity;
 - Residential properties on Wyberton Low Rd concerning access; and
 - Public footpath along the Haven bank Boston Public Footpath No.14 (Macmillan Way).
- 6.1.2 The total movement of traffic associated with the construction phase has been forecast, and mitigation measures outlined to combat the potential impact of the construction traffic (Section 5.5.2 of this Technical Report). There would be no significant residual effects during the construction phase once the mitigation measures are implemented.
- 6.1.3 Once the construction and commissioning phases are complete the site would begin to routine operation, with vehicles only attending for routine maintenance checks.
- 6.1.4 It is concluded that the Project would have no significant residual effects on receptors post mitigation in either the construction or operational phases.

7 References

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8 List of abbreviations

Abbreviations	Definition
AADT	Average Annual Daily Traffic
ATC	Automatic Traffic Count
AQMA	Air Quality Management Area
BBC	Boston Borough Council
CO ²	Carbon Dioxide
CTMP	Construction Traffic Management Plan
EIA	Environmental Impact Assessment
ES	Environmental Statement
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
IEA	Institute of Environmental Assessment
IEMA	Institute of Environmental Management and Assessment
LCC	Lincolnshire County Council
LTP	Lincolnshire Transport Plan
NO ²	Nitrogen Dioxide
NPPF	National Planning Policy Framework
PoB	Port of Boston
PROW	Public Right of Way
SR	Scoping Report
SFFD	South Forty Foot Drain
TEMPRO	Trip End Model Presentation Programme
TWA	Transport Works Act
WLM	Water Level Management
WSC	Witham Sailing Club

9 Glossary

Term	Definition
Automatic Traffic Count	Pneumatic road tube counter placed on highway to collect traffic data all day.
Air Quality Management Area	If a Local Authority identifies any locations within its boundaries where the Air Quality Objectives are not likely to be achieved, it must declare the area as an Air Quality Management Area (AQMA). The area may encompass just one or two streets, or it could be much bigger. The Local Authority is subsequently required to put together a plan to improve air quality in that area - a Local Air Quality Action Plan.
Construction Traffic Management Plan	A mitigation measure which will be used to monitor and assess measures over a whole construction period, the CTMP outlines the requests that will be implemented to regulate the flow of vehicles required for a construction period.
Environmental Impact Assessment	A process and technique for assessing the potential significant environmental effects of a project.
Average Annual Daily Traffic flow	Number of vehicles that will travel on a given stretch of road on an average day of the year.
Heavy Duty Vehicle	HDVs include HGVs, buses and coaches.
Heavy Goods Vehicle	A large heavy goods vehicle with a gross combination mass of +3,500 kilograms
Combine total two way traffic flow	Total number of vehicles travelling in both directions on a given stretch of road (e.g. total of eastbound and westbound vehicle movements on a road)
Severance	‘Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities.’ (4.27 IEMA Guidelines for the Environmental Assessment of Road Traffic.)’

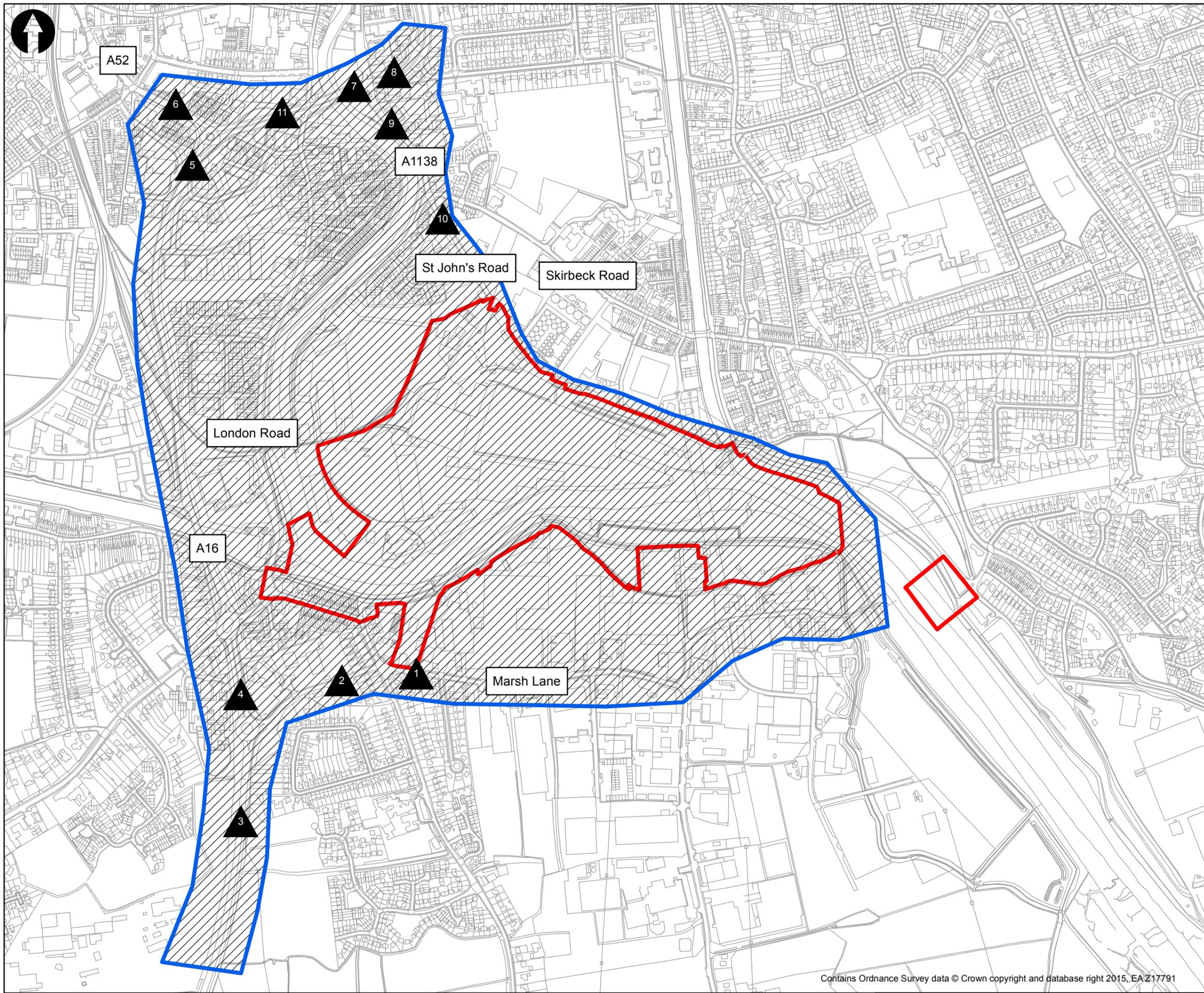
Appendices

A.	Figures	49
B.	Draft Construction Traffic Management Plan (CTMP)	67

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A. Figures

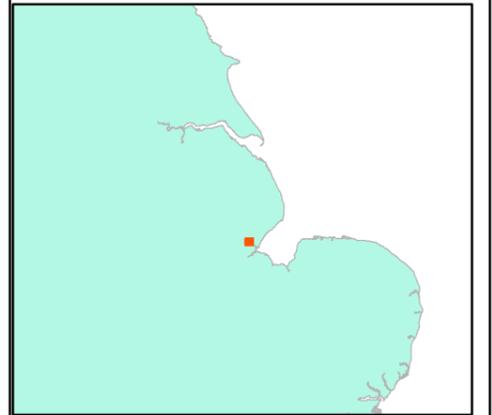
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Key to Symbols

-  Survey Locations
-  Study Area
- Site Application Boundary

Key Plan



PO	28/07/16	LS	Draft	KC	EL
Rev	Date	Drawn	Description	Ch'k'd	App'd



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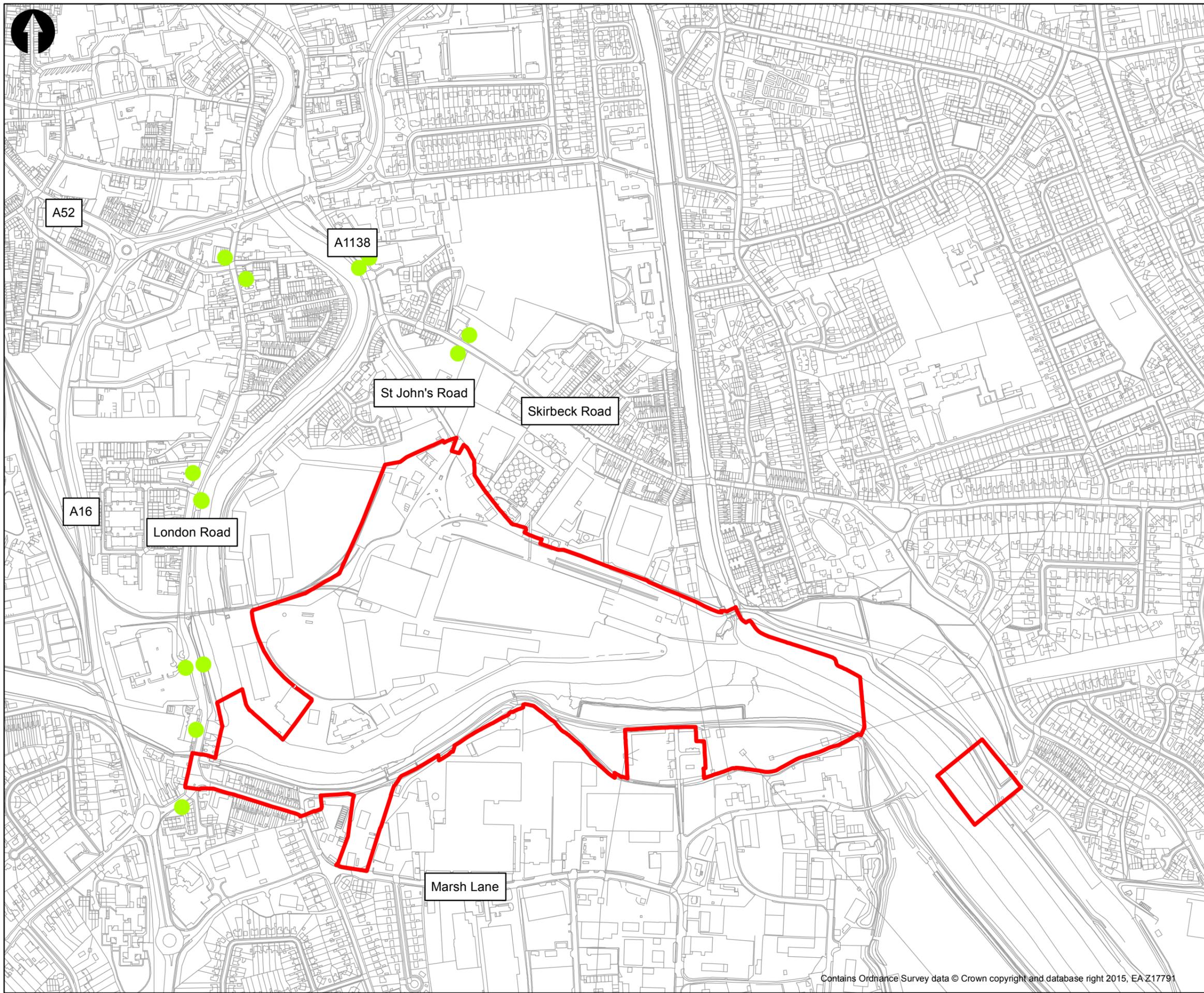

Title
Boston Barrier Project
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Figure 2.1

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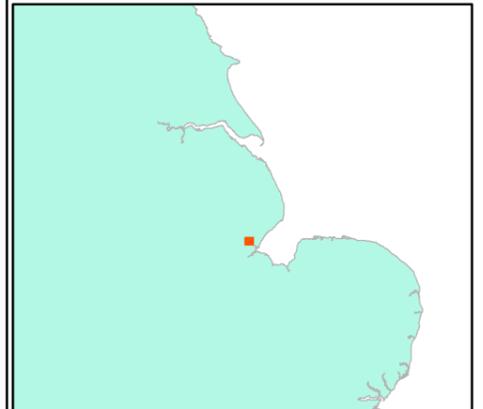




Key to Symbols

- Bus Stops
- Site Application Boundary

Key Plan



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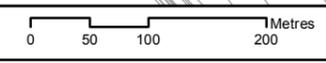
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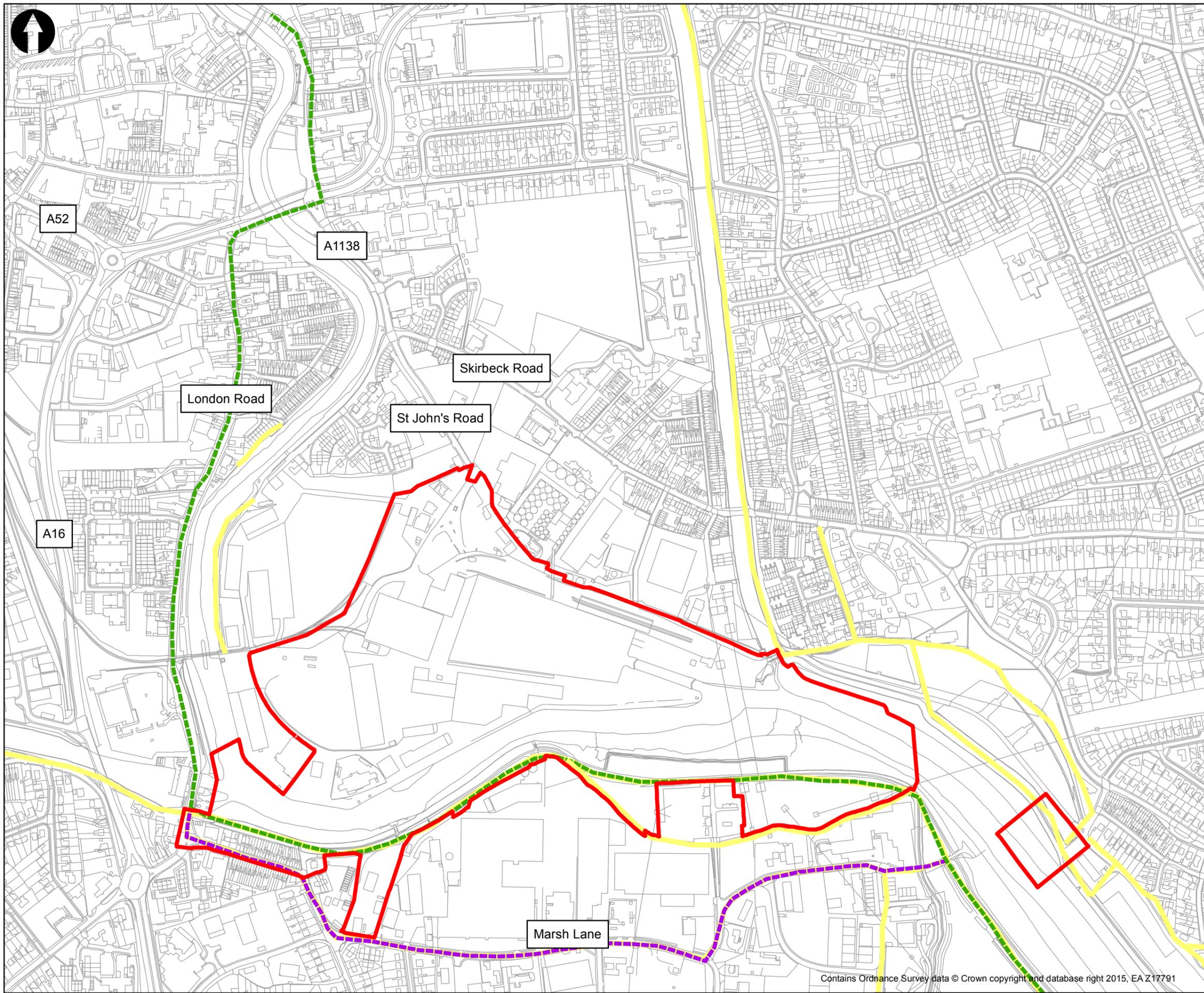
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Boston Barrier Tidal Project

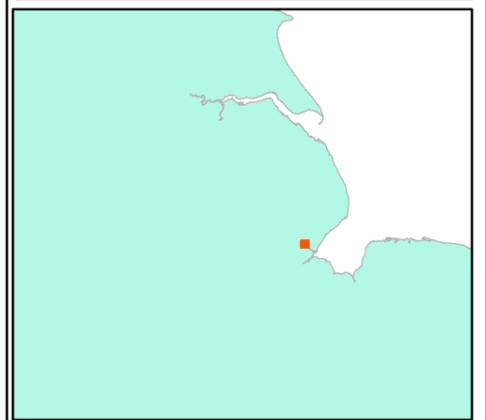
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Key to Symbols

- PROW
- Boston No. 14 Footpath (Macmillan Way Footpath)
- Temp diversion along Macmillan Way
- Site Application Boundary

Key Plan



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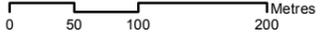
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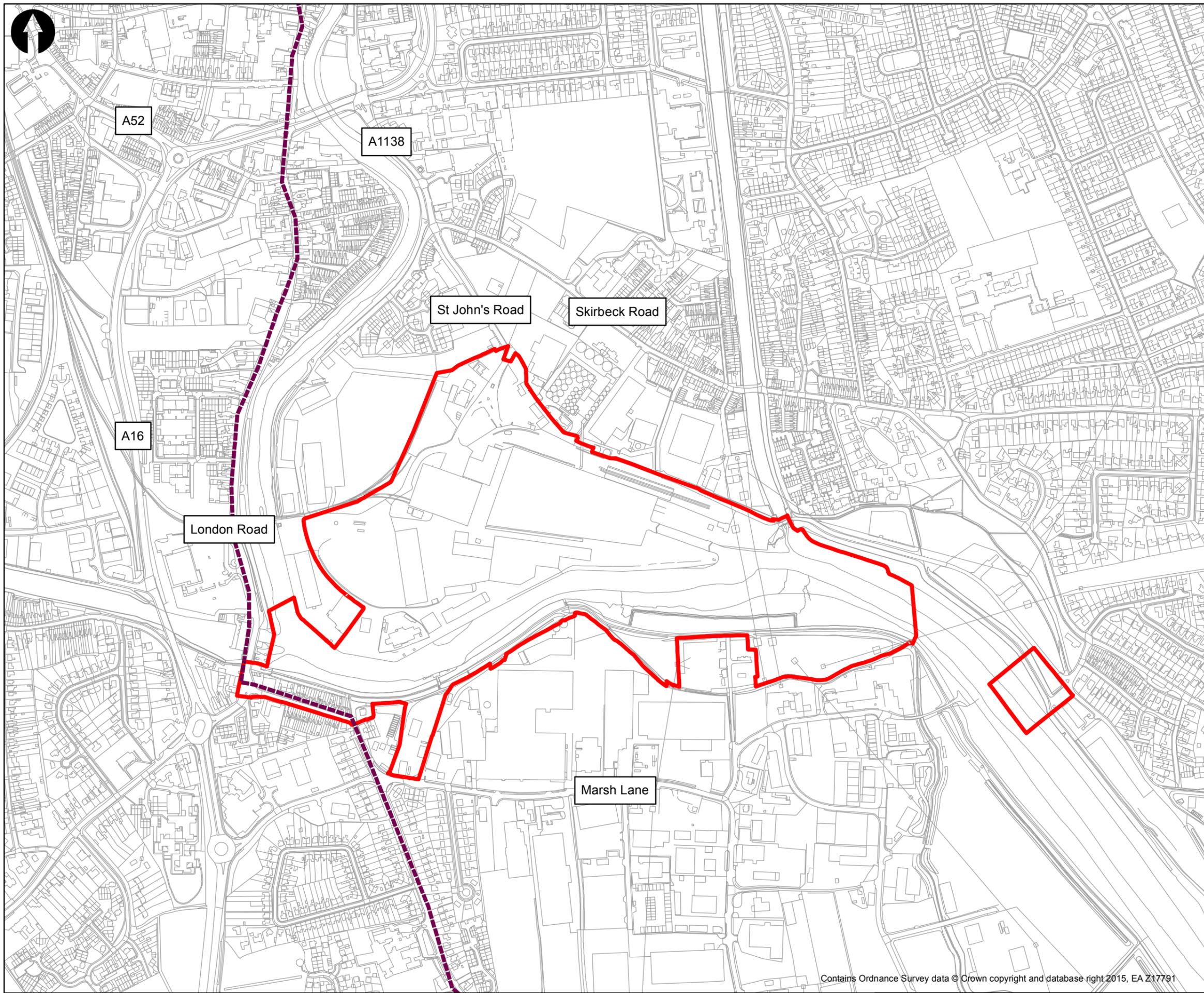
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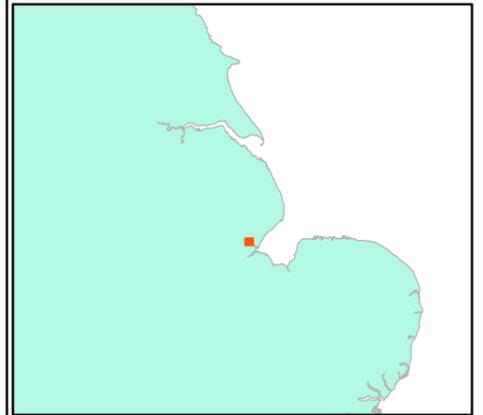




Key to Symbols

-  National Cycle Network Route 1
-  Site Application Boundary

Key Plan



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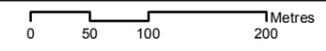
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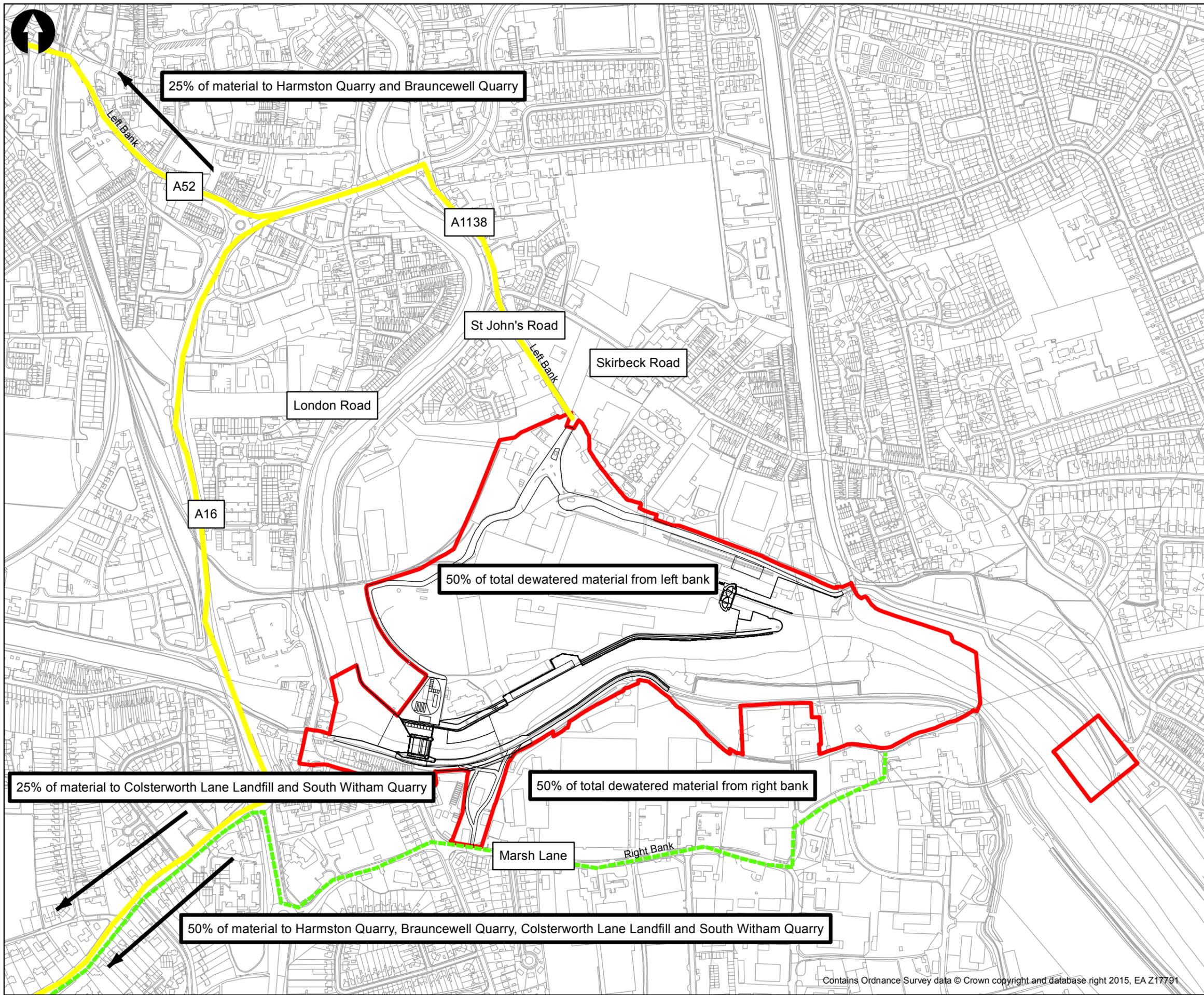
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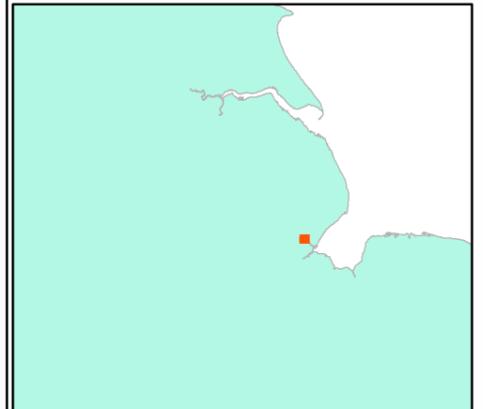




Key to Symbols

- - - - - Right Bank traffic route
- Left Bank traffic route
- ← Removal route direction
- Site features
- Site Application Boundary

Key Plan



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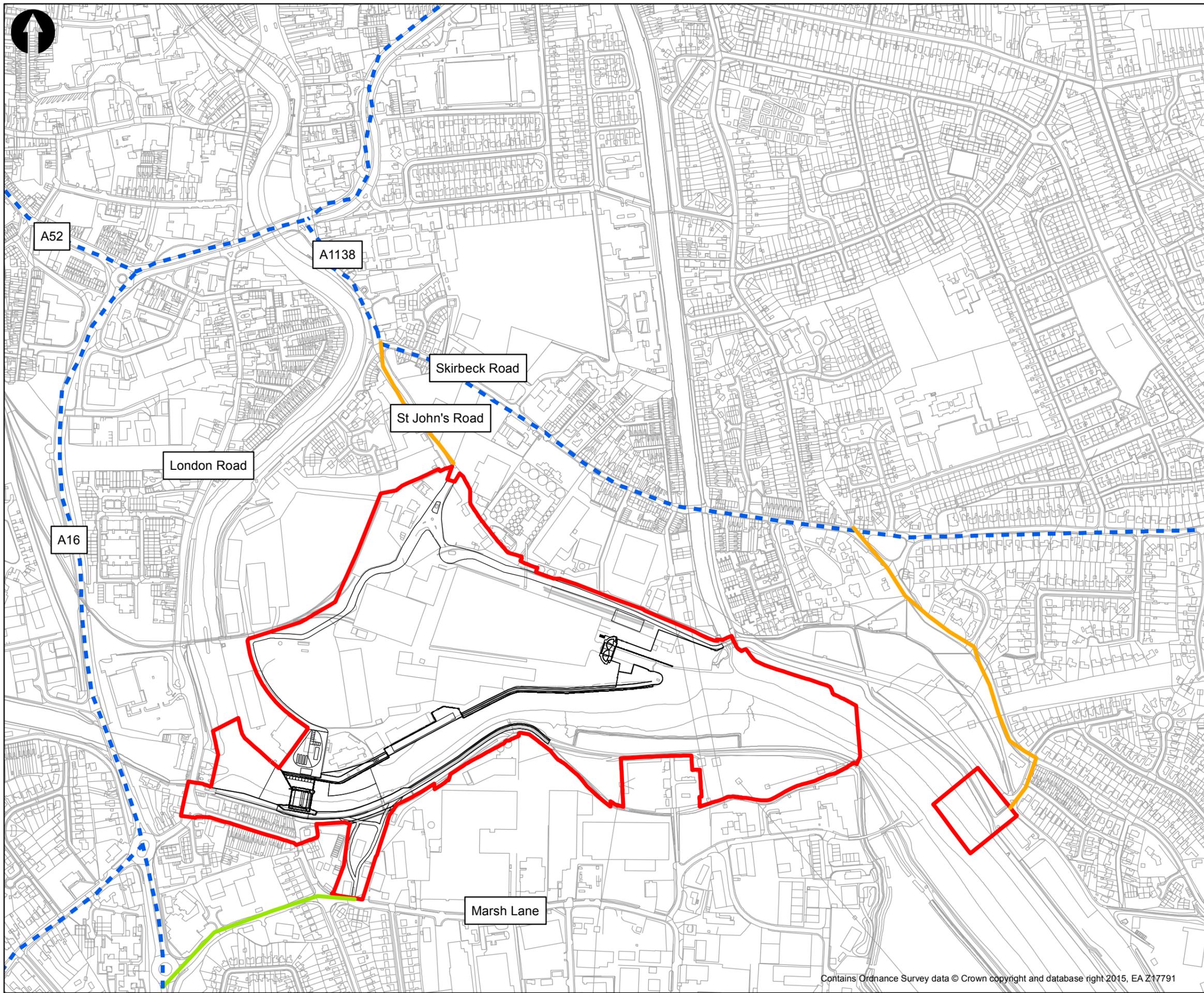
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**Boston Barrier Project
 De-watered Dredged Material Removal Route:
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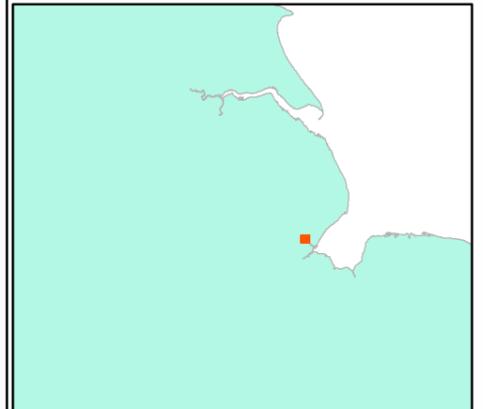
Figure Number **IMAN001472-DDM-FIG-536**



Key to Symbols

- - - Access to both banks
- Left bank access
- Right bank access
- Site Application Boundary
- Site features

Key Plan



PO	04/08/16	LS	Draft	KC	EL
Rev	Date	Drawn	Description	Ch'k'd	App'd


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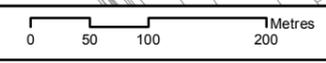
Client

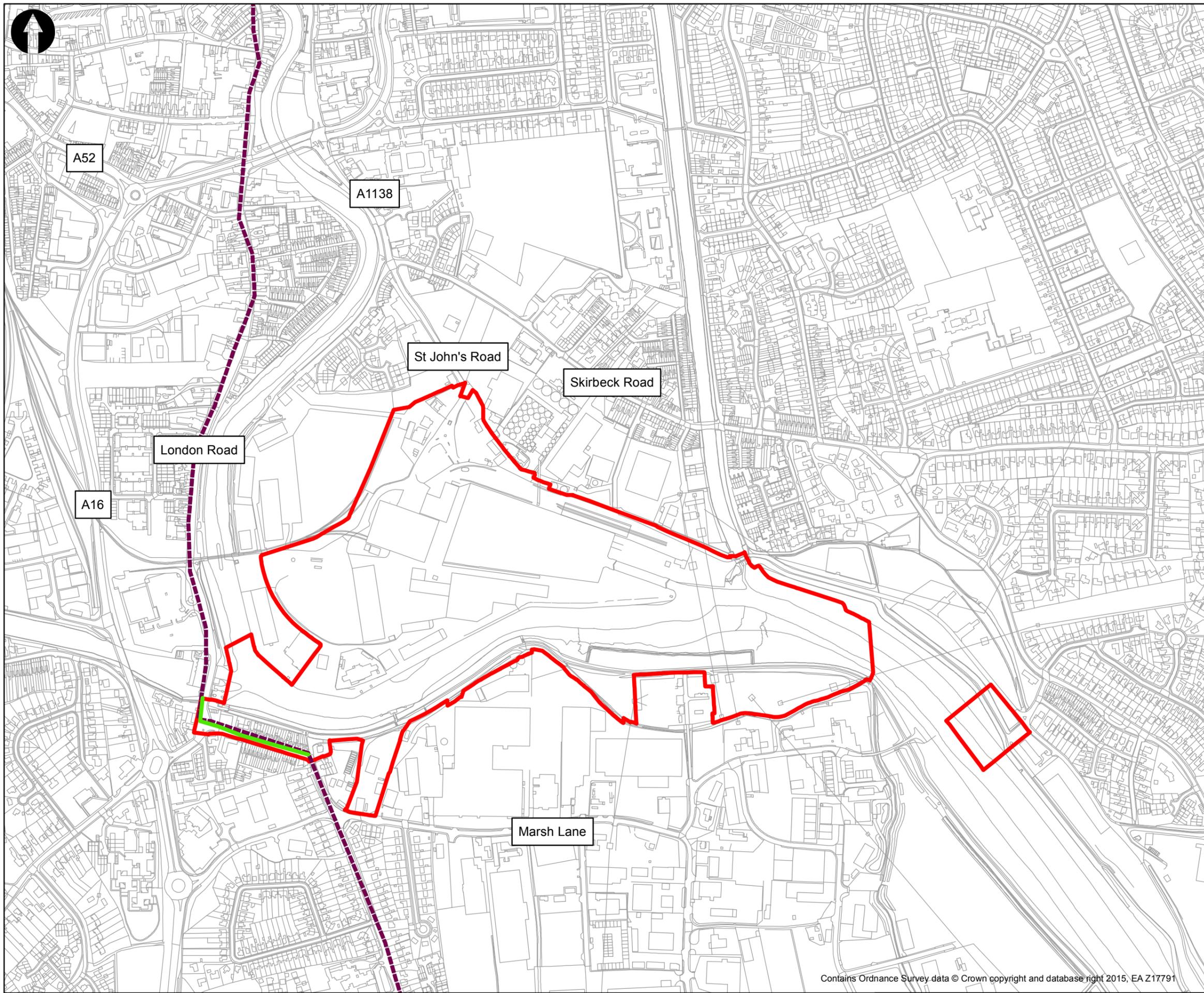
Environment Agency

Title
**Boston Barrier Project
 Construction Traffic Access Route:
 Figure 5.2**

Designed	-	ENV Check	T Stirling
Drawn	LS	Coordinated	G Hughes
GIS Check	KC	Approved	E Lunt
Scale at A3	Status	Rev	
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Figure Number **IMAN001472-CTR-FIG-532**

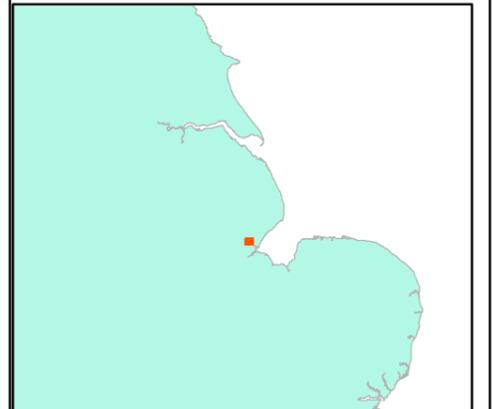




Key to Symbols

- National Cycle Network Route 1
- Restricted access for cyclists during construction enabling works
- Site Application Boundary

Key Plan



PO	28/07/16	LS	Draft	KC	EL
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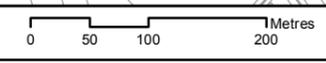
Title
 Boston Barrier Project
 National Cycle Route Restricted Access:
 Figure 5.3

Designed	-	ENV Check	T Stirling
Drawn	LS	Coordination	G Hughes
BIS Check	KC	Approved	E Lunt
Scale at A3	Status	Rev	
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Figure Number **IMAN001472-NCNR1-FIG-541**

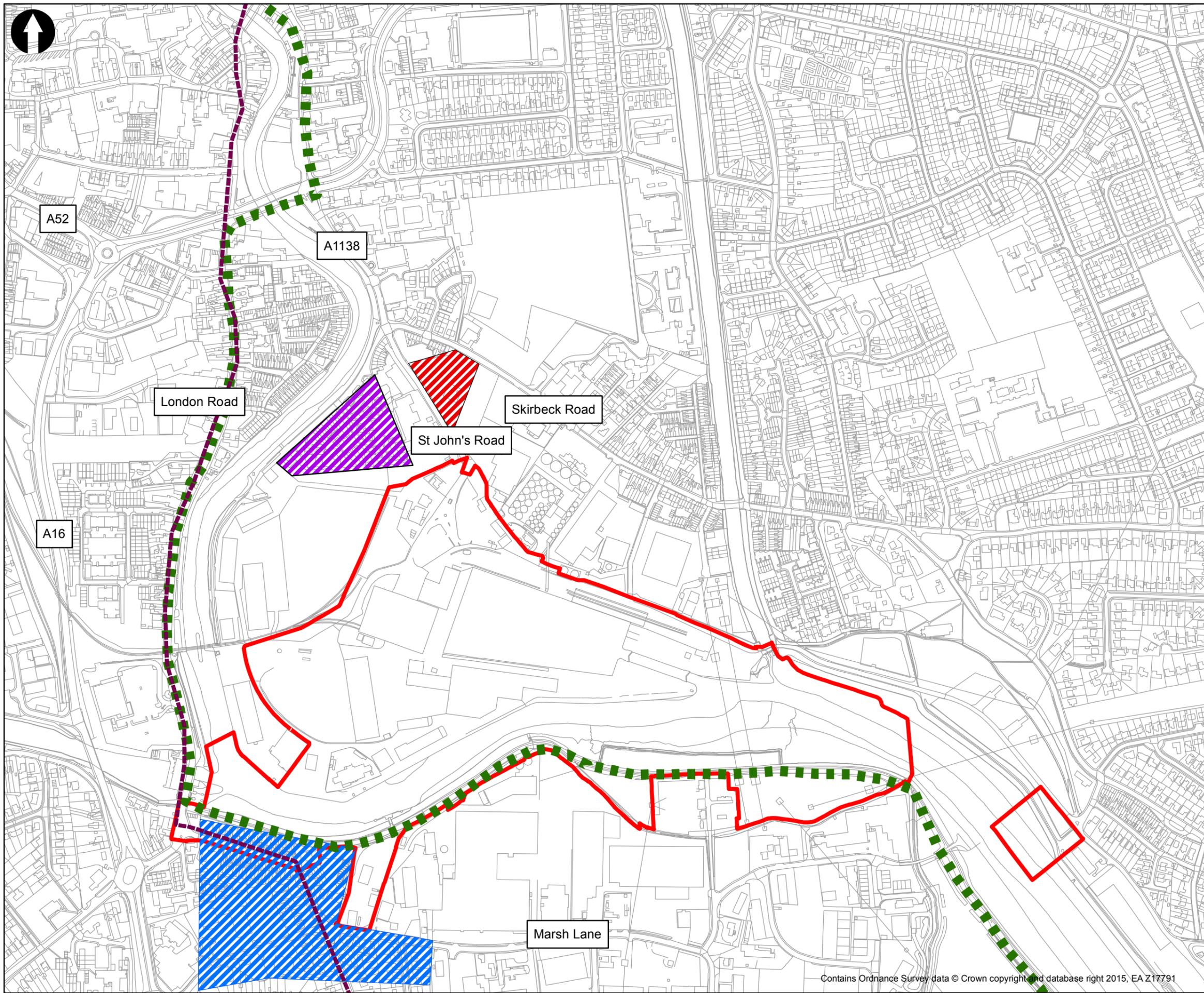
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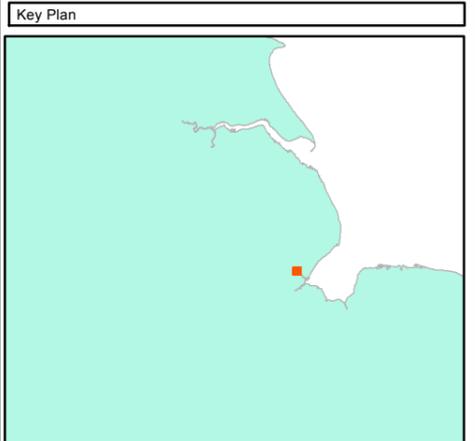
Boston Barrier Tidal Project

A17/2d - Volume 2d: Traffic and Transport Technical Report



Key to Symbols

- National Cycle Network Route 1
- Boston No.14 Footpath (Macmillan Way Footpath)
- Recreation Area
- South Terrace Properties
- Wyberton Low Road and Marsh Lane Properties
- Site Application Boundary



P0	04/08/16	LS	Draft	KC	EL
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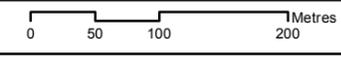
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Title
Boston Barrier Project
Significant Receptors:
Figure 5.4

Designed	-	ENV Check	T Stirling
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GIS Check	KC	Approved	E Lunt
Scale at A3	Status	Rev	
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Figure Number **IMAN001472-SR-FIG-535**



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Boston Barrier Tidal Project

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B. Draft Construction Traffic Management Plan (CTMP)

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Boston Barrier Tidal Project

Construction Traffic Management Plan

August 2016

Environment Agency



Boston Barrier Tidal Project

Construction Traffic Management Plan

August 2016

Environment Agency

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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
1	12 August 2016	KC	LS	EL	Final for Issue

Information class: Standard

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1 Introduction and background

1.1 Purpose of report

- 1.1.1 This framework Construction Traffic Management Plan (CTMP) outlines the measures that would be implemented to regulate the flow of vehicles required for the construction period of the planned Boston Barrier Tidal Project, hereafter referred to as 'the Project'.
- 1.1.2 This document is based on currently available data, and would be subject to further change on appointment of a contractor who would be responsible for developing the construction methodology for the Project.
- 1.1.3 Further details of the construction process are to be provided in a separate Construction Method Statement which is to be developed separately by the contractor.
- 1.1.4 A traffic management system would be implemented separately for navigation prior to the commencement of construction activities.

1.2 The Project

- 1.2.1 The Environment Agency, in association with Lincolnshire County Council (LCC), is seeking to manage the flood risk from the tidal River Witham (the Haven) in Boston, Lincolnshire over the next 100 years, and raise the standard of flood protection for to ensure protection against a 0.33% (1 in 300) annual probability of flooding over the 100 year project life. The works required to achieve this are outlined in the Boston Barrier Combined Strategy (2008), and comprise of a tidal barrier, to be closed during extreme tidal conditions, to reduce the risk of flooding upstream, along with flood defences along the banks of tidal River Witham, focussed around the stretch of the river known as the Haven, and associated works.
- 1.2.2 The Project comprises the construction of a tidal barrier which can be raised when extreme high tides are predicted within the Haven, along with land-based flood risk management structures that tie in to the barrier structure and existing flood management structures. The barrier has a large moveable flood gate which, when not in use, would lie flat on the river bed, to be raised occasionally to prevent flooding in Boston during tidal surges (by acting as a tidal barrier). The gate and concrete side walls would sit on a reinforced concrete base slab, supported by deep steel piled steel foundations.
- 1.2.3 The Project is located in the Haven, approximately 100m downstream of Black Sluice with associated works on the right and left bank of the Haven.

1.3 Existing road network

- 1.3.1 The A52 and the A16 form the primary routes through Boston. The A52 runs in a predominantly east to west direction and provides connections to the nearby towns of Grantham and Skegness. The A16 runs in a primarily north to south direction with links to Louth and Spalding. Both the A52 and A16 provide connections to the A17 which runs in an east to west direction to the south of the town providing wider access to East Anglia and the strategic road network at the A1, along with towns to the west including Sleaford.
- 1.3.2 On the left bank, vehicular access to the PoB is gained from the A16 John Adams Way which traverses the Haven. This connects with the A1138 South End at a signalised junction. South End leads directly onto St. Johns Road which continues to the gated access to the Port.
- 1.3.3 At the time of a site visit (10 September 2015), an experimental traffic order was in place which only allowed vehicles on the A1138 to turn left onto the A16 John Adams Way. This necessitated vehicles wishing to head east on the A16 to carry out a U-turn manoeuvre at the A16 / A52 roundabout to the west of the Haven. Access to the A1138 South End is permitted from all directions. Following discussions with LCC officers (September, 2015), it was understood that a review of the junction performance would be carried out to understand whether the experimental traffic order would be made permanent. Whilst the restrictions provide additional traffic signal capacity, they do cause some vehicles to travel additional distances and may result in extra vehicles U-turning at the A16/A52 roundabout which may cause issues for construction related traffic during the construction of the Project.
- 1.3.4 Vehicular access to the construction compound on the right bank is primarily via the A16 and Marsh Lane. There is a 7.5tonne vehicle restriction in place along Wyberton Low Road, south of its junction with Marsh Lane which restricts access by goods vehicles from other directions. Marsh Lane provides access to a large industrial area to the south east and a number of Heavy Goods Vehicles (HGVs) were observed in this area.
- 1.3.5 Vehicular access between the left and right banks is via the A16 Spalding Road and the A16 John Adams Way Bridge.

1.4 Vehicle definitions

- 1.4.1 For the purpose of this CTMP construction delivery vehicles have been classified as Heavy Goods Vehicles (HGV, abnormal loads or non-HGVs).
- 1.4.2 The term HGV is used for vehicles that fall within the dimension limits of the Road Vehicles (Construction and Use) Regulations 1986 with amendments (No. 1078). This means that a vehicle that has a maximum length and width of 18.75m and 2.75m respectively would comprise most of the deliveries to the construction compounds (left and right bank).

Boston Barrier Tidal Project

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- 1.4.3 The term abnormal load is used for vehicles outside the scope of the HGV definition above. This generally means an abnormal indivisible load as defined in the Road Vehicles (Authorisation of Special Types) (General) Order 2003.
- 1.4.4 It is anticipated that there would be no abnormal loads associated with the construction of the Project.
- 1.4.5 Non-HGVs are considered to be all delivery vehicles which do not meet the HGV criteria identified above, and would mainly comprise of Light Good Vehicles (LGVs) such as vans.
- 1.4.6 Consideration would also be given to arrivals and departures by construction workers who are currently anticipated to travel in private cars or crew bus.

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2 Normal and abnormal load policy and procedure

2.1 Introduction

2.1.1 Haulage contractors for normal loads would be experienced and should be suitably competent in gaining necessary permissions for the movement of both normal and abnormal loads.

2.2 Normal loads

2.2.1 A normal load is one which can be carried on a vehicle which complies with the dimension limits as defined in the Road Vehicles (Construction and Use) Regulations 1986.

2.3 Abnormal loads

2.3.1 It is anticipated that there would be no abnormal loads being delivered or leaving the Project during the construction period. As a result, no further consideration would be given to abnormal loads within this document. Should details regarding abnormal loads change in the future this document would be updated to include the relevant information and would be confirmed by the appointed contractor.

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3 Construction traffic management

3.1 Introduction

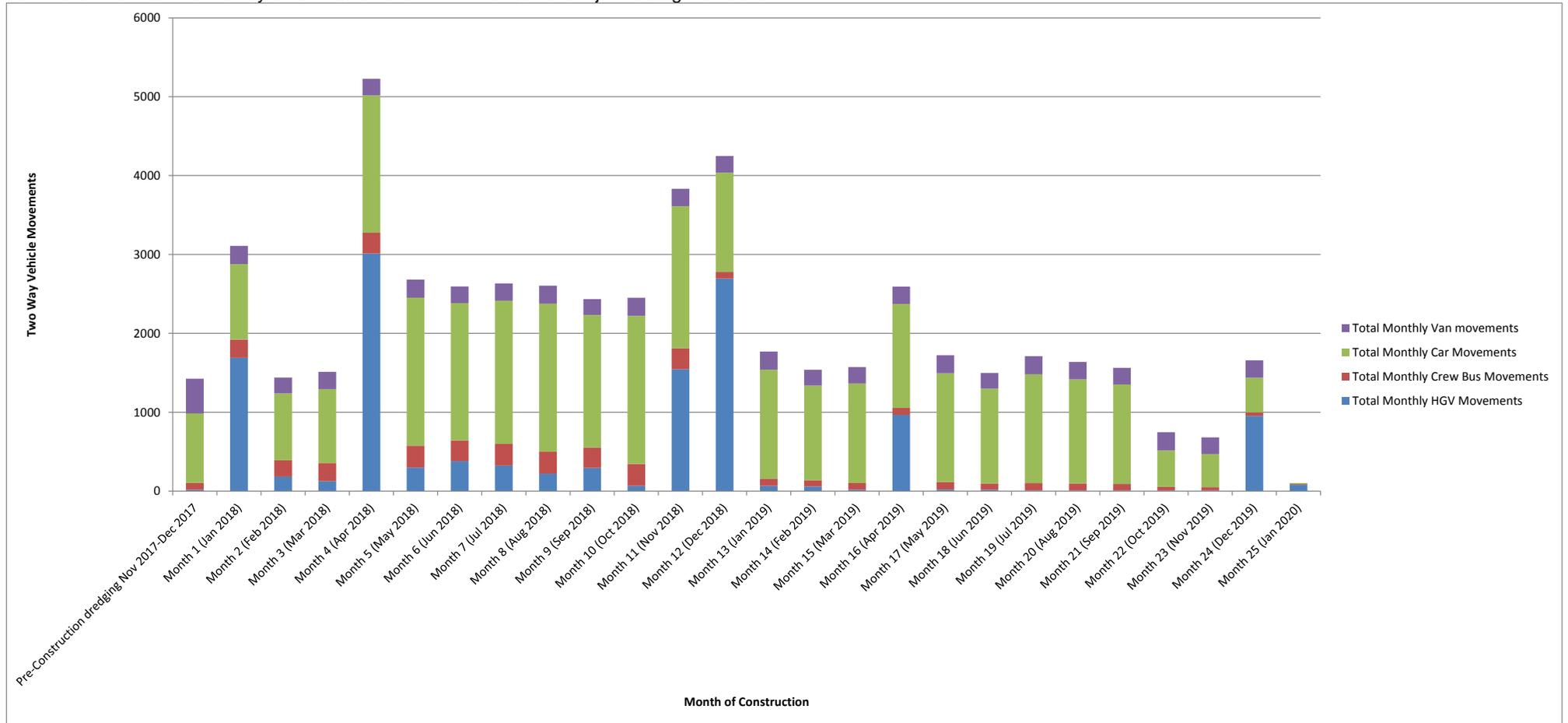
- 3.1.1 This section provides estimates of the volumes of vehicular movements associated with construction of the Project and includes delivery of materials, concrete, removal of dredged material and waste and trips associated with staff which have been based on currently available information.
- 3.1.2 Further details are provided regarding site access and mitigation measures proposed during construction which would minimise potential adverse effects on the surrounding area. Following the appointment of a contractor, the details contained in this chapter would be revisited and details confirmed with LCC prior to commencement of the Project.

3.2 Forecast construction vehicular volumes

- 3.2.1 Current forecasts for construction related movements have been based on information provided by an independent contractor, appointed by the Environment Agency to provide objective and current construction programme advice including delivery requirements for the Project.
- 3.2.2 The profile of monthly vehicle movements across the construction period, including pre-construction capital dredging (Phase 1) has been estimated and is summarised in Plate 3.1.

Boston Barrier Tidal Project
A17/2d - Construction Traffic Management Plan

Plate 3.1: Predicted monthly vehicle movements to and from the Project during construction



Source: Mott MacDonald (2016)

- 3.2.3 The monthly vehicle estimates take into account all deliveries and removals made by HGV including premixed concrete, de-watered dredged material and other construction materials and waste, as well as site personnel and non HGV delivery vehicles. During the first full year of construction in 2018 a total of approximately 34,800 total two way vehicle movements are estimated, and broken down as follows:
- 53% cars;
 - 31% HGVs;
 - 8% crew bus; and
 - 8% delivery vans.
- 3.2.4 Month 4 (April 2018) is predicted to be the busiest month, in terms of total construction vehicle movements, as a result of the 24 hour/7 day a week phase and the removal of de-watered dredged material to landfill. A maximum of 480 HGV combined total two way daily vehicle movements (240 HGVs making journeys to and from the Project area) associated with the removal of dewatered dredged material from the left bank, is forecast for a period of up to 6 days (24 hour operation) with an average of 44 combined total two way movements associated with the construction workforce and 18 combined total two way movements associated with the other construction process during this month.
- 3.2.5 Barges would be required for the delivery of construction material to site, with up to 90% of construction material arriving by barge. Barges are also expected to be used during the dredging process of the Project to deposit material from the river onto the drying areas on both sides of The Haven.

Material delivery including premixed concrete

- 3.2.6 The delivery of construction material and removal of waste associated with the Project is forecast to generate a maximum of three additional vehicle movements per day throughout 2018 and up to February 2019. From March 2019 onwards it is forecast that additional trips would only be associated with the removal of waste which would equate to an average of one additional trip movement per day.
- 3.2.7 It is forecast that premixed concrete would be delivered between April 2018 and June 2019 with a maximum of approximately 12 combined total two way HGV movements per day occurring on big pour days, with an average of seven two way HGV movements throughout this period. Premixed concrete deliveries associated with the WDE are forecast to be an average of two two-way vehicle movements per day between January 2018 and June 2018.

De-watered dredged material removal

- 3.2.8 As shown in Table 3.1, seven separate months have been identified to remove de-watered dredged material associated with four phases of dredging.

- 3.2.9 It is proposed that material that is dredged and deposited to the left bank of the Haven would be dewatered using a mechanical process which would allow the material to be dewatered and removed from site within 24 hours of it being dredged. It has been assumed that material processed in this way would be on a 24/7 basis, with trucks removing material throughout the duration of the day.
- 3.2.10 Dredged material deposited by barges to the right bank of the Haven would be dewatered without the use of machinery and would be dried over a period of 12 months, and removed from the site using HGVs. Dewatered material from the right bank would be removed during week days only over a 12 hour period each day.
- 3.2.11 It has been assumed that during the removal of de-watered dredged material from both construction compounds to landfill that each HGV can carry up to 20 tonnes of material and is expected to make 10 deliveries an hour over either a 12 hour or 24 hour period. Table 6.1 summarises the assumptions made for when these removal movements would occur.

Table 3.1: Removal of de-watered dredged material over construction period

Side of the Haven	Phase	Weight of de-watered dredged material (tonnes)	Number of HGV's required	Number of hours to complete deliveries	Number of days (rounded to nearest whole day)	Removal month	Total number of two way HGV movements in month
Left Bank	Phase 1	14,802	740	74	3*	Jan 2018	1480
	Phase 2	26,325	1316	132	6*	Apr 2018	2633
	Phase 3	9,450	473	47	2*	Apr 2019	945
	Phase 4	810	41	4	1*	Jan 2020	81
Right Bank	Phase 1	14,802	740	74	6**	Nov 2018	1480
	Phase 2	26,325	1316	132	11**	Dec 2018	2633
	Phase 3	9,450	473	47	4**	Dec 2019	945
	Phase 4	0	0	0	0	-	0

* Assumes 24 hour 7 days a week ** Assumes 12 hour working day 5 days a week
Source: Mott MacDonald (2016)

- 3.2.12 The removal of de-watered dredged material has been assumed to occur only on weekdays during the specified months. The maximum number of additional HGV movements which are forecast during these periods of removal is 20 two way movements per hour, which equates to 480 additional HGV movements per day when 24/7 operations are in operation from the left bank. As noted previously, the removal of de-watered material would take place from two different sites on opposite sides of the Haven as a result of this the impact of additional HGV movements is split between the left bank and right bank. Consequently the maximum number of additional HGV movements on St John's Road would be 480 combined total two way movements per day (over a 24 hour period), with a maximum of 240 combined total two way movements per day being possible on Marsh Lane (over a 12 hour period).

Construction staff

Weekday construction workforce

- 3.2.13 The main movement of traffic would be the arrival of the construction workforce. It is anticipated that the contractor would provide a crew bus to pick up approximately 120 workers (local and regional) and bring them to and from the construction site, with around only 20% of the workforce arriving by private car.
- 3.2.14 Vehicle movements associated with private car arrivals and departures would equate to an additional 60 two way vehicle movements per week day, with it being assumed that staff would be split equally between the left and right bank construction compounds. The use of a crew bus would generate an additional six two way vehicle movements per day. Using these figures it is forecast that St John's Road (from right bank construction compound) and Marsh Lane (from left bank construction compound) would each see an average increase of 33 additional combined total two way vehicle movements per day associated with the weekday construction workforce.
- 3.2.15 With the workforce currently anticipated to work from 7.30am to 6.30pm, the arrival and departure of staff would occur outside of traditional highway peak hours (considered to be 8.00 – 9.00am and 17.00 – 18.00pm) and as such would be present on the highway network during relatively quieter traffic periods and in isolation would not significantly exacerbate existing highway network congestion issues.

24/7 working at the wet dock entrance

- 3.2.16 During 2018, when it is anticipated that 24/7 working would be in operation in relation to the Wet Dock Entrance (WDE), a maximum of 16 combined total two way vehicle movements associated with staff using private cars and 6 two way movements associated with the crew bus per day have been forecast. There would also be an average of two two-way movements associated with concrete deliveries per day between January 2018 and June 2018.
- 3.2.17 This total increase of 24 additional combined total two way vehicle movements per day associated with the WDE represents a small percentage of the total traffic flow on the surrounding highway network and as such the increase, in isolation, is considered to have a minor negative impact on capacity, routing and journey time is considered to be low adverse impact, with minor impact on the receptor and therefore is assessed as not significant.

3.3 Access arrangements

- 3.3.1 Two construction compounds and offices would be located on the left and right bank.
- 3.3.2 Access to the left bank construction compound is via the A16 along John Adams Way and southbound along the A1138 onto St. John's Road.

- 3.3.3 Access to the right bank construction compound is via the A16 eastbound and then along Marsh Lane to a new access road through existing land occupied by the Environment Agency. The construction compound would consist of an office, welfare facilities, car parking, and larger equipment storage area.

3.4 Construction traffic timing

- 3.4.1 To reduce potential conflicts and the number of failed delivery attempts, it is proposed that deliveries to the construction compounds would be managed. This process would be particularly crucial during the busiest months of construction deliveries and would rely upon effective communication between the site manager and relevant source companies. These measures would also prevent delivery vehicles from 'stacking up' on the external highway, notably St Johns Road and Marsh Lane, by ensuring there is sufficient space to accommodate these vehicles within the construction compounds when necessary.
- 3.4.2 It is proposed that arrivals and departures to and from the Project area would generally be controlled by a Gateman, who would be able to hold vehicles within both site compounds to avoid conflicts with external traffic. Further consideration would be required to take into account the movement of HGVs associated with the day-to-day operation of the PoB and the Boston Industrial Estate to ensure there are no conflicts which would affect business operations.
- 3.4.3 The appointed contractor would be responsible for establishing the necessary restrictions regarding delivery times with LCC.

Construction personnel / non-HGV deliveries

- 3.4.4 Staff working hours are anticipated to be from 7.30am to 6.30pm for the majority of the construction phase. The arrival of construction personnel would be in the form of the crew bus (anticipated to transport around 80% of the workforce) or private car.
- 3.4.5 It has been identified that to complete the works associated with the project within a reduced timescale that a period of 24 hour/7 days a week working would be required for the works associated with the WDE. Current assumptions would see approximately 13 construction workers attending the site for each of the three eight hour shifts per day which would be in continuous operation during this period. All other Project construction components would be working to normal construction hours.

HGVs

- 3.4.6 Within the construction compound HGVs can either access from the north via the A16 and A1138 to gain access to the left construction compound or the south via A16 and Marsh Lane to gain access to the right bank construction compound. HGVs should be discouraged from

using other routes through residential areas, with specific restrictions along Wyberton Low Road south of the right bank with a 7.5 tonne weight restriction having been identified.

- 3.4.7 It has not been confirmed where materials being delivered by HGVs would originate. However, it has been assumed that HGVs would follow routes using A roads identified above for the majority of the journey. Following the appointment of a contractor, it is suggested that they should liaise with LCC in order to identify preferred routes for deliveries.

Concrete delivery

- 3.4.8 It has not been confirmed which local supplier would provide the concrete for the Project. Therefore, a number of assumptions have been made on the routes to be taken by vehicles associated with these deliveries.
- 3.4.9 Figure A.1 provides a summary of the likely routes to be taken for concrete deliveries to the two construction compounds.
- 3.4.10 It is forecast that the majority of movements associated with concrete deliveries would route via the A16 south, via the A16 and the A52 to the north west and to the east along the A16 or Skirbeck Road.

Dredged Material

- 3.4.11 Four designated landfill sites within the local area have been identified which may be appropriate for the receipt of de-watered dredged material. These sites are:
- Brauncewell Quarry, Sleaford, Lincolnshire (approx. 22 miles from Project)
 - Colsterworth Landfill, Grantham, Lincolnshire (approx. 36 miles from Project)
 - Harmston Quarry, Lincoln, Lincolnshire (approx. 30 miles from Project)
 - South Witham Quarry, Grantham, Lincolnshire (approx. 38 miles from Project)
- 3.4.12 It has been assumed that de-watered dredged material would be removed from both construction compounds in equal amounts by HGV. A summary of the likely routes which would be taken from each of these landfill sites to the construction compounds is shown in Figure A.2
- 3.4.13 It is forecast that the majority of movements associated with de-watered dredged material would route via the A16 and the B1397 and B1391 to the south west or via the A16 and the A52 to the north west.

Construction Personnel

- 3.4.14 No information is currently available for the home locations of the required workforce or their temporary residency if they are to be employed from outside the local area. Assumptions have been made regarding the routing of the crew bus to both the construction compounds, with

the majority of movements routing via the A16 to the south or via the A16 and the A52 to the north-west and east.

Non-HGV deliveries

- 3.4.15 It has been assumed that deliveries associated with non-HGV deliveries would follow a similar route to HGV deliveries identified above, primarily following A roads. Due to the smaller size of these vehicles, it is anticipated that they would not need to consider the weight limit restrictions for local side roads, however the use of these roads should be discouraged to minimise any impacts on local residential areas.

3.5 Footways and Public Rights of Way (PRoW)

Boston Public Footpath No.14 (Macmillan Way)

- 3.5.1 The Boston Public Footpath No.14 (Macmillan Way) PRoW route which runs adjacent to the right bank would be temporarily diverted during construction. During this period it would be re-routed south of the right construction compound following along Wyberton Low Road through residential areas onto Marsh Lane passing through the Industrial Estate, then back onto the original route along Lealand Way.
- 3.5.2 Construction traffic would be using Marsh Lane to access the right bank construction compound. Appropriate signage would be put in place to make pedestrians aware of construction activity to improve their safety whilst walking along the temporary proposed route.

Boston Public Footpath No.13

- 3.5.3 During the construction of the Witham Sailing Cub facilities on the left bank, it has been assumed that no diversions of existing PROW facilities are required and that pedestrians would be able to continue to access Boston Footpath 13/3 during the both the construction and operation of these facilities. The number of construction related traffic movements associated with the provision of these sailing club facilities is considered to be minimal, and as such it would be the responsibility of the contractor to allocate Banksmen to either side of the Footpath 13/3 in order to delay pedestrians crossing the path when construction vehicles visit the site.

National Cycle Network Route 1

- 3.5.4 The National Cycle Network Route 1 cycle route is a long distance route connecting Dover and the Shetland Islands. It passes through Boston along both Wyberton Low Road and London Road. The route follows Wyberton Low Road on the south side of the Haven before turning onto Marsh Lane and then London Road.

- 3.5.5 For 10 weeks during the 3rd and 4th Quarters of 2017, three 11kv electricity cables would be diverted along Wyberton Low Road from the right bank embankment. During this time Wyberton Low Road would be restricted for vehicular traffic; however, cyclists' access would be maintained to reduce disruption to users of the National Cycle Network Route 1.

Access to residential properties on Wyberton Low Road

- 3.5.6 Access to residential properties located along Wyberton Low Road adjacent to the Black Sluice, would be restricted during the diversion of existing 11kV electricity cables, which is expected to occur over 10 weeks in the 3rd and 4th quarter of 2017. Access would be restricted during the 10 weeks and a diversion and / or parking restrictions should be agreed upon and put in place for residents accessing residential properties along Wyberton Low Road.

3.6 Signage

- 3.6.1 It would be the responsibility of the appointed contractor to ensure that adequate signage is provided within the vicinity (up to 500m from the Project boundary) of the construction compounds in order to make the public aware of construction activity. Signage for speed limits and route demarkations would be provided in the construction method statement.
- 3.6.2 Following the appointment of a contractor, and in consultation with LCC, a Construction Traffic Signage Plan could be produced which would detail the signage infrastructure considered appropriate to the Project.

3.7 General site management

Site working hours

- 3.7.1 Site working hours would be defined by the contractor in consultation with LCC prior to commencement on site. It is currently anticipated that site working hours during weekdays would be from 7.30am to 6.30pm during the construction phase, with additional 24/7 working hours for the wet dock Project component only being required during 2018.

Banksmen

- 3.7.2 Where the site manager deems it appropriate, banksmen would be utilised to ensure the efficient management of HGV construction traffic entering and leaving the site at particularly busy periods or where abnormal loads are concerned.

Control of vehicles arriving and departing site

- 3.7.3 Vehicles arriving at and departing from both the construction compounds would be scheduled appropriately to ensure that no conflict occurs with other delivery vehicles. This would require efficient communication between the source companies and would be the responsibility of the site manager. Where appropriate, a Gateman would be assigned for each construction compound, which would ensure that construction vehicles are entering and leaving the construction compounds efficiently. Sped limits on site and route demarcations would be agreed upon with the appointed contractor.

Wheel washing

- 3.7.4 Wheel washing facilities would be provided at an appropriate location to reduce the levels of dust and mud spreading onto the external highway from both compound compounds. Further details of these facilities would be provided in the separate Construction Method Statement.

3.8 Monitoring of traffic management issues

- 3.8.1 During the construction phase, all matters concerning vehicle movements to and from construction compounds would be monitored by the contractor. Should unforeseen issues arise they would be highlighted to BBC and LCC for further discussion and resolution.
- 3.8.2 Currently, the Boston Barrier Community Hub is situated on Marsh Lane which displays the latest information about the Project and provides residents with the opportunity to discuss matters with representatives from the Environment Agency. It is intended that this resource would be open every Wednesday to the local community throughout the construction period.
- 3.8.3 Members of the public would also be able to report any issues via a dedicated email address and Project hotline, which would be provided by the Environment Agency or appointed contractor and advertised appropriately around both construction compounds.

4 Summary

- 4.1.1 This CTMP provides a framework for the contractor who would be assigned to the Project. A full review and update of the CTMP would be required by the appointed contractor prior to commencement on site.
- 4.1.2 It is the responsibility of the contractor and any haulage companies to ensure that necessary steps are taken to meet requirements for the movement of construction and delivery vehicles associated with this Project and to reduce any potential impacts on residents, businesses, and members of the public as a result of additional construction related trips generated.

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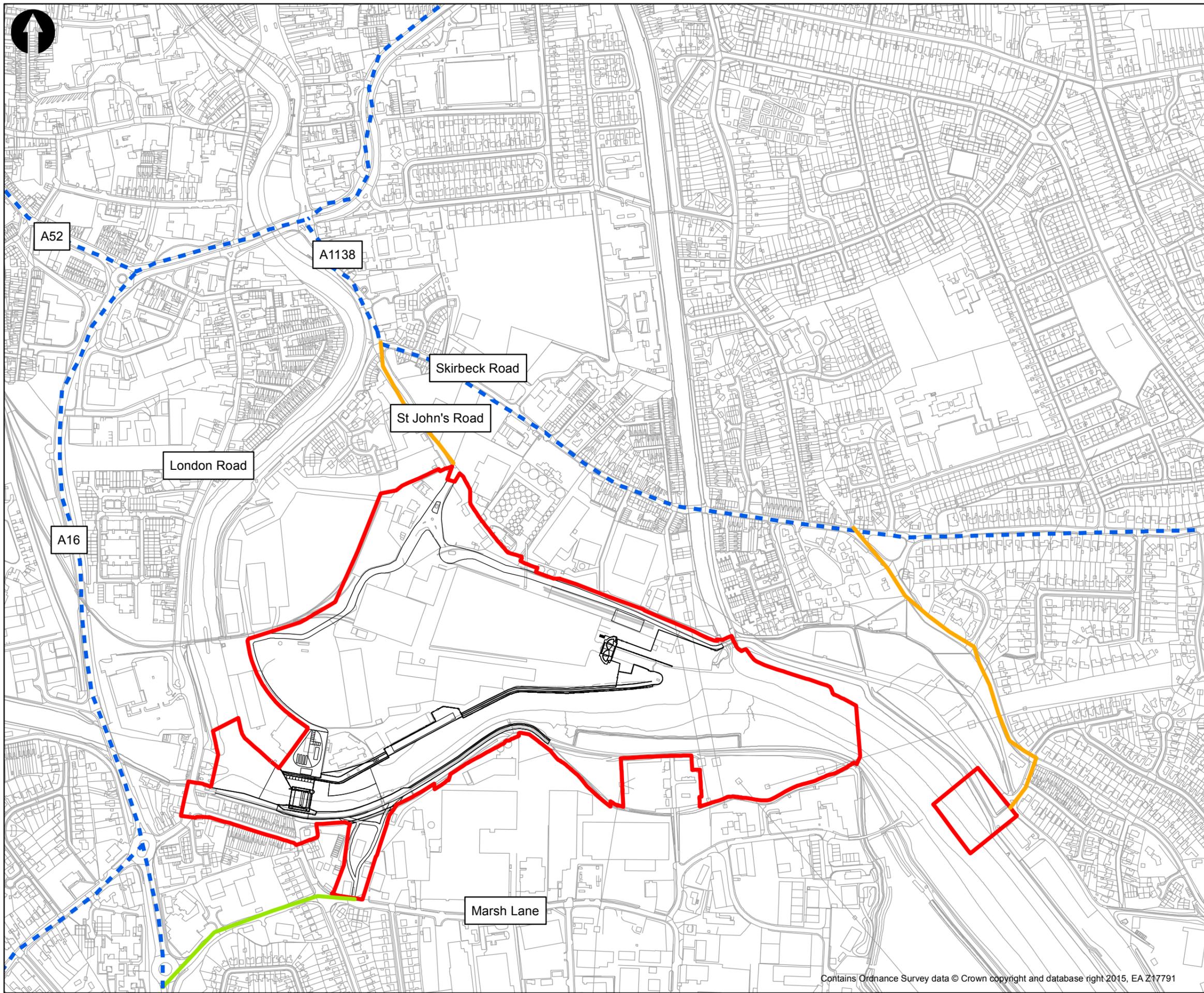
Appendices

A. Figures _____ 21

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A. Figures

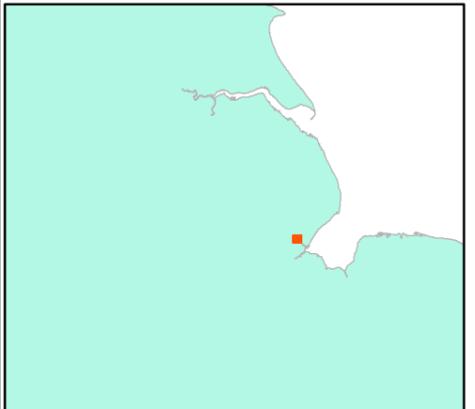
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Key to Symbols

- - - Access to both banks
- Left bank access
- Right bank access
- Site Application Boundary
- Site features

Key Plan



PO	04/08/16	LS	Draft	KC	EL
Rev	Date	Drawn	Description	Ch'k'd	App'd


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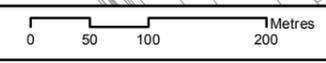
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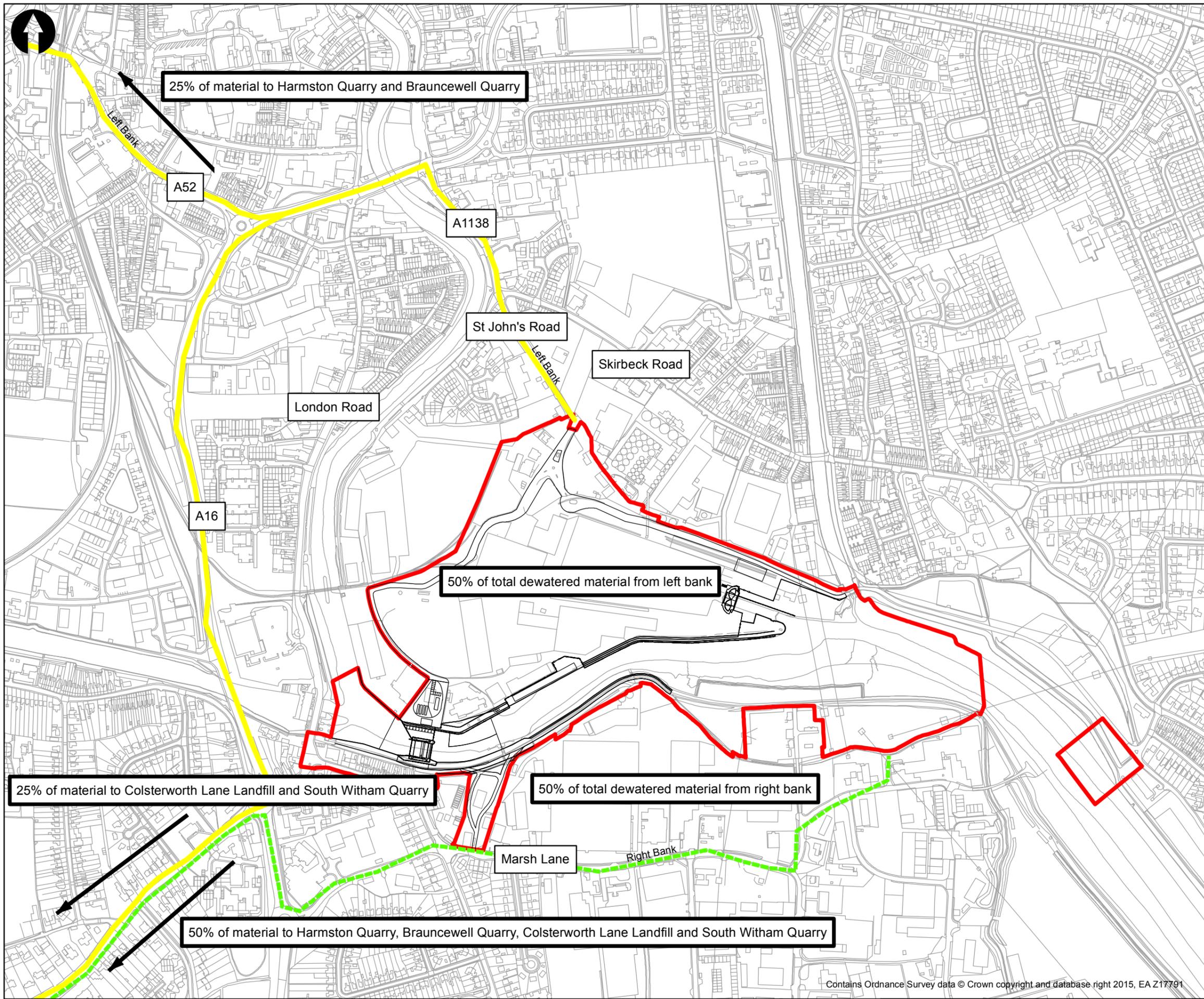


Title
**Boston Barrier Project
 Construction Traffic Access Route:
 Figure A.1**

Designed	-	ENV Check	T Stirling
Drawn	LS	Coordinated	G Hughes
GIS Check	KC	Approved	E Lunt
Scale at A3	Status	Rev	
1:6,000	PRE	P0	

Figure Number **IMAN001472-CTR-FIG-532**

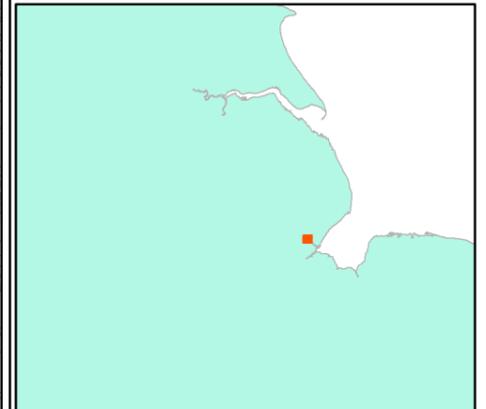




Key to Symbols

- - - Right Bank traffic route
- Left Bank traffic route
- ← Removal route direction
- Site features
- Site Application Boundary

Key Plan



P0	03/08/16	LS	Draft	KC	EL
Rev	Date	Drawn	Description	Ch'k'd	App'd


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Client


Environment Agency

Title
**Boston Barrier Project
 De-watered Dredged Material Removal Route:
 Figure A.2**

Designed	-	ENV Check	T Stirling
Drawn	LS	Coordination	G Hughes
GIS Check	KC	Approved	E Lunt
Scale at A3	Status	Rev	
1:6,000	PRE	P0	

Figure Number
IMAN001472-DDM-FIG-536

Boston Barrier Tidal Project
Construction Traffic Management Plan

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