

Outer Dowsing Offshore Wind

Environmental Statement

Chapter 27 Traffic and Transport

Volume 3 Appendices

Appendix 27.1 Transport Assessment

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Volume 3, Appendix 27.1: Transport Assessment

Outer Dowsing Offshore Wind Environmental Statement

GoBe Consultants Ltd

Prepared by:

SLR Consulting Limited

15 Middle Pavement, Nottingham, NG1 7DX

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Acronyms and Abbreviations

ADT	Average Daily Traffic
AADT	Annual Average Daily Traffic
ATC	Automatic Traffic Count
DCO	Development Consent Order
DfT	Department for Transport
ETG	Export Topic Group
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
Onshore ECC	Export Cable Corridor
LCC	Lincolnshire County Council
LRN	Local Road Network
NGSS	National Grid Substation
NH	National Highways
NSIP	Nationally Significant Infrastructure Project
ODOW	Outer Dowsing Offshore Wind
OnSS	Onshore Substation
OWF	Offshore Wind Farm
PEIR	Preliminary Environmental Information Report
PIA	Personal Injury Accident
PRoW	Public Rights of Way
TA	Transport Assessment
TCC	Temporary Construction Compound
TP	Travel Plan
TPC	Travel Plan Coordinator



SRN	Strategic Road Network
WCH	walker, cyclist and horse-rider

Terminology

Term	Definition
400kV cable	High-voltage cables linking the OnSS to the NGSS.
Baseline	The status of the environment at the time of assessment without the development in place.
Connection Area	An indicative search area for the NGSS.
Development Consent Area	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP).
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the sensitivity of the receptor, in accordance with defined significance criteria.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Regulations, including the publication of an Environmental Statement (ES).
EIA Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
Environmental Statement (ES)	The suite of documents that detail the processes and results of the EIA.
Evidence Plan	A voluntary process of stakeholder consultation with appropriate Expert Topic Groups (ETGs) that discusses and, where possible, agrees the detailed approach to the Environmental Impact Assessment (EIA) and information to support Habitats Regulations Assessment (HRA) for those relevant topics included in the process, undertaken during the pre-application period.
Export cables	High voltage cables which transmit power from the Offshore Substations (OSS) to the Onshore Substation (OnSS) via an Offshore Reactive Compensation Platform (ORCP) if required, which may include one or more auxiliary cables (normally fibre optic cables).
Haul Road	The track within the onshore ECC which the construction traffic would use to facilitate construction.
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Landfall	The location at the land-sea interface where the offshore export cables and fibre optic cables will come ashore.
Maximum Design Scenario	The project design parameters, or a combination of project design parameters that are likely to result in the greatest potential for change in relation to each impact assessed.
Mitigation	Mitigation measures are commitments made by the Project to reduce and/or eliminate the potential for significant effects to arise as a result of the Project. Mitigation measures can be embedded (part of the project design) or secondarily added to reduce impacts in the case of potentially significant effects.



National Grid Onshore Substation	The National Grid substation and associated enabling works to be developed by the National Grid Electricity Transmission (NGET) into which the Project's 400kV cables would connect.
Onshore Export Cable Corridor (ECC)	The Onshore Export Cable Corridor (Onshore ECC) is the area within which the export cables running from the landfall to the onshore substation will be situated.
Onshore Infrastructure	The combined name for all onshore infrastructure associated with the Project from landfall to grid connection.
Onshore substation (OnSS)	The Project's onshore HVAC substation, containing electrical equipment, control buildings, lightning protection masts, communications masts, access, fencing and other associated equipment, structures or buildings; to enable connection to the National Grid.
Outer Dowsing Offshore Wind (ODOW)	The Project.
Order Limits	The area subject to the application for development consent, The limits shown on the works plans within which the Project may be carried out.
The Planning Inspectorate	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).
Pre-construction and post-construction	The phases of the Project before and after construction takes place.
Preliminary Environmental Information Report	The PEIR was written in the style of a draft Environmental Statement (ES) and provided information to support and inform the statutory consultation process during the pre-application phase.
The Project	Outer Dowsing Offshore Wind, an offshore wind generating station together with associated onshore and offshore infrastructure.
Receptor	A distinct part of the environment on which effects could occur and can be the subject of specific assessments. Examples of receptors include species (or groups) of animals or plants, people (often categorised further such as 'residential' or those using areas for amenity or recreation), watercourses etc.
Trenchless technique	Trenchless technology is an underground construction method of installing, repairing and renewing underground pipes, ducts and cables using techniques which minimize or eliminate the need for excavation. Trenchless technologies involve methods of new pipe installation with minimum surface and environmental disruptions. These techniques may include Horizontal Directional Drilling (HDD), thrust boring, auger boring, and pipe ramming, which allow ducts to be installed under an obstruction without breaking open the ground and digging a trench.



27.0 Transport Assessment

27.1 Introduction

1. Outer Dowsing Offshore Wind (ODOW) is a Nationally Significant Infrastructure Project (NSIP). An Environmental Impact Assessment (EIA) has been undertaken, the findings of which are presented within an Environmental Statement (ES), which accompanies a Development Consent Order (DCO) application under the Planning Act 2008.
2. SLR Consulting was commissioned by GoBe Consultants Ltd, whom has been instructed by GT R4 Limited (trading as Outer Dowsing Offshore Wind) on behalf of ODOW, to undertake an assessment of the traffic and transport aspects that may be affected by the construction and operation of the onshore aspects of the Project (see Volume 1, Chapter 27: Traffic and Transport (document reference 6.1.27)).
3. This report provides a Transport Assessment (TA) of the construction and operation of the onshore aspects of the Project. The TA is presented as a technical appendix to support Chapter 27 (document reference 6.1.27) of the ES.

27.2 The Project

4. The Project will be located approximately 54km from the Lincolnshire coastline in the southern North Sea. The Project will include both offshore and onshore infrastructure including an offshore generating station (windfarm), export cables to landfall, connection to the electricity transmission network, and ancillary and associated development (see Volume 1, Chapter 3: Project Description (document reference 6.1.3) for full details).
5. The ES references the Project's 'Order Limits'. This comprises the extent of the land for which the ES assessments are based upon. It reflects an approximate 80m wide corridor around a centre line approximately 70km in length, in reference to the footprint of the Onshore Export Cable Corridor (ECC), a grid connection and a location for the Onshore substation (OnSS).
6. This TA will assess the anticipated construction vehicle movements associated with the Onshore ECC, the OnSS and grid connection for the Project.



27.3 Background

7. An EIA Scoping Report was prepared in accordance with Regulation 10 of the Infrastructure Planning (EIA) Regulations 2017. The Scoping Report was submitted to the Planning Inspectorate in July 2022. The Scoping Opinion, provided by the Planning Inspectorate in response to the Scoping Report, was provided in September 2022.
8. A Preliminary Environmental Information Report (PEIR) was prepared and issued to the Planning Inspectorate in May 2023, which was supported by a Traffic and Transport Baseline Report. Section 42 responses were provided in July 2023.
9. Comments made in the Scoping Opinion and the Section 42 responses have been taken into account within this TA, where relevant. The Scoping Report, Scoping Opinion, PEIR submission and Section 42 responses are available at the Planning Inspectorate website; their content is not repeated here, and readers should refer to the original documents for details.

27.4 Consultation

10. The scope of the baseline data that informs this report has been discussed through the Evidence Plan Process (EPP) with traffic and transport Expert Topic Group (ETG) stakeholder members through a series of ETG meetings.

27.5 Study Area and Onshore ECC Segments

11. Due to the linear footprint of the Project, the Study Area for some receptors is relatively large-scale, therefore, to assist with the interpretation and explanation of associated data, the Order Limits has been split into segments. The extent of these segments has been aligned with easily recognisable geographical features such as roads or rivers which cross the Order Limits.
12. The ECC segments are shown in **Table 27.1** and Figure 3.3 in Volume 2, Chapter 3 (document reference 6.2.3).
13. The study area for the TA has been defined as the proposed construction and permanent access options and the routes that would be used by construction traffic in using those accesses, for the segments of the Onshore ECC (including landfall and OnSS).



Table 27.1: Onshore ECC Segment Names

ECC Segment	Starts	Ends
1	Landfall	A52 West of Hogsthorpe
2	A52 West of Hogsthorpe	Marsh Lane
3	Marsh Lane	A158
4	A158	Low Road
5	Low Road	Steeping River
6	Steeping River	Fodder Dike Bank/Fen Bank
7	Fodder Dike Bank/Fen Bank	Broadgate
8	Broadgate	Ings Drove
9	Ings Drove	Church End Lane
10	Church End Lane	The Haven
11	The Haven	Marsh Road
12	Marsh Road	Fosdyke Bridge
13	Fosdyke Bridge	Surfleet Marsh OnSS/Marsh Drove
14	Surfleet Marsh OnSS/Marsh Drove	The Connection Area

14. Elements of the study area of relevance to traffic and transport include the Local Road Network (LRN), sustainable travel infrastructure and non-motorised user (walker, cyclist and horse-rider (WCH)) infrastructure, including a network of Public Rights of Way (PRoW).

15. The Strategic Road Network (SRN) has been excluded from the TA due to its significant distance from the study area. Construction vehicle movements associated with the Project would be widely distributed across the SRN reducing the likelihood for significant effects. This was agreed in principle by National Highways (NH) in its consultation response to the Project Scoping Report, further discussed and agreed with NH through the Evidence Plan Process and agreed in the NH Section 42 response.

27.6 Report structure

16. The report structure is as follows:

- **Section 27.7** summarises the data that has informed this report;
- **Section 27.8** describes the highway network, access points and construction access routes;



- **Section 27.10** describes and provides an analysis of the baseline traffic data and road safety data; and
- **Section 27.11** describes and provides an analysis of the sustainable travel network.
- **Section 27.12** sets out the forecast trip generation and distribution during the construction of the Project;
- **Section 27.13** outlines the proposed mitigation on the local highway network to facilitate the forecast vehicle movements associated with the construction of the Project; and
- **Section 27.14** describes the Special Order Abnormal Indivisible Load delivery.

27.7 Baseline Data Collection

27.7.1 Desk study

17. A desk-based study has been undertaken to identify sources of pre-existing data of relevance, that will be used to inform the EIA process, as set out in **Table 27.2** below.

Table 27.2: Baseline Data Sources

Source	Summary
Google Earth	Desktop appraisal of the traffic and transport aspects of the study area
Department for Transport (DfT) Road Statistics	Annual Average Daily Traffic (AADT) flows for the A158, A1028, A16, A1121, A17, A52 and Horbling Lane
Lincolnshire County Council (LCC)	Accident data for the study area
	PRoW

27.7.2 Existing Traffic Data

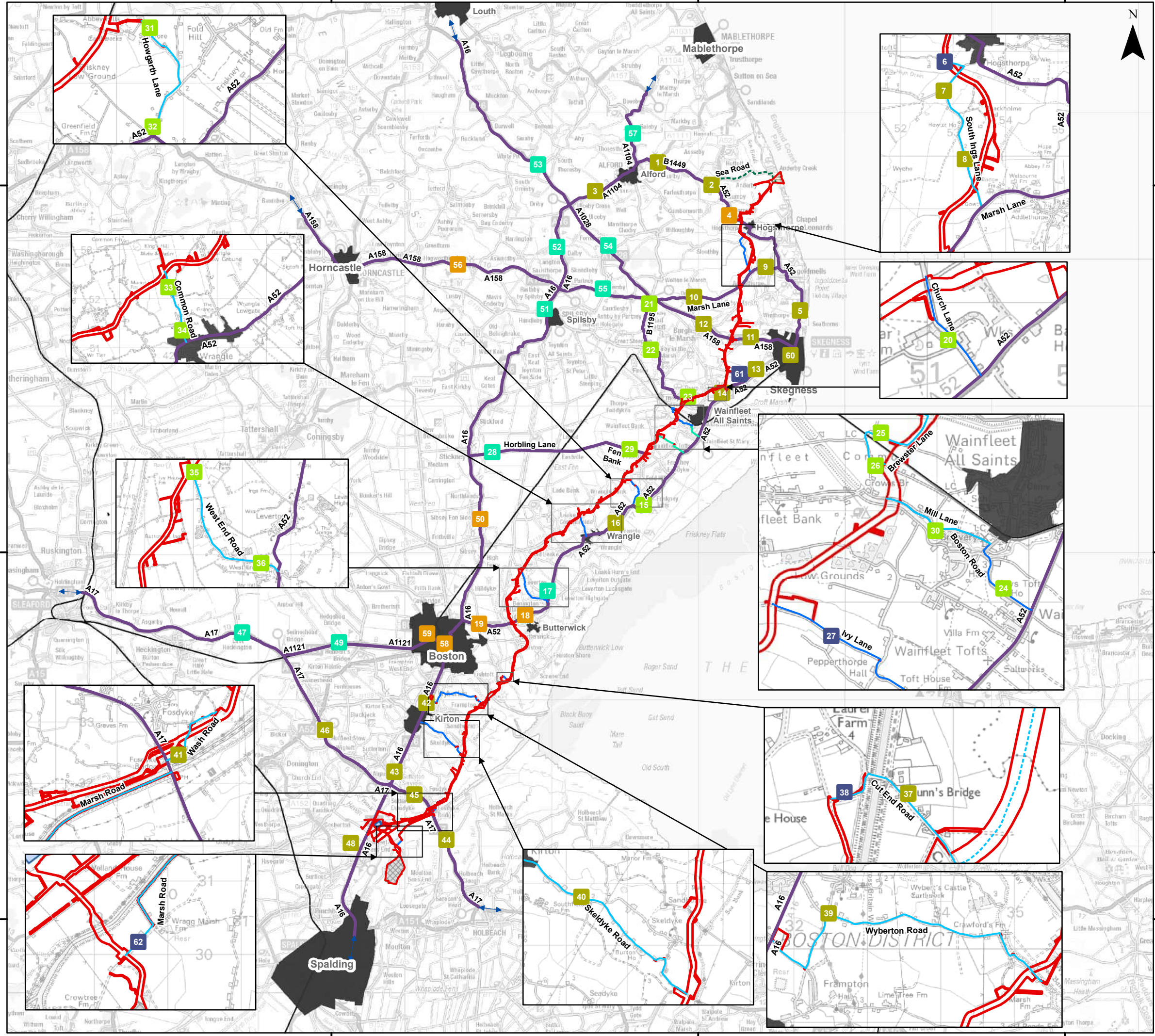
18. Existing traffic data have been obtained from the DfT Road Statistics database on a number of highway links within the study area as set out in **Table 27.3** with the corresponding DfT Reference and location reference (on the traffic diagram) along the Onshore ECC. The original data are provided in **Annex B** and the locations are shown on Figure 27.1



525000

550000

575000



Legend

- Order Limits
 - Onshore Substation (OnSS) Footprint
 - Landfall Trenchless Works Area
 - Transition Joint Bay Area
 - Connection Area
 - Railway Line
- Construction Access Vehicle Route - Date Of Survey**
- Automatic Traffic Counts (December 2023)
 - Automatic Traffic Counts (October 2022)
 - Automatic Traffic Counts (23rd February / March 2023)
 - Automatic Traffic Counts August / October 2022)
 - Department for Transport Data (2019)
- Construction Access Vehicle Route Type**
- Core Access Route
 - Core Access Route via Haul Road
 - Local Access Route
 - Local Access Route via Haul Road
 - Local Access Route (LGV)
 - Local Access Route - Enabling Works
 - To / From Wider Highway Network



Coordinate System: British National Grid
 0 5 10 km
 Scale: 1:250,000
 A3 Page Size

Environmental Statement
 Traffic Data Collection Locations and Survey Date
 (Construction Vehicle Access Routes)

Figure 27.1.1



Date: 29/02/2024
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Table 27.3: DfT Data Locations – Construction Vehicle Access Routes

DfT reference	Location reference Figure 27.1	Highway link	Date
16524	17	A52 (Butterwick)	2019 ¹
800874	28	Horbling Lane	
16215	47	A17 (west of the A1221)	
57598	49	A1121	
16213	51	A16 (north of the A155)	
81550	52	A16 (A158 to A1028)	
6227	53	A16 (north of the A1028)	
7480	54	A1028	
7996	58	A16 (Boston)	
81151	55	A158 (A1028 to A16)	
47946	59	A52 (Boston)	

27.7.3 Commissioned Traffic Surveys

19. New baseline traffic data have been collected to inform the Chapter 27 (document reference 6.1.27) of the ES. The new traffic data was collected in August 2022 (to take account of uplifts in traffic as a result of tourism and agriculture during the summer) and the neutral months of October 2022, February 2023, March 2023 and December 2023.

20. February and March are not technically neutral months; however, are representative months avoiding main and local holiday periods, local school holidays and half terms, and other abnormal traffic periods, as required by Transport Analysis Guidance Unit M1.2.2.

21. The data collected in August 2022 is on five highway links across the study area as a sample for the consideration of the changes in traffic during the summer.

22. All Automatic Traffic Count (ATC) data are provided in **Annex C**.

¹ 2019 data as the most recent dataset avoiding the Covid-19 pandemic

² Transport Analysis Guidance Unit M1.2: Data Sources and Surveys, DfT, May 2020



23. ATCs were installed at the locations on the highway links forming the proposed construction access routes, as set out in **Table 27.4**, with the corresponding ATC Reference, location reference (on the traffic diagram), for a period of seven days in August and October 2022, October 2022, February or March 2023 and December 2023, for assessing the Onshore ECC.

24. The data collection locations are shown on Figure 27.1

Table 27.4: ATC Locations - Construction Vehicle Access Routes

ATC reference	Location reference Figure 27.1	Highway link	Date of survey
1	18/19	A52 Wainfleet Road	23 rd – 29 th August 2022 and 13 th – 19 th October 2022
2	50	A16 (south of the A155)	
3	56	A158 (west of the A16)	
4	59	A1104 (north of the B1449)	
5	4	A52 (Hogsthorpe)	
6	3	A1104 (Alford)	13 th – 19 th October 2022
7	2	B1449 Long Lane	
8	1	B1449 Thurlby Road	
9	5	A52 between Marsh Lane and Skegness	
25	42/43	A16 (south of Boston)	
26	46	A17 (north of the A16)	
27	44/45	A17 (south/north of River Welland)	
28	48	A16 (south of the A17)	
10	7	Sloothby High Lane	
11	8	South Ings Lane	
12	9/10	Marsh Lane	
14	11/12	A158 Skegness Road (east/west of Skegness)	
15	13/14	A52 (north/south of Low Road)	
17	16	A52 (Wrangle)	
22	37	Cut End Road	
23	39	Wyberton Roads	
24	40	Skeldyke Road/Station Road	
76	41	Wash Road	
77	60	Lincoln Road	
53	15	A52 Holland Lane	



ATC reference	Location reference Figure 27.1	Highway link	Date of survey
30	21	Gunby Lane (south of the A158)	23 rd February – 1 st March 2023 or 2 nd March – 9 th March 2023
31	22	B1195 (Irby in the Marsh)	
32	23	B1195 (Thorpe St Peter)	
33	25	Brewster Lane	
35	20	Church Lane	
41	29	Fen Bank	
49	31	Howgarth Lane	
52	32	Low Road	
56	33	Common Road	
58	34	Common Road (near the A52)	
62	35	Ings Road	
64	36	West End Road	
78	61	Low Road (east of Croft)	
79	62	Marsh Road (Surfleet Bank)	
80	6	Listoft Lane	
81	38	Pinfold Lane	
82	26	Collision Gate	

25. Additional ATCs were installed on the highway links that would be crossed by the Onshore ECC using open trenching and/or have a haul road crossing, as set out in **Table 27.5** with the corresponding ATC Reference, for a period of seven days in October 2022, February/March 2023 or November 2023. The speed data from these ATCs have been used to inform the haul road crossing designs as set out in **Section 27.8**.

Table 27.5: ATC Locations – Haul Road Crossings

ATC Reference	Location Reference Figure 27.1	Highway Link	Date of Survey
13	1	Ingoldmells Lane	13 th – 19 th October 2022
39	2	Church Lane	23 rd February – 1 st March 2023 or 2 nd March – 9 th March 2023
40	3	Cranberry Lane	
42	4	Old Fen Road	
43	5	Scald Gate	
46	6	Mill Hill	



ATC Reference	Location Reference Figure 27.1	Highway Link	Date of Survey	
47	7	Small End Road		
48	8	Skirmore Road		
50	9	Patman's Lane		
51	10	Ivery Lane		
54	11	Seadyke Lane		
55	12	Manor Lane		
56	13	Common Road/Double Bank		
57	14	Cragmire Lane		
60	15	Lowfield Lane		
61	16	Double Bank		
62	17	Ings Road		
63	18	Ings Drove		
68	19	Church Road/Fold Hill Road		
69	20	Unnamed Lane		
70	21	Faunt Bridge		
71	22	Pode Lane		
72	23	Skipmarsh Lane		
73	24	Southfields		
74	25	Butterwick Road		
75	26	Shore Road		
83	27	Billgate Lane		5 th – 11 th December 2023
84	28	Middlemarsh Road		
85	33	Lowgate Road		
86	34	Langham Road		

27.7.4 Accident data

26. Personal Injury Accident (PIA) data for the highway links in the study area has been obtained from LCC for the period between 1st January 2015 to 30th September 2022 (for a robust assessment given the reduction in traffic in 2020 and 2021 due to the Covid-19 pandemic).

27. The data is provided in **Annex D**.

27.7.5 PRoW

28. The PRoW data has been obtained from LCC website online mapping.



27.7.6 Field Studies

29. A series of site visits have been undertaken to supplement the desktop appraisal of the study area to inform the assessment of the baseline of the study area.

30. **Table 27.6** sets out a summary of the field study activities.

Table 27.6: Field Study Activities

Activity	Summary	Date undertaken
Initial Construction access options audit.	An initial audit of the proposed construction access options along the Onshore ECC, including sensitive receptors, road widths etc.	August 2022
Construction traffic access routes inspection.	A visual route inspection of the proposed construction access routes.	October 2022, February 2023 and June 2023

27.8 Enabling Access

31. In advance of the commencement of construction, and before the construction accesses have been formed, it will be necessary to take access to the ECC to carry out enabling works, also known as preparatory or early works (as described in Volume 1, Chapter 3: Project Description (document reference 6.1.3). Access from the highway, for enabling works, will be taken from existing access points, typically using farm tracks, and will be used until the construction accesses have been formed. The enabling accesses are all existing access points and minimal or no improvements are required to make them suitable for use. The enabling accesses will be used for a range of pre-construction activities including:

- Ground Investigations;
- Facilitating construction access and fencing;
- Pre-construction drainage;
- Hedgerow / vegetation clearance;
- Ecological mitigation;
- Archaeological investigations; and
- Landscape planting.



32. At the end of the construction period, following the reinstatement of the construction accesses, it may be necessary to use the enabling accesses again for reinstatement works, including hedgerow and landscape planting and for plant used for reinstatement.
33. The use of the enabling accesses will be intermittent, short term, and will only be required when the construction accesses are not in place. The type of vehicles will typically be pickups, light farm vehicles and light construction plant.
34. The proposed enabling access locations are shown on Figure 27.1 Alternative enabling access locations will only be used subject to the agreement of LCC.
35. Table 27.7 outlines the maximum number of enabling accesses identified and the maximum duration that these would be utilised by the Project.
36. Following completion of construction and demobilisation, it may also be necessary to take access at the same points for vehicles required for reinstatement and planting works after the construction accesses have been removed. The type of vehicles involved would typically be four-wheel drive pickup trucks or ATVs and works would be expected to take place over one or two days at any location.

Table 27.7: Enabling Access Locations

Parameters	Design Envelope
Maximum number of Enabling Accesses	Approximately 100 - 150
Maximum Duration (months)	2

27.9 Construction Access and Construction Vehicle Access Routes

27.9.1 Construction Accesses

37. This section describes the proposed accesses that have been identified for use by construction vehicles access from and egress to the public highway for the construction of the Project. The construction accesses would either be directly into a Temporary Construction Compound (TCC) or to the haul road along the Onshore ECC.



38. **Table 27.8** shows the construction access locations along the Onshore ECC with full details shown in **Annex E**. At each construction access location, there would be access towards the OnSS (Positive ECC Direction) or towards landfall (negative ECC direction), or an access for both directions, which is also shown in **Table 27.8**. The exception of this is at:

- AC-48 for the OnSS only;
- AC-49, for the grid connection, where there would be an access towards the OnSS;
- AC-50, where there would be an access towards the National Grid Onshore Substation (NGSS);
- AC-51, which would be an access from the local highway network to a private track;
- AC-52, which would be an access to a TCC; and
- AC-53, which would be an access from the local highway network to a private track.

39. It is proposed that all construction accesses and crossings would be temporary and following completion of construction works, will be removed. The exception is AC-01 on Roman Bank, which will be retained to provide access to the TJB for inspections and maintenance, and AC-48 will be the permanent access for the OnSS. Where accesses are located opposite each other, they would also allow construction traffic to cross from one side of the public highway to the other i.e. to traverse along the temporary haul road and minimise trips included on the local highway network.

Table 27.8: Construction Access Locations

Access Reference	Location	Segment	Direction
AC-01	Roman Bank	1	Positive (enabling works and permanent O&M only)
AC-02	A52 West of Hogsthorpe	1	Negative
AC-03		2	Positive
AC-04	Listoft Lane	2	Negative
AC-05		2	Positive
AC-06	Sloothby High Lane	2	Negative
AC-07		2	Positive
AC-08	South Ings Lane	2	Negative
AC-09		2	Positive
AC-10	Marsh Lane	2	Negative
AC-11		3	Positive



Access Reference	Location	Segment	Direction
AC-12	A158 (west of Skegness)	3	Negative
AC-13		4	Positive
AC-14	Low Road	4 ³	Negative
AC-15	A52 (East of Croft)	5	Positive and Negative
AC-16	Church Lane	5	Negative
AC-17		5	Positive
AC-18	B1195 Wainfleet Road	5	Negative
AC-19		5	Positive
AC-20	Brewster Lane	5	Negative
AC-21		5	Positive
AC-22	Collision Gate	5	Negative
AC-23		5	Positive
AC-24	Mill Lane	5	Negative (LGV only)
AC-25	Scald Gate	6	Negative (LGV only)
AC-26		6	Positive (LGV only)
AC-27	Fen Bank	6	Negative
AC-28		7	Positive
AC-29	Howgarth Lane	7	Positive and Negative
AC-30	Common Road	7	Negative
AC-31		8	Positive
AC-32	Ings Road	8	Negative
AC-33		9	Positive
AC-34	A52	9	Negative
AC-35		9/10	Positive
AC-36	Cut End Road	10	Negative
AC-37		10	Positive
AC-38	Pinfold Lane	10	Positive and Negative
AC-39	Millfield Lane East	TCC only	n/a
AC-40	Wyberton Roads	11	Negative
AC-41		11	Positive
AC-42	Marsh Road	11	Negative
AC-43		12	Positive
AC-44	Craven's Lane	12	Negative and Positive
AC-45	Wash Road	12	Negative
AC-46		12	Positive
AC-47	Surfleet Bank (A17)	13	Positive

³ and route between A52 and A158 to avoid Skegness



Access Reference	Location	Segment	Direction
AC-48	Surfleet Bank (A16)	13	n/a Retained as the permanent OnSS access
AC-49	Marsh Road	14	n/a
AC-50		14	n/a
AC-51	A17/Private Track	14	n/a
AC-52	A17	12	n/a
AC-53	Private Track/Marsh Road	14	n/a

40. Preliminary General Arrangement (GA) drawings have been prepared for each of the construction access locations (with the exception of AC51, AC-52 and AC-53 as these are existing accesses suitable for construction vehicles), which are provided in **Annex F**.
41. The locations of the construction accesses have been identified following a physical inspection undertaken in June 2023, utilising existing accesses and minimising temporary vegetation removal wherever feasible.
42. The design of each construction access is based on the largest vehicle type expected to use the access and the direction of movements from and to the access routes (as set out in **Section 27.8**) with the most appropriate radius derived by swept path analysis of the relevant vehicle ranging from a car or LGV (workforce vehicles) to a large low loader for the delivery of the cable drums (a non-Special Order Abnormal Indivisible Load (AIL)).
43. The visibility splays have been identified using the 85th percentile speed data from the ATCs (See **Section 27.7** and **Annex C**) and using the requirements in the Design Manual for Roads and Bridges CD 123 for speeds over 37mph or Table 7.1 of Manual for Streets, where identified speed are 37mph or less.
44. The principle of the location of the construction accesses have been discussed and agreed with LCC, subject to a range of traffic management measures that would be implemented, which would be identified at the detailed design stage (post consent) and shown on the detailed design drawings that would be prepared to submit for approval from LCC. A framework of the types of traffic management measures to be implemented is set out in the Outline Construction Traffic Management Plan (CTMP) (document reference 8.15) which has been submitted with the DCO application.



27.9.2 Permanent Access

45. Upon completion of the construction works there will be a requirement for periodic visits to the OnSS to undertake routine checks and carry out maintenance. The OnSS is not however expected to be permanently manned. These movements would typically be made by light vehicles, cars, vans etc. however, occasional access may be required by HGVs to deliver larger components.
46. The Project's transformers are designed not to require replacement during the lifetime of the Project and as such, operational access for abnormal loads is not anticipated to be required. To allow for periodic access to the OnSS for routine checks and maintenance, a new permanent access would be constructed from Surfleet Bank at the same location as the construction access AC-46.
47. At Roman Bank, the access installed for enabling works (AC-01) will not be used for construction traffic except for the initial phase of work and during the reinstatement stage. It will be retained and made into a permanent access to the TJB for the operations phase, for routine inspection and any maintenance work.

27.9.3 Construction Vehicle Access Routes

48. The highway network proposed to form the core and local construction vehicle access routes for use by construction vehicles between the SRN and the construction access locations described in **Section 27.8**, for the purposes of the assessment, are shown in **Annex G** and are described below.
49. The majority of the local construction vehicle access routes are individually assessed in Chapter 27 (document reference 6.1.27) (where required according to the EIA assessment thresholds). However, in some cases, where there are multiple highway links comprising a local construction vehicle access route between the core construction vehicle access routes and the Onshore ECC, these are assessed (where required according to assessment thresholds) as a whole route and focused on the highway links where the receptors have the highest sensitivity along the route (see Chapter 27 (document reference 6.1.27)).



27.9.4 Core Construction Vehicle Access Routes

50. The following core construction vehicle access routes would be used by all construction traffic for the Project (with the exception of Special Order AILs, the route for which is identified in **Section 27.14**).

51. The types of construction vehicles include:

- 20 tonne tipper (delivery of aggregates);
- Maximum legal (16.5m) articulated / low loader (delivery of equipment and plant);
- Large low loader (delivery of the cable drums)
- Oil tanker (supply of diesel to construction plant);
- Crane;
- Tractor and trailer; and
- Cars and LGV (workforce).

A52

52. The A52 provides a key connecting route from Mablethorpe and Skegness, passing through Boston, Grantham and beyond to Nottingham. Between Skegness and Boston, the A52 follows a northeast to southwest general alignment along the coastline. There are varying speed limits along its length and it is single carriageway only. The A52 passes over the railway line with a level crossing, at Wainfleet St. Mary.

A16

53. The A16 provides a north to south link from Grimsby to Peterborough, generally as a single carriageway road subject to the national speed limit (60mph), with reductions in speed limit through built-up areas. It passes through the key towns of Louth, Boston, and Spalding with connecting roads to the east coast towns of Mablethorpe and Skegness. There is an Air Quality Management Area (AQMA) in Boston, which the A16 passes through.

A17

54. The A17 provides an east to west link from Newark to Kings Lynn and beyond, generally as a single carriageway road subject to the national speed limit (60mph) with reductions in speed limit through built-up areas. It passes through the key town of Sleaford and intersects with the A16 south of Boston.



A158

55. The A158 is an east to west link between Lincoln and Skegness, passing through Horncastle, is predominantly single carriageway and subject to the national speed limit (60mph) with reductions through built-up areas. There is a short section of dual carriageway known as Burgh Road (approximately 275m) on the edge of Skegness to the west of the signal-controlled junction with Lincoln Road and Old Burgh Road.

Lincoln Road (Skegness)

56. Lincoln Road connects the A158 to the A52 gyratory in Skegness and is a single carriageway road subject to a 30mph speed limit, serving residential properties, shops and school, Skegness Hospital and other local facilities. There are footways on either side of the carriageway, segregated by wide verges for the majority of its length, with controlled and uncontrolled pedestrian crossings. This route would only be used before the temporary haul road is constructed between the A158 and Low Road (east of Croft) to form part of a bypass route (including Low Road between the Onshore ECC and the A52) for construction traffic associated with the Project between the A158 and the A52, avoiding Skegness.

A1121

57. The A1121 provides an east to west connecting link between the A17 at Swineshead Bridge and the A52 leading into Boston, running alongside the railway. The road is a single carriageway subject to the national speed limit (60mph) along the western section, reducing to 40mph around Hubberts Bridge (junction with B1192) and 50mph further east.

A1104

58. The A1104, combined with the A1111, provides an east to west connecting link between the A16 at Ulceby Cross and the A52 at Sutton on Sea. The road is a single carriageway road generally subject to the national speed limit (60mph) with reductions through built-up areas, which include Alford.



A1028

59. The A1028 provides a rural connecting link between the A16 at Ulceby Cross and the A158 at Gunby as a single carriageway road and is subject to the national speed limit (60mph).

B1449

60. The B1449 provides an east to west rural route through the villages of Bilsby and Thurlby, providing a connecting link between the A1111 to the A52 Station Road/Mumby Road junction. The road is a single carriageway road, subject to the national speed limit (60mph), reducing to 30mph in Bilsby.

Low Road (east of Croft)

61. Low Road (between the Onshore ECC and the A52) would be used by construction traffic associated with the Project to access the haul road between the A158 (construction access AC-13) and Low Road, providing a connection between the A158 and the A52 avoiding the route through Skegness (A52 north of Low Road, Lincoln Road and the A158 east of AC-12/AC-13). Low Road has a 26m wide bell mouth at a junction with the A52 with a ghost island for right turning vehicles and is a rural road between 5 and 5.5m in width. The section of Low Road closest to the A52 past residential properties, a garage and a caravan park is subject to a 50mph speed limit and between the caravan park and the Onshore ECC is subject to national speed limit (60mph) and the surface of the carriageway on this section is poor and undulating.

Gunby Road/Marsh Road/Marsh Lane

62. Gunby Road is accessed from the A158 via a free flow/lane drop arrangement from the west and traffic signals from the east. Gunby Road, turns into Marsh Road, Marsh Lane and then Orby Road and connects with the A52 north of Ingoldmells, the settlement immediately north of Skegness. Gunby Road/Marsh Road is the main route through the village of Orby and is subject to the national speed limit (60mph) either side of the village, with a 30mph speed limit through the village itself.



Gunby Lane/Mill Lane/B1195

63. Gunby Lane is a two-way carriageway, provides direct access to /from the A158 via a priority junction and connects to Mill Lane at a priority junction approximately 1.5km to the south of the junction with the A158. Mill Lane, which is a slightly narrower than Gunby Lane, with passing places, connects to the B1195 approximately 1.25km to the south of Gunby Lane at a priority junction on the outside of a bend with good visibility. There are several properties along these highway links, which are predominantly set back from the carriageway. Both roads are subject to national speed limit (60mph).
64. The B1195 between Mill Lane and the proposed construction accesses AC-18/AC-19 is a main route connecting the A16 at Spilsby to Wainfleet St. Mary and is a wide road, that passes a number of properties along this section, with limited pedestrian activity and is subject to national speed limit (60mph) apart from the section through Irby in the March where the speed limit reduced to 40mph.

Horbling Lane/Midville Road/Fodderdyke Bank/Station Road/ Fen Bank

65. This is a key route between the A16 and Friskney and is predominantly between 6 and 7m in width and subject to national speed limit (60mph), with the exception of the populated section (Stickney) on Horbling Lane where the speed limit is 30mph and through the settlement of Eastville, where the speed limit is 40mph. Whilst the majority of the route is subject to national speed limit, there is a warning sign on Fen Bank stating maximum speed of 40mph. In addition to the residential properties on Horbling Lane in Stickney and some other locations, the route passes a primary school, at Eastville and crosses over a railway line at a level crossing.

27.9.5 Local Construction Vehicle Access Routes (All Vehicles)

66. The following local access routes would be used by all types of construction vehicles for the Project, subject to the mitigation identified in **Section 27.13** and the implementation of measures within a CTMP(s), which would be prepared by the Principal Contractor and agreed with LCC prior to the commencement of construction.
67. The large low loader for the delivery of the cable drums may not be required to use all of the local construction vehicle access routes, which would be confirmed at the detailed design of the Project (post consent).



South Ings Lane/Sloothby High Lane/Listoft Lane

68. South Ings Lane is a rural road subject to the national speed limit (60mph), connecting to Sloothby High Lane, approximately 1km to the north and Marsh Lane/Orby Lane approximately 1.5km to the south. Sloothby High Lane is also a rural road subject to the national speed limit (60mph), providing a connection between Sloothby and the A52. Listoft Road is a minor rural road, with a narrow carriageway, which provides access to a number of properties and is also subject to the national speed limit (60mph). The sections of these highway links forming the construction vehicle access routes have limited receptors.

Brewster Lane/Crow's Lane/Collision Gate

69. Collision Gate/Crow's Lane/Brewster Lane provides a narrow single lane route with limited vehicle passing opportunities. A level crossing is provided over the railway as Crow's Lane transitions into Brewster Lane. At this location there is a sharp bend in the road alignment. This route is subject to the national speed limit (60mph). Brewster Lane may not be suitable for low-loader access.

Low Road/Yawing Gate Road/Howgarth Lane

70. Low Road provides a direct connection off the A52 in the south via a two-lane priority arrangement, located at a point where the A52 changes alignment. Low Road is a two-way single carriageway road subject to the national speed limit (60mph). Due northeast, Yawing Gate Road forms at a split priority junction arrangement with Low Road and continues in a northwardly direction. Yawing Gate Road is slightly narrower than Low Road, but still provides a reasonably wide two-way single carriageway road. Howgarth Lane is a reasonably narrow single road with limited passing opportunity.

Common Road/Double Bank

71. Common Road is a rural unclassified road accessed off the A52 via a priority junction. The route is generally a single lane subject to the national speed limit (60mph) (60mph). Formal passing places are limited but grass verges are located on both sides of the carriageway. Common Road connects to Double Bank in the vicinity of the Onshore ECC.



West End Road/Lowfields Road/Ings Road

72. West End Road is accessed off the A52 at a priority junction with large junction radius.

This route is generally a two-way single carriageway lane subject to the national speed limit (60mph), with a reduction in the speed limit to 30mph on approach to the West End Road/A52 junction. Footways are present where the road is more residential in nature. West End Road connects to Lowfields Road, and the route has an existing commercial presence and is already used by HGVs. The road becomes more rural in nature when it changes to Ings Road, passing several residential properties.

Haul Road between AC-35 (A52) and Cut End Road

73. A section of the temporary haul road between AC-35 on the A52 and Cut End Road would be used by construction traffic associate with the Project to avoiding Church Road and Church End Road through Haltoft End and Frieston, which was a local access route identified in the PEIR.

Cut End Road/Pinfold Lane

74. Cut End Road is a single lane rural road providing access across Hobhole Drain and Pinfold Lane on the western side; which is also a single lane rural road and all both subject to the national speed limit (60mph).

Millfield Lane East/Low Road/Streetway/Wyberton Roads

75. Millfield Lane East is accessed from the A16 to the south of Wyberton at a priority junction with a ghost island arrangement for right turning vehicles from the A16 south. It is a narrow single lane road with passing places for the majority of its length and is subject to the national speed limit (60mph). Approximately 600m from the junction with the A16, Millfield Lane East connects with Low Road at a simple priority junction. Approximately 800m north of the junction with Millfield Lane East, Low Road, a relatively wide rural road, connects with Streetway at a crossroads with Saundergate Lane East. Streetway, which turns into Wyberton Roads is a relatively wide rural road, providing access to several properties and is subject to the national speed limit (60mph).



Station Road/Skeldyke Road/Nidd's Lane/Marsh Road

76. Station Road is accessed from the A16 at a four-arm roundabout, serving the village of Frampton, and is subject to a 30mph speed limit. There is a double yellow line on both sides of the carriageway restricting any on-street parking in the vicinity of the dwellings. Approximately 500m from the junction with the A16 is a simple priority junction with Skeldyke Road, which is a rural road, providing access to Skeldyke. Skeldyke Road, changes to the national speed limit (60mph) approximately 200m to the east of the junction with Station Road and passes a playground. Nidd's Lane and Marsh Road are single lane rural roads serving several properties and are subject to the national speed limit (60mph).

Wash Road/Craven's Lane

77. Wash Road is accessed from the A17 at Fosdyke to the north of the River Welland at a simple priority junction with large junction radii and serves several properties and a caravan park. It is a single lane rural road subject to the national speed limit (60mph). There is a large change in levels between the A17 and Wash Lane, which could result in slow moving vehicles joining the A17, particularly HGVs. Craven's Lane is a narrow single lane rural road passing one property. It is subject to the national speed limit (60mph).

Surfleet Bank (A17)

78. Surfleet Bank is an access road running parallel to the A17 on the other side of the carriageway to Wash Road. There are three access points: at the southern end, the middle and the northern end. The access at the northern end is at a substandard alignment with the A17, requiring drivers to look back over the shoulder to check for vehicles approaching from the A17 south.

Surfleet Bank (A16)

79. Surfleet Bank is located off the A16 and would provide the temporary and permanent access route for the OnSS during construction and operation. The junction has a ghost island right turn lane for vehicles turning right into Surfleet Bank from the A16 south.



Marsh Road (via a private track from the A17)

80. Marsh Road is a minor rural road providing access to a glamping site, a garden centre and agricultural buildings, subject to national speed limit (60mph). A short section of Marsh Road would be used by construction vehicles to access the haul roads for the installation of the 400kV cable connection between the OnSS and the NGSS.

27.9.6 Local Construction Vehicle Access Route (LGVs Only)

81. The following two local construction vehicle access routes would only be used by LGVs (workforce vehicles or tractor and trailers between trenchless crossing sites). No HGVs would be permitted to use these routes.

B1195 Boston Road/B1195 Station Road/Mill Lane

82. The B1195 Boston Road provides a connection to Wainfleet St Mary from the A52. Boston Road is a wide unopposed two-way single carriageway with a footway on one side. In proximity to the Steeping River, footways on both sides of the carriageway are present. The B1195 Boston Road changes to the B1195 Station Road.

83. Access onto Mill Lane is provided off the B1195 Station Road. There are buildings directly adjacent to the carriageway on Mill Lane at the junction with the B1195 Station Road, with limited visibility due to the existing building line and parked cars.

84. Mill Lane is a single road with grass verges and passing opportunities. HGV's currently use Mill Lane and articulated vehicles are required to turn right from the B1195 north.

Ivy Lane/Low Road/Scald Gate

85. Ivy Lane forms a simple priority junction with the A52. Ivy Lane is a narrow single lane with limited passing opportunities. A ditch and grass verges are present adjacent to the carriageway edge. Low Road is slightly wider than Ivy Lane but also has a ditch and grass verges on either side. Scald Gate provides a priority junction with Low Road at around 135m due northeast of the Low Road/Ivy Lane junction and provides a single carriageway with a ditch and grass verges. Scald Gate has a straight highway alignment with good forward visibility.



27.9.7 Local Construction Vehicle Access Route (Enabling and Commissioning Works Only)

86. There would be a requirement to use an access route between the A52 and Roman Bank, via Anderby for enabling works and commissioning. The enabling works include the construction of a noise bund, during September, should the haul road from the A52 to landfall not be in place. The short window (September) is due to wintering birds during other months in the year and avoiding the summer months.

87. The route (Rectory Road, Sea Road and Roman Bank) would only be used for the enabling works (if required) and for the following vehicle movements at the beginning of the works and one at the end of the works:

- 5 low loaders delivering 2 tracked excavator, 1 dozer; 1 30t dumper and 1 7t dumper;
- Plant delivery vehicles for two garric Welfare units – including dry unit, auger unit for fencing panels on the mini digger; and
- Low loaders to deliver bog mats/trackway

88. The vehicle movements (until the haul road from the A52 is in place) would be as follows:

- Up to 10 workers via cars and LGVs;
- Oil tanker for fuel delivery – 2 per week;
- Material for fencing installation – timber hoarding and/or Heras; and
- Bog mats.

89. The route via Roman Bank would not be utilised for construction traffic associated with the Project during the core 42-month construction programme.

27.9.8 Summary of Construction Vehicle Access Routes

90. **Table 27.9** summarises the construction vehicle access routes to each access.



Table 27.9 Construction Vehicle Access Routes

Access	Location	Route
AC-01	Roman Bank	A158 or A16/A1104 (Alford)/B1449/A52/Rectory Road/Sea Road/Roman Bank
AC-02/AC-03	A52 West of Hogsthorpe	A158 or A16/A1104 (Alford)/A1449/A52
AC-04/AC-05	Listoft Lane	A158 or A16, A1028 and A158/Gunby Road/Marsh Lane/South Ings Lane/Sloothby High Lane/Listoft Lane
AC-06/AC-07	Sloothby High Lane	A158 or A16, A1028 and A158/Gunby Road/Marsh Lane/South Ings Lane/Sloothby High Lane
AC-08/AC-09	South Ings Lane	A158 or A16, A1028 and A158/Gunby Road/Marsh Lane/South Ings Lane
AC-10/AC-11	Marsh Lane	A158 or A16, A1028 and A158/Gunby Road/Marsh Lane
AC-12/AC-13	A158 (west of Skegness)	A158 or A16, A1028 and A158
AC-14	Low Road	A158 or A16, A1028 and A158/Lincoln Road (via Skegness)/A52 or A158 or A16, A1028 and A158/Haul Road or A52/Low Road
AC-15	A52 (East of Croft)	A158 or A16, A1028 and A158/Lincoln Road (via Skegness)/A52 or A158 or A16, A1028 and A158/Haul Road/A52
AC-16/AC-17	Church Lane	A158 or A16, A1028 and A158/Lincoln Road (via Skegness)/A52/Boston Road/Low Lane/Church Lane or Ivy Lane/Low Lane/Church Lane



Access	Location	Route
AC-18/AC-19	B1195 Wainfleet Road	A158 or A16, A1208 and A158/Gunby Road, B1195
AC-20/AC-21	Brewster Lane	A158 or A16, A1208 and A158/Gunby Road, B1195/Brewster Lane
AC-22/AC-23	Collision Gate	A158 or A16, A1208 and A158/Gunby Road, B1195/Brewster Lane/Crow's Lane/Collision Gate
AC-24	Mill Lane (LGV only)	Scald Gate/Low Road/Ivy Lane/A52/B1195 Boston Road/Mill Lane.
AC-25/AC-26	Scald Gate (LGV only)	
AC-27/AC-28	Fen Bank	A158 or A52, A16, Horblin Lane/Midville Road/Fodderdyke Bank/Station Road/Fen Bank
AC29	Howgarth Lane	A158 or A16, A1028 and A158/Lincoln Road (via Skegness)/A52/Low Road/Yawning Gate Road/Howgarth Lane
AC-30/AC-31	Double Bank	A17/A1121/A6 (via Boston)/A52/Common Road/Double Bank
		or A158/A16/A52 (avoiding Boston)/Common Road/Double Bank
AC-32/AC-33	Ings Road	A17/A1121/A16 (via Boston)/A52/West End Road/Lowfields Road/Ings Road
		or A158/A16/A52 (avoiding Boston)/West End Road/Lowfields Road/Ings Road
AC-34/AC-35	A52	A17/A1121/A16 (via Boston)/A52
		or A158/A16/A52 (avoiding Boston)
AC-36/AC-37	Cut End Road	A17/A1121/A`6 (via Boston)/A52/Church End Road/haul road/Cut End Road
		or



Access	Location	Route
		A158/A16/A52 (avoiding Boston)/Church End Road /haul road /Cut End Road
AC-38	Pinfold Lane	A17/A1121/A16 (via Boston)/A52/Church End Road/haul road/Cut End Road/Pinfold Lane or A158/A16/A52 (avoiding Boston)/Church End Road /haul road /Cut End Road/Pinfold Lane
AC-39	Millfield Lane East	A16 or A17 and A16/Millfield Road East
AC-40/AC-41	Wyberton Roads	A16 or A17 and A16/Millfield Road East/Low Road/Streetway/Wyberton Roads
AC-42/AC-43	Marsh Road	A16 or A17 and A16/Station Road/Skeldyke Road/Nidd's Lane/Marsh Road
AC-44	Craven's Lane	A17 or A16 and A17/Wash Road/Craven's Lane
AC-45/AC-46	Wash Road	A17 or A16 and A17/Wash Road/
AC-47	Surfleet Bank (A17)	A17 or A16 and A17/Surfleet Bank
AC-48	Surfleet bank (A16)	A16 or A17 and A16/Surfleet Bank
AC-49/AC-50	A17	A17 or A16 and A17, private track (via AC-51 and AC-53), Marsh Road
AC-51	A17/Private track	A17 or A16 and A17
AC-52	A17	A17 or A16 and A17
AC-53	Private track/Marsh Road	A17 or A16 and A17, private track (via AC-51)

27.9.9 Haul Road Crossing Locations

91. **Table 27.10** summarises the highway links that would be crossed by the Onshore ECC with a haul road crossing for the construction of the Project to allow construction traffic to cross the public highway (but not take direct access). In some cases, construction vehicles may be required to cross the public highway using construction accesses on either side of the carriageway of a local construction vehicle access route.

92. The haul road crossing locations and preliminary GA drawings that have been prepared for each of the haul road crossings are provided in **Annex H**.



Table 27.10: Haul Road Crossings

Crossing Reference	Highway link	Segment
HC-01b	Ember Lane	1
HC-01	Langham Road	1
HC-02	Lowgate Road	1
HC-03	Moat Farm	3
HC-04	Ingoldmells Road	4
HC-05	Billgate Lane	4
HC-06	Middlemarsh Road	6
HC-07	Church Lane	6
HC-07b	Hall Gate	7
HC-08	Burgh Road	7
HC-09	Cranberry Lane	7
HC-10	Mill Hill	7
HC-11	Skirmore Road	7
HC-12	Patman's Lane	7/8
HC-13	Ivery Lane	8
HC-14	Broadgate	8
HC-15	Cragmire Lane	8
HC-16	Manor Lane	8
HC-17	Seadyke Lane	8
HC-18	Church Road	8
HC-19	B1184	8
HC-20	Unnamed lane	8
HC-21	Pode Lane	8/9
HC-22	Skipmarsh Lane	9
HC-23	Southfields	9
HC-24	Ings Drove	9
HC-25	Double Bank	9
HC-26	Lowfields Lane	9/10



Crossing Reference	Highway link	Segment
HC-26b	Foxhole lane	10
HC-27	Butterwick Road	10
HC-28	Shore Road	10
HC-29	Church End Road	11
HC-20	Clampgate Road	11
HC-31	Grovefield Lane	11
HC-32	Lane off Grovefield Lane	11
HC-33	Woad Lane	11
HC-34	Frampton Roads	12
HC-35	Sandholme Lane	12
HC-35b	Marsh Lane Track	12
HC-36	Pullover Lane	13
HC-37	Marsh Drove	13/14

27.9.10 Crossing Technique

93. The roads in the study area currently identified to be crossed using a trenchless technique would be:

- A52;
- A158;
- A17;
- Youngers Lane;
- B1195;
- Fen Bank;
- B1184; and
- Scalp Road.

94. All of the other roads in the study area that would be crossed by the Onshore ECC, may be undertaken using open trenching, which would require a temporary lane or road closure.



27.10 Baseline Traffic Data and Road Safety Review

95. This section sets out the following baseline traffic data that will be used for the EIA assessment:

- Traffic flow data for the highway links that form the construction access routes; and
- Road safety data.

27.10.1 Traffic Flow Data (Construction Vehicle Access Routes)

27.10.1.1 DfT data

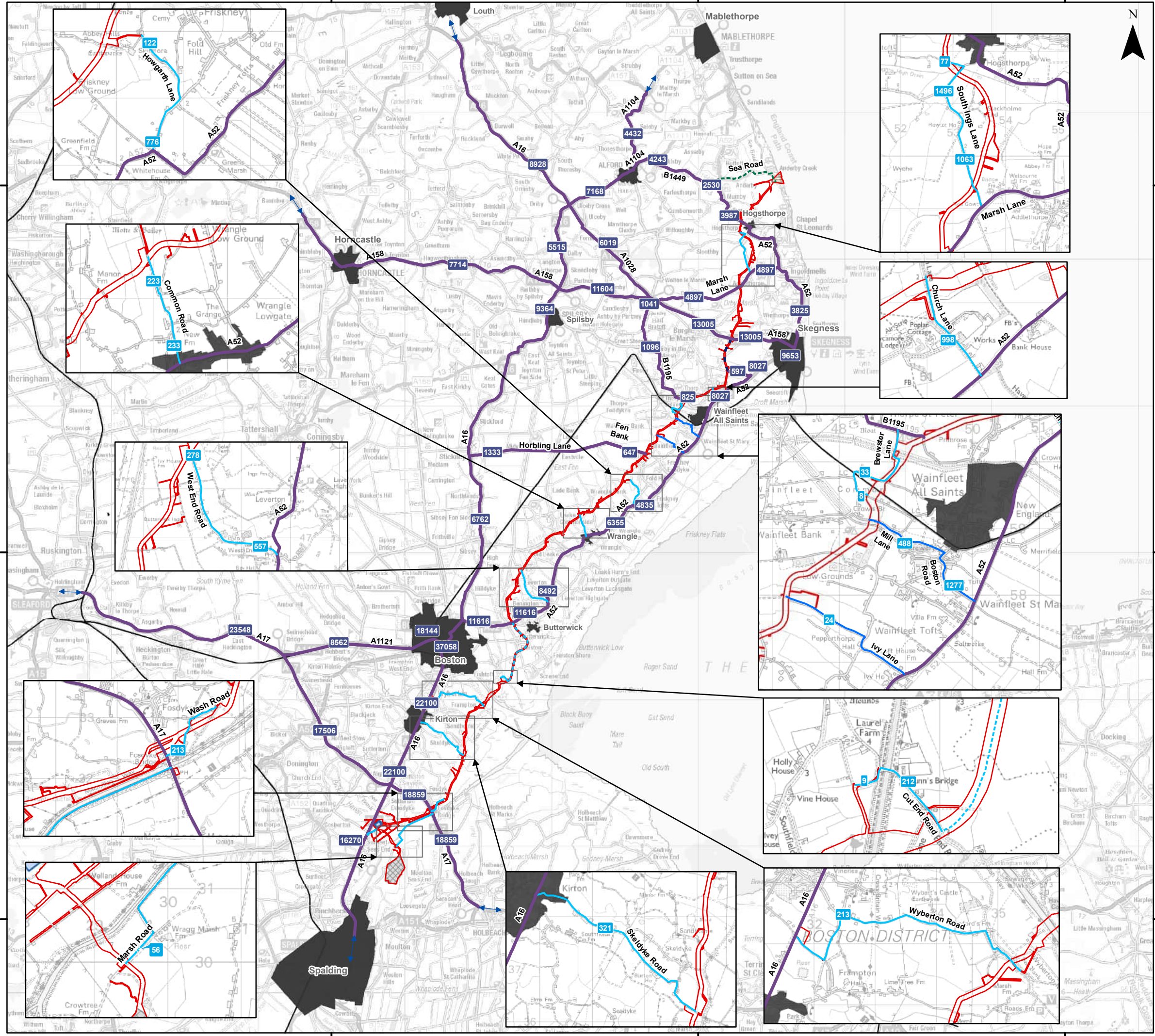
96. **Table 27.11** sets out the baseline AADT data (2019) obtained from the DfT Road Statistics website (see **Annex B**) and shown on Figure 27.2 and Figure 27.3.


















525000

550000

575000



Legend

-  Order Limits
 -  Onshore Substation (OnSS) Footprint
 -  Landfall Trenchless Works Area
 -  Transition Joint Bay Area
 -  Connection Area
 -  Railway Line
- Construction Access Vehicle Route - Number of Vehicles**
-  Core Access Route
 -  Local Access Route
- Construction Access Vehicle Route Type**
-  Core Access Route
 -  Core Access Route via Haul Road
 -  Local Access Route
 -  Local Access Route via Haul Road
 -  Local Access Route (LGV)
 -  Local Access Route - Enabling Works
 -  To / From Wider Highway Network

Note:
Not all local construction vehicle route road names shown between the core construction vehicle routes and the Onshore ECC.



Coordinate System: British National Grid
0 5 10 km

Scale: 1:250,000 A3 Page Size

Environmental Statement
Baseline AADT Traffic Flows (Total)

Figure 27.1.2

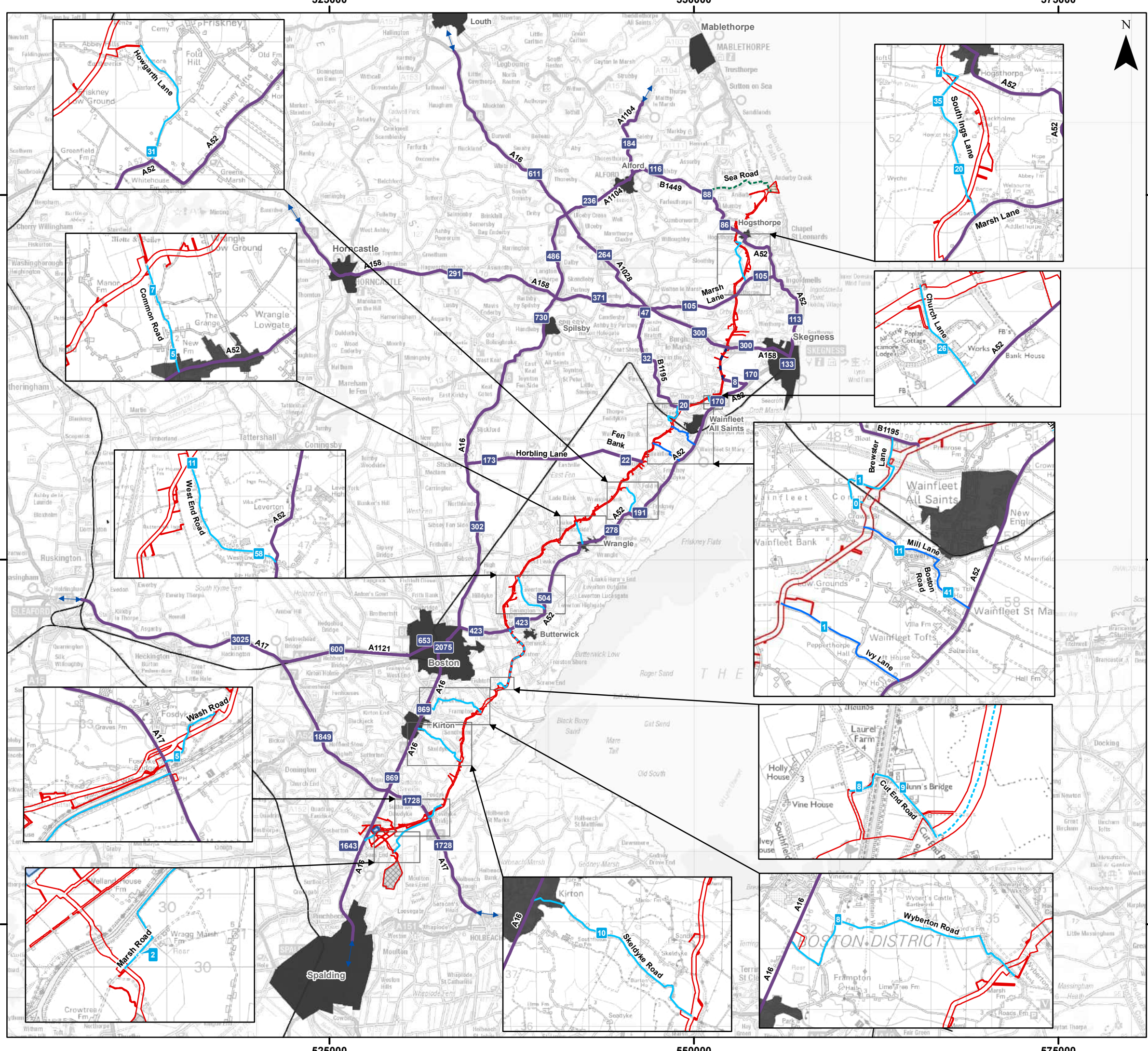


Date: 04/03/2024
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Legend

- Order Limits
- Onshore Substation (OnSS) Footprint
- Landfall Trenchless Works Area
- Transition Joint Bay Area
- Connection Area
- Railway Line

Construction Access Vehicle Route - Number of Vehicles

- XX Core Access Route
- XX Local Access Route

Construction Access Vehicle Route Type

- Core Access Route
- Core Access Route via Haul Road
- Local Access Route
- Local Access Route via Haul Road
- Local Access Route (LGV)
- Local Access Route - Enabling Works
- To / From Wider Highway Network

Note:
Not all local construction vehicle route road names shown between the core construction vehicle routes and the Onshore ECC.



Coordinate System: British National Grid
 0 5 10 km
 Scale: 1:250,000
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Environmental Statement
 Baseline AADT Traffic Flows (HGVs)

Figure 27.1.3



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Table 27.11: DfT Data (2019)

DfT reference	Location reference Figure 27.1	Highway link	AADT		HGV (%)
			Total vehicles	HGVs	
16215	17	A17 (west of the A1221)	23,548	3,025	12.8
800874	28	Horbling Lane	1,333	173	13.0
16524	47	A52 (Butterwick)	8,492	504	5.9
57598	49	A1121	8,562	600	7.0
6226	51	A16 (north of the A155)	9,634	730	7.8
81550	52	A16 (A158 to A1028)	5,515	486	8.8
6227	53	A16 (north of the A1028)	8,928	611	6.8
7480	54	A1028	6,019	264	4.4
81151	55	A158 (A1028 to A16)	11,604	371	3.2
7996	58	A16 (Boston)	37,058	2,075	5.6
47946	59	A52 (Boston)	18,144	688	3.8

27.10.1.2ATC Data

97. This section sets out the ATC data collected to inform the traffic and transport assessment. It should be noted in the Traffic and Transport Baseline report submitted with the PEIR, the HGV percentages were adjusted due to some non-HGVs being categorised in the Other Goods Vehicle (OGV) 1 category. These vehicles have now been identified and removed from the data when calculating the HGV percentage and therefore the adjustment process is not required.

August 2022 Surveys

98. **Table 27.12** sets out the baseline Average Daily Traffic (ADT) data obtained from ATCs on the LRN undertaken in August 2022 (see **Annex C**).



Table 27.12: ATC Data (August 2022)

ATC Reference	Location Reference Figure 27.1	Highway Link	ADT		HGV (%)
			Total Vehicles	HGVs	
5	4	A52 (Hogsthorpe)	5,432	91	1.7
1	18/19	A52 Wainfleet Road	11,902	409	3.4
2	50	A16 (south of the A155)	8,790	273	3.1
3	56	A158 (west of the A16)	9,798	333	3.4
4	57	A1104 (north of the B1449)	5,030	112	2.2

99. Whilst ATC data has been collected in August 2022, this is to understand if there are any differences to typical traffic flows on the local highway network as a result of tourism and agriculture; however, the neutral month data collected has been used for the basis of the assessment in the EIA.

October 2022 Surveys

100. **Table 27.13** sets out the baseline data obtained from ATCs on the LRN undertaken in October 2022 (see **Annex C**) and shown on Figure 27.2 and Figure 27.3.

Table 27.13: ATC Data (October 2022)

ATC Reference	Location Reference Figure 27.1	Highway Link	ADT		HGV (%)
			Total Vehicles	HGVs	
8	1	B1449 Thurlby Road	2,530	116	2.7
7	2	B1449 Long Lane	4,243	88	3.5
6	3	A1104	7,168	236	3.3
5	4	A52 (Hogsthorpe)	3,987	86	2.2
9	5	A52 (south of Marsh Lane)	3,825	113	2.9
10	7	Sloothby High Lane	1,496	35	2.3
11	8	South Ings Lane	1,063	20	1.9
12	9/10	Marsh Lane	4,897	105	2.1
14	11/12	A158 (east/west of AC-12/AC-13)	13,005	300	2.3
15	13/14	A52 (north/south of Low Road)	8,027	170	2.1
17	16	A52 (Wrangle)	6,355	278	4.4



ATC Reference	Location Reference Figure 27.1	Highway Link	ADT		HGV (%)
			Total Vehicles	HGVs	
1	18/19	A52 (east/west of AC-32/AC-33)	11,616	423	3.6
22	37	Cut End Road	212	9	4.4
23	39	Streetway/Wyberton Roads	213	8	3.6
24	40	Station Road/Skeldyke Road	321	10	3.0
25	42/43	A16 (north/south of AC-39)	22,100	869	3.9
27	44/45	A17 (south/north of River Welland)	19,839	1,728	9.2
26	46	A17 (north of the A16)	18,578	1,849	10.6
28	48	A16 (south of the A17)	16,270	1,643	10.1
2	50	A16 (south of the A155)	6,762	302	4.5
3	56	A158 (west of the A16)	7,714	291	3.8
4	57	A1104 (north of the B1449)	4,432	184	4.2

February / March 2023 Surveys

101. **Table 27.14** sets out the baseline data obtained from ATCs on the LRN undertaken in February/ March 2023 (see **Annex C**) and shown on Figure 27.2 and Figure 27.3.

Table 27.14: ATC Data (February/March 2023)

ATC reference	Location reference (Figure 27.1)	Highway link	ADT		HGV (%)
			Total vehicles	HGVs	
53	15	A52 Holland Lane	4,835	191	3.9
35	20	Church Lane	998	11	3.9
30	21	Gunby Lane (south of the A158)	1,041	47	4.5
31	22	B1195 (Irby in the Marsh)	1,096	32	2.9
32	23	B1195 (Thorpe St Peter)	825	31	4.0
33	25	Brewster Lane	33	7	3.1
41	29	Fen Bank	647	8	3.6
49	31	Howgarth Lane	122	2	1.3
52	32	Low Road	776	31	4.0
56	33	Common Road	223	7	3.1
58	34	Common Road (near the A52)	233	5	2.1
62	35	Ings Road	278	11	3.9



ATC reference	Location reference (Figure 27.1)	Highway link	ADT		HGV (%)
			Total vehicles	HGVs	
64	36	West End Road	557	58	10.3
76	41	Wash Road	213	5	2.3

December 2023 Surveys

102. **Table 27.15** sets out the baseline data obtained from ATCs on the LRN undertaken in December 2023 (see **Annex C**) and shown on Figure 27.2 and Figure 27.3.

Table 27.15: ATC Data (December 2023)

ATC reference	Location reference Figure 27.1	Highway link	ADT Total vehicles	HGVs	HGV (%)
6	80	Listoft Lane	77	7	9.1
26	81	Collision Gate	7	0	0.0
38	82	Pinfold Lane	8	0	0.0
60	77	Lincoln Road Skegness	9653	133	1.4
61	78	Low Road, East of Croft	597	8	1.3
62	79	Marsh Road, Surfleet Bank	56	2	3.6

27.10.1.3 Seasonality

103. It was agreed with ETG stakeholders through the Evidence Plan process that a comparison of the neutral month (the ATCs in October 2022 only) and summer month (August 2022) traffic flow data collected in the study area would be undertaken to understand if there are any differences resulting from tourism and agricultural traffic.

104. The differences (volume and percentage) between the neutral and summer month data are shown in **Table 27.16**.



Table 27.16: Difference of August 2022 Traffic Flows Compared to October 2022 Traffic Flows on the LRN

ATC Reference	Location Reference (Figure 27.1)	Location	Difference (Vehicles)		Difference (%)	
			Total Traffic	HGV	Total Traffic	HGV
5	4	A52 (Hogsthorpe)	1,445	5	26.6	5.3
1	18/19	A52 Wainfleet Road	286	-14	2.4	-3.4
2	50	A16 (south of the A155)	2,028	-29	23.1	-10.6
3	56	A158 (west of the A16)	2,084	42	21.3	12.5
4	57	A1104 (north of the B1449)	598	-72	11.9	-64.7

105. As **Table 27.16** shows, there is between a 2.4% and 26.6% difference in the number of total vehicles on the highway network in the study area, based on the five selected highway links. The number of HGVs is lower in August on the A16, A1104 and A52 Wainfleet Road and higher on the A52 (Hogsthorpe) and the A158.

27.10.2 Road Safety Data

106. PIA data for the period between 1st January 2015 to 30th September 2022 (seven years, nine months, but has been assessed as six years to take account of the reduction in traffic on the highway network during 2020 and 2021 as a result of the Covid-19 pandemic) was received from Onshore ECC for all of the proposed construction routes in the study area. The accident locations and corresponding descriptions are provided in **Annex D**.

107. It should be noted that PIAs are classified into three categories: slight, serious and fatal, and the definition of these are provided below:

- **Slight Injury:** Injuries of a minor nature, such as sprains or cuts not judged to be severe, or slight shock requiring only roadside attention [medical treatment not a prerequisite for an injury defined as slight];
- **Serious Injury:** Injuries for which a person is detained in hospital, as an in-patient, or any of the following injuries, whether or not a person is detained in hospital: fractures, concussion, internal injuries, severe cuts and lacerations, severe general shock requiring medical treatment and injuries which result in death 30 days after the collision. The serious category, therefore, covers a very broad range of injuries; and
- **Fatal Injury:** Injuries which cause death either immediately or any time up to 30 days after the collision.



27.10.2.1 Severity

108. An analysis of the accidents has been undertaken for sections of the proposed construction routes and the number of accidents per severity and route length is provided in **Table 27.17**.



Table 27.17: Accident Severity Analysis

Highway Link Section	Length (miles)	Accidents (No.)			
		Slight	Serious	Fatal	Total
A16 (A151 (Spalding) to the A17)	7.1	70	19	6	95
A16 (A17 to the A52 (Boston))	6.4	109	16	2	127
A16 in Boston	1.5	76	10	1	87
A16 (A158 to the A1028/A1104)	4.0	13	1	0	14
A16 (A1028/A1104 to the B1200)	11.3	38	28	3	69
A17 (Onshore ECC to the A1151)	4.6	49	11	1	61
A17 (Onshore ECC to the A16)	2.4	12	5	0	17
A17 (A16 to the A1121)	7.4	53	16	9	78
A17 (A1121 to the A153 (Sleaford))	9.6	28	15	5	48
A158 (A153 (Horncastle) to the A16)	9.5	37	14	4	55
A158 (A16 to the A1028)	4.0	24	8	0	32
A158 (A1028 to the Onshore ECC)	3.3	16	9	0	25
A158 (Onshore ECC to Roman Bank)	3.5	52	3	3	58
A52 (A1121 (west of Boston) to the A16 (Boston))	1.5	51	5	2	58
A52 (A16 to the B1184 (Old Leake))	6.4	48	12	3	63
A52 (B1184 (Old Leake) to Eau Dike Road)	6.1	31	10	0	41
A52 (A158 (Skegness) to Hogsthorpe)	6.8	94	15	1	110
A52 (Hogsthorpe to the B1449)	2.7	16	4	0	20



Highway Link Section	Length (miles)	Accidents (No.)			
		Slight	Serious	Fatal	Total
B1449 (A52 to the A1104 (Alford))	3.7	9	4	0	13
A1104 (B1449 to the A1028/A16)	3.4	15	7	1	23
Marsh Lane (A52 to the A158)	5.9	29	8	3	40
West End Lane (A52 to Lowfields Road)	0.75	2	0	0	2
Lowfields Road (West End Lane to Ings Bank)	0.83	0	1	0	1
Ings Lane (Ings Bank to the A52)	1.04	0	0	0	0
Common Road (A52 to the Onshore ECC)	0.97	0	0	0	0
Low Road /Yawling Gate Road/Howarth Lane	1.0	1	0	0	1
Collision Gate (Crows Lane to the Onshore ECC)	0.20	0	0	0	0
Crows Lane (Mill Lane to Brewster Lane)	0.16	1	0	0	1
Brewster Lane (Crows Lane and the Onshore ECC)	0.34	1	1	0	2
B1195 Spilsby Road (Cork Lane to the Onshore ECC)	1.43	0	1	0	1
B1195 Wainfleet Road (Cork Lane to Mill Lane)	2.19	3	1	0	3
Mill Lane (B1195 Wainfleet Road to Gunby Lane)	0.85	1	2	0	3
Gunby Lane (Mill Lane to the A158)	1.43	5	2	0	7
Horbling Lane/Fodderdyke Road	3.9	6	2	1	9
Station Road/Fen Bank	3.7	3	3	1	7
Low Road (east of Croft)	0.9	2	0	0	2
Millfield Road East/Low Road/Streetway/Wyberton Roads	2.84	1	1	0	2



Highway Link Section	Length (miles)	Accidents (No.)			
		Slight	Serious	Fatal	Total
Station Road/Skeldyke Road/Nidd's Lane/Marsh Road	3.04	3	0	0	2
Wash Road/Craven's Lane	0.78	1	0	0	1
Marsh Road (Surfleet Bank)	0.34	0	0	0	0



27.10.2.2PIA Rate

109. The number of PIAs per billion vehicle miles in the UK was 413⁴ in 2022, which has been used as a benchmark to assess the PIA rate for each of the sections identified in **Table 27.17**. This has been undertaken using the following calculation:

110. $(\text{Number of PIAs} \times 1,000,000,000) / ((\text{AADT or ADT}) \times 365 \text{ days} \times \text{section length (miles)} \times \text{five years})^5$

111. **Table 27.18** shows the calculated PIA rate for each highway link section (where there has been at least one PIA) in the study area.

Table 27.18: PIA Rate Analysis

Highway Link Section	AADT / ADT	Section Length	PIAs	PIA Rate
A16 (A151 (Spalding) to the A17)	16,270	7.1	95	453
A16 (A17 to the A52 (Boston))	22,100	6.4	127	493
A16 in Boston	37,058	1.5	87	837
A16 (A158 to the A1028/A1104)	5,515	4.0	14	352
A16 (A1028/A1104 to the B1200)	8,928	11.3	69	374
A17 (Onshore ECC to the A1151)	19,839	4.6	61	367
A17 (Onshore ECC to the A16)	19,839	2.4	17	199
A17 (A16 to the A1121)	18,578	7.4	78	309
A17 (A1121 to the A153 (Sleaford))	23,548	9.6	48	116
A158 (A153 (Horncastle) to the A16)	7,714	9.5	55	409
A158 (A16 to the A1028)	11,604	4.0	32	375
A158 (A1028 to the Onshore ECC)	13,005	3.3	25	323
A158 (Onshore ECC to Roman Bank)	13,005	3.5	58	708
A52 (A1121 (west of Boston) to the A16 (Boston))	18,144	1.5	58	1,168
A52 (A16 to the B1184 (Old Leake))	11,616	6.4	63	463

⁴ Reported road casualties in Great Britain: 2019 annual report, DfT (September 2020)

⁵ This rate is derived by multiplying the number of vehicle accidents by 1,000,000,000 miles and dividing by the mileage driven for a given period of time.



Highway Link Section	AADT / ADT	Section Length	PIAs	PIA Rate
A52 (B1184 (Old Leake) to Eau Dike Road)	6,355	6.1	41	583
A52 (A158 (Skegness) to Hogsthorpe)	3,987	6.8	110	2,231
A52 (Hogsthorpe to the B1449)	3,825	2.7	20	1,048
B1449 (A52 to the A1104 (Alford))	4,243	3.7	13	457
A1104 (B1449 to the A1028/A16)	7,168	3.4	23	510
Marsh Lane (A52 to the A158)	4,897	5.9	40	756
West End Road/Lowfields Road	557	1.58	3	1,867
Low Road/Yawling Gate Road/Howarth Lane	776	1	1	706
Brewster Lane (Crows Lane to the Onshore ECC)	33	0.34	1	48,836
B1195 Spilsby Road (Cork Lane to the Onshore ECC)	825	1.43	1	465
B1195 Wainfleet Road (Cork Lane to Mill Lane)	1,096	2.19	3	685
Mill Lane (B1195 Wainfleet Road to Gunby Lane)	1,041	0.85	3	1,858
Gunby Lane (Mill Lane to the A158)	1,041	1.43	7	2,577
Horbling Lane/Fodderdyke Road	1,333	3.9	9	949
Station Road/Fen Bank	647	3.7	7	1,602
Low Road (east of Croft)	597	1.1	1	834
Millfield Road East/Low Road/Streetway/Wyberton Roads	213	2.84	2	1,811
Station Road/Skeldyke Road/Nidd's Lane/Marsh Road	321	3.04	2	1,123
Wash Road/Craven's Lane	213	0.78	1	3,298

112. The analysis of PIA rates shows that the following highway links have a significantly higher accident rate than the national average (2022), per billion vehicle miles:

- A52 between Hogsthorpe and Skegness;
- A16 in Boston;
- A52 in Boston
- A158 in Skegness;
- Mill Lane;



- Brewster Lane;
- Horbling Lane/Fodderdyke Road;
- Station Road/Fen Bank;
- West End Road/Lowfields Road;
- Millfield Road East/Low Road/Streetway/Wyberton Roads;
- Station Road/Skeldyke Road/Nidd's Lane/Marsh Road; and
- Wash Road/Craven's Lane

113. The analysis shows that the following links have a marginally higher accident rate than the national average:

- A16 south of Boston;
- A52 north of Boston;
- B1449;
- A1104;
- Low Road (east of Croft)
- Marsh Lane;
- Gunby Lane;
- B1195 Wainfleet Road; and
- Low Road /Yawling Gate Road/Howarth Lane

114. The other highway links within the study area all have an accident rate similar to, or less than, the UK rate in 2022.

115. The highway links that have a higher PIA rate than the UK PIA rate in 2022 are considered as part of the assessment in Chapter 27 of the ES (document reference 6.1.27), where the EIA screening thresholds are breached.

27.10.2.3 Clusters

116. A summary of the PIA clusters (defined as three or more PIAs at the same location) on the highway links in the study area are:

- A17/A16 roundabout;
- A52/A16 Spalding Road roundabout;
- A16/B1397 roundabout;



- A16/A1138 signal controlled junction;
- A16/High Street left-in/left-out priority junction;
- A158/Gunby Lane junction;
- A17/B1397 staggered priority Junction; and
- A158/Roman Bank signal-controlled junction.

117. The above clusters are considered as part of the assessment Chapter 27 (document reference 6.1.27), on the highway links where the EIA screening thresholds are breached.

27.10.3 Speed Data

118. The average and 85th percentile speeds recorded at each ATC location are shown in **Table 27.19**.



Table 27.19: Speed Data (Construction Vehicle Access Routes)

ATC Reference	Location Reference (Figure 27.1)	Highway Link	Average		85 th Percentile	
			Direction 1 (mph)	Direction 2 (mph)	Direction 1 (mph)	Direction 2 (mph)
8	1	B1449 Long Lane	48.3	38.9	48.3	44.5
7	2	B1449 Thurlby Road	49.8	41.6	49.8	48.7
6	3	A1104 (Alford)	61.6	47.8	61.6	55.5
5	4	A52 (Hogsthorpe)	41.2	36.6	41.2	41.6
9	5	A52 (south of Marsh Lane)	31.8	27.4	31.8	32.6
80	6	Listoft Lane	26.7	25.2	34.2	33.7
10	7	Sloothby High Lane	56.1	37.0	56.1	48.0
11	8	South Ings Lane	56.1	45.3	56.1	53.9
12	9/10	Marsh Lane	63.2	51.7	63.2	60.4
14	11/12	A158 Skegness Road	58.3	51.4	58.3	58.7
15	13/14	A52 (Croft/Wainfleet)	53.5	46.4	53.5	52.3
53	15	A52 Holland Lane	40.6	42.9	47.8	50.8
17	16	A52 (Butterwick)	42.5	37.9	42.5	44.6
1	18/19	A52 Wainfleet Road	39.7	36.1	39.7	40.7
35	20	Church Lane	29.5	29.1	35.4	35.2
30	21	Gunby Lane	42.2	33.4	49.5	38.1



ATC Reference	Location Reference (Figure 27.1)	Highway Link	Average		85 th Percentile	
			Direction (mph) 1	Direction (mph) 2	Direction (mph) 1	Direction (mph) 2
31	22	B1195 (Irby in the Marsh)	36.2	36.6	42.4	43.0
32	23	B1195 (Thorpe St. Peter)	35.5	35.1	41.6	41.6
33	25	Brewster Lane	26.1	22.9	32.4	29.2
81	26	Collision Gate	25.7	21.9	33.8	31.0
43	27	Scald Gate	20.1	21.4	24.8	26.5
41	29	Fen Bank	36.2	37.5	43.3	44.5
49	31	Howgarth Lane	26.4	26.2	32.3	32.9
52	32	Low Road	32.9	37.7	38.8	44.8
56	33	Double Bank	42.6	42.6	52.9	53.0
58	34	Common Road (at A52)	19.8	20.0	24.2	24.6
62	35	Ings Road	39.5	39.7	49.6	49.4
64	36	West End Road	26.4	26.3	33.0	33.6
22	37	Cut End Road	26.4	26.3	33.7	33.9
82	38	Pinfold Lane	11.6	14.4	10.1	13.1
23	39	Wyberton Roads	39.2	31.3	39.2	39.4
24	40	Skeldyke Road	42.7	35.1	42.7	44.1
25	41/42	A16 (south of Boston)	59.1	53.6	59.1	61.6
76	43	Wash Road	19.7	20.0	25.0	24.5



ATC Reference	Location Reference (Figure 27.1)	Highway Link	Average		85 th Percentile	
			Direction 1 (mph)	Direction 2 (mph)	Direction 1 (mph)	Direction 2 (mph)
26	46	A17 (between A16 and A1121)	58.5	52.9	58.5	60.0
28	48	A16 (south of A17)	64.7	52.3	64.7	61.2
2	50	A16 (between A52 (Boston) and A155)	54.3	48.0	54.3	56.0
3	56	A158 (west of A16)	64.4	50.9	64.4	57.2
4	57	A1104 north of B1149	51.5	52.0	51.5	61.2
78	61	Low Road (east of Croft)	37.5	40.2	46.8	50.5
79	62	Marsh Road (Surfleet Bank)	29.5	30.1	40.6	39.9



Table 27.20: Speed Data (Haul Road Crossing Locations)

ATC Reference	Highway Link	Average		85 th Percentile	
		Direction 1 (mph)	Direction 2 (mph)	Direction 1 (mph)	Direction 2 (mph)
13	Ingoldmells Road	45.4	37.8	45.4	45.4
40	Cranberry Lane	29.4	31.2	36.6	38.4
42	Old Fen Bank	36.1	37.7	43.7	45.8
43	Scald Gate	20.1	21.4	24.8	26.5
46	Mill Hill	24.9	25.0	30.8	31.3
48	Skirmore Lane	17.9	17.1	23.2	21.8
49	Howgarth Lane	26.4	26.2	32.3	32.9
50	Patmah's Lane	28.9	28.8	35.7	37.1
54	Seadyke Lane	33.2	30.4	41.0	37.0
57	Cragmire Lane	18.5	15.0	25.3	22.1
61	Double Bank	34.2	33.8	42.9	43.0
65	Ings Lane	28.5	31.8	34.8	39.3
66	Church Road	33.7	33.8	40.6	39.6
69	Unnamed Lane	20.7	17.5	24.5	22.1
70	Faunt Brigde	36.8	33.2	43.3	38.6
71	Pode Lane	29.3	30.1	35.2	38.6
72	Skipmarsh Lane	19.7	18.6	26.6	23.6
73	Southfields	35.0	33.8	42.5	42.9
74	Butterwick Road	40.0	40.3	47.2	47.8
75	Shore Road	36.2	33.8	44.2	41.7
83	Billgate Lane	40.4	38.5	51.2	49.7
84	Middlemarsh Road	43.8	41.7	53.5	49.5
85	Lowgate Road	22.8	21.8	28.5	28.6
86	Langham Road	29.2	30.4	37	38.4



27.11 Sustainable Travel

119. This section provides a description of the sustainable travel network within the study area.

27.11.1 PRow

120. The PRow routes are shown in Annex I

121. The PRow that could be impacted by the Project are set out for each segment in **Table 27.21.**

Table 27.21: PRow⁶

PRow	Onshore ECCS Segment	Starts	Ends	Relationship to the Project
Ande/19/1	1	Sea Road	Ande/19/2	Would cross a temporary duct storage compound
Ande/19/2	1	Roman Bank	Ande/19/2 and Ande/19/3	Would be crossed by haul road/Cable trenches and temporary duct storage area
Ande/19/3	1	Ande/19/1 and Ande/19/2	Chap/19/5	Would be crossed by haul road/and would cross a Cable Installation Compound (CIC) and temporary duct storage area
Chap19/2	1	Chap/21/4	Ande/19/3	Would be crossed by haul road
Chap21/4	1	Ember Lane	Chap19//2	Would be crossed by haul road
Chap/1180/1	1	Ember Lane	Stones Lane	
Hogs/1181/1	1	Ember Lane	Workhouse Lane	Would be crossed by haul road
Hogs/57/1	1	Lowgate Farm	Hogs/58/2 and Hogs/58/5	Would be crossed by haul road

⁶ There are also the following PRow above trenchless works, with no impact: Fish/12/2, Fish/11/5, Fish/13/11, Wybe/8/5, Fosd/8/1, Fosd/2/2, Surf/3/4, Surf/8/2 and Wstn/6/2



PRoW	Onshore ECCS Segment	Starts	Ends	Relationship to the Project
Hogs/58/2	1	Hogs/58/1	Hogs/57/1 and Hogs/58/5	Would be crossed by haul road and cable trenches
Hogs/48/1	2	Private Track to Stackholme End	Addl/48/1 and Addl/49/1	Could be crossed by cable trenches
BurM/265/2	3	Skegness Road (Burgh le Marsh)	Middlemarsh Road and BurM/265/1	Would be crossed by haul road
BurM/260/1	4	A158 Skegness Road	Middlemarsh Road	Would be crossed by enabling works access
BurM/261/3	4	Middlemarsh Road	BurM/261/2, BurM/263/1 and BurM/264/1	Would be crossed by haul road
BurM/263/2	4	BurM/261/3	Middlemarsh Road	Would be crossed by enabling works access, CIC, haul road and cable trenches
Crof/264/1	5	Crof/264/3	A52	Would be crossed by haul road, could be crossed by cable trenches and would be crossed by enabling works access.
Crof/276/4	5	Crof/276/2	Church Lane	Would be crossed by haul road, could be crossed by cable trenches and would be crossed by enabling works access.
Crof/276/2	5	Crof/276/3	Croft Road	Would be crossed by cable trenches
Croft/276/3	5	Church Lane	Crof/276/2	Would be crossed by haul road and cable trenches
WStM/371/1	6	WStM/370/1	Low Road	Would be crossed by haul road and cable trenches
Fish/12/2	10	Cut End Road and Fish/12/1	Fish/14/1 and Fish/12/3	The potential impact would be from an increase in vehicles at



PRoW	Onshore ECCS Segment	Starts	Ends	Relationship to the Project
				the crossing at Cut End Road
Fish/11/5	10	Cut End Road and Fish/11/4	Fish/13/12 and Fish/11/6	The potential impact would be from an increase in vehicles at the crossing at Cut End Road.
Wybe/2/4	11	Crawford's Farm, Wybe/2/2 and Wybe/8/4	Wybe/2/5 and Wybe/8/7	Would be crossed by AC-40 and AC-41.
Kirt/1/5	12	Clough Lane/Seadyke Cottage	Hundred Acre Farm/Kirt/1/4 and Kirt/2/5	Would be crossed by haul road.
Fosd/8/1	12	Low Mill Lane	Fosd/4/1 and Fosd/4/2	Would be crossed by enabling access. Would be crossed by AC-44
Fosd/7/1	12	A17	Moul/6/1	Would be shared with construction access
Fosd/2/2	13	Fosd/2/1	Alga/8/2	Would be crossed by haul road.
Fosd/2/1	13	Surfleet Bank	Fosd/2/2	Shared with a construction access and is part of the Macmillan Way.
Fosd/3/1	13	Fosd/2/1	Alga/9/1	Shared with a construction access and is part of the Macmillan Way.
Alga/9/1	13	Fosd/3/4	Fosd/3/1	Shared with enabling access
Alga/10/1	14	Fosd/6/1	Surf/8/1	Adjacent to access route on private track (no impact)
Surf/8/1	14	Surf/8/2	Alga/10/1	
Fosd/6/1	14	A17	Alga/10/1	Small section shared with construction access



PRoW	Onshore ECCS Segment	Starts	Ends	Relationship to the Project
Surf/9/1	14	Old Sea Bank	Marsh Road/Wstn/4/1	Shared with construction access vehicle route

27.11.2 Cycle Infrastructure

122. There is limited cycling infrastructure on the construction access routes in the study area as these are predominantly rural in nature. There are some shared use paths in Boston and Skegness.

123. The former National Cycle Network Route number 1 (which has been reclassified in for the section in the study area as it does not meet the high-quality standards Sustrans aspire to for the Network), 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.

27.11.3 Access by Public Transport

124. Bus and rail services operate across Lincolnshire, connecting towns with major centres, such as Lincoln, Boston and Skegness. A number of local railway stations are located within the study area such as Wainfleet Train Station. While there may be some potential for construction workers to use these services, the limited coverage in rural areas will minimise the use of public transport for the Project.

27.11.3.1 Bus Services

125. A summary of the relevant bus services is provided in **Table 27.22** to **Table 27.24**.

Table 27.22: Bus Services for the Construction Accesses Near the A52, South Ings Lane or the B1449

Service	Route	Typical Weekday Frequency	Typical Saturday Frequency
59 InterConnect	Skegness – Mablethorpe, via Hogsthorpe	1 per hr	1 per hr
7	Alford – Skegness, via Hogsthorpe	2 per hr	2 per hr



**The distance between these bus stops and the construction accesses would be over 800m.*

Table 27.23: Bus Services for the Construction Accesses Near the A52

Service	Route	Typical Weekday Frequency	Typical Saturday Frequency
57 Interconnect	Skegness – Boston – Spalding	1 per hr	1 per hr
B7	Boston – Skegness	1 per hr	0
X57 InterConnect	Skegness – Boston – Spalding	1 per hr	1 per hr

**The distance between these bus stops, and the construction accesses would be over 800m.*

Table 27.24: Bus Services for the Construction Accesses Near the A158

Service	Route	Typical Weekday Frequency	Typical Saturday Frequency
56 InterConnect	Lincoln – Horncastle – Skegness Interchange	1 per hr	1 per hr
96A	Spilsby – Mablethorpe	1 per hr	0

**The distance between these bus stops, and the accesses would be over 800m.*

27.11.3.2 Rail Services

126. A summary of the relevant rail services is provided in **Table 27.25**

Table 27.25: Rail Services

Railway Station	Typical Frequency
Skegness	1 to 2 per hour in each direction between approximately 06:30 and 21:30
Wainfleet	
Boston	

27.12 Trip Generation

127. This section sets out the forecast trip generation associated with the construction of the Project.



27.12.1 Approach

128. The report sets out the trip generation and distribution (parameters and results) associated with the Maximum Design Scenario (MDS) used for the assessment of the likely significant effects associated with the onshore elements of the Project on traffic and transport.
129. The MDS sets out the maximum design parameters of the combined project assets that result in the greatest potential for change in relation to each impact assessed.
130. The Project design consultant has derived the trip generation forecasts for the construction phase of the Project across a 42-month core construction programme. There would be some additional construction traffic movements in months 42 to 51 associated with commissioning and energisation at the landfall TJB and OnSS; however, these would be minor and therefore would not affect the robust assessment undertaken for the core 42-month construction programme.
131. The Project traffic numbers have been derived using a first principles approach to the engineering parameters of the Project design and using professional judgement from previous project experience Annex J.

27.12.2 Construction Activities

27.12.2.1 Onshore ECC

132. Within each route segment, construction activities would be undertaken in a practical, logical and sequential manner.
133. Site enabling works will be required before construction within each route segment can commence. These will include:
- Upgrade of existing or installation of new access from the public highway where required;
 - Fencing; and
 - Establishment of TCCs, offices, welfare facilities, security, wheel wash, lighting and signage.
134. Construction activities for each route segment will include:



- Topsoil removal;
- Haul road installation, including haul road crossings;
- Trench excavation;
- Duct and tile installation;
- Trench backfilling;
- Trenchless crossings;
- Jointing pit installation; and
- Cable installation and jointing.

135. Once construction is complete, demobilisation and reinstatement can occur.

Activities will consist of:

- Removal of haul road;
- Jointing pit ground re-instatement;
- Replacement of topsoil;
- Landscaping and hedge re-planting; and,
- Demobilisation and fence removal.

27.12.2.2 Onshore Substation

136. The likely sequence of activities at the OnSS is:

- Site enabling works, including:
 - site clearance;
 - site mobilisation, fencing and the establishment of the temporary construction
- The construction of temporary and permanent access roads;
- Site mobilisation, fencing and the establishment of the TCC for the OnSS;
- Ground works including cable ducting and new site drainage;
- Ground raising and establishment of the stoned site platform;
- Installation of the Above Ground Electrical Infrastructure; and
- Demobilisation.

137. Using the construction activities identified above, excluding pre-construction survey work, the indicative construction programme is provided in **0** and includes a breakdown of the anticipated daily number of two-way (arrivals and departures), employee and HGV movements per month, for the segments that comprise the Onshore ECC, the OnSS and grid connection.



27.12.3 Maximum Design Scenario

138. The approach taken to derive the MDS is to establish the peak forecast vehicle demand to and from each route section/OnSS has been added together to create a theoretical 'in-combination worst case' whereby the peak construction activity for all sections would occur concurrently.
139. This method has the advantage of assessing the peak impact on all links and is therefore appropriate for applying assessment screening. However, there is a drawback in that the potential combined traffic flows on the core vehicle access routes are overestimated by assigning peak vehicle demand for all of the route segments/OnSS, when in reality, these peaks would not occur at the same time. Therefore, for the HGVs (which make up the majority of the construction vehicle movements) a 17% reduction factor (derived from the maximum daily vehicle movements from the combined route segments/OnSS compared to the maximum daily vehicle movements for each route segment/OnSS individually) has been applied to the core construction vehicle access routes, as set out in **paragraphs 141 and 142** and **Table 27.26**.
140. The peaks of the HGVs and workforce vehicle movements have been derived independently, both of which would result in a robust assessment of vehicular impact on the LRN.

27.12.3.1 HGVs

141. **Table 27.26** below sets out a summary of the maximum two-way HGV daily trip generation for each route segment/OnSS and the corresponding month. It also shows the difference between the peak HGVs for each route segment/OnSS and the number of HGVs in the month for the greatest number of HGV movements across all route segments/OnSS.

Table 27.26: Maximum HGV Trip Generation

Segment/OnSS	Maximum daily HGVs (2-way)	Month	Peak month 20 (overall) Maximum daily HGVs (2-way)	Difference
1	151	13	59	92
2	153	20	153	0
3	59	29	26	33



Segment/OnSS	Maximum daily HGVs (2-way)	Month	Peak month 20 (overall) Maximum daily HGVs (2-way)	Difference
4	78	20	78	0
5	181	20	181	0
6	171	20	171	0
7	120	37	59	61
8	239	20	239	0
9	149	11	64	85
10	109	20	109	0
11	153	20	153	0
12	153	20	153	0
13/14	102	20	102	0
OnSS	151	3 to 7	90	61
Total	1,970	n/a	1,638	332

142. As **Table 27.26** shows, the assessment based on the maximum HGVs to each Onshore ECC route segment is 332 two-way HGV movements (17%) greater than the total based on the peak month overall.

27.12.3.2 Workforce

143. The same exercise has been undertaken for the anticipated construction workforce, as set out in **Table 27.27**.

Table 27.27: Maximum Workforce Trip Generation

Segment/OnSS	Maximum daily Workforce Vehicles (2-way)	Month	Peak month 20 (overall) Maximum daily Workforce Vehicles (2-way)	Difference
1	24	13	9	14
2	24	19 and 20	24	0
3	9	21 and 22	4	5
4	12	20	12	0
5	28	19 and 20	28	0
6	27	20	27	0
7	19	37	9	9
8	37	19 and 20	37	0



Segment/OnSS	Maximum daily Workforce Vehicles (2-way)	Month	Peak month 20 (overall) Maximum daily Workforce Vehicles (2-way)	Difference
9	23	11	10	13
10	17	13, 19 and 20	17	0
11	24	13, 19 and 20	24	0
12	24	19 and 20	24	0
13 and 14	16	19 and 20	16	0
OnSS	92	3 and 7	54	37
Total	376	n/a	296	80

144. As **Table 27.27** shows, the assessment based on the maximum number of construction workers to each Onshore ECC route segment is 80 -way worker movements greater than the total based on the peak month overall and therefore a robust assessment.

27.12.3.3 Summary

145. Given the above, the assessment of construction traffic has been undertaken based on a set of robust forecasts.

27.12.4 Trip Generation Parameters

146. In order to undertake an assessment of the likely significant effects of the MDS identified for the construction phase of the Project, a number of trip generation parameters have been identified, which have been discussed with ETG members as part of the Evidence Plan process. The assumptions have been informed by the evolving project design parameters and are considered suitable in order to provide a robust but reasonable forecast of the likely traffic effects of the Project during construction.

147. The key trip generation parameters are:

- Core working hours – 07:00 to 19:00 (Monday to Saturday), which doesn't take into account some 24-hour working that may be required for trenchless technique crossing works;
- The construction workforce arrive and depart in cars or light goods vehicles (LGVs);



- Construction workforce arrival and departures:
 - 80% arriving before 07:00 and leaving after 18:00 (April to October), or before 16:00 (November to March), based on approximate daylight hours (see **Annex K**; and
 - 20% arriving between 07:00 and 09:00 and leaving between 16:00 and 18:00 (the peak hour periods identified on the highway network, which varies across the study area; predominantly 08:00 to 09:00 and 16:00 to 17:00).
- Core HGV deliveries - 07:00 to 19:00 (Monday to Friday) and Saturday 07:00 to 13:00;
- The two-way HGV movements assumes a vehicle arriving at a construction access and TCC, unloading and departing at the same access;
- With the exception of the haul roads that may be used to provide off-road routes for construction traffic between route segments off the highway network, the HGV movements along each of the haul roads is not known and is not specifically assessed as part of Chapter 27 (document reference 6.1.27). The construction traffic data that has been provided to inform Volume 1, Chapter 26 Noise and Vibration (document reference 6.1.26) (for the assessment of noise receptors along the haul roads) it has assumed that all HGVs arriving at an access to the Onshore ECC/OnSS/grid connection would also use the haul roads;
- Car occupancy – two construction workers per car, which is considered a conservative estimate, given core working hours will be the same for the majority of workers, who may frequent the same local accommodation and wish to share travel costs; and
- The two-way employee movements assumes a vehicle arriving at a construction access and/or TCC in the morning and leaving in the evening, as per the assumptions above.

27.12.4.1 Daily Trip Generation

148. The maximum daily trip generation for total, HGVs and construction worker vehicle movements associated with the construction of the Project, based on **Table 27.26** and **Table 27.27** is summarised in **Table 27.28**, which also shows the average (across the assumed core 42-month construction programme) vehicle movements as a comparison.



Table 27.28: Daily (Two-Way) Trip Generation Summary

Segment/OnSS	Total vehicles		HGVs		Workforce (cars/LGVs)	
	Max	Average (42-months)	Max	Average (42-months)	Max	Average (42-months)
1	175	40	151	35	24	5
2	177	45	153	39	24	6
3	68	14	59	12	9	2
4	90	21	78	18	12	3
5	209	44	181	38	28	6
6	198	31	171	27	27	4
7	139	17	120	15	19	2
8	276	68	239	59	37	9
9	172	41	149	35	23	6
10	126	31	109	27	17	4
11	177	42	153	36	24	6
12	177	39	153	34	24	5
13/14	118	28	102	24	16	4
OnSS	243	90	151	56	92	34
Total	1,934	551	1,638	455	296	96



27.12.4.2 Peak Hour Trip Generation

149. The maximum forecast vehicular traffic associated with the construction of the Project during the morning and evening peak hours on the highway network is summarised in **Table 27.29** based on the assumptions set out in **Paragraph 147**.

Table 27.29: Peak Hour (Two-Way) Trip Generation Summary (AM or PM Peak)

Segment/OnSS	Total Vehicles	HGVs	Workforce (Cars/LGVs)
1	25	13	2
2	25	13	2
3	6	5	1
4	8	7	1
5	18	15	3
6	17	14	3
7	12	10	2
8	24	20	4
9	14	12	2
10	11	9	2
11	15	13	2
12	15	13	2
13/14	11	9	2
OnSS	22	13	9
Total	167	137	30

27.12.5 Traffic Distribution Parameters

27.12.5.1 Construction Workforce

150. A simple population/distance (squared) gravity model has been prepared (see **Annex L**) based on settlements within a one-hour (approximate) journey time from the centre of the study area to distribute the likely vehicle movements from the construction workforce, noting that this will be highly dependent on the availability of accommodation at the time of the construction period.

151. The construction workforce distribution is summarised in **Table 27.30**



Table 27.30: Construction Workforce Trip Distribution

Location	Population	Distance (km)	Weighted (Population/distance)	Distribution (%)
Boston	58,124	14	297	33.0
Grantham	44,000	44	23	2.5
Grimsby	88,243	42	50	5.6
Horncastle	6,651	22	14	1.5
Kings Lynn	42,800	47	19	2.2
Lincoln	130,200	40	81	9.1
Louth	16,419	27	23	2.5
Mablethorpe	12,531	22	26	2.9
Newark	37,084	50	15	1.7
Peterborough	186,400	48	81	9.0
Skegness	24,876	12	173	19.2
Sleaford	17,359	32	17	1.9
Spalding	28,722	27	39	4.4
Spilsby	3,440	12	24	2.7
Wisbech	31,573	42	18	2.0

152. For the purposes of the assessment, HGVs and construction employee vehicles will use the same routes (with the exception of the LGV only routes on Boston Road, Mill Lane and Ivy Lane, Low Road and Scald Gate) to ensure a robust assessment along these highway links. However, in reality, depending on the proportion of local employees and the availability of local accommodation for workers who do not live in the local area, the distribution of construction worker vehicles is likely to be spread across the wider network, reducing the level of likely impact across the LRN.

27.12.5.2HGV

153. In terms of the traffic distribution parameters, all HGV traffic associated with the construction phase of the Project is assumed to use the routes identified in **Table 27.8**, with the exception of the Special Order AIL, which is the transformer for the OnSS, which would follow the route confirmed with the AIL route assessment in **Section 27.14**.

154. The assumed proportion of HGVs to each construction access and the routeing from and to the wider highway network is shown in **Annex L**.



27.12.5.3 Assessment Scenarios

155. Two assessment scenarios have been considered to take account of the maximum likely impact on all highway links in the study area.

156. The assessment scenarios are:

- **Scenario 1:** Maximum impact in Skegness; and
- **Scenario 2:** Use of haul road between the A158 and A52 to avoid Skegness.

157. The traffic assignment assumptions are set out in **Table 27.31**.



Table 27.31: Trip Distribution Scenarios

Construction Access	Core Construction Vehicle Access Route	Local Construction Vehicle Access Route	Scenario Distribution (%)	
			1	2
AC-01/AC-03	A158/A16/A1104 (Alford)/A1449/A52	N/A	50	50
	A16/A1104 (Alford)/A1449/A52	N/A	50	50
AC-04/AC-05	A158/Gunby Road/Marsh Lane	South Ings Lane/Sloothby High Lane/Listoft Lane	50	50
	A16/A1028/A158/Gunby Road/Marsh Lane	South Ings Lane/Sloothby High Lane/ Listoft Lane	50	50
AC-06/AC-07	A158/Gunby Road/Marsh Lane	South Ings Lane/Sloothby High Lane/	50	50
	A16/A1028/A158/Gunby Road/Marsh Lane/	South Ings Lane/Sloothby High Lane/	50	50
AC-08/AC-09	A158/Gunby Road/Marsh Lane	South Ings Lane	50	50
	A16/A1028/A158/Gunby Road/Marsh Lane	South Ings Lane	50	50
AC-10/AC-11	A158/Gunby Road/Marsh Lane	N/A	50	50
	A16/A1028/A158/ Gunby Road/Marsh Lane	N/A	50	50
AC-12/AC-13	A158	N/A	50	50
	A16/A1028/A158	N/A	50	50
AC-14	Access for haul road between A158 and A52	Low Road	N/A	
AC-15	A158/Lincoln Road (via Skegness)/A52	N/A	50	0
	A16/A1028/A158/Lincoln Road (via Skegness)/A52	N/A	50	0
	A158/Haul Road/Low Road/A52	N/A	0	50



Construction Access	Core Construction Vehicle Access Route	Local Construction Vehicle Access Route	Scenario Distribution (%)	
			1	2
	A16/A1028/A158/Haul Road/Low Road/A52	N/A	0	50
AC-16/AC-17	A158/Lincoln Road (via Skegness)/A52	Church Lane	50	0
	A16/A1028/A158/Lincoln Road (via Skegness)/A52	Church Lane	50	0
	A158/Haul Road/Low Road/A52	Church Lane	0	50
	A16/A1028/A158/Haul Road/Low Road/A52	Church Lane	0	50
AC-18/AC-19	A158/Gunby Road/B1995	N/A	50	50
	A16/A1028/A158/Gunby Road/B1995	N/A	50	50
AC-20/AC-21	A158/Gunby Road/B1995	Brewster Lane	50	50
	A16/A1028/A158/Gunby Road/B1995	Brewster Lane	50	50
AC-22/AC-23	A158/Gunby Road/B1995	Brewster Lane/Crow's Lane/Collision Gate	50	50
	A16/A1028/A158/Gunby Road/B1995	Brewster Lane/Crow's Lane/Collision Gate	50	50
AC-24	A158/Gunby Road/B1995	B1195 Boston Road/Mill Lane (LGV only)	100	100
AC-25/AC-26	A16/A1028/A158/Gunby Road/B1995	Ivy Lane/Low Road/Scald Gate (LGV only)	100	100
AC-27/AC-28	A158/A16/Horbling Lane/Midville Road/Fodderdyke Bank/Station Road/Fen Bank	N/A	50	50
	A17/A52/A16/Horbling Lane/Midville Road/Fodderdyke Bank/Station Road/Fen Bank	NA	50	50



Construction Access	Core Construction Vehicle Access Route	Local Construction Vehicle Access Route	Scenario Distribution (%)	
			1	2
AC29	A158/Lincoln Road (via Skegness)/A52	Low Road/Yawning Gate Road/Howgarth Lane	50	0
	A16/A1028/A158/Lincoln Road (via Skegness)/A52	Low Road/Yawning Gate Road/Howgarth Lane	50	0
	A158/Lincoln Road (via Skegness)/A52	Low Road/Yawning Gate Road/Howgarth Lane	0	50
	A16/A1028/A158/Lincoln Road (via Skegness)/A52	Low Road/Yawning Gate Road/Howgarth Lane	0	50
AC-30/AC-31/AC-32/AC-33/AC-34	A158/Lincoln Road (via Skegness)/A52	AC-30/AC-31 - Common Road/Double Bank	20	20
	A16/A1028/A158/Lincoln Road (via Skegness)/A52	AC-32/AC-33 - West End Lane/Lowfields Road/Ings Road	80	80
		AC-34 – n/a		
AC-35/AC-36/AC-37/AC-38	A158/A16/A52	AC-35 – n/a	35	35
		AC-36/AC-37 - Haul Road/Cut End Road		
AC-38 - Haul Road/Cut End Road/Pinfold Lane				
	A16/A52	AC-35 – n/a	35	35
		AC-36/AC-37 - Haul Road/Cut End Road		



Construction Access	Core Construction Vehicle Access Route	Local Construction Vehicle Access Route	Scenario Distribution (%)	
			1	2
		AC-38 - Haul Road/Cut End Road/Pinfold Lane		
	A16 (Via Boston)	AC-35 – n/a AC-36/AC-37 - Haul Road/Cut End Road AC-38 - Haul Road/Cut End Road/Pinfold Lane	18	18
	A17/A52 (via Boston)	AC-35 – n/a AC-36/AC-37 - Haul Road/Cut End Road AC-38 - Haul Road/Cut End Road/Pinfold Lane	18	18
AC-39/AC-40/AC-41/AC-42/AC-43	A17 West of A1121/A16	AC-39 - Millfield Lane East AC-40/AC-41 – Millfield Lane East/Low Road/Streetway/Wyberton Roads AC-42/AC-43 - Station Road/Skeldyke Road/Nidd’s Lane/Marsh Road	50	50
	A16 South	AC-39 - Millfield Lane East AC-40/AC-41 – Millfield Lane East/Low Road/Streetway/Wyberton Roads	25	25



Construction Access	Core Construction Vehicle Access Route	Local Construction Vehicle Access Route	Scenario Distribution (%)	
			1	2
		AC-42/AC-43 - Station Road/Skeldyke Road/Nidd's Lane/Marsh Road		
	A17 (South/North of River Weland)/A16	AC-39 - Millfield Lane East AC-40/AC-41 – Millfield Lane East/Low Road/Streetway/Wyberton Roads AC-42/AC-43 - Station Road/Skeldyke Road/Nidd's Lane/Marsh Road	25	25
AC-44, AC-45 and AC-46	A17 West of A1121/A17 North of River Welland	AC-44 - Wash Road/Craven's Lane AC-45/AC-46 – Wash Road	50	50
	A16 South/A17 North of River Welland	AC-44 - Wash Road/Craven's Lane AC-45/AC-46 – Wash Road	25	25
	A17 (South/North of River Weland)	AC-44 - Wash Road/Craven's Lane AC-45/AC-46 – Wash Road	25	25
AC-47	A17 West of A1121/A17 North of River Welland	Surfeet Bank	50	50
	A16 South/A17 North of River Welland	Surfeet Bank	25	25
	A17 (South/North of River Weland)	Surfeet Bank	25	25
AC-48	A17 West of A1121/A16	Surfleet Bank	50	50



Construction Access	Core Construction Vehicle Access Route	Local Construction Vehicle Access Route	Scenario Distribution (%)	
			1	2
	A16 South	Surfleet Bank	25	25
	A17 (South/North of River Weland)/A16	Surfleet Bank	25	25
AC-49/AC-50	A17 West of A1121/(South/North of River Weland)	Private track (via AC-51 and AC-53)/Marsh Road	50	50
	A16 South/(South/North of River Weland)	Private track (via AC-51 and AC-53)/Marsh Road	25	25
	A17 (South/North of River Weland)	Private track(via AC-51 and AC-53)/Marsh Road	25	25
AC-52	As per routing options for AC-44, AC45, AC-46 and AC-47		Construction vehicles may use this access prior to accessing AC-44, AC45, AC-46, AC-47, AC-49 and AC-50.	



27.12.6 Daily Trip Generation per Highway Link

27.12.6.1 Peak Months

158. The peak (anticipated to be over two months) two-way daily vehicular trip generation (total, LGV and HGV) on each highway link for the maximum of Scenario 1 and Scenario 2 is shown in **Table 27.32**, and shown on Figure 27.4, Figure 27.5 and Figure 27.6.

Table 27.32: Maximum Two-Way Daily Vehicle Movements

Location Reference (Figure 27.1.1)	Highway Link	Maximum Two-Way ⁷		
		Total	HGV	Car/LGV
1	B1449 Thurlby Road	195	174	21
2	B1449 Long Lane	195	174	21
3	A1104	195	174	21
4	A52 (west of Hogsthorpe)	195	174	21
5	A52 between Marsh Lane and Skegness	10	0	10
6	Listoft Lane	31	23	8
7	Sloothby High Lane	56	46	10
8	South Ings Lane	81	69	12
9	Marsh Lane (east of AC-10/AC-11)	3	0	3
10	Marsh Lane (west of AC-10/AC-11)	163	145	18
11	A158 Skegness Road (east of AC-12/AC-13)	147	147	0
12	A158 Skegness Road (west of AC-12/AC-13)	623	565	58
13	A52 (north of Low Road)	219	147	72
14	A52 (south of Low Road)	244	147	97
15	A52 (Holland Lane)	198	87	111
16	A52 (Wrangle)	243	87	156
17	A52 (Butterwick)	243	87	156
18	A52 Wainfleet Road (west of AC-34/AC-35)	574	434	140
19	A52 Wainfleet Road (east of AC-34/AC-35)	575	434	141

⁷ The figures in this table have been altered to take account of errors associated with rounding and therefore some total vehicle movements shown in Figure 27.4 may differ slightly.



Location Reference (Figure 27.1.1)	Highway Link	Maximum Two-Way ⁷		
		Total	HGV	Car/LGV
20	Church Lane	40	36	4
21	Gunby Lane	184	163	21
22	B1195 (Irby in the Marsh)	184	163	21
23	B1195 (Thorpe St. Peter)	218	163	55
24	Boston Road (Wainfleet)	47	0	47
25	Brewster Lane	69	54	14
26	Collision Gate	30	27	3
27	Scald Gate	10	0	10
28	Horbling Lane	210	200	10
29	Fen Bank	210	200	10
30	Mill Lane	10	0	10
31	Howgarth Lane	54	45	9
32	Low Road	54	45	9
33	Common Road	192	164	28
34	Common Road (near A52)	192	164	28
35	Ings Road	187	157	30
36	West End Road	187	157	30
37	Cut End Road	38	33	5
38	Pinfold Lane	38	33	5
39	Millfield Lane East to Wyberton Roads	89	77	12
40	Station Road to Marsh Road	177	153	24
41	Wash Road/Craven's Lane	89	77	12
42	A16 (north of AC-39)	183	64	120
43	A16 (south of AC-39)	420	305	115
44	A17 (south of River Welland)	238	220	18
45	A17 (north of River Welland)	227	175	51
46	A17 (between A16 and A1121)	314	294	20
47	A17 (west of A1221)	381	353	28
48	A16 (south of A17)	489	350	139
49	A1121 between Boston and A17	124	116	9



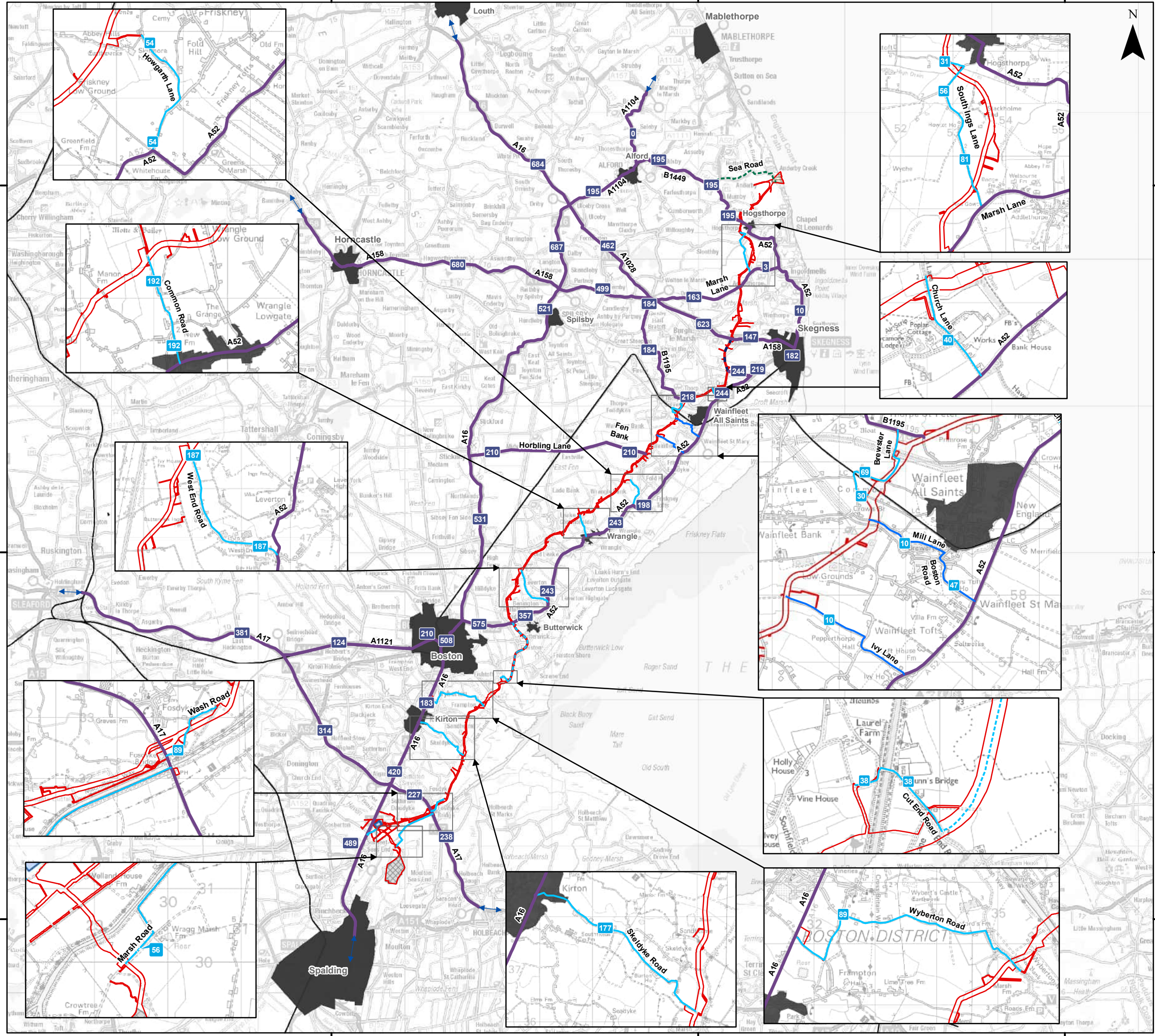
Location Reference (Figure 27.1.1)	Highway Link	Maximum Two-Way ⁷		
		Total	HGV	Car/LGV
50	A16 between A52 (Boston) and A155	531	447	84
51	A16 between A155 and A158	521	447	74
52	A16 between A158 and A1028	687	653	35
53	A16 north of A1028/A1104	684	653	32
54	A1028 between A158 and A16	462	462	0
55	A158 between A1028 and A16	499	462	37
56	A158 west of A16	680	653	28
58	A16 Boston	508	241	267
59	A52 Boston	210	121	89
60	Lincoln Road Skegness	182	177	5
61	Low Road (east of Croft)	244	147	97
62	Marsh Road (Surfleet Bank)	56	51	5



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Legend

- Order Limits
 - Onshore Substation (OnSS) Footprint
 - Landfall Trenchless Works Area
 - Transition Joint Bay Area
 - Connection Area
 - Railway Line
- Construction Access Vehicle Route - Number of Vehicles**
- Core Access Route
 - Local Access Route
- Construction Access Vehicle Route Type**
- Core Access Route
 - Core Access Route via Haul Road
 - Local Access Route
 - Local Access Route via Haul Road
 - Local Access Route (LGV)
 - Local Access Route - Enabling Works
 - To / From Wider Highway Network

Note:
 Not all local construction vehicle route road names shown between the core construction vehicle routes and the Onshore ECC.
 Construction vehicle movements should be treated as the maximum on each highway link individually and may not occur at the same time, due to the assessment being based on the anticipated maximum construction vehicle movements for each route section/OnSS – refer to Section 27.11.



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Environmental Statement
 Maximum Daily Total Traffic

Figure 27.1.4

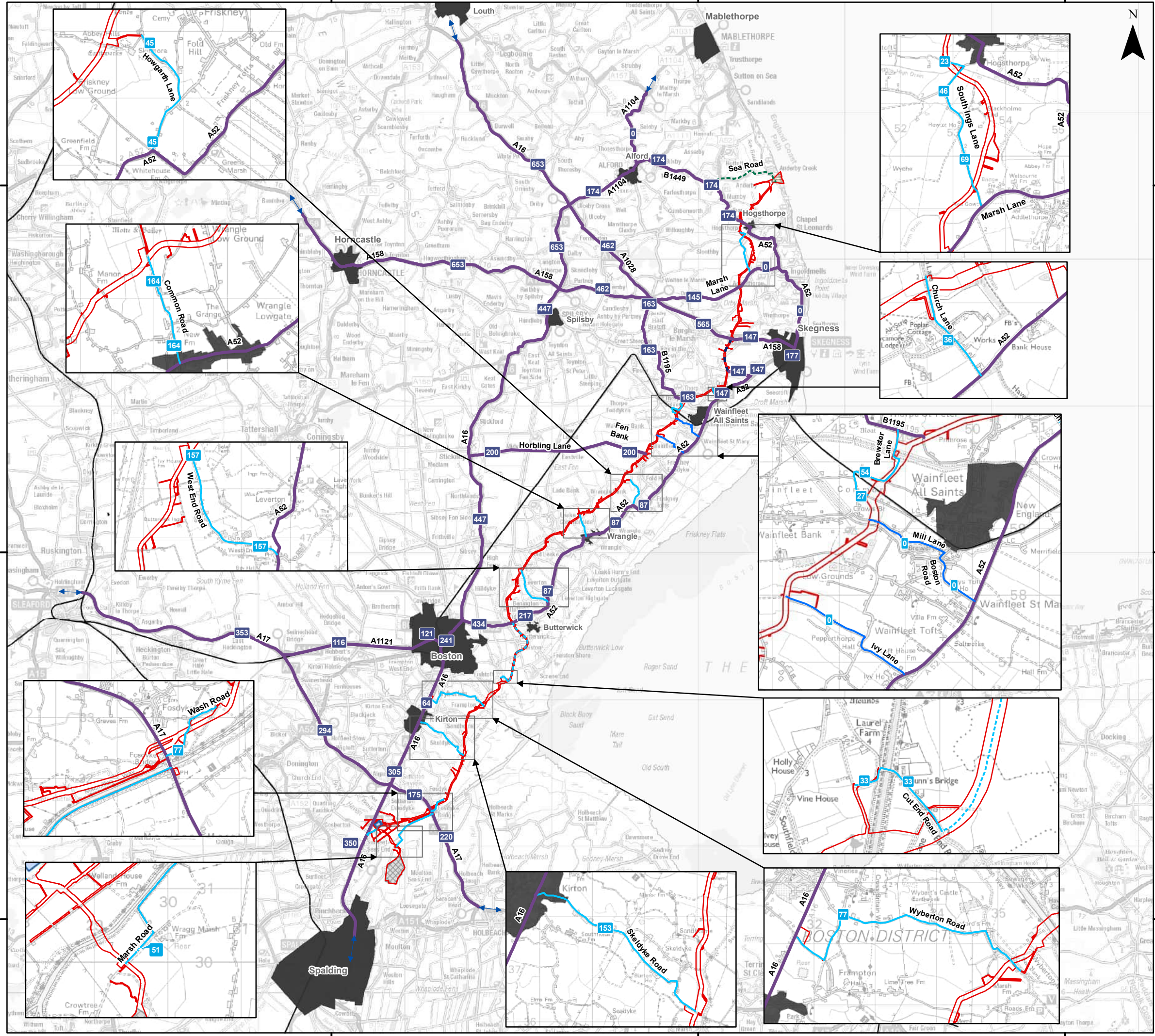


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Legend

- Order Limits
 - Onshore Substation (OnSS) Footprint
 - Landfall Trenchless Works Area
 - Transition Joint Bay Area
 - Connection Area
 - Railway Line
- Construction Access Vehicle Route - Number of Vehicles**
- Core Access Route
 - Local Access Route
- Construction Access Vehicle Route Type**
- Core Access Route
 - Core Access Route via Haul Road
 - Local Access Route
 - Local Access Route via Haul Road
 - Local Access Route (LGV)
 - Local Access Route - Enabling Works
 - To / From Wider Highway Network

Note:
 Not all local construction vehicle route road names shown between the core construction vehicle routes and the Onshore ECC.
 Construction vehicle movements should be treated as the maximum on each highway link individually and may not occur at the same time, due to the assessment being based on the anticipated maximum construction vehicle movements for each route section/OnSS – refer to Section 27.11.



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Environmental Statement
 Maximum Daily HGV's Traffic

Figure 27.1.5



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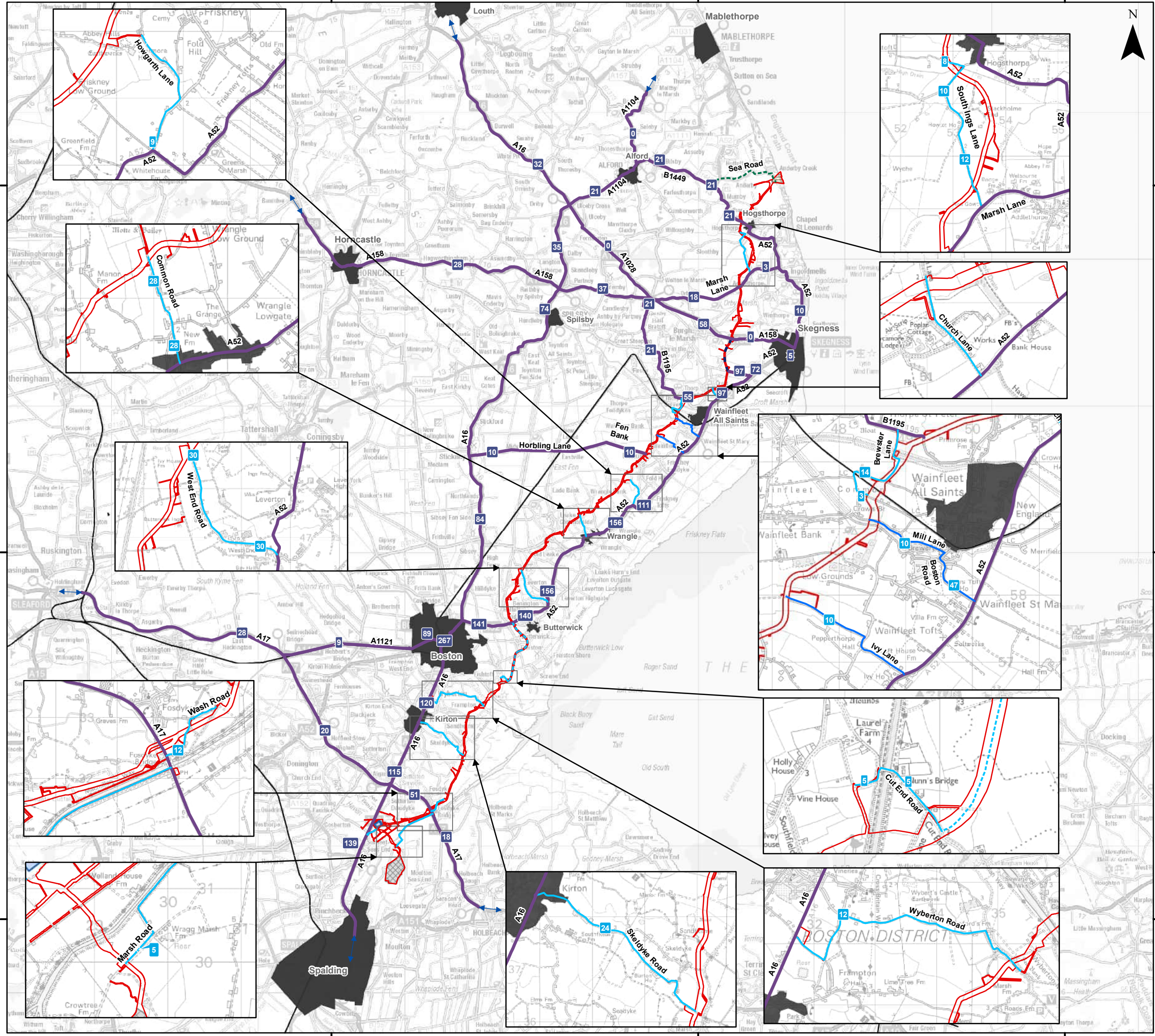
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Legend

- Order Limits
 - Onshore Substation (OnSS) Footprint
 - Landfall Trenchless Works Area
 - Transition Joint Bay Area
 - Connection Area
 - Railway Line
- Construction Access Vehicle Route - Number of Vehicles**
- Core Access Route
 - Local Access Route
- Construction Access Vehicle Route Type**
- Core Access Route
 - Core Access Route via Haul Road
 - Local Access Route
 - Local Access Route via Haul Road
 - Local Access Route (LGV)
 - Local Access Route - Enabling Works
 - To / From Wider Highway Network

Note:
 Not all local construction vehicle route road names shown between the core construction vehicle routes and the Onshore ECC.
 Construction vehicle movements should be treated as the maximum on each highway link individually and may not occur at the same time, due to the assessment being based on the anticipated maximum construction vehicle movements for each route section/OnSS – refer to Section 27.11.



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Environmental Statement
 Maximum Daily Workforce Vehicles

Figure 27.1.6



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27.12.6.2 Average (42-months)

159. The average (over the core 42-month construction period) two-way daily vehicular trip generation (total, LGV and HGV) on each highway link for the maximum of Scenario 1 and Scenario 2 is shown in **Table 27.33**.

Table 27.33: Average (42-month Construction Programme) Two-Way Daily Vehicle Movements

Location Reference (Figure 27.1.1)	Highway Link	Average Two-Way		
		Total	HGV	Car/LGV
1	B1449 Thurlby Road	45	40	5
2	B1449 Long Lane	45	40	5
3	A1104	45	40	5
4	A52 (west of Hogsthorpe)	45	40	5
5	A52 between Marsh Lane and Skegness	2	0	2
6	Listoft Lane	8	6	2
7	Sloothby High Lane	14	11	2
8	South Ings Lane	20	17	3
9	Marsh Lane (east of AC-10/AC-11)	1	0	1
10	Marsh Lane (west of AC-10/AC-11)	39	35	4
11	A158 Skegness Road (east of AC-12/AC-13)	33	33	0
12	A158 Skegness Road (west of AC-12/AC-13)	147	135	12
13	A52 (north of Low Road)	50	33	18
14	A52 (south of Low Road)	55	33	23
15	A52 (Holland Lane)	44	19	25
16	A52 (Wrangle)	54	19	35
17	A52 (Butterwick)	54	19	35
18	A52 Wainfleet Road (west of AC-34/AC-35)	139	107	32
19	A52 Wainfleet Road (east of AC-34/AC-35)	139	107	33
20	Church Lane	8	7	1
21	Gunby Lane	35	31	4
22	B1195 (Irby in the Marsh)	35	31	4
23	B1195 (Thorpe St. Peter)	41	31	10
24	Boston Road (Wainfleet)	9	0	9



Location Reference (Figure 27.1.1)	Highway Link	Average Two-Way		
		Total	HGV	Car/LGV
25	Brewster Lane	13	10	3
26	Collision Gate	30	27	3
27	Scald Gate	1	0	1
28	Horbling Lane	30	29	1
29	Fen Bank	30	29	1
30	Mill Lane	10	0	10
31	Howgarth Lane	8	6	1
32	Low Road	8	6	1
33	Common Road	38	33	6
34	Common Road (near A52)	38	33	6
35	Ings Road	41	34	7
36	West End Road	41	34	7
37	Cut End Road	9	8	1
38	Pinfold Lane	38	33	5
39	Millfield Lane East to Wyberton Roads	19	16	3
40	Station Road to Marsh Road	36	31	5
41	Wash Road/Craven's Lane	18	15	2
42	A16 (north of AC-39)	50	16	34
43	A16 (south of AC-397)	107	74	33
44	A17 (south of River Welland)	63	59	4
45	A17 (north of River Welland)	61	48	13
46	A17 (between A16 and A1121)	88	82	6
47	A17 (west of A1221)	104	96	8
48	A16 (south of A17)	91	48	43
49	A1121 between Boston and A17	30	28	2
50	A16 between A52 (Boston) and A155	120	100	20
51	A16 between A155 and A158	118	100	18
52	A16 between A158 and A1028	159	150	8
53	A16 north of A1028/A1104	158	150	8
54	A1028 between A158 and A16	104	104	0
55	A158 between A1028 and A16	113	104	8



Location Reference (Figure 27.1.1)	Highway Link	Average Two-Way		
		Total	HGV	Car/LGV
56	A158 west of A16	156	150	6
57	A1104 north of B1149	0	0	0
58	A16 Boston	126	56	70
59	A52 Boston	51	28	23
60	Lincoln Road Skegness	34	33	1
61	Low Road	55	33	23
62	Marsh Road	12	11	1

27.12.7 Peak Hour Trip Generation per Highway Link

160. The two-way peak hour vehicular trip generation (total, LGV and HGV) on each highway link for the maximum of Scenario 1 and Scenario 2 is shown in **Table 27.32** and shown on Figure 27.7, Figure 27.8 and Figure 27.9).

Table 27.34: Maximum Two-Way Peak Hour Vehicle Movements

Location Reference (Figure 27.1.1)	Highway Link	Maximum Two-Way ⁸		
		Total	HGV	Car/LGV
1	B1449 Thurlby Road	16	14	2
2	B1449 Long Lane	16	14	2
3	A1104	16	14	2
4	A52 (west of Hogsthorpe)	16	14	2
5	A52 between Marsh Lane and Skegness	1	0	1
6	Listoft Lane	3	2	1
7	Sloothby High Lane	5	4	1
8	South Ings Lane	7	6	1
9	Marsh Lane (east of AC-10/AC-11)	0	0	0
10	Marsh Lane (west of AC-10/AC-11)	14	12	2
11	A158 Skegness Road (east of AC-12/AC-13)	12	12	0

⁸ The figures in this table have been altered to take account of errors associated with rounding and therefore some total vehicle movements shown in may differ slightly.



Location Reference (Figure 27.1.1)	Highway Link	Maximum Two-Way ⁸		
		Total	HGV	Car/LGV
12	A158 Skegness Road (west of AC-12/AC-13)	53	47	6
13	A52 (north of Low Road)	19	12	7
14	A52 (south of Low Road)	22	12	10
15	A52 (Holland Lane)	18	7	11
16	A52 (Wrangle)	23	7	16
17	A52 (Butterwick)	23	7	16
18	A52 Wainfleet Road (east of AC-34/AC-35)	50	36	14
19	A52 Wainfleet Road (west of AC-34/AC-35)	50	36	14
20	Church Lane	3	3	0
21	Gunby Lane	16	14	2
22	B1195 (Irby in the Marsh)	16	14	2
23	B1195 (Thorpe St. Peter)	20	14	6
24	Boston Road (Wainfleet)	5	0	5
25	Brewster Lane	6	5	1
26	Collision Gate	2	2	0
27	Scald Gate	1	0	1
28	Horbling Lane	18	17	1
29	Fen Bank	18	17	1
30	Mill Lane	1	0	1
31	Howgarth Lane	5	4	1
32	Low Road	5	4	1
33	Common Road	17	14	3
34	Common Road (near A52)	17	14	3
35	Ings Road	16	13	3
36	West End Road	16	13	3
37	Cut End Road	4	3	1
38	Pinfold Lane	4	3	1
39	Millfield Lane East to Wyberton Roads	7	6	1
40	Station Road to Marsh Road	15	13	2
41	Wash Road/Craven's Lane	7	6	1
42	A16 (north of AC-39)	17	5	12



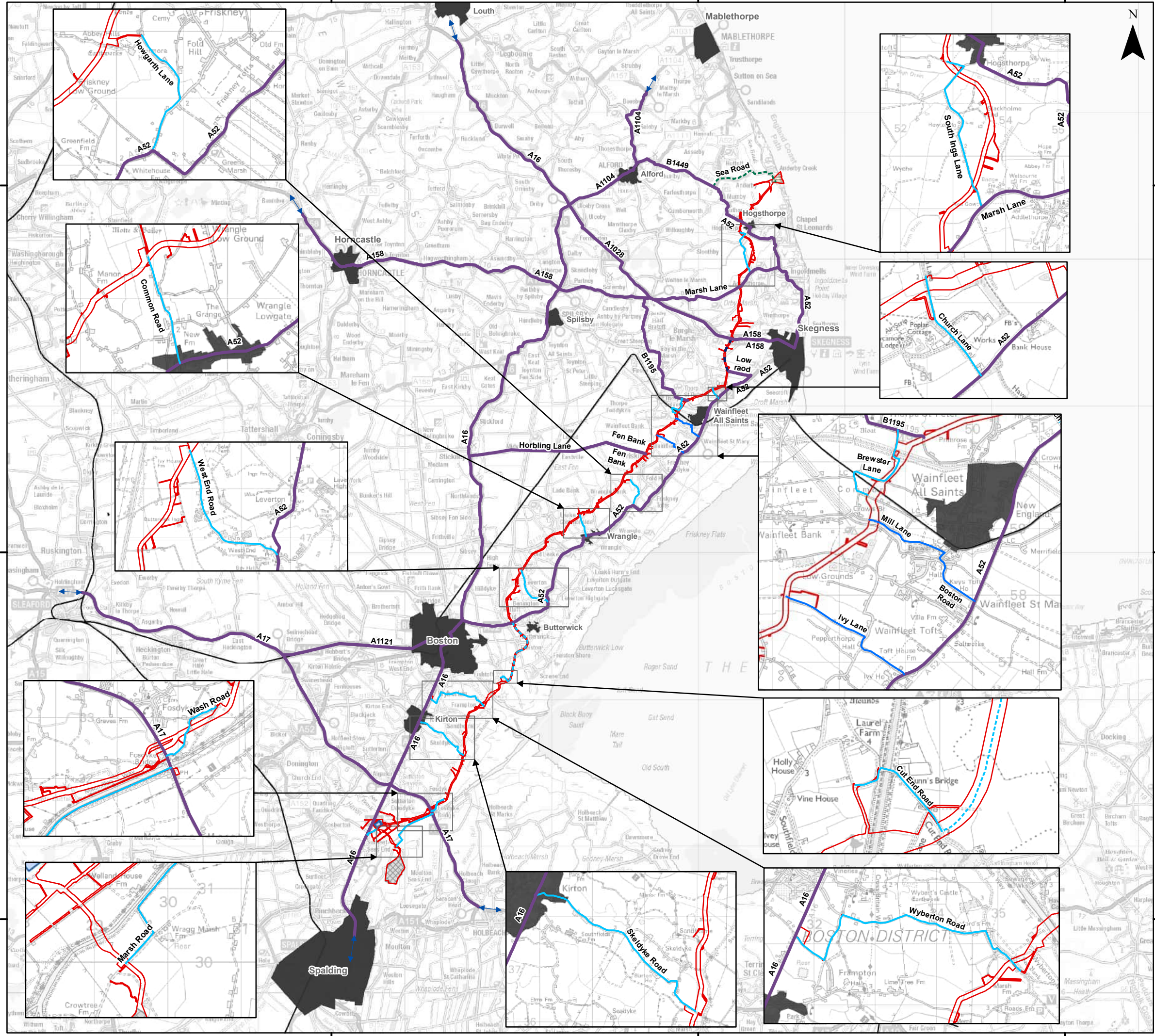
Location Reference (Figure 27.1.1)	Highway Link	Maximum Two-Way ⁸		
		Total	HGV	Car/LGV
43	A16 (south of AC-39)	36	25	11
44	A17 (south of River Welland)	20	18	2
45	A17 (north of River Welland)	20	15	5
46	A17 (between A16 and A1121)	26	25	2
47	A17 (west of A1221)	32	29	3
48	A16 (south of A17)	43	29	14
49	A1121 between Boston and A17	11	10	1
50	A16 between A52 (Boston) and A155	45	37	8
51	A16 between A155 and A158	44	37	7
52	A16 between A158 and A1028	57	54	3
53	A16 north of A1028/A1104	57	54	3
54	A1028 between A158 and A16	38	38	0
55	A158 between A1028 and A16	42	38	4
56	A158 west of A16	57	54	3
58	A16 Boston	47	20	27
59	A52 Boston	19	10	9
60	Lincoln Road Skegness	16	15	1
61	Low Road	22	12	10
62	Marsh Road	5	4	1



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Legend

- Order Limits
 - Onshore Substation (OnSS) Footprint
 - Landfall Trenchless Works Area
 - Transition Joint Bay Area
 - Connection Area
 - Railway Line
- Construction Access Vehicle Route - Number of Vehicles**
- Core Access Route
 - Local Access Route
- Construction Access Vehicle Route Type**
- Core Access Route
 - Core Access Route via Haul Road
 - Local Access Route
 - Local Access Route via Haul Road
 - Local Access Route (LGV)
 - Local Access Route - Enabling Works
 - To / From Wider Highway Network

Note:
 Not all local construction vehicle route road names shown between the core construction vehicle routes and the Onshore ECC.
 Construction vehicle movements should be treated as the maximum on each highway link individually and may not occur at the same time, due to the assessment being based on the anticipated maximum construction vehicle movements for each route section/OnSS – refer to Section 27.11.



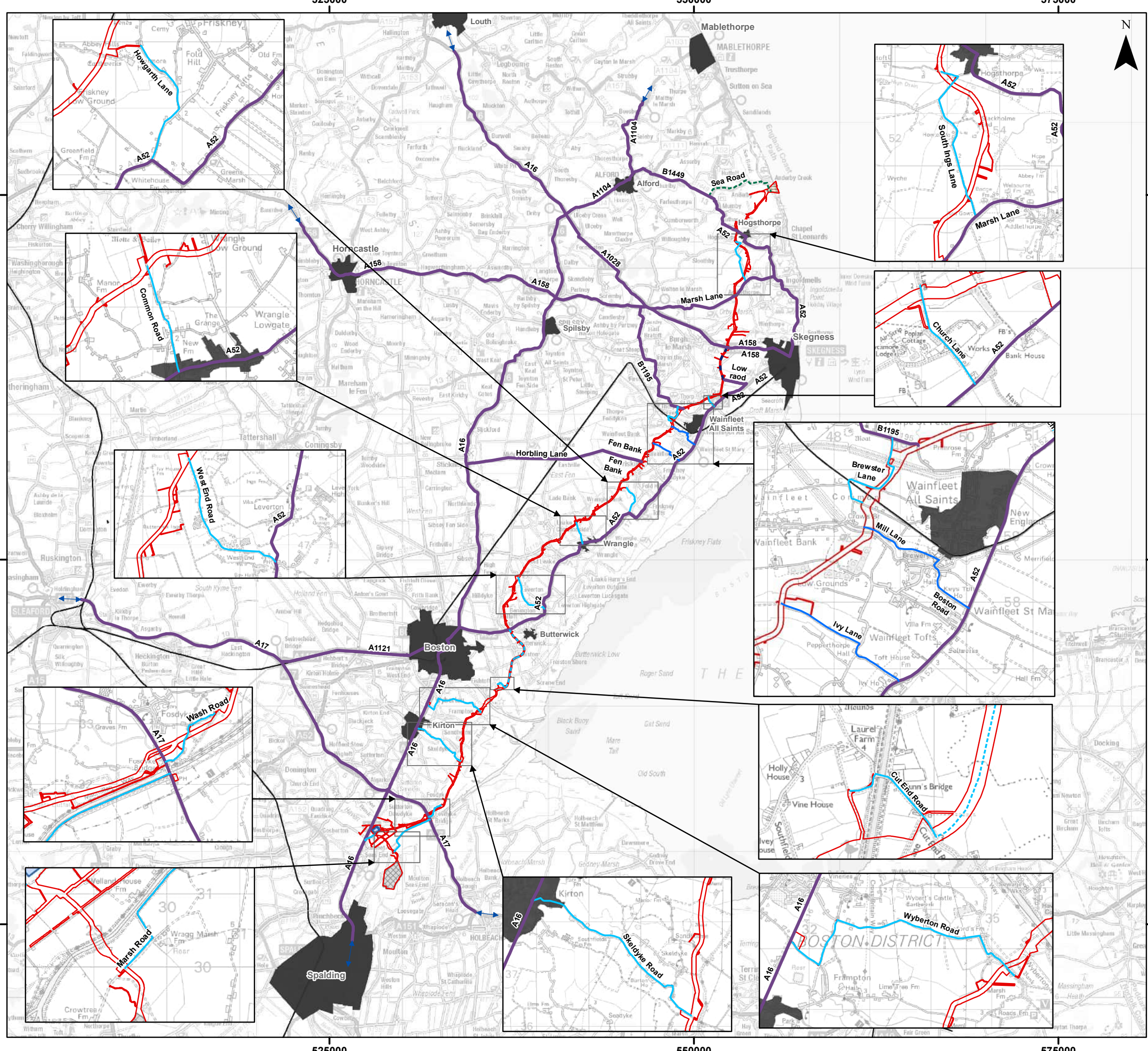
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Environmental Statement
 Maximum Peak Hour Vehicles (Total)

Figure 27.1.7



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Legend

- Order Limits
- Onshore Substation (OnSS) Footprint
- Landfall Trenchless Works Area
- Transition Joint Bay Area
- Connection Area
- Railway Line

Construction Access Vehicle Route - Number of Vehicles

- Core Access Route
- Local Access Route

Construction Access Vehicle Route Type

- Core Access Route
- Core Access Route via Haul Road
- Local Access Route
- Local Access Route via Haul Road
- Local Access Route (LGV)
- Local Access Route - Enabling Works
- To / From Wider Highway Network

Note:
 Not all local construction vehicle route road names shown between the core construction vehicle routes and the Onshore ECC.
 Construction vehicle movements should be treated as the maximum on each highway link individually and may not occur at the same time, due to the assessment being based on the anticipated maximum construction vehicle movements for each route section/OnSS – refer to Section 27.11.



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Environmental Statement
 Maximum Peak Hour Vehicles (HGVs)

Figure 27.1.8

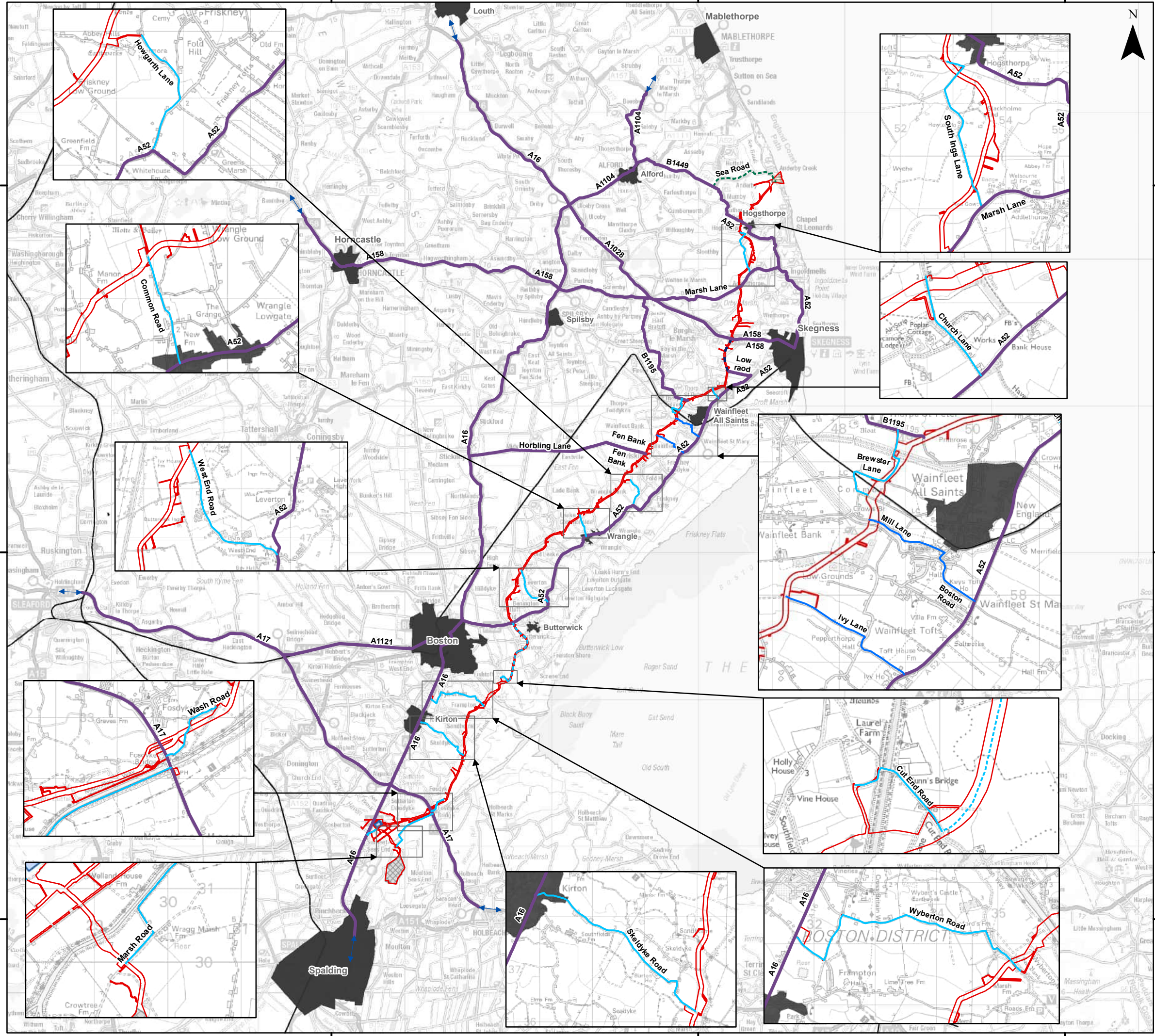


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Legend

- Order Limits
 - Onshore Substation (OnSS) Footprint
 - Landfall Trenchless Works Area
 - Transition Joint Bay Area
 - Connection Area
 - Railway Line
- Construction Access Vehicle Route - Number of Vehicles**
- Core Access Route
 - Local Access Route
- Construction Access Vehicle Route Type**
- Core Access Route
 - Core Access Route via Haul Road
 - Local Access Route
 - Local Access Route via Haul Road
 - Local Access Route (LGV)
 - Local Access Route - Enabling Works
 - To / From Wider Highway Network

Note:
 Not all local construction vehicle route road names shown between the core construction vehicle routes and the Onshore ECC.
 Construction vehicle movements should be treated as the maximum on each highway link individually and may not occur at the same time, due to the assessment being based on the anticipated maximum construction vehicle movements for each route section/OnSS – refer to Section 27.11.



Coordinate System: British National Grid
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Environmental Statement
 Maximum Peak Hour Vehicles (Workforce Vehicles)

Figure 27.1.9



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161. As shown in **Table 27.34** even with a robust estimate of 20% of construction workers arriving at or departing from the construction sites during highway peak hours, the only locations forecast to have a greater than 30 two-way vehicle movements on a highway link (and therefore at junctions on these links, noting the analysis in Paragraphs 164 to 166 whereby this would not necessarily always be the case) on the LRN are shown in **Table 27.35**

Table 27.35: Highway Links with Greater than 30 Two-Way peak Hour Vehicle Movements

Location Reference (Figure 27.1.1)	Highway Link	Maximum Two-Way ⁹		
		Total	HGV	Car/LGV
12	A158 Skegness Road (west of AC-12/AC-13)	53	47	6
18	A52 Wainfleet Road (west of AC-32/AC-33)	50	36	14
19	A52 Wainfleet Road (east of AC-32/AC-33)	50	36	14
43	A16 (south of AC-39)	37	25	11
47	A17 (west of A1221)	32	29	3
48	A16 (south of A17)	43	29	14
50	A16 between A52 (Boston) and A155	45	37	8
51	A16 between A155 and A158	44	37	7
52	A16 between A158 and A1028	57	54	3
53	A16 north of A1028/A1104	57	54	3
54	A1028 between A158 and A16	38	38	0
55	A158 between A1028 and A16	42	38	4
56	A158 west of A16	57	54	3
58	A16 Boston	47	20	27

162. The peak hour forecasts for the highway links stated that are above the 30 two-way vehicle threshold, for the consideration of undertaking junction capacity assessments (which range between 32 and 57 two-way vehicles), represents between 1.6% and 9.4% increase of the baseline (2019 or 2022) peak hour traffic flows for the majority of the

⁹ The figures in this table have been altered to take account of errors associated with rounding and therefore some total vehicle movements may differ slightly.



highway links, as set out in **Table 27.36**, which is less than 10% minimum threshold for assessment under EIA Regulations.

163. The percentage increase on the A16 between the A158 and A1028 (2019) is 13.4% in the morning peak hour and 11.8% in the evening peak hour, which is only marginally above the minimum 10% threshold and significantly under the 30% threshold for non-sensitive highway links, such as the A16 between the A158 and A1028.

164. Due to the existing levels of traffic through Boston, LCC requested further consideration of the forecast construction vehicle movements associated with the Project that are anticipated to route through Boston during the peak hours. The maximum forecast number of Project construction vehicle movements in the morning or evening peak hours on the highway network through Boston is 47 (two-way) on the A16 (20 HGVs and 27 workforce vehicles).

165. For the workforce vehicle movements on the A16, 21 out of the 27 have been assumed to originate/terminate in Boston based on the gravity model, which could join/leave the A16 at four of five locations within Boston (the analysis does not go into detail regarding specific accommodation and respective routeing) and travel out of/into Boston to/from the various segments of the Onshore ECC or OnSS to the north and south of Boston. Therefore, the actual maximum number of two-way vehicle movements at the various junctions on the A16 in Boston is likely to be much closer to, if not below 30, which is typically used as the trigger for the consideration of undertaking a junction capacity assessment. It is also likely that many drivers of HGVs would endeavour to avoid travelling through Boston in the peak hours due to the known congestion.

166. Given the forecast construction vehicle movements are not significantly different from those presented at PEIR, the levels for which LCC didn't envisage junction capacity assessments being required, and taking the above into account, no junction capacity assessments have been undertaken. Junction capacity assessments can be undertaken (if necessary) as part of the discharge documents should the DCO be approved, using confirmed vehicle movement data provided by the Principal Contractor using up-to-date baseline traffic data.



167. Given the above and the robust assessment parameters, it is unlikely the vehicle movements in the peak hours on the highway network would have a material impact at the junctions on these routes.



Table 27.36: Maximum Peak Hour Construction Traffic – Percentage Impact (Highway Links with over 30 Two-Way Vehicle Movements)

Location Reference (Figure 27.1.1)	Highway Link	2019/2022/2023 Peak Hour Traffic Flow ¹⁰		ODOW Peak Hour Traffic Flow	Percentage Impact (%)	
		AM Peak	PM Peak		AM Peak	PM Peak
12	A158 Skegness Road (west of AC-12/AC-13)	990	1,037	53	5.3	5.1
18	A52 Wainfleet Road (west of AC-32/AC-33)	878	914	50	5.7	5.5
19	A52 Wainfleet Road (east of AC-32/AC-33)	878	914	50	5.7	5.5
43	A16 (south of AC-37)	1,531	1,699	37	2.4	2.2
47	A17 (west of A1221)	1,120	1,507	32	2.9	2.1
48	A16 (south of A17)	1,191	1,377	43	3.6	3.1
50	A16 between A52 (Boston) and A155	534	572	46	8.6	8.0
51	A16 between A155 and A158	730	832	45	6.1	5.4
52	A16 between A158 and A1028	430	490	58	13.4	11.8
53	A16 north of A1028/A1104	696	793	58	8.3	7.3
54	A1028 between A158 and A16	469	505	38	8.2	7.6
55	A158 between A1028 and A16	905	974	42	4.7	4.3
56	A158 west of A16	990	611	57	5.8	9.4
58	A16 Boston	2,891	3,291	47	1.6	1.4

¹⁰ Peak hour traffic flows on highway Links 47 and 51 to 55 and 58 estimated using nearby ATCs, as peak hour data not available for DfT baseline counts.



27.13 Highway Mitigation Proposals

168. This section describes the highway mitigation works that have been identified to facilitate the forecast vehicular trip generation associated with the construction of the Project as set out in **Section 27.12**. This Section excludes the Special Order AIL (the delivery of the transformer and shunt reactors for the OnSS), which is described in **Section 27.14**.

27.13.1 Methodology

169. The following has been undertaken in order to identify the highway mitigation works:

- A desk-top study of the local construction vehicle access routes to identify the likely pinch points that could require mitigation;
- A visual inspection of the local construction vehicle access routes;
- A series of swept path analysis checks of the sections of the local construction vehicle access routes identified as pinch points, to ascertain where widening is likely to be required for the following vehicle types:
 - A large tipper (10.2m);
 - Maximum legal articulated vehicle (16.5m); and
 - A large low loader (24m), which is a non-Special Order AIL;
- A review of the existing passing places on the local construction vehicle access routes and identification of locations for additional passing places; and
- A review of any locations on the construction vehicle access routes that interact with the railway (three level crossings).

27.13.2 Pinch Points

170. Based on the desk-top and visual inspection of the local construction vehicle access routes, the following have been identified as pinch points:

- South Ings Lane, Sloothby High Lane and Listoft Lane;
- Low Road;
- Brewster Lane, Crow's Lane and Collision Gate;
- Low Road, Yawling Gate Road and Howgarth Lane;
- Common Road and Double Bank;
- West End Road, Lowfields Road and Ings Road;
- Cut End Road and Pinfold Lane;
- Millfield Lane East, Low Road, Streetways and Wyberton Roads;



- Skelydyke Road, Nidd's Lane and Marsh Road;
- Wash Road and Craven Lane;

27.13.3 Swept Path Analysis

171. Drawings showing the swept path analysis checks on the sections of the local construction vehicle access routes identified in **Section 27.8** are provided in **Annex M** and a summary of the findings is presented in **Table 27.37**.



Table 27.37: Summary of Highway Widening Requirements per Vehicle Type

Route	Improvement Requirement	Tipper	Articulated	Large Low-Loader	Drawing References	Additional Notes
South Ings Lane, Sloothby High Lane and Listoft Lane	Carriageway widening on Listoft Lane on the approach to the Sloothby High Lane junction.	No	No	Yes	<ul style="list-style-type: none"> • VD23907-VEC-XXX-001-DR-CH-0001 • VD23907-VEC-XXX-001-DR-CH-0002 • VD23907-VEC-XXX-001-DR-CH-0003 	Detailed investigation required regarding the bridges at the approaches to the junctions.
	Carriageway widening at the Marsh Lane/Sloothby High Lane junction.					
	Carriageway widening on Listoft Lane on the approach to the Sloothby High Lane junction.	No	No	Yes		
	Minor carriageway widening on Listoft Lane.	Yes	Yes	Yes		May not be required based on detailed investigations using a topographic survey.
Mill Lane, Brewster Lane, Crow's Lane and Collision Gate	Carriageway widening on Brewster Lane and Crow's Lane	Yes	Yes	Yes	<ul style="list-style-type: none"> • VD23907-VEC-XXX-002-DR-CH-0001 • VD23907-VEC-XXX-002-DR-CH-0002 • VD23907-VEC-XXX-002-DR-CH-0003 	May not be required based on detailed investigations using a topographic survey.
	Widening at bend on Brewster Lane at the level crossing	Yes	Yes	Yes		
	Widening at the Mill Lane junction	No	No	Yes		Manoeuvre is very tight for the tipper and articulated vehicle due to the location of the buildings at the junction at the edge of the carriageway.
Low Road, Yawling Gate Road and Howgarth Lane	Minor carriageway widening works at some sections along Howgarth Lane including its junction with Yawling Gate Road.	Yes	Yes	Yes	<ul style="list-style-type: none"> • VD23907-VEC-XXX-004-DR-CH-0001 • VD23907-VEC-XXX-004-DR-CH-0002 • VD23907-VEC-XXX-004-DR-CH-0003 	May not be required based on detailed investigations using a topographic survey.
Common Road and Double Bank	Minor carriageway widening may be required on some sections.	No	Yes	Yes	<ul style="list-style-type: none"> • VD23907-VEC-XXX-006-DR-CH-0001 • VD23907-VEC-XXX-006-DR-CH-0002 • VD23907-VEC-XXX-006-DR-CH-0003 	May not be required based on detailed investigations using a topographic survey.
West End Road, Lowfields Road and Ings Road	Minor carriageway widening may be required on some sections.	No	No	Yes	<ul style="list-style-type: none"> • VD23907-VEC-XXX-007-DR-CH-0001 • VD23907-VEC-XXX-007-DR-CH-0002 • VD23907-VEC-XXX-007-DR-CH-0003 	May not be required based on detailed investigations using a topographic survey.
Cut End Road and Pinfold Lane	Minor carriageway widening may be required for the majority of the route.	Yes	Yes	Yes	<ul style="list-style-type: none"> • VD23907-VEC-XXX-010-DR-CH-0001 • VD23907-VEC-XXX-010-DR-CH-0002 	<p>Detailed investigation regarding the bridge over Hobhole Drain.</p> <p>May not be required based on detailed investigations using a topographic survey.</p>



Route	Improvement Requirement	Tipper	Articulated	Large Low-Loader	Drawing References	Additional Notes
					<ul style="list-style-type: none"> VD23907-VEC-XXX-010-DR-CH-0003 	
Millfield Lane East, Low Road, Streetways and Wyberton Road	Minor carriageway widening may be required on some sections.	Yes	Yes	Yes	<ul style="list-style-type: none"> VD23907-VEC-XXX-011-DR-CH-0001 	May not be required based on detailed investigations using a topographic survey.
	Widening at the Millfield Lane East/Low Road junction.	No	No	Yes	<ul style="list-style-type: none"> VD23907-VEC-XXX-011-DR-CH-0002 	
	Widening at the Low Road/Streetways junction.	No	No	Yes	<ul style="list-style-type: none"> VD23907-VEC-XXX-011-DR-CH-0003 	
Skelydyke Road, Nidd's Lane and Marsh Road	Minor carriageway widening on sections of Nidd's Lane.	Yes	Yes	Yes	<ul style="list-style-type: none"> VD23907-VEC-XXX-012-DR-CH-0001 	May not be required based on detailed investigations using a topographic survey.
	Widening to the carriageway at the bend on Nidd's Lane adjacent to the residential properties.	Yes	Yes	Yes	<ul style="list-style-type: none"> VD23907-VEC-XXX-012-DR-CH-0002 VD23907-VEC-XXX-012-DR-CH-0003 	May not be required for the articulated and tipper, based on detailed investigations using a topographic survey. Will definitely be required for the large low loader.
	Widening at the Nidd's Lane/Marsh Road junction.	No	No	Yes		
	Minor carriageway widening on sections of Marsh Road.	Yes	Yes	Yes		May not be required based on detailed investigations using a topographic survey.
Wash Road and Craven Lane	Minor carriageway widening may be required on some sections.	Yes	Yes	Yes	<ul style="list-style-type: none"> VD23907-VEC-XXX-013-DR-CH-0001 	May not be required based on detailed investigations using a topographic survey.
	Widening at the Wash Road/Craven's Lane junction.	No	No	Yes	<ul style="list-style-type: none"> VD23907-VEC-XXX-013-DR-CH-0002 VD23907-VEC-XXX-013-DR-CH-0003 	



172. As **Table 27.37** sets out, whilst there are a number of locations on the local construction vehicle access routes that have been identified as requiring improvements, detailed investigations would be undertaken once all construction vehicle types that are required to access each route have been confirmed, using a topographic survey.

27.13.4 Passing Places

173. In addition to the carriageway widening that has been identified (subject to more detailed investigations as set out above), given the width of the carriageway of these local construction vehicle access routes, a scheme of new passing places has been identified for each route, to enable two HGVs (maximum legal) to pass each other safely. The schemes have been developed using the following criteria:

- Passing place length of 15m (plus tapers); and
- Minimum width of total carriageway at the passing place of 6m (suitable for two HGVs passing at slow speed).

174. The passing place schemes are provided in **Annex N** as follows:

- South Ings Lane, Sloothby High Lane and Listoft Lane - VD23907-VEC-XXX-001-DR-CH-0010;
- Brewster Lane and Collision Gate - VD23907-VEC-XXX-001-DR-CH-0010-P01;
- Low Road - VD23907-VEC-XXX-001-DR-CH-0010-P01;
- Low Road, Yawling Gate Road and Howgarth Lane - VD23907-VEC-XXX-004-DR-CH-0010;
- Common Road and Double Bank - VD23907-VEC-XXX-006-DR-CH-0010;
- West End Road, Lowfields Road and Ings Road - VD23907-VEC-XXX-004-DR-CH-0010;
- Cut End Road and Pinfold Lane - VD23907-VEC-XXX-010-DR-CH-0010;
- Millfield Lane East, Low Road, Streetways and Wyberton Road - VD23907-VEC-XXX-011-DR-CH-0010;
- Skelydyke Road, Nidd's Lane and Marsh Road - VD23907-VEC-XXX-012-DR-CH-0010;
- Wash Road and Craven Lane - VD23907-VEC-XXX-013-DR-CH-0010; and
- Private track between the A17 and Marsh Road - VD23907-VEC-XXX-XXX-DR-CH-0011 and VD23907-VEC-XXX-XXX-DR-CH-0012

175. In an email on the 23rd November 2023, LCC has agreed with the passing places schemes and suggested that depending on the forecast Project vehicle movements that



would use each of the local access routes, a lesser number of passing places may be required.

27.13.5 Level Crossings

176. The level crossings that would be used by construction vehicles associated with the Project are located at:

- A52 to the east of Wainfleet All Saints;
- Brewster Lane to the north-west of Wainfleet All Saints; and
- Station Road, Eastville.

177. Based on the ATC data collected to inform this TA, the number of vehicles (total and HGVs) currently using the three level crossings between 07:00 and 19:00 (the period when construction traffic associated with the Project could be passing over the level crossing) is set out in **Table 27.38**.

Table 27.38: Vehicle Movements Across Level Crossings

Level Crossing	Traffic Flows (07:00 to 19:00)				Average Traffic Flows per Hour					
	Baseline 2019/2022		Maximum ODOV		Baseline 2019/2022		Maximum ODOV		Baseline plus Maximum ODOV	
	Total	HGV	Total	HGV	Total	HGV	Total	HGV	Total	HGV
A52	9,519	350	126	87	793	29	18	7	811	36
Brewster Lane	31	1	63	54	3	0	6	5	9	5
Station Road ¹¹	1,133	147	207	200	94	12	18	17	112	29

178. Using **Table 27.38** there would be between five and 18 additional vehicles associated with the construction of the Project passing over the level crossings during one hour, where there would be between two to four railways services passing (see **Table 27.25**) requiring the barriers at the level crossing to be closed. Using professional judgement and taking into account measures within the Outline CTMP (document reference 8.1.5) that would assist in providing awareness of the level crossings, the

¹¹ Calculated using a factor from Fen Bank as no 12-hour data available with the DfT baseline counts. 12-hour traffic flow is 85% of the 24-hour traffic flow.



increases are not considered to be significant. The final CTMP which would be prepared post consent would be discussed and agreed with Network Rail in relation to construction traffic using the level crossings.

179. As part of detailed design investigations, a grounding assessment will be undertaken to ensure a low loader can negotiate the level crossings and if any improvements to the vertical alignment of the highway are required.

27.14 Special Order Abnormal Indivisible Load Deliveries

180. This Section provides details of the AIL delivery (the transformer and shunt reactors for the OnSS) between the anticipated delivery Port (Port Sutton Bridge) and the OnSS at Surfleet Marsh.

181. An assessment of the anticipated vehicle type that would be used to transport the AIL between Port Sutton Bridge and the OnSS location is provided in **Annex A**, the route is as follows:

- West Bank between the Port and Bridge Road;
- Bridge Road between West Bank and the A17;
- A17 between Bridge Road and the A16;
- A16 between the A17 and Surfleet Bank; and
- Surfleet Bank.





Annex A Special Order AIL Swept Path Analysis

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Annex B DfT Traffic Data

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Annex C Automatic Traffic Count (ATC) data

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Annex D Personal Injury Accident (PIA) Data

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Annex E Construction Access Locations

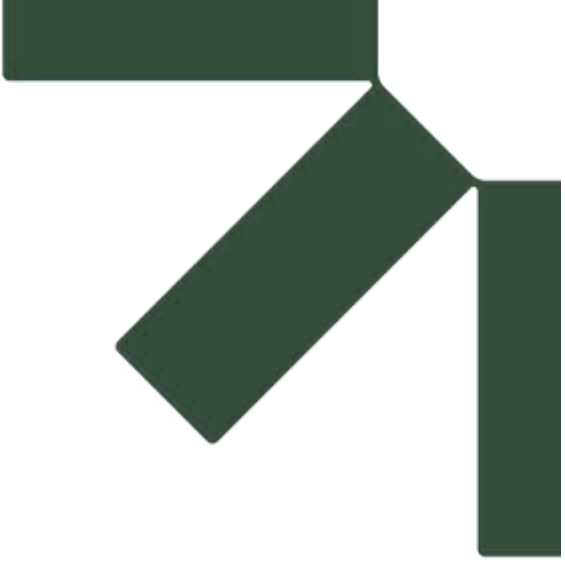
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Annex F

Construction Access General Arrangement Drawings

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Annex G

Construction vehicle access routes - Onshore ECC

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Annex H Haul Road Crossing

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Annex I Public Rights of Way

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Annex J

Trip Generation Calculations

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Annex K Daylight Hours Availability

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Annex L Workforce Gravity Model

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Annex M

Swept Path Analysis Checks

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Annex N

Passing Place Proposals

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