



Hornsea Project Four: Environmental Statement (ES)

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APFP Regulation 5(2)(a)

Volume A6, Annex 7.2: Abnormal Load Report

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A6.7.2
Version A

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Glossary

Term	Definition
Abnormal Indivisible Load	An abnormal load is one that cannot legally be carried on a vehicle within the maximum weights and/or dimensions in the Construction and Use Regulations and Road Vehicles (Authorised Weight) Regulations.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
Energy balancing infrastructure / EBI	The onshore substation includes energy balancing Infrastructure. These provide valuable services to the electrical grid, such as storing energy to meet periods of peak demand and improving overall reliability.
Hornsea Project Four Offshore Wind Farm	The term covers all elements of the project (i.e. both the offshore and onshore). Hornsea Four infrastructure will include offshore generating stations (wind turbines), electrical export cables to landfall, and connection to the electricity transmission network. Hereafter referred to as Hornsea Four.
National Grid Electricity Transmission (NGET) substation	The grid connection location for Hornsea Four.
Onshore substation (OnSS)	Comprises a compound containing the electrical components for transforming the power supplied from Hornsea Project Four to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National Grid. If a HVDC system is used the OnSS will also house equipment to convert the power from HVDC to HVAC.
Order Limits	The onshore limits within which Hornsea Project Four (the 'authorised project) may be carried out.
Orsted Hornsea Project Four Ltd.	The Applicant for the proposed Hornsea Project Four Offshore Wind Farm Development Consent Order (DCO).

Acronyms

Acronym	Definition
ERYC	East Riding Yorkshire Council
ES	Environmental Statement
LxWxH	Length x Width x Height
TBC	To be confirmed
ROLO	Roll on/Roll Off
LOLO	Lift on/Lift Off
TBD	To be Determined
TPO	Tree Preservation Orders

Units

Unit	Definition
Km	Kilometre
mm	Millimetre
Sq/m	Square metre
Kgs	Kilograms
m	Metres
t	Tonnes
Ha	Hectare

1 Introduction

1.1 Project Background

1.1.1.1 Orsted Hornsea Project Four Limited (the 'Applicant') is proposing to develop Hornsea Project Four Offshore Wind Farm (hereafter 'Hornsea Four'). Hornsea Four will be located approximately 69 km offshore the East Riding of Yorkshire in the Southern North Sea and will be the fourth project to be developed in the former Hornsea Zone. Hornsea Four will include both offshore and onshore infrastructure including an offshore generating station (wind farm), export cables to landfall, and on to an onshore substation (OnSS) with energy balancing infrastructure (EBI), and connection to the electricity transmission network.

1.1.1.2 Mammoet was commissioned to undertake an abnormal indivisible load (AIL) assessment for AILs associated with the construction of the Hornsea Four OnSS, the location of which is shown in [Figure 1](#). This technical report provides detail of the routeing and associated mitigation for the AILs that has informed the assessment of potential transport impacts associated with Hornsea Four.

1.1.1.3 This Technical Report is provided as an annex to the Environmental Statement (ES) Traffic and Transport chapter ([Volume A3, Chapter 7: Traffic and Transport](#)).

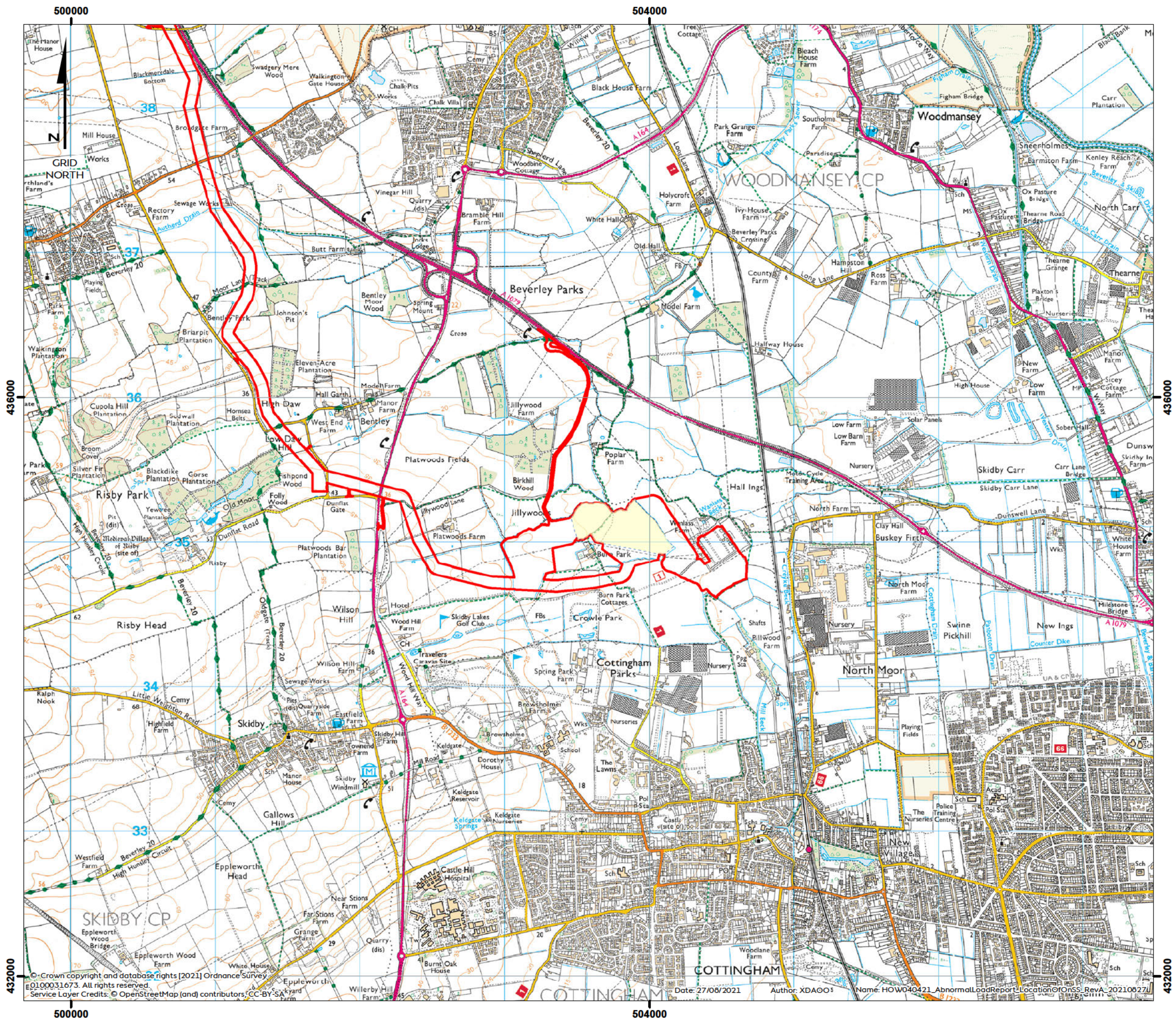
1.2 Aims

1.2.1.1 This ALL assessment aims to provide up-front information regarding the practicalities of delivering AILs to the Hornsea Four OnSS.

1.2.1.2 The transfer vehicle used to inform the assessment of AILs (detailed in [Section 3.1](#)) represented a Maximum Design Scenario (MDS) and may be subject to change during the pre-construction works. The final changes being materially less than the MDS assessed here.

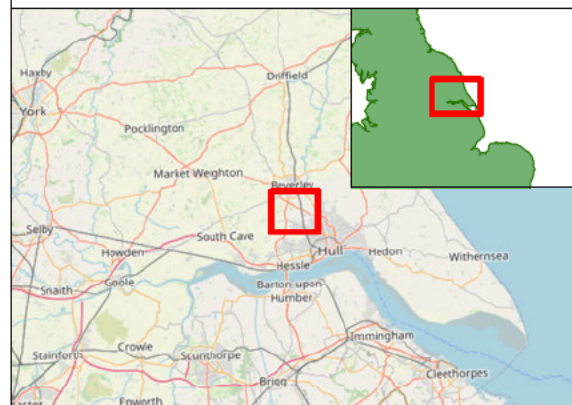
1.2.1.3 In summary this report provides information on the following items:

- Transfer vehicle and ALL specifications;
- Suitable marine facility, including point of entry and discharge;
- Transfer routes considered within this assessment; and
- Next steps.



Hornsea Four
Figure 1
 Abnormal Load Report
 Location of OnSS

- Order Limits
- Onshore Substation, Permanent Space



Coordinate system: British National Grid
 Scale@A3: 1:25,000
 0 250 500 1,000 Meters
 0 250 500 1,000 Yards

REV	REMARK	DATE
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A	Update to Onshore Order Limits	27/08/2021

Abnormal Load Report - Location of OnSS
 Document no: HOW040421
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 Approved by: JULCA



2 Legislation

2.1.1.1 The different types and classification of permitted vehicles for use on the road are described in The Road Vehicles (Construction and Use) Regulations (UK Government, 1986). The maximum dimensions for each type of vehicle (including gross weight, number of axles, braking system, maximum speed) are also outlined. Vehicles not conforming to these regulations are subject to the regulations outlined within The Road Vehicles (Authorisation of Special Types) (General) Order (UK Government, 2003).

2.1.1.2 Below are the Special Types General Order (STGO) load categories as found on the UK government website (UK Government, 2018):

Cat 1 (not exceeding 46,000 kgs / 50,000 kgs):

- Up to 46,000 kgs with a minimum of 5 axles.
- Up to 50,000 kgs with a minimum of 6 axles.
- AW Regs maximum weights apply to axle and vehicle gross weights (meaning, only the train weight can exceed AW Regs).
- Display 'STGO Cat 1' plate to the front of the drawing vehicle.
- 2 working days' notice must be provided to highway and bridge authorities about the weight: the dimensions may need to be given to the police.
- Speed limits:
 - motorway 60 mph.
 - dual carriageway 50 mph.
 - other roads 40 mph.

Cat 2 (not exceeding 80,000 kgs):

- Minimum of 6 axles.
- Maximum axle weight of 12,500 kgs.
- Display 'STGO Cat 2' plate to the front of the drawing vehicle.
- 2 working days' notice to highway and bridge authorities in relation to weight: the dimensions may need to be given to the police.
- Speed limits:
 - Motorway 40 mph
 - Dual carriageway 35 mph
 - Other roads 30 mph
- a plate must be fitted to the vehicle showing the maximum weight recommended by the manufacturer of the vehicle when travelling at certain maximum speeds: this must be marked 'Special Types Use' - the plate should show the weights for gross, train and axle weights.

Cat 3 (Not exceeding 150,000 kgs):

- Minimum of 6 axles.
- Maximum axle weight of 16,500 kgs.
- Display 'STGO Cat 3' plate to the front of the drawing vehicle.

- 5 working days' notice to highway and bridge authorities: the dimensions may need to be given to the police.
- Speed limits:
 - Motorway 40 mph
 - Dual carriageway 35 mph
 - Other roads 30 mph
- A plate must be fitted to the vehicle showing the maximum weight recommended by the manufacturer of the vehicle when travelling at certain maximum speeds: this must be marked 'Special Types Use' - the plate should show the weights for gross, train and axle weights.
- There is no need to carry movement order notices in all categories of these types of vehicle.

Special order movements:

- You must have a special order for vehicles more than:
 - 150,000 kgs or 16,500 kgs in weight per axle.
 - 6.1 metres wide.
 - 30 metres long in rigid length when loaded.
- You'll need to give:
 - 5 working days' notice to highway and bridge authorities.
 - 2 working days' notice to police.
 - You must carry the special order authorisation for the vehicle movement (issued on behalf of the Secretary of State by Highways England (now National Highways (hereafter NH)), Birmingham office) in the vehicle. Otherwise, it will be operating under C&U and AW Regs.

2.1.1.3 It is anticipated that the AIL loads for Hornsea Four will fall under a special-order movement. A special-order application must be submitted via the Electronic Service Delivery for Abnormal Loads (ESDAL) system a minimum of 12 weeks prior to any planned movement. Once the special-order application has been approved as per the above, a minimum of 5 working days' notice to Highways and bridge authorities and a minimum of 2 working days' notice to the police.

3 Methodology

3.1 Cargo Specifications and Transport Proposal

3.1.1.1 It is anticipated that the principal requirement for ALLs at the Hornsea Four OnSS will arise due to the movement of six transformers. The maximum design scenario of the weights and dimensions of the Transformers have been provided by the Applicant. These are summarised as below.

- Each Transformer:
 - Dimensions: 11650mm x 4200mm x 5000mm (LxWxH); and
 - Weight: 387,000kgs.

3.1.1.2 The trailer has been selected based on design and weight capacity compared to the proposed transformer weights and dimensions. The main task is to minimise axle loading where possible and based on experience, a 16.5 tonne, 18 axle transport vehicle is considered a benchmark. For all information regarding the transportation vehicle, please see [Appendix A](#) Transport Arrangement Drawing (AA9779-02-DWG-001-A).

3.2 Survey Information

3.2.1.1 Abnormal Load Engineering Limited (ALE) (now Mammoet) was requested on behalf of the Applicant to undertake a Transport Routing Assessment for the movement of Transformers to the proposed Hornsea Four OnSS located near Beverley, East Riding of Yorkshire.

3.2.1.2 A physical survey has been performed to conclude the suitability of different routes (see [Section 5](#)). This has enabled any obstructions/difficulties to be highlighted.

3.2.1.3 Survey Information is as follows:

- Survey Date: 6th/7th June 2019
- Survey By: Matthew Rushton
- Weather Conditions: Dry, Clear Conditions – 15degrees
- Survey Methods: Mammoet Laser route survey tool (to measure heights of bridges and trees) and physical route assessment.

4 Port Information

- 4.1.1.1 Associated British Ports (ABP) own and operate the Hull Port facilities including Alexandra, King George, Queen Elizabeth and Albert Docks.
- 4.1.1.2 Alexandra Docks is primarily operated on a long-term lease basis by Siemens Gamesa Renewable Energy through which ABP and Siemens have a co-shared invested of around £310m in Green Port Hull serving Siemens' Offshore Energy Market and Construction Operations. This is not currently available for 3rd party commercial operations.
- 4.1.1.3 In line with Highways England (now NH) guidance and the enforcement of the Inland Preferred Water Policy (UK Government, 2019) dictating the use of the nearest water facility to the site, Mammoet has considered the use of Hull Docks as the primary port of import for the equipment. A plan for these docks can be found on [Figure 2](#) and [Figure 3](#).

4.2 ABP Hull – King George Dock

- 4.2.1.1 King George Dock (North Gap) has historically been used for Project Cargo and in the past has facilitated major infrastructure Projects serving as a trans-shipment and marshalling facility for both West Burton and Staythorpe CCGT Power Plants – both of which were projects delivered and installed by ALE (now Mammoet). Cargo weights up to 370t were handled for this project in multiple shipments.
- 4.2.1.2 The location of King George and Alexandra Docks is to the East of the City of Hull and is separated from the rest of the route by a single structure (the Myton Swing Bridge on the A63 ([Plate 13](#))) which may cause the largest challenge from the perspective of obtaining structural approval.

4.3 ABP Hull – Albert Dock

- 4.3.1.1 Albert Docks is positioned to the South West of the City of Hull which would avoid the use of the Myton Swing Bridge.
- 4.3.1.2 The use of Albert Docks (Fish Docks), however, has not been used for project cargo before and having had initial discussions with Associated British Ports, it has been advised that further investigation and engineering may be required to prove this is possible. Consequently, Mammoet considers this only to be an option to pursue further if alternative routes around the north of Hull or the Myton Bridge on the A63 through Hull are not deemed to be feasible for the movement of the AILs to the Hornsea Four OnSS site.

Hornsea 4

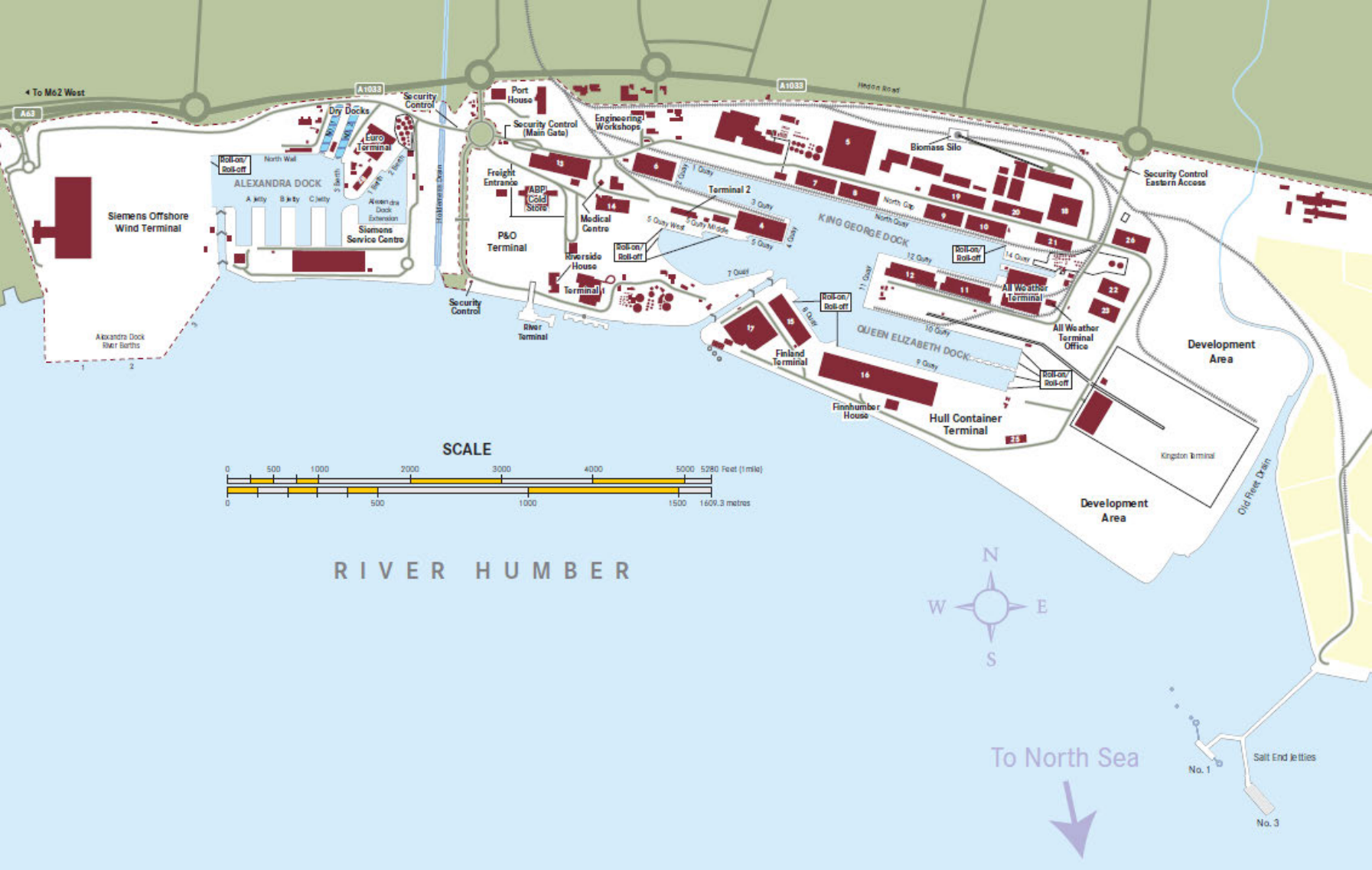


Figure 2: ABP Hull – King George Dock.

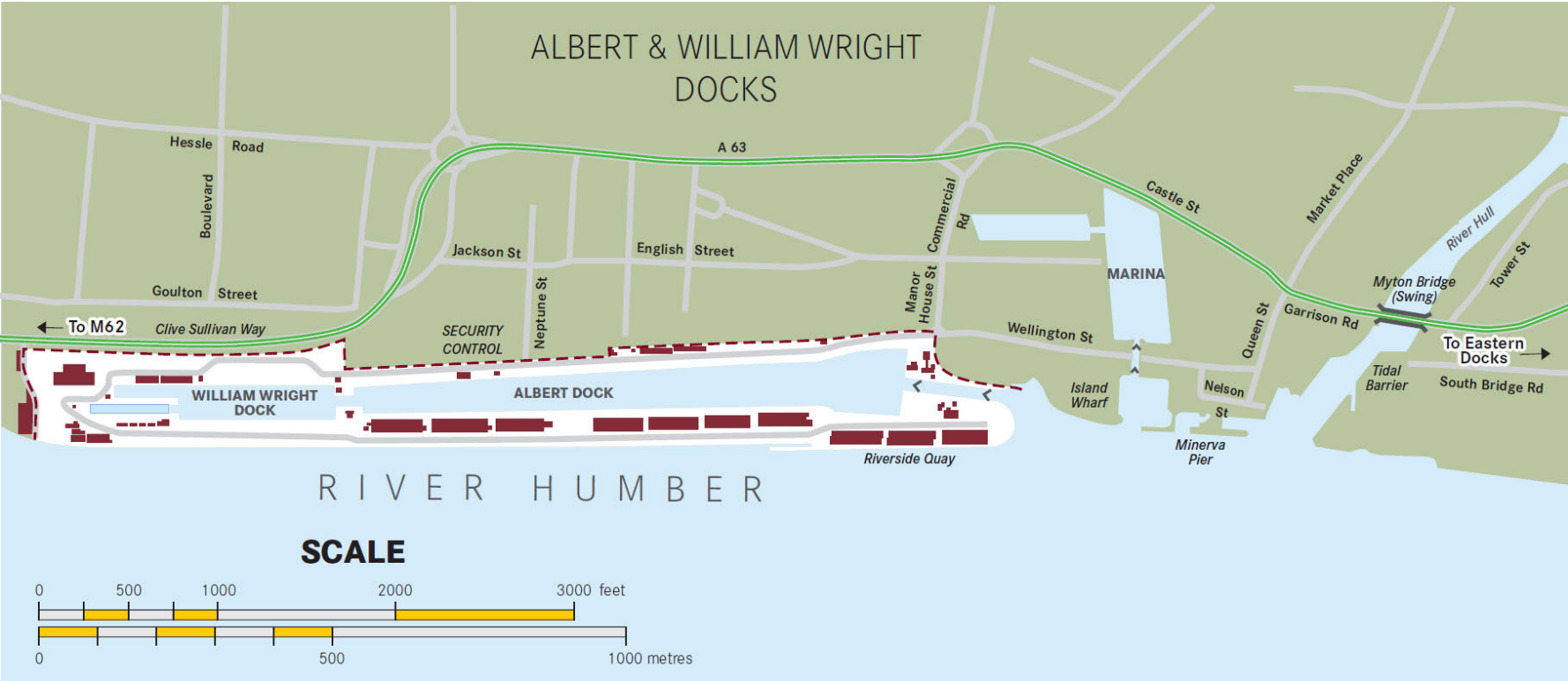


Figure 3: ABP Hull – Albert Dock.

4.3.2 Hull Docks Summary of Facilities

4.3.2.1 A summary of the facilities at King George and Albert docks are identified in [Table 1](#).

Table 1: Summary of Facilities for King George and Albert Dock.

Port Name	ABP Hull– King George Dock	ABP Hull– Albert Docks
<i>Operator</i>	Associated British Ports (ABP)	Associated British Ports (ABP)
<i>Address</i>	Port House, Northern Gateway, Hull, East Yorkshire, HU9 5PQ	Port House, Northern Gateway, Hull, East Yorkshire, HU9 5PQ
<i>Security Status</i>	International Ship and Port Facility Security (ISPS)	International Ship and Port Facility Security (ISPS)
<i>Point of Contact/Email</i>	humber.commercial@abports.co.uk	humber.commercial@abports.co.uk
<i>Discharge Berth</i>	North Gap	TBC
<i>Tidal Conditions/ Limitations</i>	5,069 m Of Quay Length Overall Max LOA 199 m, Beam 25.5, Draught 10.4 m Locked Facility, Water Level sub 1.5 m below coping	3,453 m Of Quay Length Overall Max LOA 122 m, Beam 22.0, Draught 7.0 m Locked Facility, Water Level sub 1.5 m below coping
<i>RORO/Crane Discharge</i>	Roll On/Roll Off (RORO) Vessel or Geared Vessel Lift On/Lift Off (LOLO) Crane on quay used at North Gap	Unconfirmed
<i>Maximum Ground Loadings/Technical Information Relating to Crane Operations</i>	15t m ² 1 m stand off	Unconfirmed
<i>Storage Available (Covered/Not Covered)</i>	12,100,000 m ² overall 230,000 m ² of storage (subject to availability) 650,000 m ² of open storage	12,100,000 m ² overall 230,000 m ² of storage (subject to availability) 650,000 m ² of open storage
<i>Supporting Equipment</i>	Various Fork Trucks and Maafi Equipment to support operations.	Various Fork Trucks and Maafi Equipment to support operations.

5 Routing Information

5.1.1.1 Two routes have been identified as suitable for ALL transport, both of which start King George Port:

- Route 1: Via A63 to the new Hornsea Four access off the A1079; and
- Route 2: Via Hull Centre (Ings Road/Sutton Road) to the new Hornsea Four access off the A1079.

5.1.1.2 These routes have been determined using:

- Highways England (now NH) high and heavy load grid;
- Historic experience of loads leaving Hull Docks;
- Prior to assessment ALE (now Mammoet) completed a Desktop review of possible routes, comparing street furniture impact, and possible structural considerations; and
- Most suitable for transport configuration.

5.1.1.3 Swept path analysis has been undertaken for the Hornsea Four OnSS access junction and access road (to inform the design specifications).

5.2 King George Dock via A63

5.2.1 Overview – Route 1

5.2.1.1 Please Note, whilst highway improvement works are being completed on A63 (A63 Castle Street Improvement Scheme), this route cannot be used (works are expected to be completed in 2025). For further information regarding this improvement scheme, see [Volume A3, Chapter 7: Traffic and Transport](#) and the project's website (Highways England, 2020). This has been discussed with Highways England (now NH) and it has been agreed that the A63 would not be used for ALLs related to the OnSS if construction activities associated with the A63/Castle Street Improvement Scheme are ongoing at a stage in which ALLs are not able to navigate.





5.2.1.2 An overview of Route 1 is shown in [Figure 4](#), and detailed in [Figure 5](#) to [Figure 9](#).

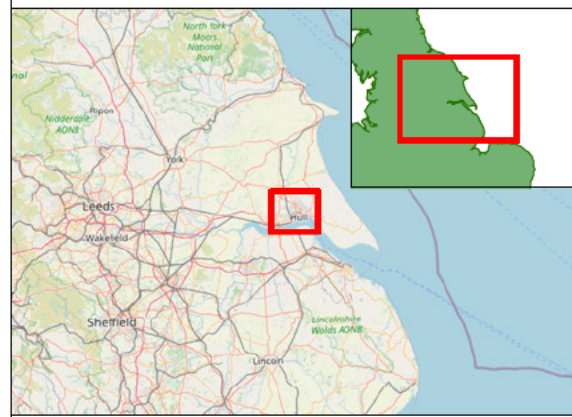
Hornsea Four

Figure 4

Abnormal Load Report

Route 1 - Overview


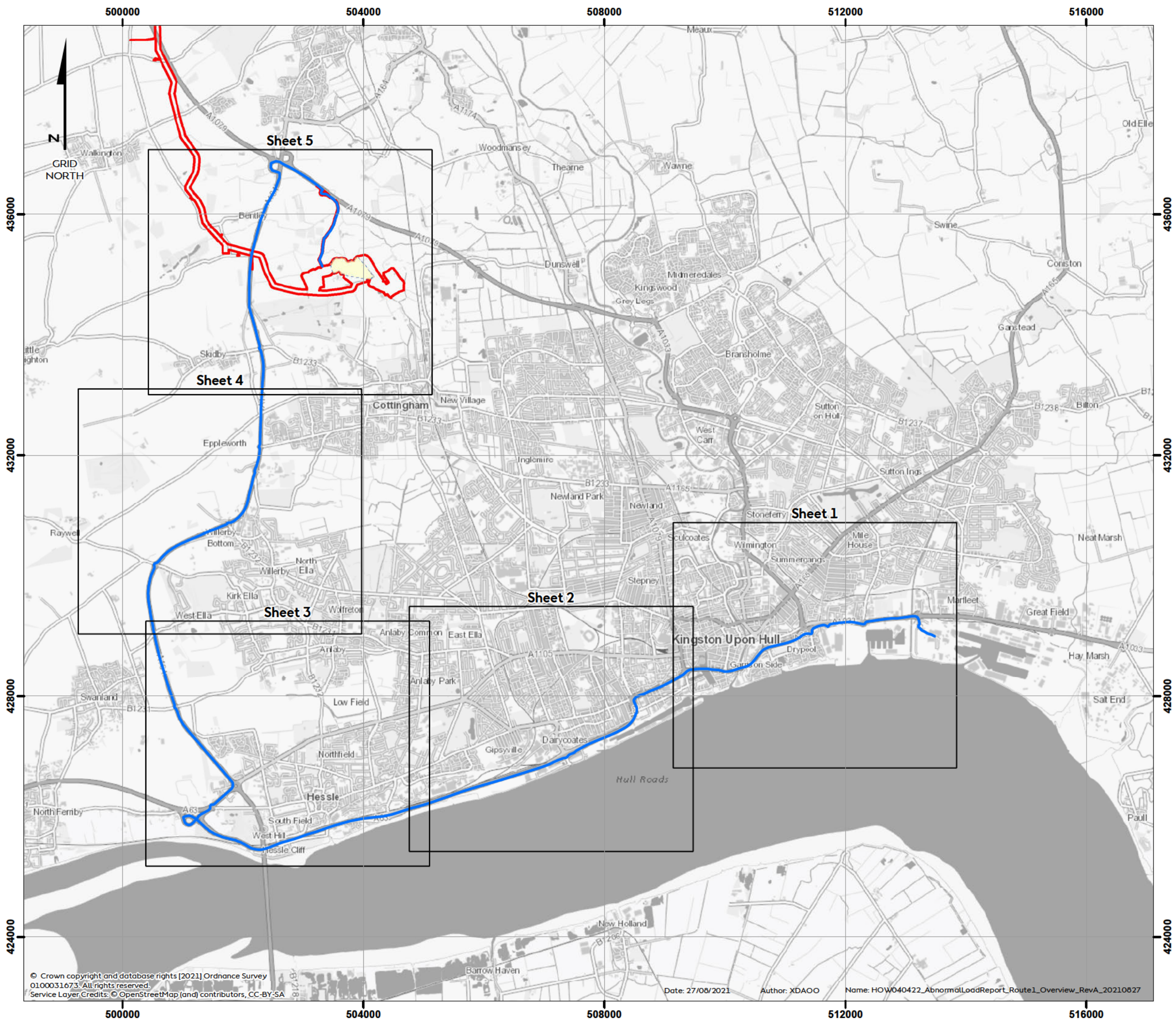
-  Sheet Boundary
-  Order Limits
-  Onshore Substation, Permanent Space
-  Transport Route



Coordinate system: British National Grid
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 0 500 1,000 2,000 Yards

REV	REMARK	DATE
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A	Update to Onshore Order Limits	27/08/2021

Abnormal Load Report - Route 1 - Overview
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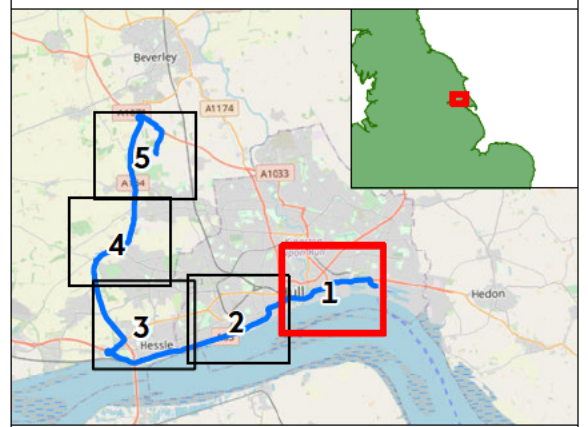
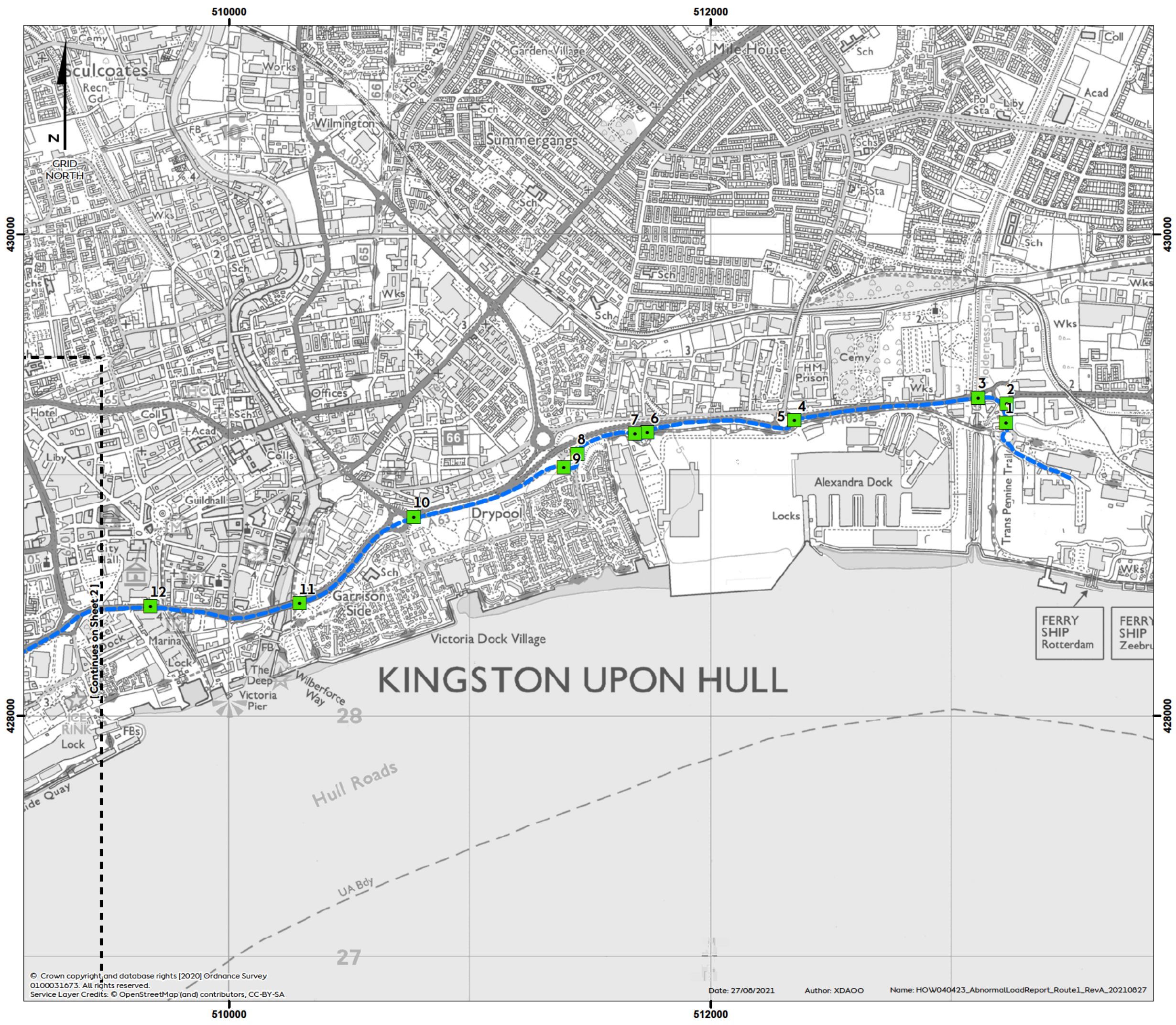
Hornsea Four

Figure 5

Abnormal Load Report

Route 1 - Sheet 1 of 5

- Photo Location
- Transport Route



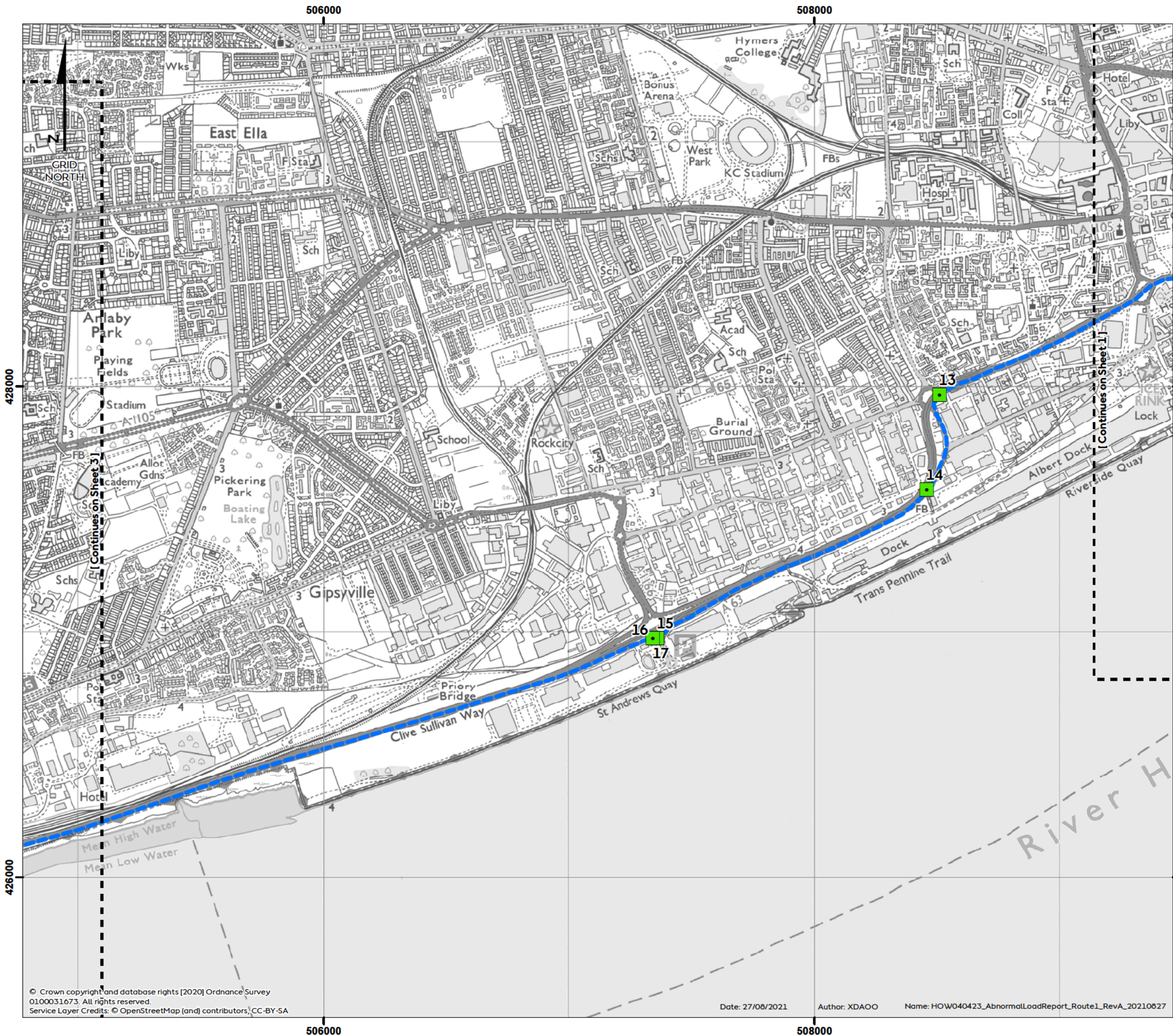
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REV	REMARK	DATE
	First Issue	16/12/2020
A	Update to Onshore Order Limits	27/08/2021

Abnormal Load Report - Route 1
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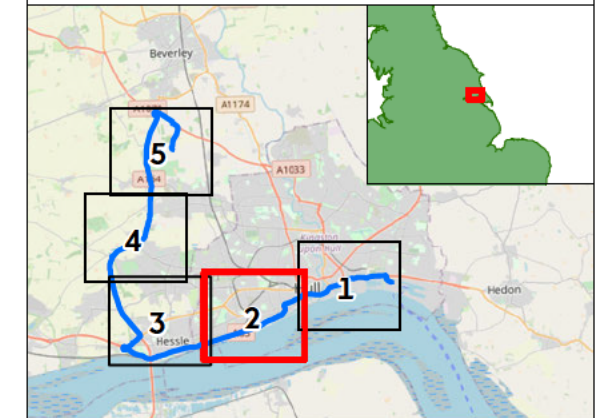
Hornsea Four

Figure 6

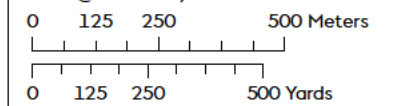
Abnormal Load Report

Route 1 - Sheet 2 of 5

- Photo Location
- Transport Route



Coordinate system: British National Grid
Scale@A3: 1:15,000



REV	REMARK	DATE
	First Issue	16/12/2020
A	Update to Onshore Order Limits	27/08/2021

Abnormal Load Report - Route 1
Document no: HOW040423
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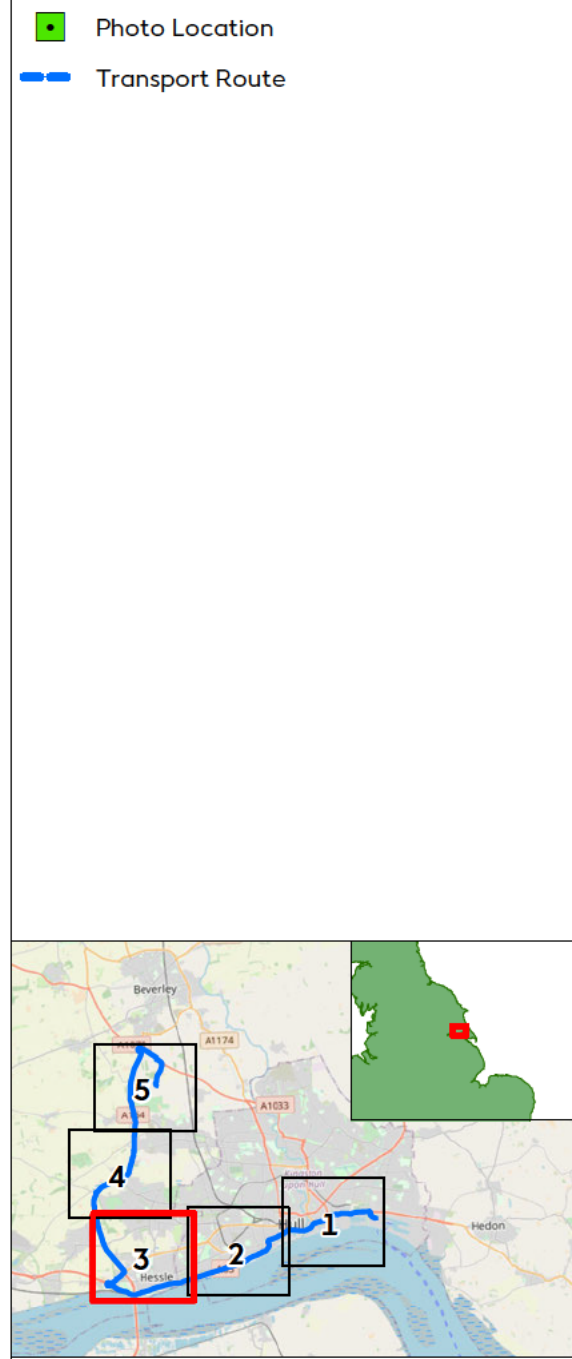


Hornsea Four

Figure 7

Abnormal Load Report

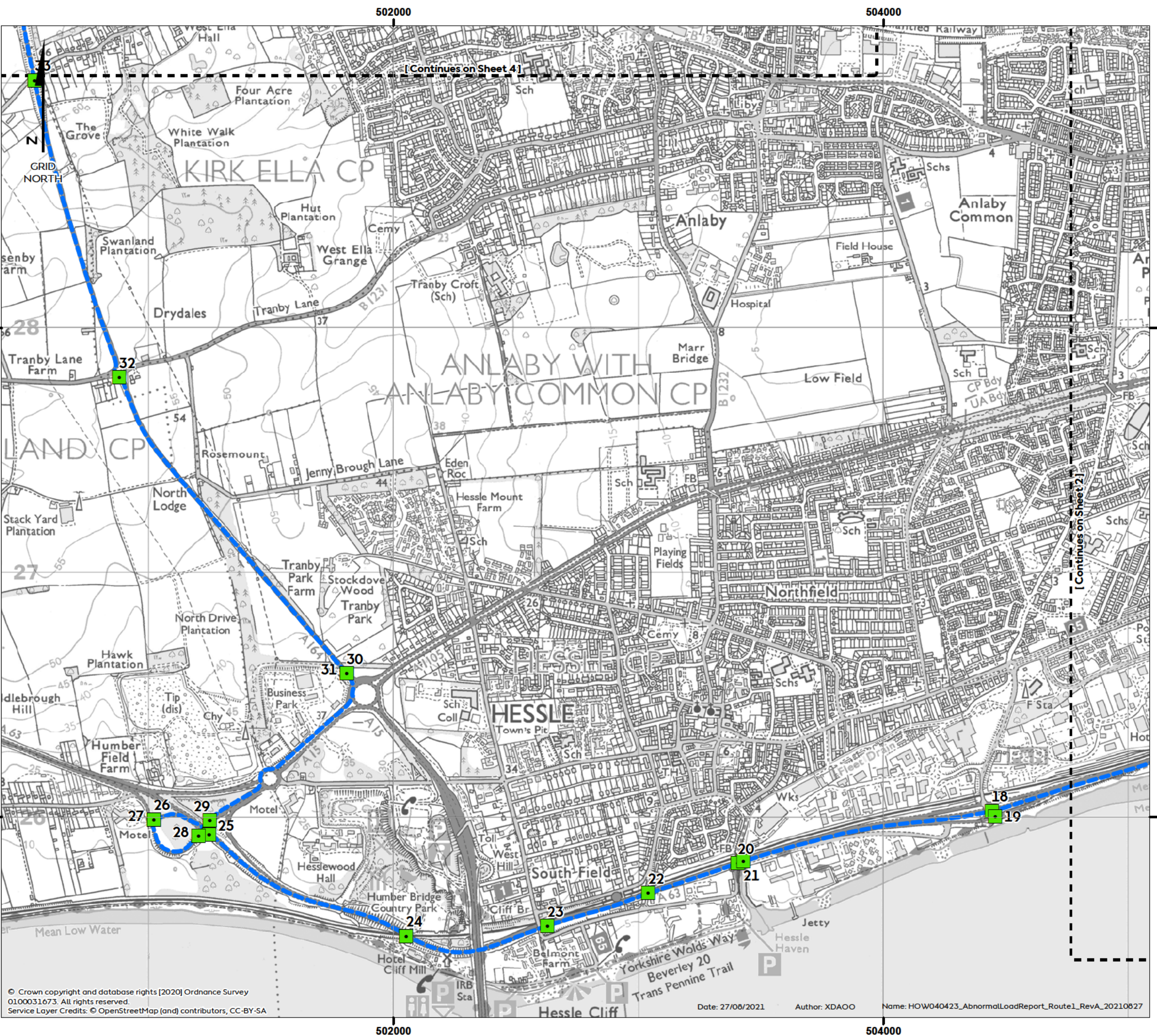
Route 1 - Sheet 3 of 5



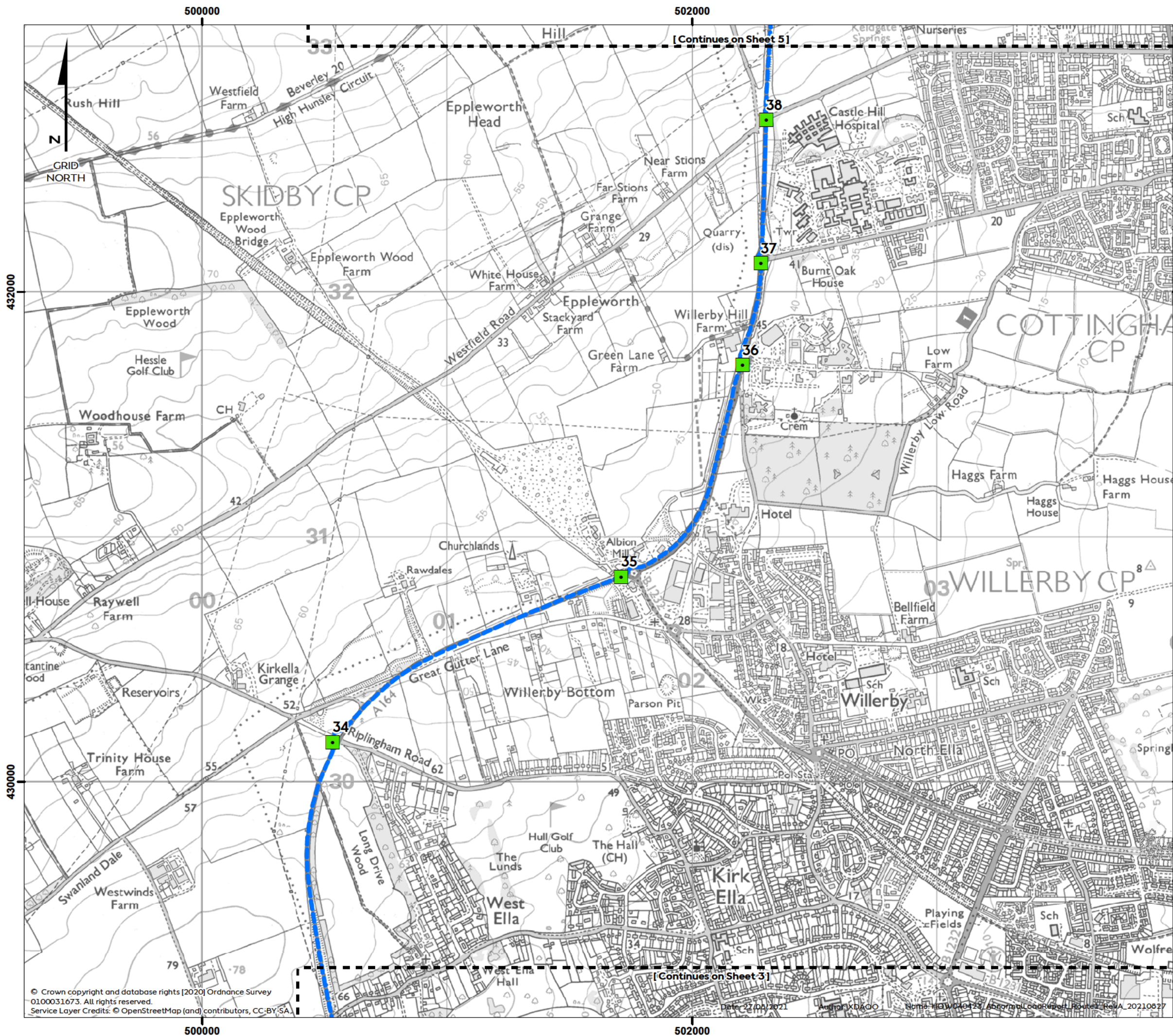
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 0 125 250 500 Yards

REV	REMARK	DATE
	First Issue	16/12/2020
A	Update to Onshore Order Limits	27/08/2021

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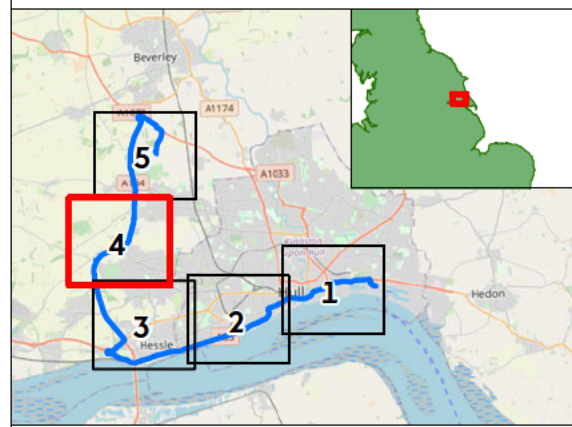
Hornsea Four

Figure 8

Abnormal Load Report

Route 1 - Sheet 4 of 5

- Photo Location
- Transport Route



Coordinate system: British National Grid
 Scale@A3: 1:15,000
 0 125 250 500 Meters
 0 125 250 500 Yards

REV	REMARK	DATE
	First Issue	16/12/2020
A	Update to Onshore Order Limits	27/08/2021

Abnormal Load Report - Route 1
 Document no: HOW040423
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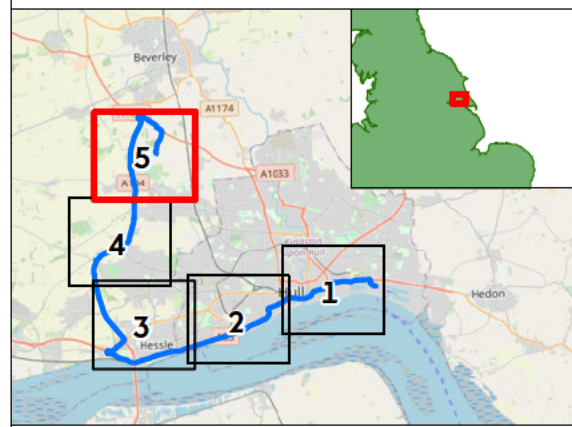
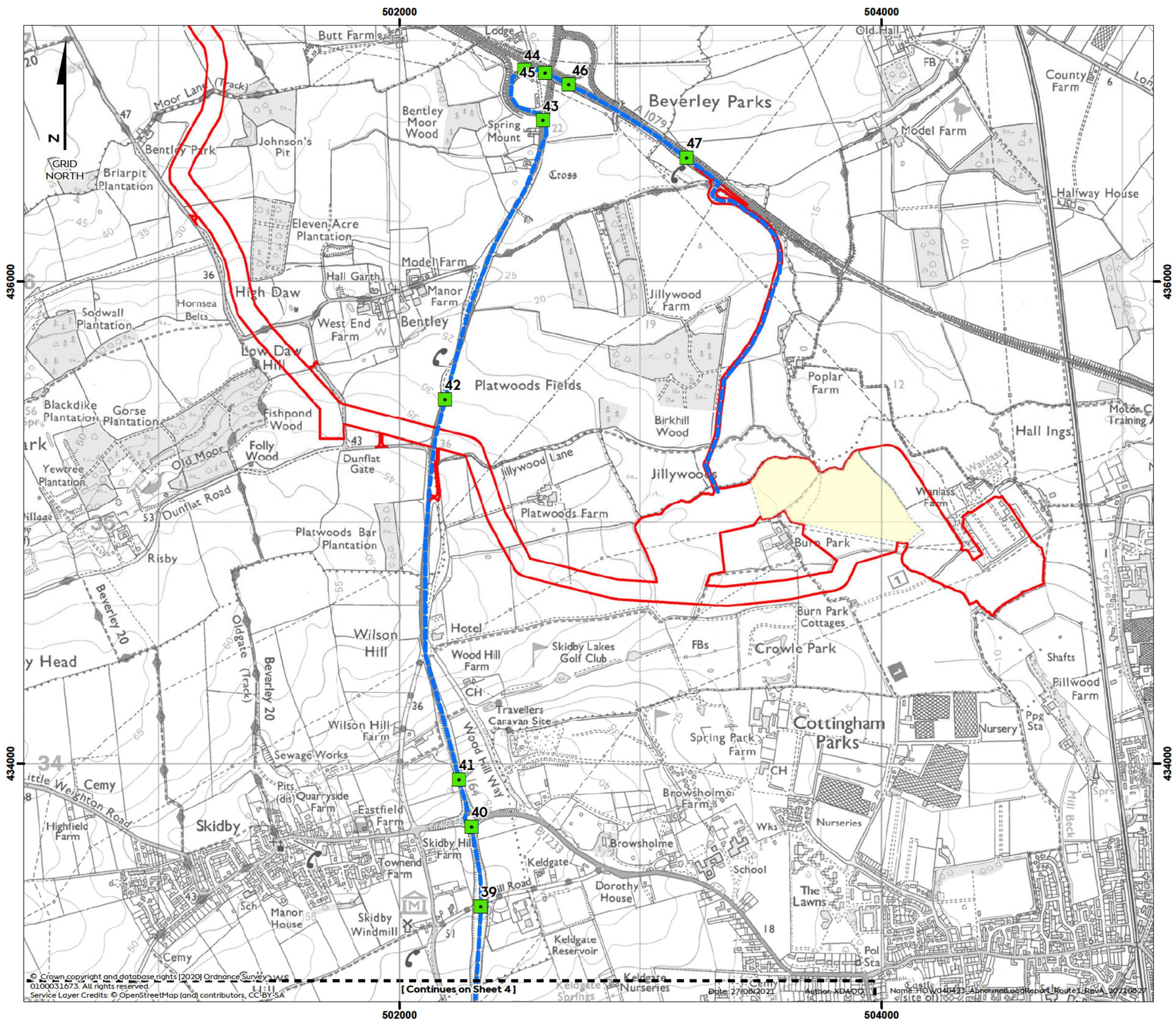
Hornsea Four

Figure 9

Abnormal Load Report

Route 1 - Sheet 5 of 5

- Order Limits
- Onshore Substation, Permanent Space
- Photo Location
- Transport Route



Coordinate system: British National Grid
 Scale@A3: 1:15,000
 0 125 250 500 Meters
 0 125 250 500 Yards

REV	REMARK	DATE
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[Continues on Sheet 4]

5.2.2 Obstruction List – Route 1


5.2.2.1 A physical assessment of the route has been completed. [Table 2](#) highlights any obstructions identified during the AIL study. Corresponding Photo locations are provided in [Figure 5](#) to [Figure 9](#) (the 'Photo Location' depicted in figures corresponds with the 'Ref' numbers in column one of [Table 2](#)).

5.2.2.2 Route 1 starts at ABP Hull Docks (King George – West Gate) and ends at the proposed Hornsea Four OnSS; with the route surveyed for the use of a AL500 – 28 Axle Girder Frame Trailer.



5.2.2.3 Within this obstruction list there are some images layered over the plates, these are to highlight different information:

- The **dotted yellow boxes** show street furniture.
- The **green arrows** show direction of travel for the vehicle.
- The **red triangles** highlight an area discussed in the remarks.


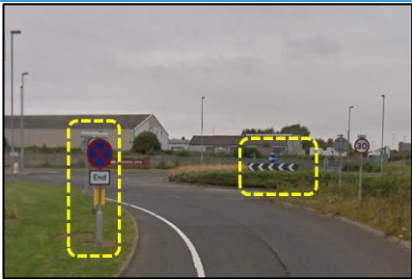
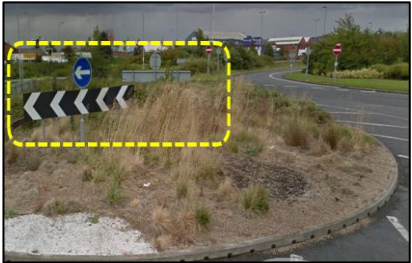
Table 2: Obstruction List for Route 1.

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
1	Manoeuvre	Port Road/A63	0.0	 <p>Plate 1</p>  <p>Plate 2</p>	Hull City Council	Reverse from Docks Entrance onto A63 Hedon Road to facilitate negotiability. See Appendix A for vehicle specifications.

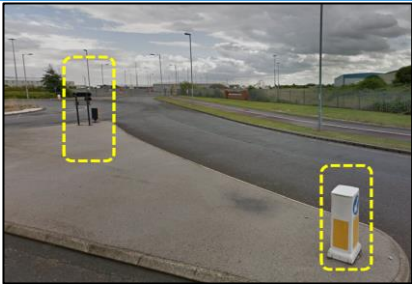
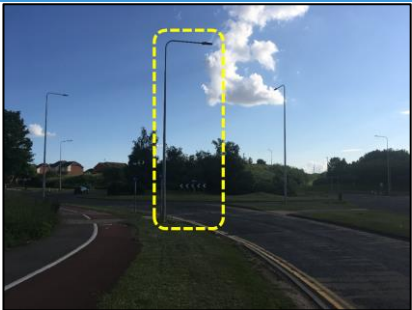

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
2	Street Furniture	A1033 King George Dock Roundabout	0.1	 <p>Plate 3</p>	Hull City Council	Removal of 10 Sections of Pedestrian Railing may be require depending on final width. See Appendix A for vehicle specifications.
3	Structure	A1033	0.3	 <p>Plate 4</p>	TBD	Approx 18m Span. Structural clearance required.
4	Negotiability	A63/A1033/ Southcoates Ln Roundabout	0.8	No image available	Hull City Council	Clear for proposed trailer configuration. See Appendix A for vehicle specifications.

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
5	Negotiability	A63/Alexandra Dock Exit	1.2	 <p>Plate 5</p>	Hull City Council	Clear for proposed trailer configuration. See Appendix A for vehicle specifications.
6	Street Furniture	Alexandra Dock (Siemens Factory)	1.2	 <p>Plate 6</p>  <p>Plate 7</p>	Hull City Council	Removal of Traffic Signs at End of Slip Road and on Apex of Roundabout.




Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
7	Street Furniture	Alexandra Dock (Siemens Factory)	1.2	 <p>Plate 8</p>	Hull City Council	Removal of Traffic Signs on Splitter Island on Exit of Roundabout.
8	Street Furniture	Mount Pleasant Roundabout	1.4	 <p>Plate 9</p>  <p>Plate 10</p>	Hull City Council	Pruning of trees/possible removal on apex of roundabout to allow oversail. See Appendix A for vehicle specifications.



Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
9	Street Furniture	Mount Pleasant Roundabout	1.4	 <p>Plate 11</p>	Hull City Council	Removal of Signs on entrance to Westbound Sliproad.
10	Negotiability	A1165/A63	1.9	 <p>Plate 12</p>	<p>New Roundabout Installation</p> <p>Hull City Council</p>	Unknown at this time as junction is being modified. None expected but would require revalidation upon completion.
11	Structure	A63 - Myton Swing Bridge	2.3	 <p>Plate 13</p>	Highways England (now NH) Trunk Roads	90m Main Span - Full Structural Clearance would be required on elevated sections approx. 130m span leading to bridge and the main bridge structure itself.

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
				 <p>Plate 14</p>		
12	Height Clearance	New Princess Quay (PQ) Footbridge	2.6	 <p>Plate 15 (Highways England, 2020)</p>	Highways England (now NH) - Currently Under Construction	Would require further assessment once complete or consultation with Highways England (now NH) to determine design clearance.
13	Negotiability/Street Furniture	Using of Daltry Street to avoid Flyover on A63	3.4	 <p>Plate 16</p>	Highways England (now NH) Trunk Roads	Removal of signs on splitter island and railing on corner to facilitate oversail.

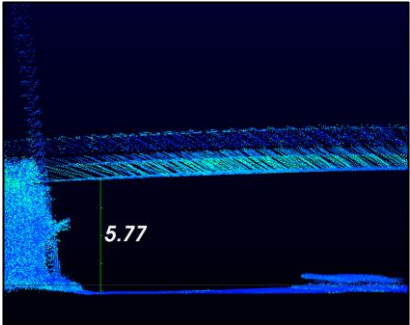
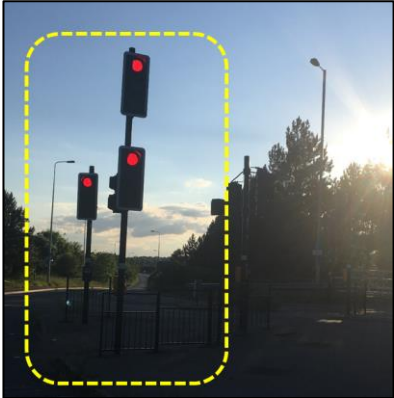
Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
				 <p>Plate 17</p>		
14	Overhead Clearance	A63 – Neptune St Footbridge	3.7	 <p>Plate 18</p>	Highways England (now NH) Trunk Roads	None Required Screen Shot shows clearance.

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
15	Structure	A1166/A63 Clive Sullivan Way	4.4	 <p>Plate 19</p>	<p>Flyover Structure At Junction</p> <p>Hull City Council</p>	Avoid using off/on slip road to St Andrews Quay and use Lower Roundabout.
16	Street Furniture	A1166/St Andrews Quay	4.4	See Plate 19	Hull City Council	Removal of Street Furniture on Central Roundabout to facilitate access.
17	Street Furniture	AA1166/A63 on Slip	6.4	 <p>Plate 20</p>	Hull City Council	Removal of Pedestrian Railing and Sign at bottom of on slip next to McDonalds.
18	Overhead Clearance	A63 Clive Sullivan Way & Priory Way	6.4		Highways England (now NH) Trunk Roads	Use on and off slip roads to avoid structure.

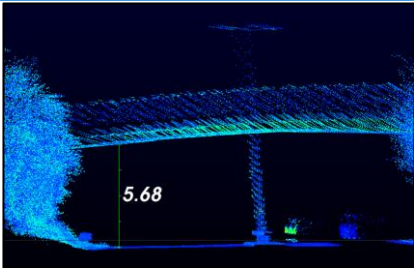

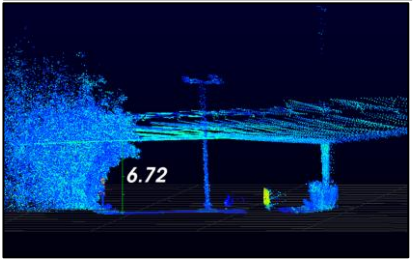
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Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
				 <p data-bbox="882 603 992 632">Plate 21</p>		
19	Street Furniture	A63/Priory Way Junction	6.4	 <p data-bbox="882 1046 992 1075">Plate 22</p>	Hull City Council	Removal of Traffic Lights at Upper Level of junction to facilitate over sail of Girder Frame Trailer. Localised timber shims to allow overrun of pavement.

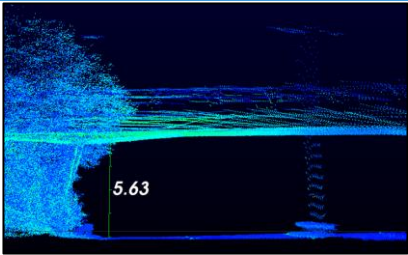

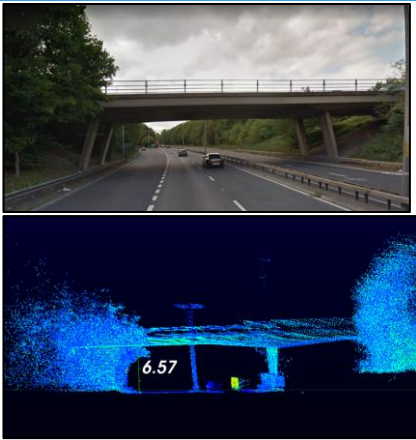
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Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
20	Structure	Fleet Drain	7.0	  <p>Plate 23</p>	Highways England (now NH) Trunk Roads	Structural Clearance Required. Approximately 34m Span.
21	Overhead Clearance	Livingstone Road Footbridge	7.0		Highways England (now NH) Trunk Road	None Required Screen Shot shows clearance.


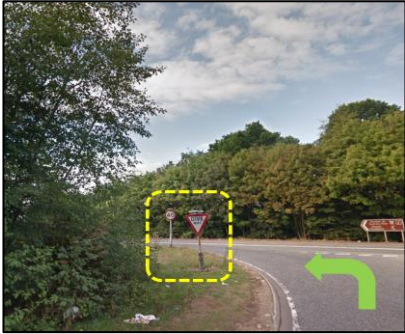

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
				 <p>5.68</p> <p>Plate 24</p>		
22	Overhead Clearance	Redcliff Road Footbridge	7.2	  <p>6.72</p> <p>Plate 25</p>	Highways England (now NH) Trunk Roads	None Required Screen Shot shows clearance.
23	Overhead Clearance	Woodfield Lane Bridge	7.5		Highways England (now NH) Trunks Roads	TBD

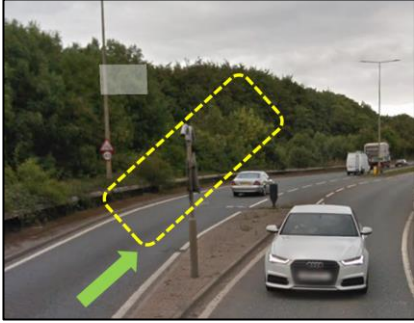
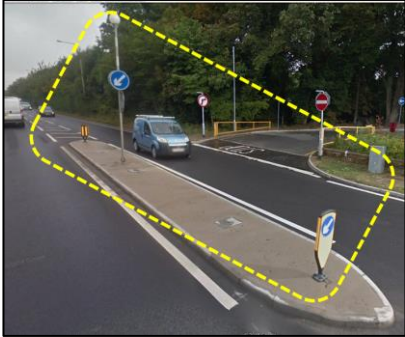
Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
				 <p>5.63</p> <p>Plate 26</p>		
24	Structure	A63 Railway Bridge	7.9	 <p>Plate 27</p>	Highways England (now NH)	Approximately 75m Skew Span - TBC
25	Overhead Clearance	A15 Junction Bridge	8.5	 <p>6.57</p> <p>Plate 28</p>	Highways England (now NH)	TBD

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
26	Negotiability	A15 Exit Slip Road	8.6	 <p>Plate 29</p>	East Riding of Yorkshire Council	No foreseen issues.
27	Street Furniture	A15 Exit Slip Road	8.6	 <p>Plate 30</p>	East Riding of Yorkshire Council	Removal of Give Way and Speed Limit Sign on Corner.
28	Structure	A15	8.8	 <p>Plate 31</p>	Highways England (now NH)	56m Span. Structural check Required prior to move



Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
29	Street Furniture	A15	8.8	 <p>Plate 32</p>	East Riding of Yorkshire Council	Removal of Keep Left Bollard and Sign.
30	Street Furniture	A15/Ferriby Road Roundabout	9.1	No Image Available	Highways England (now NH)	No foreseen issues.
31	Negotiability	A15 Boothferry Road / A164	9.4	 <p>Plate 33</p>	East Riding of Yorkshire Council	No foreseen issues, roundabout has enough lanes and width to accommodate trailer configuration.




Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
32	Street Furniture	A164/ B1231 Roundabout	10.4	 <p>Plate 34</p>	East Riding of Yorkshire Council	Removal of Chevron Boards on Centre of Roundabout and possible tree trimming at the same location.
33	Overhead Clearance	West Ella Road Bridge	11.2	 <p>Plate 35</p>	Highways England (now NH)	See Appendix B .

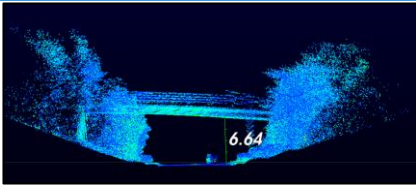


Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
34	Negotiability	Great Gutter Lane/A164	12	No figure available	New Roundabout Construction East Riding of Yorkshire Council	New Roundabout currently being constructed. Would require further review once completed to assess requirements.
35	Street Furniture	A163/ B1232	12.8	 <p>Plate 36</p>	East Riding of Yorkshire Council	No foreseen issues at this junction.
36	Negotiability	A164/Willerby Court Junction	13.4	 <p>Plate 37</p>	East Riding of Yorkshire Council	No foreseen issues at this junction.


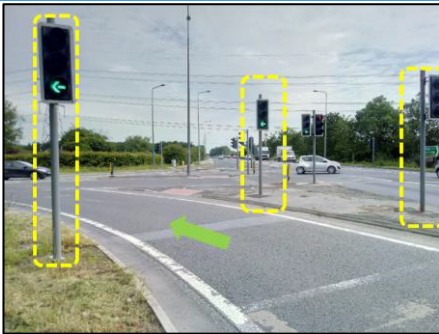
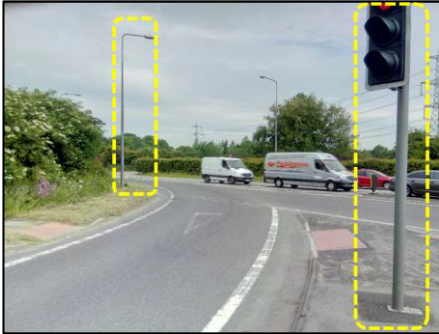
Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
37	Negotiability	A164/Castle Road Junction	13.7	 <p>Plate 38</p>	East Riding of Yorkshire Council	No foreseen issues at this junction.
38	Structure	Westfield Rd/ Eppleworth Road RoadBridge	14	 <p>Plate 39</p>	Side Elevation Image East Riding of Yorkshire Council	Structural Clearance to be determined – 24m Skew Span.
39	Overhead Clearance	Mill Road (Overhead clearance – Eppleworth Bridge)	14.5		Highways England (now NH)	See Appendix B .



Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
				 <p>Plate 40</p>		
40	Street Furniture	A164/B1233 Junction	14.7	 <p>Plate 41</p>	East Riding of Yorkshire Council	No issues foreseen.
41	Overhead Clearance – DANGER	A164	15.2	 <p>Plate 42</p>	<p>HV Power Cables with various measurements – lowest measured height of 7.31m.</p> <p>Northern Power Grid</p>	<p>Consultation with Northern Power Grid to complete assessment of safe clearance heights is required.</p> <p>Outages or disconnections may be possible.</p>

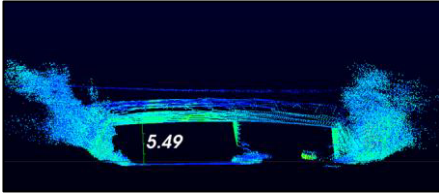

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
42	Overhead Clearance – DANGER	A164	15.9	 <p>Plate 43</p>	<p>HV Power Cables with various measurements – lowest measured height of 7.31m.</p> <p>Northern Power Grid</p>	<p>Consultation with Northern Power Grid to complete assessment of safe clearance heights is required.</p> <p>Outages or disconnections may be possible.</p>
43	Street Furniture	A164/A1079 North Bound Exit Slip Road	16.6	 <p>Plate 44</p>  <p>Plate 45</p>	<p>East Riding of Yorkshire Council</p>	<p>Traffic Lights on Central Splitter Island to be removed. Timber protection to kerbs to allow trailer overrun.</p>



Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
44	Negotiability	A1079 Northbound Exit Slip Road	16.8	 <p>Plate 46</p>  <p>Plate 47</p>	East Riding of Yorkshire Council	Contra Flow Operation onto Northbound A1079 and continue to Layby.
45	Overhead Clearance	A1079 Northbound Carriageway (Overhead clearance – Jocks Lodge)	16.9		A164 Bridge East Riding of Yorkshire Council	See Appendix B .


Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
				 <p data-bbox="882 472 994 499">Plate 48</p>		
46	Overhead Clearance	A1079 Northbound Carriageway Overhead Clearance (Manor Farm)	17.0	 <p data-bbox="882 1177 981 1204">Plate 49</p>	Unclassified Road/ Farmers Accommodation Bridge East Riding of Yorkshire Council	See Appendix B .

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
47	Negotiability	A1079 Northbound Carriageway Layby	17.2	 <p data-bbox="882 608 994 635">Plate 50</p>  <p data-bbox="882 1015 994 1042">Plate 51</p>	East Riding of Yorkshire Council	Access is not restricted into the layby although some timber protection on kerbs may be required to facilitate turning into proposed access road.

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
						
				Plate 52		

5.3 King George Dock Via Hull Centre (Ings Road/Sutton Road)

5.3.1 Overview – Route 2





5.3.1.1 Route 2 is shown in [Figure 10](#), and detailed in [Figure 11](#) to [Figure 14](#).

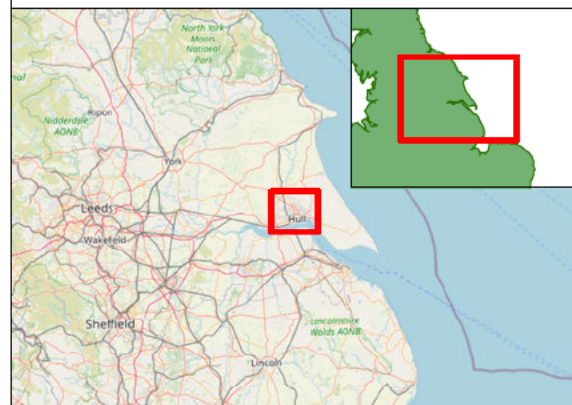
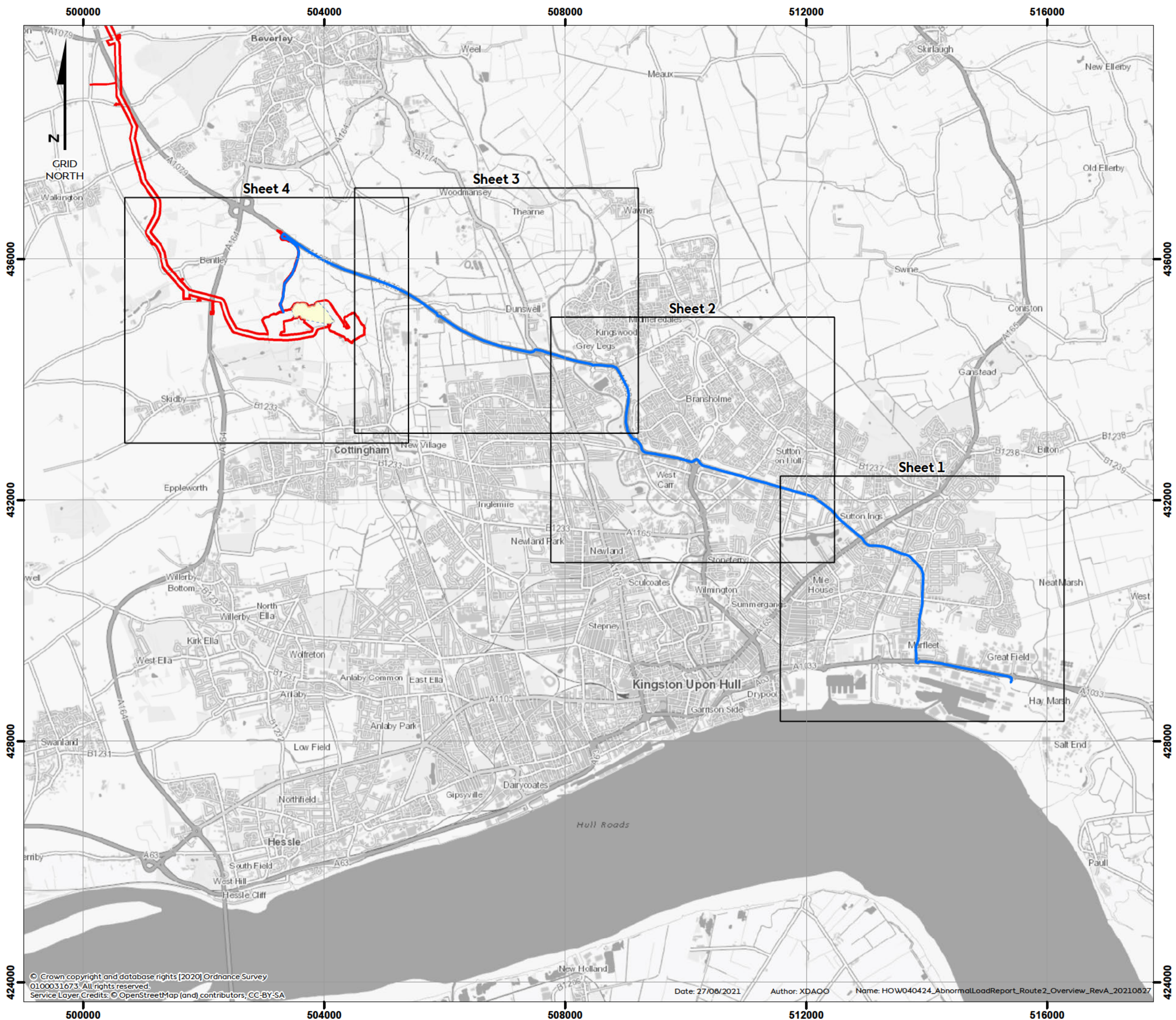
Hornsea Four

Figure 10

Abnormal Load Report

Route 2 - Overview


-  Sheet Boundary
-  Order Limits
-  Onshore Substation, Permanent Space
-  Transport Route



Coordinate system: British National Grid
 Scale@A3: 1:60,000
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 0 500 1,000 2,000 Yards

REV	REMARK	DATE
	First Issue	16/12/2020
A	Update to Onshore Order Limits	27/08/2021

Abnormal Load Report - Route 2 - Overview
 Document no: HOW040424
 Created by: XDAOO
 Checked by: WATTS
 Approved by: JULCA



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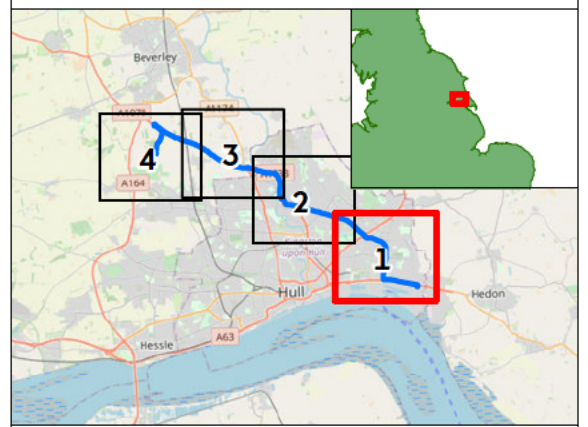
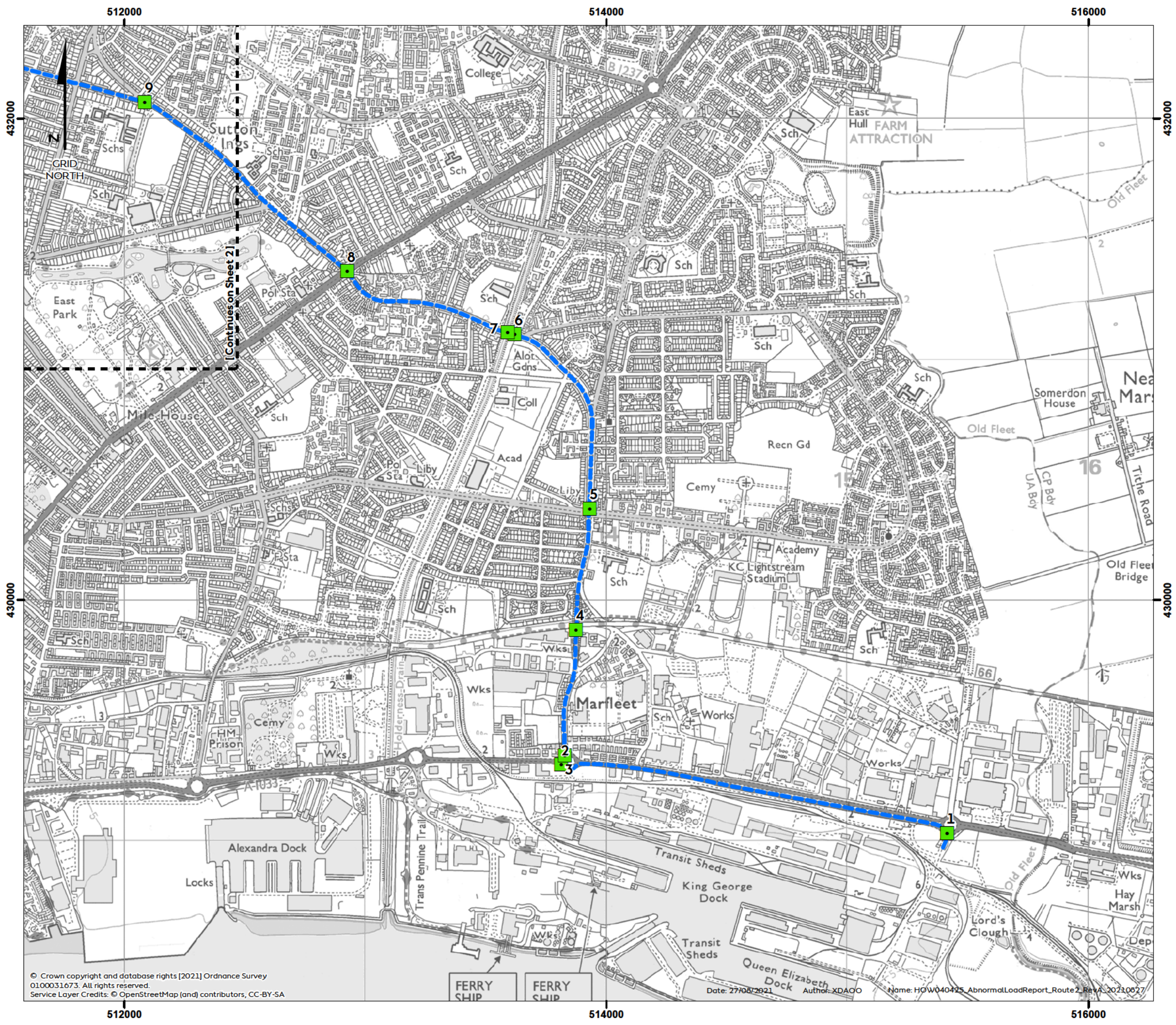
Hornsea Four

Figure 11

Abnormal Load Report

Route 2 - Sheet 1 of 4

- Photo Location
- Transport Route



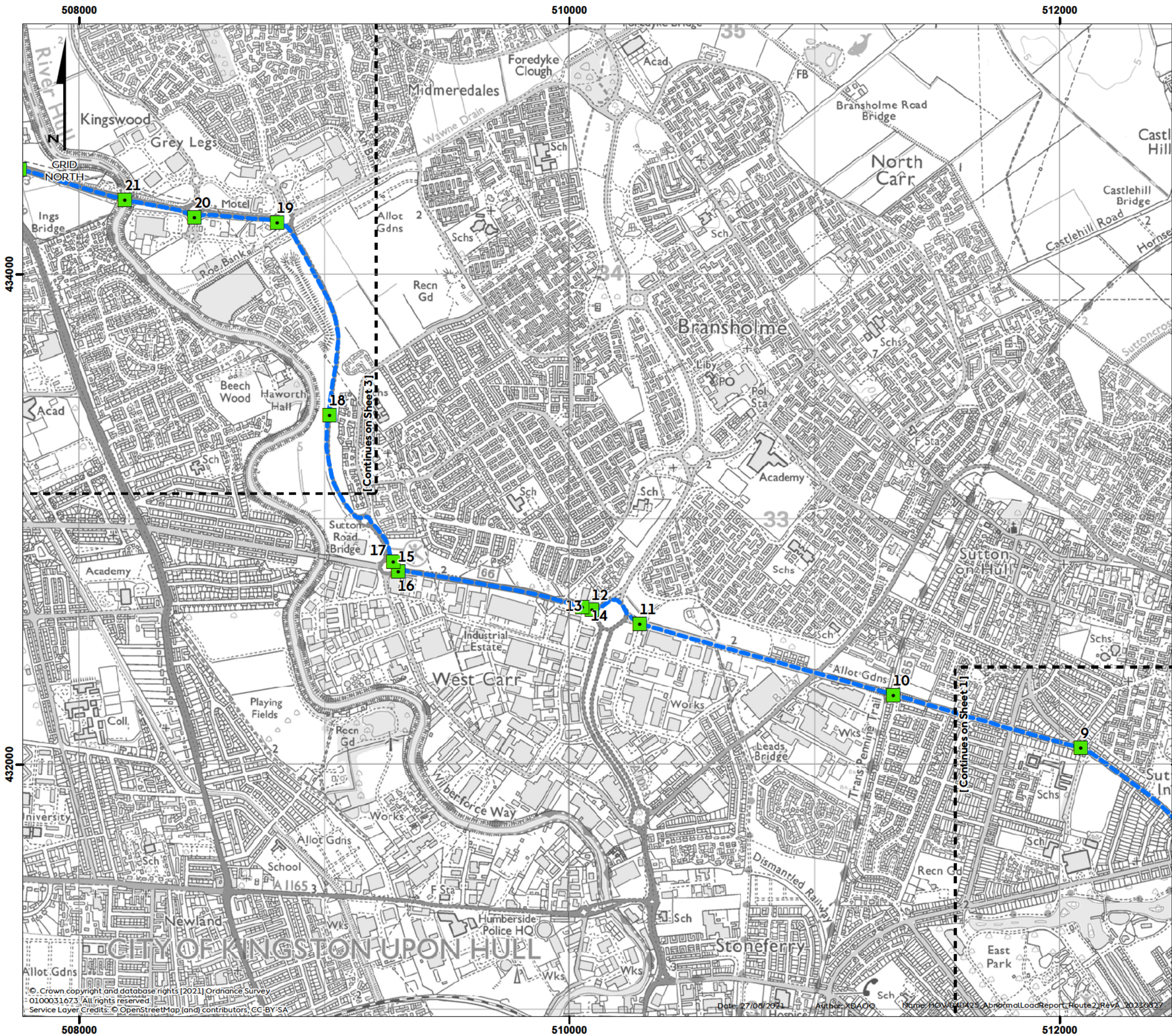
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REV	REMARK	DATE
	First Issue	16/12/2020
A	Update to Onshore Order Limits	27/08/2021

Abnormal Load Report - Route 2
 Document no: HOW040425
 Created by: XDAOO
 Checked by: WATTS
 Approved by: JULCA



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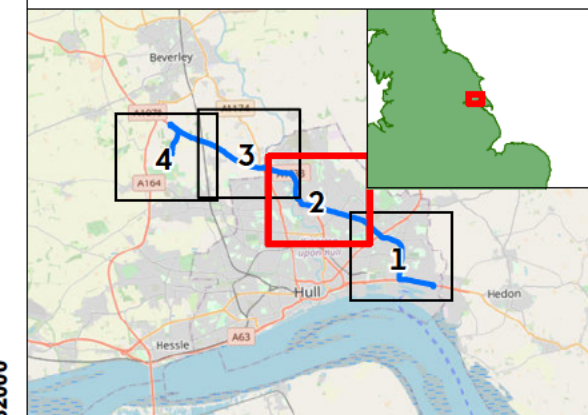
Hornsea Four

Figure 12

Abnormal Load Report

Route 2 - Sheet 2 of 4

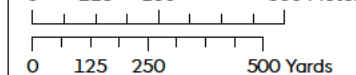
- Photo Location
- Transport Route



Coordinate system: British National Grid

Scale@A3: 1:15,000

0 125 250 500 Meters



REV	REMARK	DATE
	First Issue	16/12/2020
A	Update to Onshore Order Limits	27/08/2021

Abnormal Load Report - Route 2
 Document no: HOW040425
 Created by: XDAO0
 Checked by: WATTS
 Approved by: JULCA



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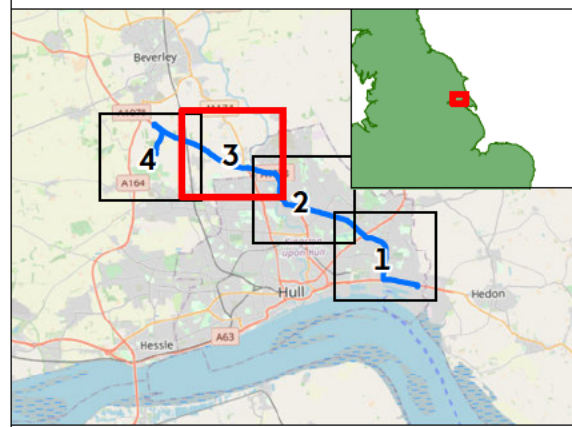
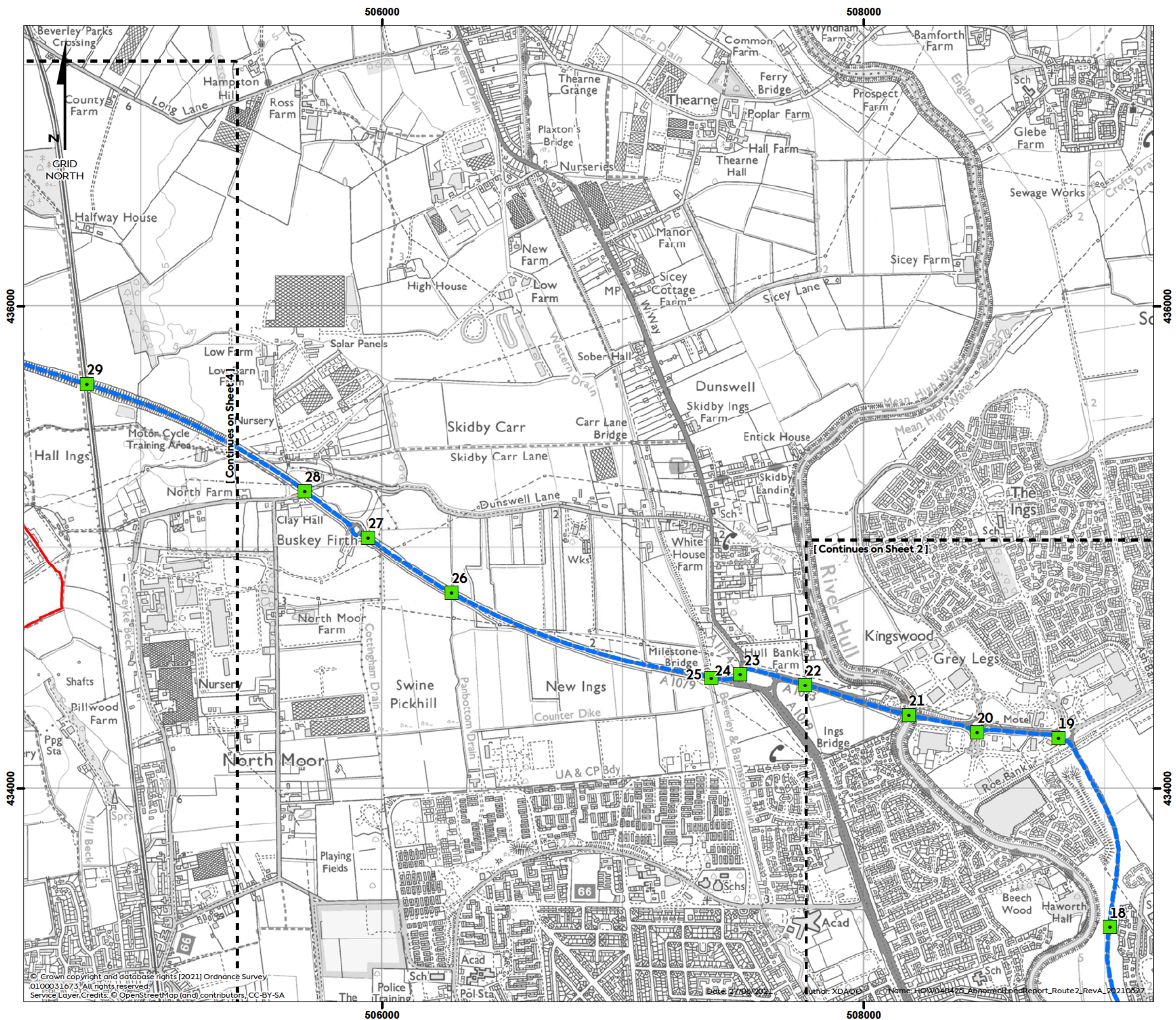
Hornsea Four

Figure 13

Abnormal Load Report

Route 2 - Sheet 3 of 4

- Order Limits
- Photo Location
- Transport Route



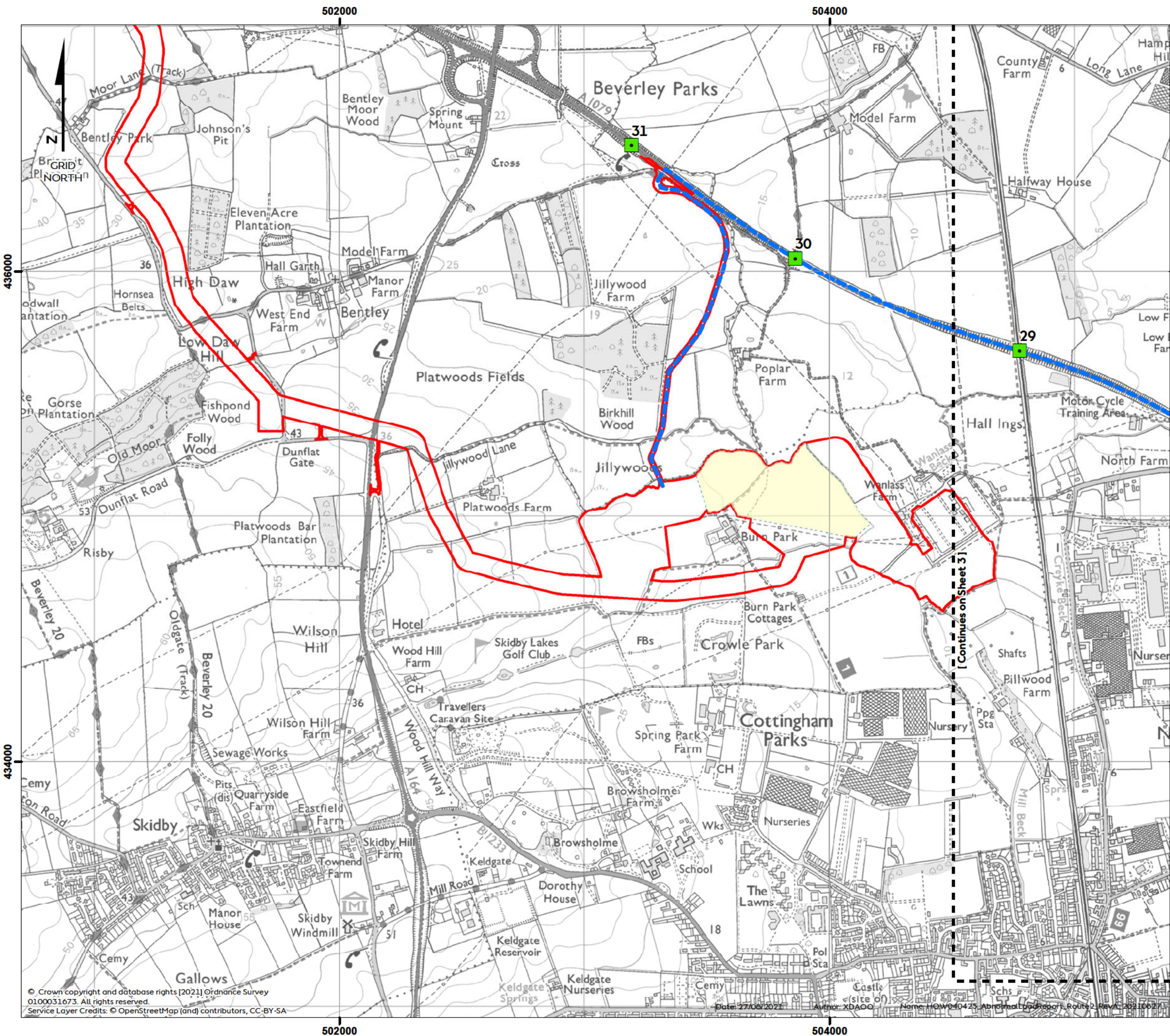
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REV	REMARK	DATE
	First Issue	16/12/2020
A	Update to Onshore Order Limits	27/08/2021

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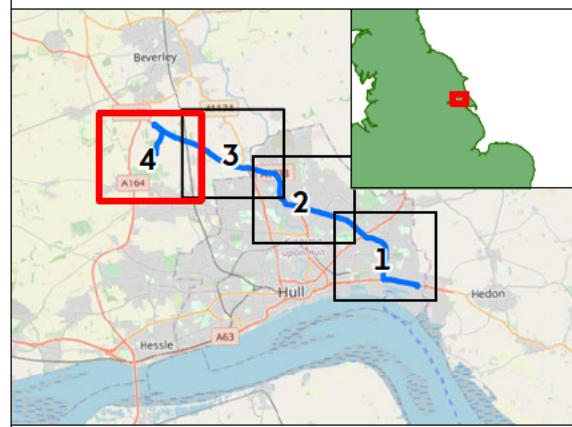
Hornsea Four

Figure 14

Abnormal Load Report

Route 2 - Sheet 4 of 4

- Order Limits
- Onshore Substation, Permanent Space
- Photo Location
- Transport Route



Coordinate system: British National Grid
 Scale@A3: 1:15,000
 0 125 250 500 Meters
 0 125 250 500 Yards

REV	REMARK	DATE
	First Issue	16/12/2020
A	Update to Onshore Order Limits	27/08/2021

Abnormal Load Report - Route 2
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5.3.2 Obstruction List – Route 2


Table 3 shows the obstruction list for route 2 via the Hull Centre. This physical survey was completed on the 13 March 2019, starting at ABP hull (Queen Elizabeth Entrance) to the Hornsea Four OnSS access junction. Corresponding Photo locations are provided in **Figure 11** to **Figure 14** (the 'Photo Location' depicted in figures corresponds with the 'Ref' numbers in column one of **Table 3**).

Table 3: Obstruction List for Route 2.

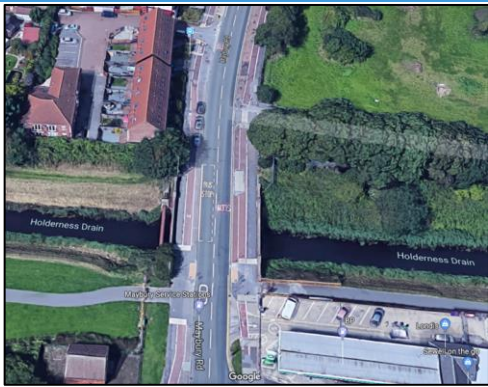
Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
1	Negotiability	KG Dock Entrance /A63 Somerden Roundabout	0.0	No figure available	Hull City Council	No foreseen issues to negotiate this junction.
2	Street Furniture	A1033 Hedon Road/Marfleet Roundabout	1.0	 <p>Plate 53</p>	Hull City Council	1 x 'Maintenance Vehicle' Sign and Chevron Board to be removed.

Hornsea 4





Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
3	Street Furniture	A1033 Hedon Road/Marfleet Roundabout	1.0	 <p data-bbox="808 715 920 743">Plate 54</p>	Hull City Council	Railings on Marfleet Lane – Central Island.
4	Structure	Marfleet Lane	1.4	 <p data-bbox="808 1058 920 1086">Plate 55</p>	Hull City Council	Pedestrian Subway circa 9m width.

Hornsea 4

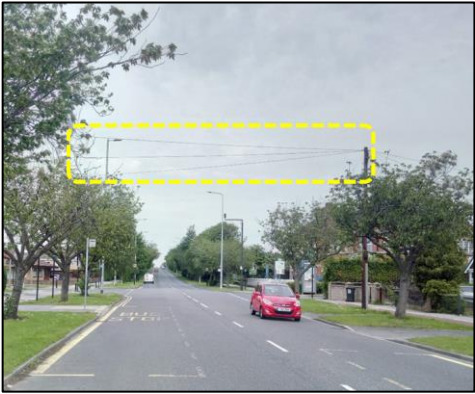

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
5	Street Furniture	Marfleet Lane/Preston Road	1.7	 <p>Plate 56</p>	Hull City Council	Traffic Lights /signs to be removed on central traffic island.
6	Overhead Clearance	Marfleet Lane/Maybury Road	2.0 to 3.1	No figure available	TBD	Will require further survey closer to time of movement to establish if any localised pruning is required.
7	Structure	Maybury Road	2.3	 <p>Plate 57</p>	TBD	Approx 8m Single Span Bridge crossing Holderness Drain – requires clearance.

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
				 <p data-bbox="808 531 920 555">Plate 58</p>		
8	Street Furniture	Maybury Road/Ings Road	2.7	 <p data-bbox="808 930 920 954">Plate 59</p>	Hull City Council	Removal of Traffic Lights and Sign on Central Island on Ings Road to allow oversail. Travel Contraflow.

Hornsea 4



Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
9	Overhead Clearance	Ings Road/ Cavendish Road	2.7 to 4.4	 <p data-bbox="810 708 920 735">Plate 60</p>	British Telecom	BT Telecom Cables require re-assessment closer to time of movement to establish any requirement for lifting.
10	Structure	Sutton Road	4.3	 <p data-bbox="810 1224 920 1251">Plate 61</p>	Hull City Council	Approximate 19m Span – appears to be former railway – now pedestrian walkway.



Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
11	Negotiability	Sutton Road/Holwell Road Roundabout	4.6	 <p data-bbox="810 671 920 699">Plate 62</p>  <p data-bbox="810 1106 920 1133">Plate 63</p>	Hull City Council	Transport configuration to pass in contra flow operation due to road alignment.

Hornsea 4

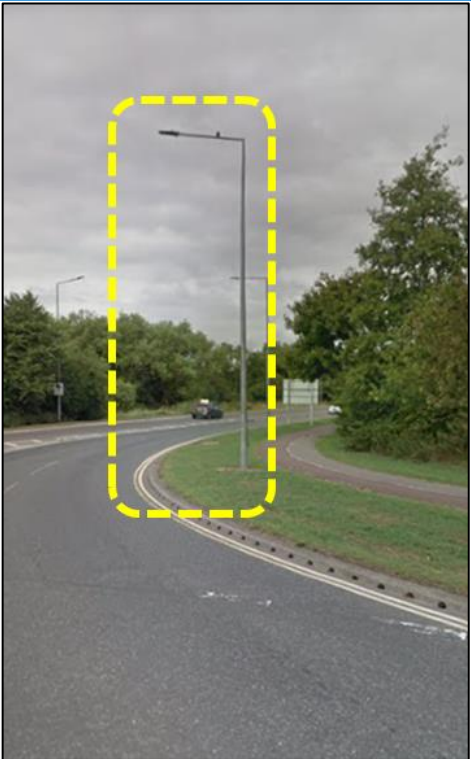
Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
12	Street Furniture	Sutton Road/Holwell Road Roundabout	4.6	 <p data-bbox="808 726 920 751">Plate 64</p>	Hull City Council	Removal of Keep Left Bollard /Lamppost on Eastern Side of Junction.
13	Street Furniture	Sutton Road/Holwell Road Roundabout	4.7	 <p data-bbox="808 1163 920 1189">Plate 65</p>	Hull City Council	<p data-bbox="1514 805 1977 863">Removal of Keep Left Bollard /Lamppost on Western Side of Junction.</p> <p data-bbox="1514 914 1951 971">Laying of Plates and Trackway on Central Splitter Island to facilitate driving over.</p>

Hornsea 4

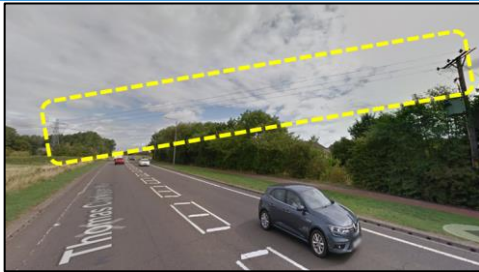

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
14	Street Furniture	Sutton Road	4.7	 <p>Plate 66</p>	Hull City Council	Clearance of Central Traffic Control Island adjacent to ALDI Store.
15	Negotiability	Sutton Road/ Ennerdale Roundabout	4.6	No figure available	Hull City Council	Transport configuration to pass in contra flow operation due to road alignment.
16	Negotiability	Ennerdale (Leisure Centre)	5.4	 <p>Plate 67</p>	Hull City Council	Transport configuration to pass in contra flow operation due to road alignment and follows Item 13.

Hornsea 4





Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
17	Street Furniture	Ennerdale (Leisure Centre)	5.4	 <p data-bbox="810 1082 920 1106">Plate 68</p>	Hull City Council	Chevron Board on Island to be removed and also Lamppost on APEX of offside corner on exit of junction.

Hornsea 4



Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
18	NG OHL Line Equipment and DNO HV Cables	Thomas Clarkson Way	5.8	 <p>Plate 69</p>	National Grid	NG Equipment not anticipated to present issues. DNO HV Cable to be checked with local PowerGrid Company to ascertain safe working clearance.
19	Street Furniture	Roebank Roundabout A1033 – Raich Carter Way	6.2	 <p>Plate 70</p>	Hull City Council	Removal of short section of Pedestrian Railing on apex of corner adjacent to McDonalds boundary.
20	Negotiability	Raich Carter Way/Gibraltar Rd	6.4	No figure available	Hull City Council	No foreseen issues

Hornsea 4



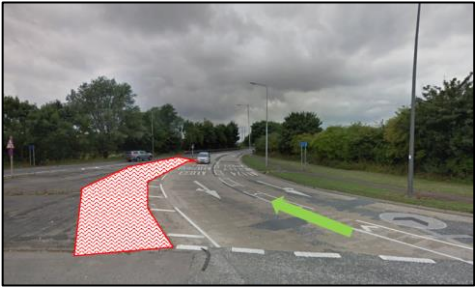

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
21	Structure	A1033 – Raich Carter Way	6.6	 <p data-bbox="810 699 920 722">Plate 71</p>  <p data-bbox="810 1082 920 1106">Plate 72</p>	TBD	River Hull Swing Bridge will require structural clearance to determine suitability of route.

Hornsea 4

Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
22	Structure	A1033 – Raich Carter Way	6.9	 <p data-bbox="810 676 920 703">Plate 73</p>  <p data-bbox="810 1147 920 1174">Plate 74</p>	Beverley and Skidby Drain	Will require structural clearance to determine suitability of route.
23	Negotiability	Raich Carter Way/Beverley Rd	7.0	No figure available	East Riding of Yorkshire Council	Load to Negotiate roundabout in contraflow operation to minimise street furniture requirements.

Hornsea 4



Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
24	Street Furniture	A1079/ Dunswell Road/Beverly Road	7.1	 <p>Plate 75</p>	East Riding of Yorkshire Council	Removal of Traffic Sign on Central Splitter Island.
25	Structure	A1079	7.2	 <p>Plate 76</p>	Beverley and Barmston Drain	Will require structural clearance to determine suitability of route.
26	Structure	A1079	7.9	No figure available	Panbottom Drain	Will require structural clearance to determine suitability of route.

Hornsea 4



Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
27	Negotiability Street Furniture	A1079/ Ken Smith way	8.1	 <p data-bbox="810 638 920 662">Plate 77</p>  <p data-bbox="810 1171 920 1195">Plate 78</p>	<p data-bbox="1317 319 1458 375">Load Travels Contraflow</p> <p data-bbox="1317 427 1458 518">East Riding of Yorkshire Council</p>	<p data-bbox="1518 319 1962 375">Removal of 3 KL Bollards on Splitter Islands and Chevron Board from Centre of Island.</p>



Hornsea 4



Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
28	Structure	A1079	8.3	 <p data-bbox="810 632 920 655">Plate 79</p>	<p data-bbox="1317 316 1480 376">Dunswell Road Bridge</p> <p data-bbox="1317 424 1458 517">East Riding of Yorkshire Council</p>	<p data-bbox="1516 316 1872 376">Will require structural clearance to determine suitability of route.</p>
29	Structure	A1079	9.0	 <p data-bbox="810 1094 920 1118">Plate 80</p>	<p data-bbox="1317 715 1458 807">Network Rail Structure – circa 28m</p>	<p data-bbox="1516 715 1872 775">Will require structural clearance to determine suitability of route.</p>

Hornsea 4



Ref:	Type of Obstacle	Location (e.g. road-no.)	Miles	Plates	Responsible Authority / Ownership	Required Measures/Remarks
				 <p data-bbox="810 632 920 655">Plate 81</p>		
30	Overhead Clearance	A1079 (Overhead – Poplar bridge)	9.6	 <p data-bbox="810 930 920 954">Plate 82</p>	Park Lane Overbridge East Riding of Yorkshire Council	TBD
31	Layby	A1079	10.1	See Figure provided for Route 1.	East Riding of Yorkshire Council	The layby will be extended as part of Hornsea Four access junction works.

6 Consultation

- 6.1.1.1 Consultation will be required with all asset owners and relevant stakeholders prior to the routing of ALLs.

7 Discussion, Conclusions and Recommendations

- 7.1.1.1 The report has considered both the port operations and road transport delivery concepts for the Transformer Equipment to the OnSS.

7.2 Discussion and Conclusion

7.2.1 Marine and Port Operations

- 7.2.1.1 From a marine delivery perspective, there are no foreseen issues with the use of ABP Hull for the inbound shipment of the transformers. The facility has been used on numerous occasions before for project cargo operations. If the stipulated ground loading criteria are met for Heavy Lift Crane operations at North Gap then a Gearless Coaster Vessel with a Mobile Crane to discharge could be considered. In the same respect, the port can accept larger geared vessels or RORO barges if this is the preferred methodology by the successful Transformer Manufacturer and Transport Company Responsible.

- 7.2.1.2 Discharge direct to a road transport trailer is feasible and there is enough space to facilitate the temporary storage of the transformers if shipped in multiple numbers to ABP Hull. Marshalling to a storage area could be done by a smaller flat top modular trailer and then jacked and loaded into the Girder Frame for onward delivery or alternatively by loading to the girder frame and lowered off into the storage depending on the free time allowed for discharge. The chosen method will depend on shipment method and final nominated storage location closer to the time of the deliveries taking place.

- 7.2.1.3 The exit route from the Port Facility to the public highway will largely depend on the final route cleared for the delivery of equipment to the OnSS. Both Queen Elizabeth and the King George Dock entrances can be accessed from North Gap discharge location and have enough width to facilitate passage at this time without significant modification works.

- 7.2.1.4 King George Dock specifically has a wide load entrance/exit to facilitate this type of movement.

7.2.2 Transport Routes to OnSS Site from Hull Docks

- 7.2.2.1 Of the two transport routes considered within this survey, neither of them currently stands out as having a distinct advantage over the other from either a negotiability perspective or the prospect of gaining structural clearance.

- 7.2.2.2 What is common in both instances is the general level of street furniture removal and modifications required to facilitate the access based on the trailer configuration assessed.

Several contra flow manoeuvres are required to facilitate access, and these would be managed under full police escort operations.

7.2.2.3 The main areas of risk for each of the routes Mammoet has considered are summarised below. These are specifically relevant to the structural clearance of the route and therefore it is strongly recommended that the Applicant and/or the Principal Contractor consider a full consultation exercise with Highways England (now NH) and the local councils.

7.2.2.4 Routing via the A63/A164 (Route 1) – This is dependent on the A63 road improvement scheme; if construction coincides, this route cannot be used. This is also largely dependent on the clearance of the following structures:

- Myton Swing Bridge crossing the River Hull on the A63 (**Plate 13**);
- Railway Skew Bridge on A63 prior to junction with A15 (**Plate 27**); and
- Westfield Rd/ Eppleworth Rd on A164 (**Plate 39**).

7.2.2.5 Of these, it is anticipated that Myton Swing Bridge will be the structure requiring further investigation and review due to its design and the extents of lead on/off ramp structures either side of the main structure.

7.2.2.6 Routing via the A1033/A1079 (Route 2) – is largely dependent on the clearance of the following structures:

- Underpass A1033 Marfleet Avenue (**Plate 55**);
- Holderness Drain Bridge (**Plate 57**);
- River Hull Swing Bridge A1033 -Raich Carter Way (**Plate 71**);
- Beverley and Skidby Drain (**Plate 73**);
- Beverley and Barnstom Drain (**Plate 76**); and
- Network Rail Structure on A1079 (**Plate 80**).

7.2.2.7 Of these, it is again anticipated that River Hull Swing Bridge will be the structure requiring further investigation and review due to its design and span.

7.2.2.8 The measures outlined in this report including the street furniture removal and contraflow operations are regular considerations in the movement of abnormal loads in general. The first would require engagement with the owner of the Street Furniture (Council/Managing Area Agent for Highways England (now NH)) and the latter with the Police to ensure this is managed safely and effectively to minimise disruption to the public.

7.2.2.9 Mammoet has completed some initial geometric and vertical assessments of proposed road construction from the A1079 access layby. The Applicant and Mammoet are aligned in the thinking that the design of the road should be such that it allows direct access from the A1079 to the proposed Sub Station Location without the need for a trans-shipment operation.

7.2.3 Travelling Heights

- 7.2.3.1 A reducible transport height of 5150mm was used to conduct a generic non-descript automated review of the proposed routes using Highways England (now NH) ESDAL 2 System. This provided an initial indication of acceptable travelling heights on the two routes assessed with respect to fixed overhead structures – i.e. Bridges. Wires/Cables do not form part of this assessment.
- 7.2.3.2 Routing via the A63/A164 (Route 1) – Two main structures on the A1079 failed with a travelling height of 5150mm and only cleared when this was reduced to 5075mm. This would therefore require a maximum design height of the transformer of 4900mm allowing for suitable air and ground clearances below.
- 7.2.3.3 Routing via the A1033/A1079 (Route 2) – This cleared at 5150mm and would therefore permit the current design of transformer if maintaining this profile was required.

7.3 Recommendations

- 1) Fundamental to the development of the OnSS is to ascertain maximum weight parameters for the route and to do so, engagement with Government Agencies and local authorities would need to be undertaken. This process would take approx. 8 to 14 weeks to complete subject to findings of the local authorities.
- 2) Consultation with Police and Local Councils should be undertaken to determine movement restrictions, personnel requirements and fundamentally indicative costs for the provision of Escorts and Removal/Reinstatement of Street Furniture.
- 3) Despite measurements being taken, the transportation profile should be submitted to both British Telecom and Northern Power Grid to accurately determine safe working clearances and consequently define the impact on services to residents.

8 References

Highways England, 2020. [Online]

Available at: <https://highwaysengland.co.uk/projects/a63-castle-street-improvement-princes-quay-bridge-and-roger-millward-way/>

Highways England, 2020. [Online]

Available at: <https://highwaysengland.co.uk/projects/a63-castle-street-improvement/>

UK Government, 1986. The Road Vehicles (Construction and Use) Regulations 1986

UK Government, 2003. The Road Vehicles (Authorisation of Special Types) (General) Order 2003

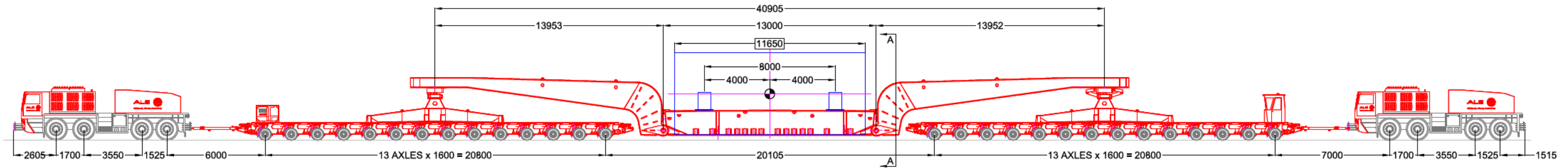
UK Government, 2018. [Online]

Available at: <https://www.gov.uk/government/publications/special-types-enforcement-guide/special-types-enforcement-guide>

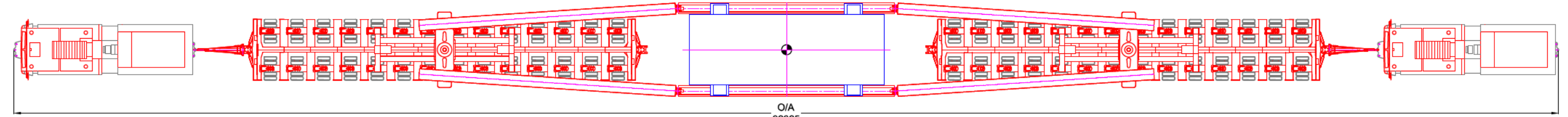
UK Government, 2019. [Online]

Available at: <https://www.gov.uk/government/publications/movement-of-abnormal-loads-by-water>

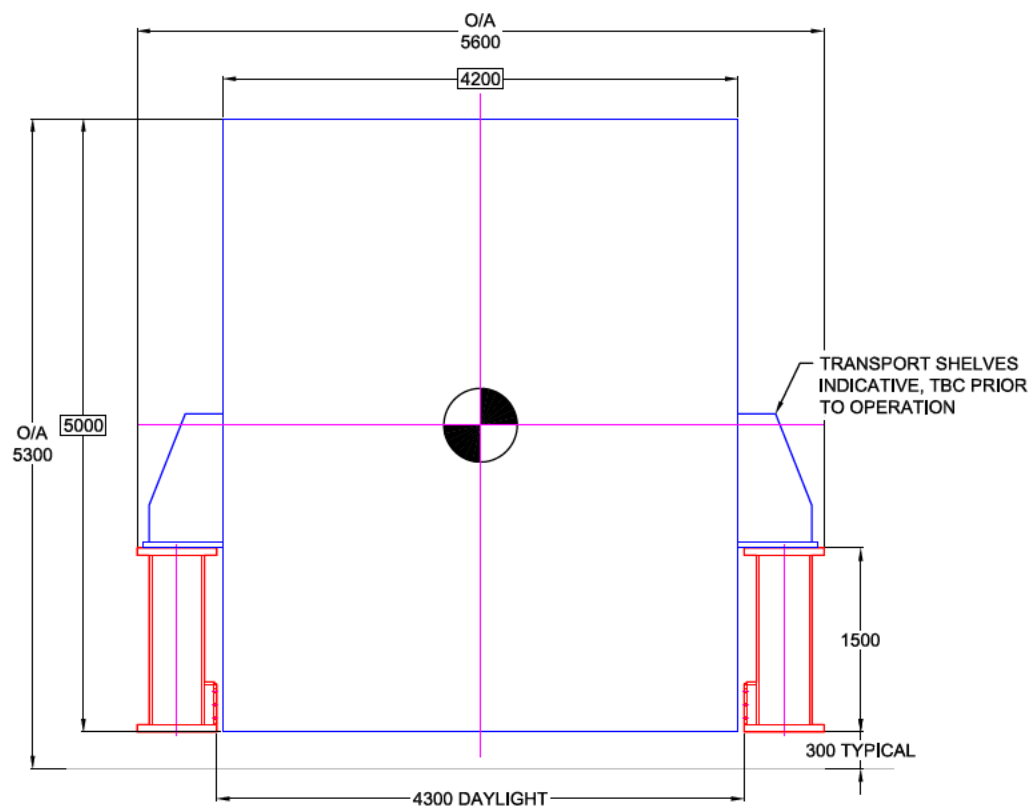
Appendix A – Transport Arrangement Drawing (AA9779-02-DWG-001-A)



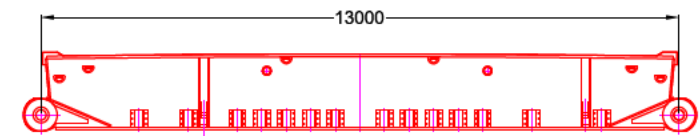
ELEVATION
SCALE 1:120



PLAN
SCALE 1:120



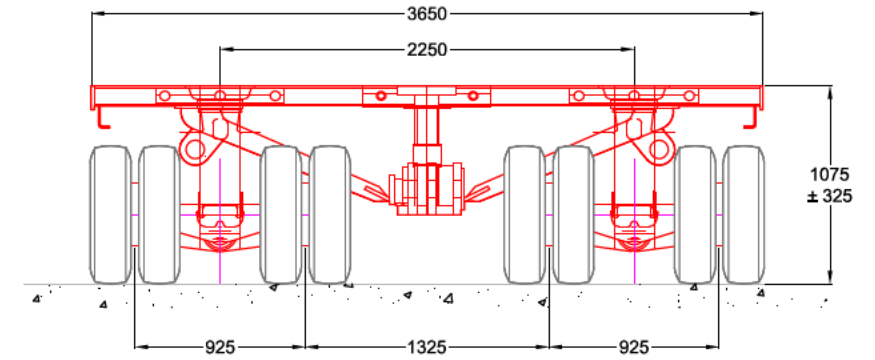
SECTION A-A
SCALE 1:30



BEAM DETAILS: ELEVATION
SCALE 1:75



BEAM DETAILS: PLAN
SCALE 1:75




TRAILER DETAILS: END ELEVATION
SCALE 1:20

DRAWING NOTES:

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
- ALL WEIGHTS ARE IN t (METRIC TONNES) UNLESS OTHERWISE STATED.
- ALL DETAILS ARE PROVISIONAL AND ARE SUBJECT TO CONFIRMATION.

TECHNICAL NOTES:

- LOAD DETAILS TAKEN FROM EMAIL RECEIVED 17/01/2019 BY EMAIL
- LOAD DETAILS: 11650mm x 4200mm x 5000mm (L x W x H), 387t
- TRANSFORMER DRAWING INDICATIVE, TBC BY CLIENT PRIOR TO OPERATION
- LASHING DETAIL TBC PRIOR TO OPERATION
- MINIMUM RUNNING HEIGHT = 5050mm
- ALL DETAILS PRELIMINARY, TBC PRIOR TO OPERATION

TRAILER SPECIFICATION							
AL500 28 AXLE 1,6m NICOLAS							
all weights in t (metric tonnes)	Total						
NUMBER OF AXLE LINES	28	A	20/05/2019	GGB	PJC	FOR INFORMATION	
NUMBER OF FILES	2	Rev.	Date	Drawn	Check	Description	QF19 (Issue 5)
LOAD DETAILS							
PAY LOAD	387	Abnormal Load Engineering Ltd. New Road, Hkcn, Staffordshire, ST18 0PE, U.K. Tel: +44 (0) 1889 272 500 Fax: +44 (0) 1889 271 750 Web: www.ale-heavylift.com					
TRANSPORTER WEIGHT	165	Client LOCAL TRANSPORT PROJECTS					
ENGINE WEIGHT	0						
AUXILIARY STEEL WEIGHT	0						
TOTAL LOAD	552						
LOAD PER AXLE LINE / TRAILER	19.71	Project Title HORNSEA 4 SWEPT PATH ANALYSIS					
LOAD PER FILE	9.86	Drawing Title TRANSPORT ARRANGEMENT FOR AL500 CARRYING 387t TRANSFORMER					
LOAD PER WHEEL	2.46						
GROUND BEARING PRESSURE t/m ²	3.38	Date	Drawn	Checked	Scale (A1)	Sheet	
		20/05/2019	GGB	PJC	AS SHOWN	1 of 1	
		Project No. AA9779-02		Drawing No. DWG-001		Rev.	A

Appendix B – East Riding Infrastructure and Facilities Bridge Height Measurements

Suzanne Cummings

From: Karyn Devoy <[REDACTED]> **On Behalf Of** Abnormal Loads
Sent: 28 July 2020 08:55
To: Rob Bailey <[REDACTED]>
Cc: David Brown <[REDACTED]>
Subject: RE: Route feasibility for a 552t Transformer

Good morning Rob

I hope you are well.

There are some concerns with our structures on this route. We will need to do full assessments to ascertain the suitability on Jocks Lodge, Eppleworth Bridge and Tranby Park Bridge this will have to be undertaken by a consultant as we don't have access to the necessary software, this cost would have to be passed on.

Clearance

Westella Road Bridge clearance 5.30m

Jocks Lodge clearance 5,20m

Manor Farm minimum clearance 4.95m max clearance (offside lane) 5.10m clearance

Poplar Farm Minimum clearance 4.95 max clearance 5.28m

These would have to be checked by yourselves and confirmed that the vehicle can be lowered enough to pass through safely.

I also haven't received a purchase order number for the previous Goole Docks move.

Kind regards,
Karyn Devoy
Abnormal Loads
Mail | abnormal.loads@eastriding.gov.uk
Telephone | 01482 395596



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