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Sent: 08 February 2019 21:06
To: KJ Johansson; Kay Sully; Hornsea Project Three
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Subject: Hornsea Project Three (UK) Ltd response to Deadline 6 (Part1)

Dear Kay, K-J

We are pleased to enclose Ørsted Hornsea Project Three (UK) Ltd (“the Applicant”) response to Deadline 6, Friday 8th Feb 2019. These documents have been prepared by the Applicant and have been produced in response to the Examining Authority’s (ExA) letter of 9 October 2018 (“the Rule 8 letter”).

These documents are being issued over a series of emails, each email containing a pdf file or files. The **last** email to be issued by the Applicant will contain a supporting file tracking sheet – to help the ExA ensure that it has received each email transmission.

Please acknowledge safe receipt of these documents.

If we can be of any assistance in that regard, please do not hesitate to contact myself or Andrew Guyton.

Best regards,
Dr Dominika Chalder PIEMA
Environment and Consent Manager



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Appendix 3 to Deadline 6 submission
Outline Construction Traffic Management Plan

APFP Regulation 5(2)(a)

Date: 8th February 2019

| Document Control | | | |
|----------------------------|--|--------|---|
| Document Properties | | | |
| Organisation | Ørsted Hornsea Project Three (UK) Ltd. | | |
| Author | RPS Group/Create Consulting Ltd | | |
| Checked by | Sarah Drjaca | | |
| Approved by | Andrew Guyton | | |
| Title | Appendix 3 to Deadline 6 submission – Outline Construction Traffic Management Plan | | |
| PINS Document Number | REP4-024 | | |
| Version History | | | |
| Date | Version | Status | Description / Changes |
| 14/05/2018 | 1 | Final | Submission with the application (14 th May 2018) APP-176 |
| 07/11/2018 | A | Final | Submission at Deadline 1 (7 th Nov 2018) REP1-146 |
| 15/01/2019 | B | Final | Submission at Deadline 4 (15 th Jan 2019) REP4-024 |
| 08/02/2019 | C | Final | Submission at Deadline 6 (8 th Feb 2019) |
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Glossary

| Term | Definition |
|-----------------------------------|--|
| Onshore elements of Hornsea Three | Hornsea Three onshore cable corridor, the onshore HVAC booster station, the onshore HVDC converter/HVAC substation and the interconnection with the Norwich Main National Grid substation. |

Acronyms

| Acronyms | Description |
|----------|--------------------------------------|
| AIL | Abnormal Indivisible Loads |
| CoCP | Code of Construction Practice |
| CTMP | Construction Traffic Management Plan |
| DCO | Development Consent Order |
| HA | Highway Authority |
| HDD | Horizontal Directional Drilling |
| HVAC | High Voltage Alternating Current |
| HVDC | High Voltage Direct Current |
| NCC | Norfolk County Council |
| PIA | Personal Injury Accident |
| PRoW | Public Right of Way |

Units

| Unit | Description |
|------|----------------------|
| km | Kilometre (distance) |
| m | Metre (distance) |

1 Introduction

1.1 Background

- 1.1.1.1 The purpose of this Outline Construction Traffic Management Plan (CTMP) is to establish the principles that will be implemented by the principal contractors to minimise the adverse impacts associated with the transport of materials, plant and staff required for construction of the onshore elements of Hornsea Project Three offshore wind farm (hereafter referred to as Hornsea Three).
- 1.1.1.2 The Draft Development Consent Order (DCO) submitted with the application requires that no onshore connection works may commence until written details of a CTMP (which accords with this Outline CTMP) has been submitted to and approved by the relevant planning authority in consultation with the relevant highway authority.
- 1.1.1.3 The construction traffic management plan must contain details of:
- Proposed vehicle routeing plans;
 - Any abnormal indivisible loads that may be delivered by road, or confirmation that no abnormal indivisible loads will be required for construction of the authorised development;
 - Condition surveys;
 - Any highway works proposed; and
 - Construction personnel travel.
- 1.1.1.4 This Outline CTMP is to be read alongside the Outline Code of Construction Practice (CoCP) (document reference A8.5), which itself is secured through a Requirement of the Draft DCO as submitted.
- 1.1.1.5 The measures set out in this Outline CTMP relate to all areas of onshore construction activity which have been identified in Chapter 7 of the Environmental Statement (volume 3, chapter 7: Traffic and Transport) and volume 6, annex 7.1: Transport Assessment ([Document refs: A6.3.7 and A6.6.7.1 respectively](#)) as potentially leading to significant adverse transport and traffic effects.
- 1.1.1.6 It is anticipated that this CTMP submitted with the application is “live” and will be updated through the examination of Hornsea Three. Post consent grant of the Hornsea Three DCO, this Outline CTMP will then establish the principles for all subsequent final CTMPs which will be prepared by the contractor or contractors appointed to deliver the different onshore elements of Hornsea Three. Each final CTMP will then need to be developed in consultation with Norfolk County Council (NCC) as the Local Highway Authority (LHA) and Highways England (HE), collectively referred to as the Highway Authorities (HAs), prior to submission to the Local Planning Authorities and the HAs for approval.

1.1.1.7 This Outline CTMP also forms part of the Outline CoCP. The draft DCO as submitted with the application requires that no phase of any works landward of MLWS may commence until, for that phase a CoCP (which must accord with the principles established in the Outline CoCP) has been submitted to and approved by the relevant planning authority, in consultation with the relevant highway authority (and if applicable the MMO). Post consent grant of the Hornsea Three DCO, the Outline CoCP will then establish the principles for all subsequent final CoCPs which will be prepared by the contractor or contractors appointed to deliver the different onshore elements of Hornsea Three.

1.1.1.8 The onshore elements of Hornsea Three is located within the districts of North Norfolk, Broadland and South Norfolk (the local planning authorities) and Norfolk County Council as the LHA.

1.2 Scope of construction activities and CTMP

1.2.1.1 This Outline CTMP considers site set-up, construction activities and site reinstatement for the onshore construction activities of Hornsea Three which includes:

- Landfall works at Weybourne;
- Onshore cable corridor (approximately 55km in length);
- Main compound at Oulton Airfield, near Oulton Street;
- Secondary compounds and storage areas located along the onshore cable corridor;
- Horizontal Directional Drilling (HDD) compounds located along the onshore cable corridor;
- Haul road along the cable corridor and access points and routes off the public highway;
- A new High Voltage Alternating Current (HVAC) booster station at Little Barningham; and
- A new High Voltage Direct Current (HVDC) converter/HVAC substation near Swardeston.

1.2.1.2 The potential adverse effects resulting from the construction activities relating to traffic and transport comprise the following:

- Adverse effects on sensitive receptors such as schools, care homes, hospitals and residential areas with poor footway provision;
- Adverse effect on pedestrian delay, severance, and fear and intimidation due to HGV movements;
- Adverse effects due to possible increased risk to road users as a result of the passage of construction vehicles along existing roads or at site accesses; and
- Adverse effects from the movement of abnormal loads associates with the construction of the HVDC converter / HVAC substation.

1.2.1.3 In addition, this Outline CTMP sets out proposed measures to reduce the overall level of travel and the associated emissions resulting from construction activities.

1.2.1.4 Hornsea Three may be constructed in a single phase or two phases. Within each phase, there would then be a sub set of works and activities as the cable corridor work fronts make their way along the cable route and then potentially by different principal contractors, the works and activities associated with the landfall, HVAC Booster Station (if required) or HVDC Converter/HVAC substation and connection to Norwich Main are constructed. Production of multiple CTMPs will therefore be required to facilitate these construction works.

1.2.1.5 The following sections are included in this Outline CTMP and will be included in all final CTMPs:

- Introduction;
- Management of HGV Movements;
- Abnormal Loads;
- Management of Construction Workforce Movement;
- Site Accesses;
- Highway Crossings;
- Management of Highway Safety;
- Implementation and Monitoring of the CTMP;
- Potential interaction between construction traffic for Hornsea Three and Vattenfall Norfolk Vanguard and how this can be managed and mitigated; and
- Potential interaction between construction traffic for Hornsea Three and the A47 improvement works and how this can be managed and mitigated.

1.2.2 Horizontal Directional Drilling

1.2.2.1 In order to assist the reader of this Outline CTMP, a definition of Horizontal Directional Drilling is given from paragraphs 3.7.3.15 – 3.7.3.17 within the volume 1, chapter 3: Project Description of the Environmental Statement ([Document ref: A6.1.3](#)):

“HDD involves drilling a long parabolic borehole underneath the obstacle using a drilling rig located beyond the obstacle in the export cable corridor. The optimum design is for each drill to be carried out in a straight line, with pits dug at both ends of the planned drill to below the level required for the cable so the drilling rig can carry out the drill horizontally, and the ducts can be installed.

The process uses a drilling head controlled from the rig to drill a pilot hole along a predetermined profile based on an analysis of the ground conditions and cable installation requirements. This pilot hole is then widened using larger drilling heads until the hole is wide enough to fit the cable ducts. Bentonite is pumped to the drilling head during the drilling process to stabilise the hole and ensure that it does not collapse. Prior to the drilling taking place, an exit pit may be excavated passed the obstacle on the export cable route in order for the HDD profile and ducts to stop at the required installation depth for the cable.

Once the HDD drilling has taken place the ducts (within which the cable will be installed) are pulled through the drilled hole. These ducts are either constructed offsite, or will be constructed onsite along

the export cable route, then pulled through the drilled hole either by the HDD rig or by separate winches.”

1.2.3 Haul road

1.2.3.1 In order to assist the reader of this Outline CTMP, a definition of haul road is given from paragraphs 3.7.2.25 – 3.7.2.27 within the volume 1, chapter 3: Project Description of the Environmental Statement:

“During the installation of the onshore cables a temporary haul road will be constructed. The haul road, 6 m wide, and extending up to the full length of the onshore cable corridor (less sections where a HDD only passes through) provides vehicular access along the cable easement off the public highway. Following completion of the works being served by that access point, the haul road will be removed and the land reinstated, unless otherwise agreed with the local planning authority. The access point would also be removed and/or no longer utilised unless otherwise agreed with the local planning authority.

The haul road will be utilised during installation and be made up of either: an average of 0.3 m of permeable gravel aggregate with a geotextile or other type of protective matting; or plastic or metal plates or grating.

To provide access to the cable corridor and limit damage to the agricultural land, the haul road will be installed as part of the preconstruction cable route works at the start of construction in that locality.”

1.2.3.2 The depth of the sub-base of the haul road will be dependent on the California Bearing Ratio (CBR) of the substrata. The following table can be used as a guide to the required thickness of the granular sub-base for typical silty clay soils in reasonable condition and at normal depths. The maximum depth of the haul road would not exceed 0.5 m.

| Granular Sub-Base Thickness | | | |
|-----------------------------|--------|--------|--------|
| CBR 2% | CBR 3% | CBR 4% | CBR 5% |
| 370mm | 310mm | 240mm | 200mm |

1.2.4 Open cut trench

1.2.4.1 In order to assist the reader of this Outline CTMP, a definition of open cut trench is given from Section 3.7.3 within the volume 1, chapter 3: Project Description of the Environmental Statement, extracts of which are as follows:

“The trenches will be excavated using a mechanical excavator, and the export cables will be installed into the open trench from a cable drum delivered to site via HGV. The cables are buried in a layer of stabilised backfill material that ensures a consistent structural and thermal environment for the cables.

The remainder of the trench is then backfilled with the excavated material. Hard protective tiles, protective tape and marker tape are also installed in the cable trenches above the cables to ensure the

cable is not damaged by any third party. Once the export cables are installed and the trenches backfilled, the stored topsoil will be replaced and the land reinstated back to its previous use. Each trench section between joint bays is expected to be open for approximately one week.”

2 Traffic Management

2.1 Management of HGV movements

2.1.1 Vehicle Types

2.1.1.1 A variety of vehicle types will need to access the construction sites. These will include, inter alia: low loaders to deliver plant, construction machinery, ducting and cables, trench and pit support; fencing, welfare facilities and temporary portable cabins; HGVs delivering aggregate for surfacing of compounds and haul road; tankers to deliver water for HDD and for welfare; delivery of components for the HVDC converter/HVAC substation and HVAC booster station; and removal of topsoil from the HVDC converter/HVAC substation and HVAC booster station sites.

2.1.2 Vehicle routing

2.1.2.1 Likely HGV routes for construction of the onshore cable corridor are identified on Figure 1.2 of volume 6, annex 7.8: Traffic and Transport Figures (document reference: A6.6.7.8). The final CTMPs will include communication with the HAs to confirm that these routes remain appropriate and are agreed for use when construction is ready to commence.

2.1.2.2 All contractors will be required to comply with the agreed routing plans and will ensure that all drivers are informed of the need to restrict HGV movements to those specified routes. If in the event that complaints are received that vehicles are not following prescribed routes (or it comes apparent to the project or principal contractors, the project would then consider mechanisms to record vehicle routing, for example applying spot-checks by the developer to ensure that the agreed routes are being adhered to).

2.1.2.3 If deemed necessary by the HAs, where routine HGV vehicle movements are generated, e.g. haul road aggregate or cable supplier, the respective suppliers will be requested to maintain a log, the purpose of which is to demonstrate compliance with following prescribed access routes and delivery times.

2.1.2.4 If deemed necessary by the HAs, construction access routes will have temporary signs posted along the confirmed routes. This may include signs to improve pedestrian awareness of HGV movements along roads where footways are not provided or are limited. The need for such signs, and their proposed locations, would be discussed and agreed with the HA during the preparation of the final CTMP.

2.1.3 Localised restrictions

2.1.3.1 Where it is possible for two HGVs associated with the Hornsea Three works to meet on a section of highway that is of insufficient width to allow the HGVs to pass without reversing or overrunning the edge of the highway, movements of HGVs to and from construction sites will be controlled to ensure that such conflicts between HGVs associated with the Hornsea Three works do not arise.

2.1.3.2 The likely HGV routes for construction of the onshore cable corridor are identified on Figure 1.2 of volume 6, annex 7.8: Traffic and Transport Figures ([document reference: A6.6-7.8](#)). These generally take into consideration existing HGV restrictions. However, there are some existing restrictions on the passage of HGVs over 7.5 t which will need to be used by the project. These are located at the following access route locations:

- Link 105: Hall Road to [Reppham-Reppham](#) Road junction;
- Link 119: Marl Hill Road and Ringland Lane from A1067 to the onshore cable corridor;
- Link 165: Bawburgh Road from the onshore cable corridor to B1108;
- Link 166: Stocks Hill from link 163/164 to B1108;
- Link 172: Cantley Lane from Station Lane to A47/A11; and
- Link 181: Gowthorpe Lane.

2.1.3.3 In addition, there are existing signs on the road network stating that the following routes are not suitable for HGVs:

- Links 6 to 9: Sandy Hill Lane;
- Link 87: B1145 in Reppham; and
- Link 100: Ketts Lane.

2.1.3.4 The above links pass through or lead up to urban areas with residential properties, other sensitive areas or are too narrow for accommodating two-way HGV movements and it appears to be for these reasons that there are 7.5 t weight restrictions on place or they are marked as being unsuitable for HGVs. For construction HGVs serving the project, these restrictions will be temporarily suspended over the period for which access is required.

2.1.3.5 In these locations, all reasonable endeavours will be made to limit the number of HGV movements on the links and to avoid damage and to avoid HGVs meeting on sections of highway where there is insufficient width to allow two HGVs to pass. In these locations, there would be discussion and agreement with the HAs on mitigation.

2.1.3.6 No HGV movements will be permitted on Cantley Lane, close to the A11/A47 Thickthorn junction. Furthermore, no HGV movements will be permitted beyond the Church Lane / Dog Lane / Ringland Road junction).

2.1.3.7 Given the limited visibility at the existing access onto the A149, specific traffic management measures will be required. These have been identified as follows, and would be developed in further detail within the detailed CTMP (under Requirement 18 of the dDCO):

- Signage would be provided on the A149 approaches to this access to forewarn drivers of slow moving, turning HGVs;
- The existing hedge line to the east of this access (on the north side of the A149) would be maintained, to trim back as far as is achievable within the highway verge, with a view to improving visibility to/from the east.

2.1.4 Timing of HGV movements

2.1.4.1 For the Hornsea Three onshore cable corridor and substation core working hours are 07.00 to 18.00 on weekdays and 07.00 to 13.00 on Saturdays. Up to one hour before and after for mobilisation (“mobilisation period”), i.e. 06:00 to 19:00 weekdays and 06:00 to 14:00 Saturdays; and Maintenance period 13:00 to 17:00 Saturdays. Mobilisation does not include heavy good vehicle (HGV) movements into and out of sites, but suppliers can make use of the wider highway network outside these hours to travel to site. In certain circumstances, specific works may have to be undertaken on a continuous working basis (00:00 to 00:00 Monday to Sunday). All HGV movements which are not planned to arrive at site after any time restrictions would be required to park at an appropriate Approved Lorry Park, Motorway Services and other designated overnight parking locations.

2.1.4.2 Other activities that will require 24-hour operation will be: site security, oil filling of transformers at the HVDC converter/HVAC substation, some work at jointing pits, some HDD activities and possible remedial works in response to severe weather events. These will be agreed in consultation with the relevant planning authorities. [It may also be beneficial to carry out several activities outside of the core working hours to utilise periods such as works within the highway, footpaths and works affecting operational railways. Activities outside of the core working hours will be agreed with the relevant local authority EHO officer.](#) However, it should be noted that not all of these activities will involve HGV movements or would generate only infrequent HGV movements e.g. site security, oil filling of transformers and so are of a different nature to the frequent HGV movements of primary consideration within this Outline CTMP.

2.1.4.3 Within the context of the working hours established in the Outline CoCP ([document reference A8-5](#)), any further restrictions over and above these associated with the movement of vehicles associated for the project should be limited. However, some limited further restrictions may be placed on the timing of HGV movements through locations with sensitive receptors, for example restrictions on number of HGV movements during school opening and closing hours where HGVs would travel along routes passing schools where the highway network is constrained.

2.1.4.4 Depending on the season of construction of individual onshore cable corridor sections or components, during peak holiday seasons (considered to be mid-July to late August) the approved routing of HGVs documented in final CTMPs, if practical, may need to avoid routes marked on the Norfolk County Council Route Hierarchy Map.

2.1.5 Reducing the impact of HGV Movements

2.1.5.1 Load sizes are typically maximised and thus vehicle usage is typically minimised by contractors in order to minimise transportation costs and this will be encouraged by the principal contractor. Site supervisors will be encouraged to re-use HGVs where practical, such as using vehicles which have delivered material to remove excavated material if this needs to be removed from a site. Where practical, local suppliers will be used to minimise the distance travelled by HGVs.

2.1.5.2 All HGVs transporting fine and loose material will be sheeted to avoid dust and the spillage of materials onto the highway. Dampening of surfaces, such as the haul road in locations where it is close to the public highway, will be undertaken in dry weather where the movement of vehicles or delivery of loads may cause dust.

2.1.5.3 Where there is a risk of mud from the construction works being transported onto the highway network by HGVs, wheel wash facilities will be provided at each construction site to ensure that HGVs do not deposit mud and dust onto the highway network. In order to minimise environmental impact upon the site and to reduce the need for water, a dry wheel 'wash' facility (rumble grids) will be used where practical, such as 'DriveOn V-Tech' solution, which is available from Eco Plant Hire. If required (and safe to operate) road cleaners may be required to be deployed along public highway in the locality of actively used site access points.

2.1.5.4 The final CTMP will identify the need for and nature of measures to be implemented to enhance pedestrian safety at locations where HGVs are routed along roads without pedestrian footways.

2.1.6 Management of Abnormal Indivisible Loads

2.1.6.1 It is expected that a number of Abnormal Indivisible Loads (AILs) comprising large components such as transformers will be transported to the HVAC Booster station and HVDC converter/HVAC substation sites. The haulage contractor appointed to undertake this work will be required to comply with statutory regulations in terms of consulting with [relevant HAs](#) and the police. The notification requirements differ depending on the weight, length and width of the AIL. HEs 'Aide Memoire for notification requirements for movement of AILs' is provided at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/503103/Aide_Memoire_updated_Sep_2015.pdf.

2.1.6.2 The timing of AIL deliveries will be discussed and agreed with the HAs to minimise delay for other road users and to minimise risk to highway users. The HAs will dictate the timing of AIL deliveries along the highway and this may be during night time periods.

2.1.6.3 The weight, length and width of AILs will be communicated to the HA, and the routing of AIL deliveries will be agreed with the HA prior to any movements on the local road network. [Where appropriate, the police and relevant highways and bridge authorities would also be consulted.](#)

2.1.6.32.1.6.4 The delivery of AIL would typically be undertaken in convoy and under escort. Where AIL require the full width of the carriageway or for unusual manoeuvres at junctions, appropriate temporary road closures and traffic management will be put in place as appropriate to maintain the safety of other road users and minimise delay.

2.2 Management of construction workforce movement

2.2.1 Construction workforce travel

2.2.1.1 The project recognises the value in managing and reducing the impact of the movement of construction staff. The final CTMPs approved by the HAs prior to the commencement of works are to document measures that can be implemented that will encourage contractors to make use of sustainable modes where possible. These measures to be considered:

- The control of parking on and around construction sites to avoid inappropriate parking on verges or unsuitable highways and to deter construction workers from driving to site unnecessarily;
- Measures to increase vehicle occupancy such as incentives to car-share, information to facilitate car sharing and the provision of minibuses where this would allow construction workers to access sites without the need to come by car;
- The provision of public transport information if this would to assist construction workers access sites or travel by bus or train to locations where they could be picked up by minibus;
- Measures to encourage walking and cycling where these modes offer an opportunity for construction workers to access sites, including provision of temporary cycle parking at work sites;
- Welfare facilities will be provided on work sites to reduce the need for construction workers to travel elsewhere in the course of the day; and
- The proposed core working hours (07:00-18:00 weekdays) avoids construction workers travelling in the peak hours and thus reduces impacts on the local road network during network peak hours.

2.2.1.2 Engagement with Highways England has identified the A47 Taverham Road Honingham junction, A47 Easton Roundabout, A47/A1074 Longwater junction, A47/ A140 junction and B1113/A140 junction as locations which will require measures such as the above, particularly in respect to encouraging staff movements outside of the network peak.

3 Site Accesses

3.1 Design

- 3.1.1.1 Access locations are identified on Figure 1.2 at volume 6, annex 7.8: Traffic and Transport Figures. The final design of all site accesses will be agreed with NCC prior to the start of construction at each access point. When an access point is in use, a Temporary Traffic Regulation Order for a 30 mph speed limit will be progressed at every access where the existing speed limit is above 30mph; the extent of each restriction will vary at each access based upon the existing speed limit, road alignment, road geometries and forward visibility. Each access will meet appropriate visibility and design standards. Traffic management measures may be required at some accesses, possible types of which are discussed below.
- 3.1.1.2 Working areas will be designed to enable plant, materials and waste to be loaded / unloaded, areas will be designated as such and to enable vehicles to enter and exit in forward gear. Contractors / suppliers will not be permitted to wait on or load / unload from the public highway.
- 3.1.1.3 Working areas will be designed to enable designated parking facilities for construction workers.
- 3.1.1.4 All site accesses will be provided with appropriate fencing to ensure that work sites are secure. Some accesses would be available to all vehicle types, whilst others may be restricted to construction workforce and light vehicles only. Nevertheless, all site accesses will be designed to eliminate the risk of vehicles queuing back onto the highway by providing sufficient width close to the adjacent highway, which is appropriate to the types of vehicles anticipated to use the access.

3.2 Management and mitigation

- 3.2.1.1 Where there is a risk that vehicles will deposit mud and debris on the highway, in the vicinity of construction site accesses, wheel washing facilities will be provided (see paragraph 2.1.5.3 above). The condition of the adjacent highway will be monitored and if mud or debris is found to be present, measures such as road sweeping will be put in place by the contractor to secure its removal with minimal delay.
- 3.2.1.2 Appropriate signage will be provided on the approach to construction site accesses to warn of turning and/or slow-moving vehicles. The design and siting of all signage will be agreed with the HAs prior to the start of work at each work site. Signage can also be placed at the exit of construction site access points to instruct construction traffic to follow the designated route.
- 3.2.1.3 Contact numbers will be on display for the general public to raise any concerns.
- 3.2.1.4 Within 28 days of a construction site access being no longer required for the purpose of Hornsea Three construction, or written notice being served unto the Applicant by the HA, the access will be removed and the highway returned to its original condition (including verges), unless otherwise agreed with the HAs. The details of and timescales for the reinstatement will also be agreed with the HAs. It is anticipated that the HAs will inspect the reinstatement works to ensure that there meet appropriate standards.

- 3.2.1.5 There may be a need to provide traffic management measures at some accesses and at some routes to the accesses. This may be required for various reasons and the type of traffic management measures to adopt will depend upon the location on the highway, the nature and level of traffic on the highway, what is served by the highway, and the alternative routes available. Example traffic management measures include:

- Requisite visibility splays cannot be provided at an access and so traffic on the highway may be temporarily stopped to allow HGVs to exit an access safely;
- The highway geometries are too narrow to safely accommodate turning HGVs when exiting an access and so traffic on the highway may be temporarily stopped to allow HGVs to exit an access safely;
- The highway geometries are too narrow to accommodate HGVs passing an oncoming vehicle and so shuttle working may be temporarily installed;
- The highway geometries are too narrow to accommodate HGVs passing an oncoming vehicle and so the road may be temporarily made one-way and a local diversion put in place;
- The highway geometries are too narrow to accommodate HGVs passing an oncoming vehicle and so the road may be temporarily closed to through traffic and a local diversion put in place; and
- The highway geometries are too narrow to accommodate simultaneous turning movements through junctions and so three-way portable signal control may be temporarily installed at T-junctions or four-way portable signal control temporarily installed at crossroads.

- 3.2.1.6 Where traffic on the highway is stopped, this could be via temporary traffic signals or via manually operated stop / go signs.

- 3.2.1.7 Whilst the project provides for HDD under all public highways, if works are required on the public highway (such as to identify local utilities) the project will make use of shuttle working arrangements. Shuttle working is where one direction of travel receives priority over the other. This could be via traffic signals or via give way signs.

- 3.2.1.8 Some example layouts of these traffic management measures and features are shown on Figure 3.1 to Figure 3.6. These examples are extracted from The Traffic Signs Manual, Chapter 8, Part 1, Traffic Safety Measures and Signs for Road Works and Temporary Situations, Department for Transport / Highways Agency, 2009. The extracts are generic in nature and they are not designed to be specific to any particular location or circumstance but designed to be implemented in accordance with the advice contained within the document.

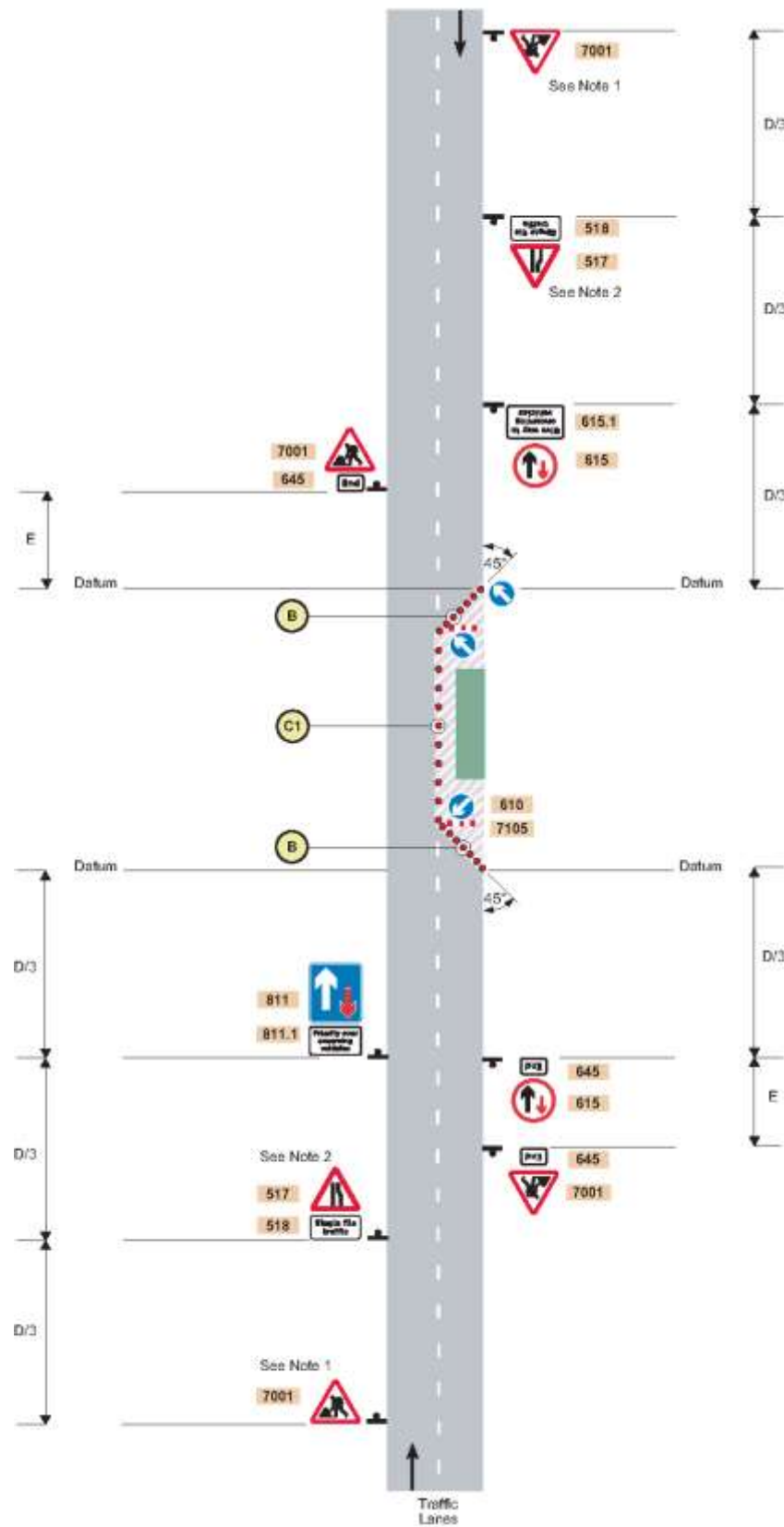


Figure 3.1: Priority signs on a two-lane single carriageway road.

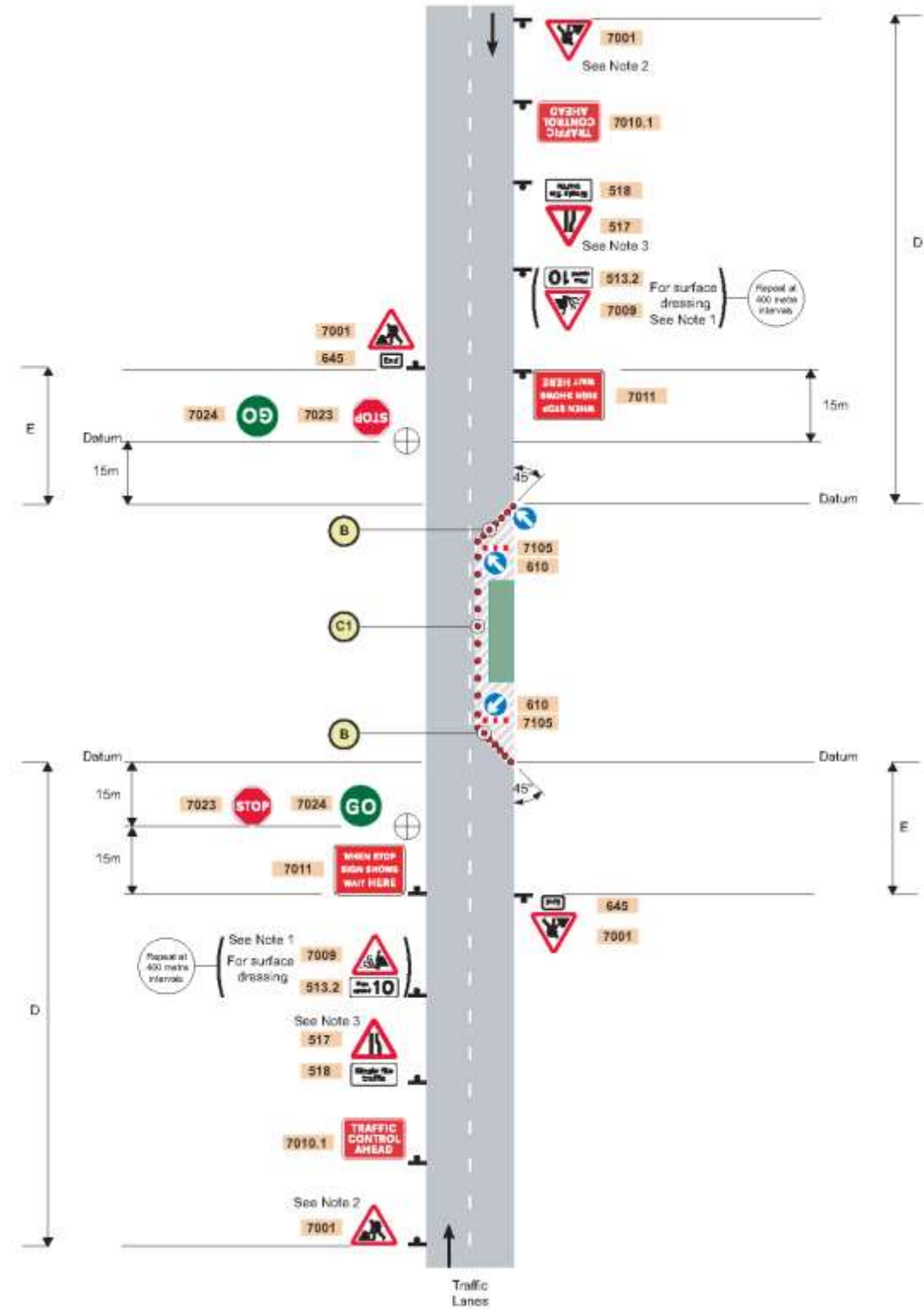


Figure 3.2: STOP/GO signs on a two-lane single carriageway road.

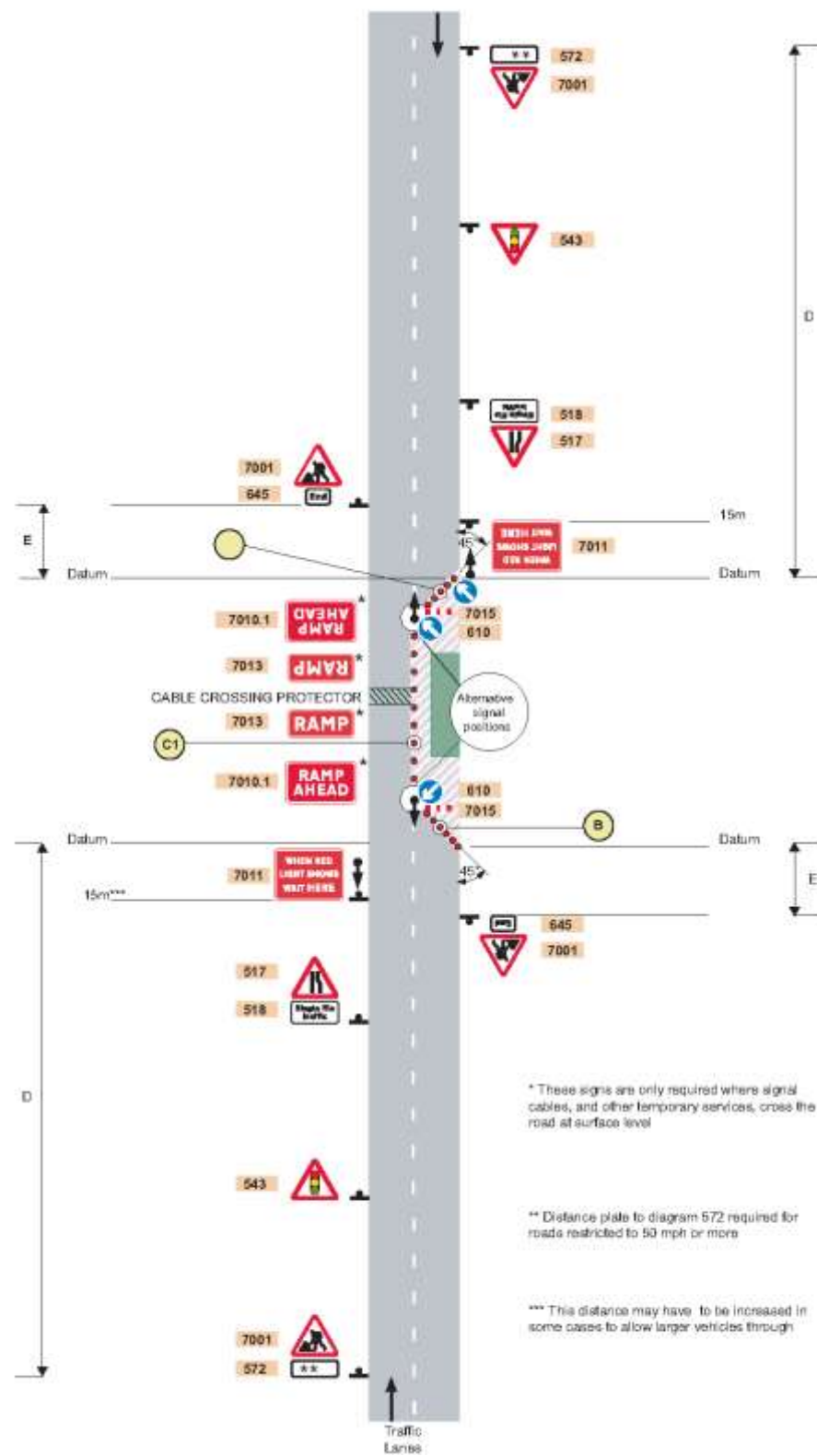


Figure 3.3: Portable Traffic Signals on a Two-lane Single Carriageway Road.

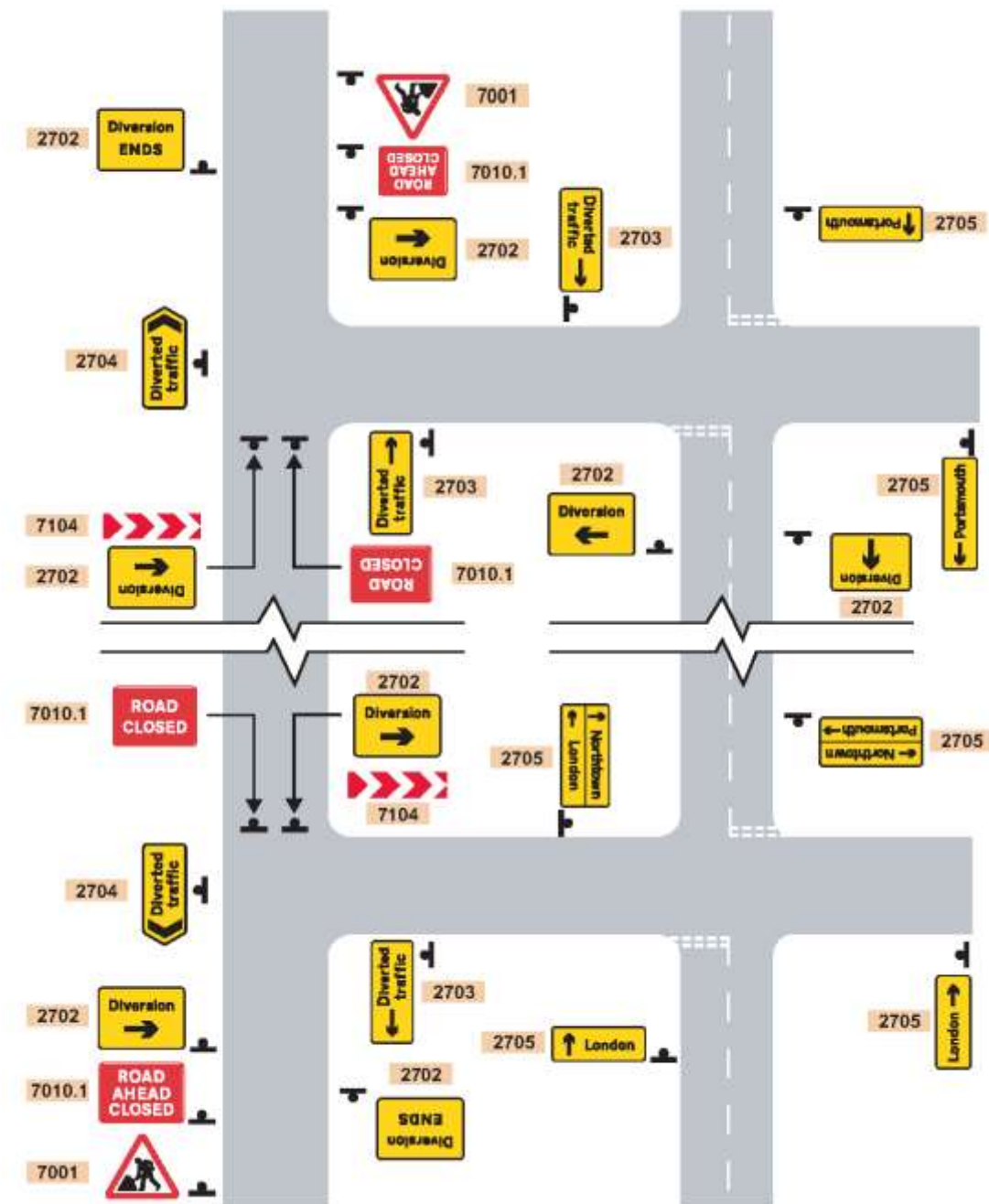
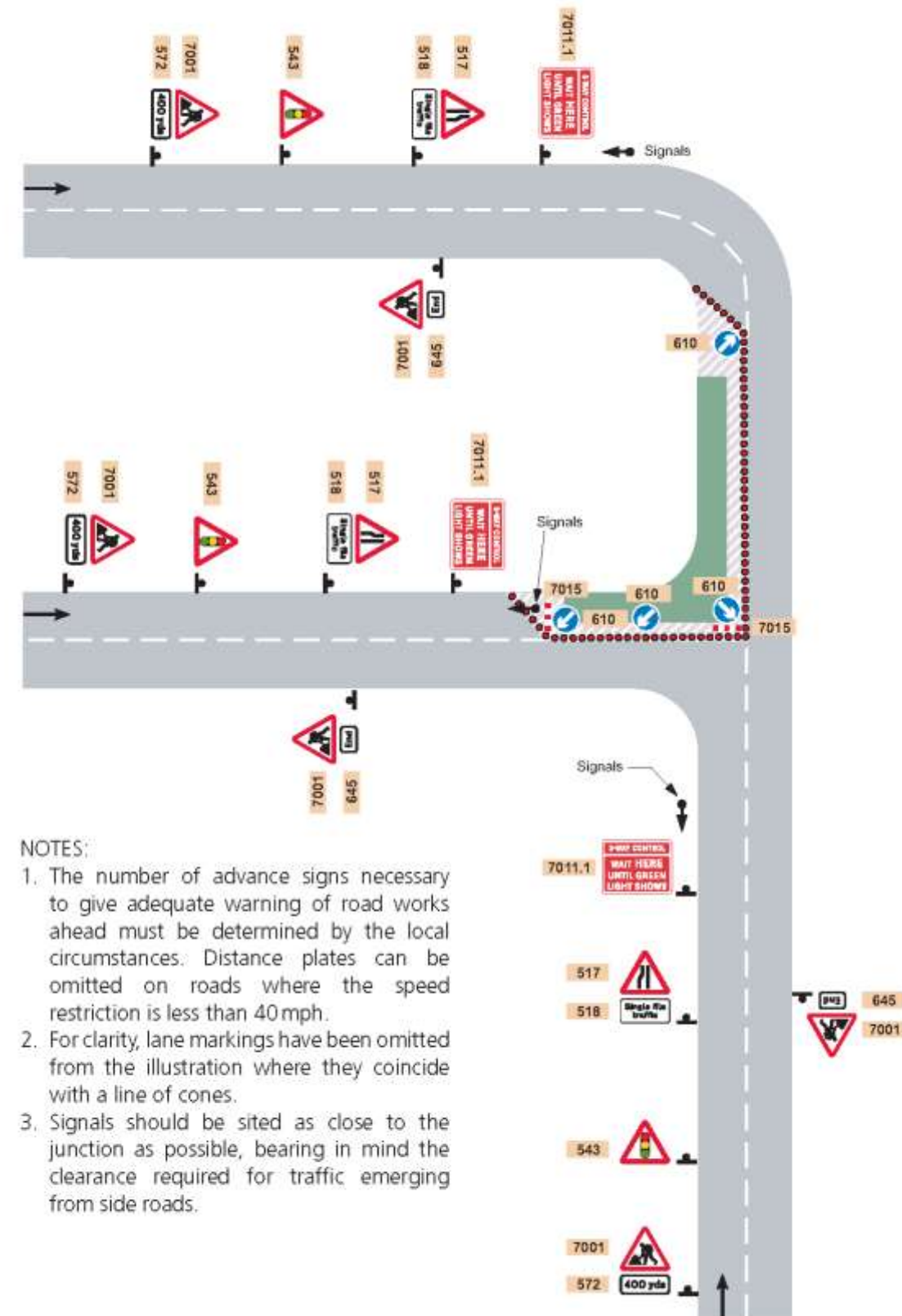


Figure 3.4: Layout of Signs for Road Works on Single Carriageway Roads with Diversions.



Figure 3.5: Manually Operated Stop/Go Signs and Priority Signs.



NOTES:

1. The number of advance signs necessary to give adequate warning of road works ahead must be determined by the local circumstances. Distance plates can be omitted on roads where the speed restriction is less than 40mph.
2. For clarity, lane markings have been omitted from the illustration where they coincide with a line of cones.
3. Signals should be sited as close to the junction as possible, bearing in mind the clearance required for traffic emerging from side roads.

Figure 3.6: Road Works at a T-Junction – Traffic Control by Means of Portable Traffic Signals.

4 Highway Crossings

4.1 Onshore cable corridor highway crossing locations and operation

4.1.1.1 All crossings of the public highway will be undertaken using HDD; the details of HDD techniques and the locations of crossings are set out within the following documents which form part of the Environmental Statement:

- Volume 1, chapter 3: Project Description (Document ref: A6.1.3);
- Volume 4, annex 4.3.5: Crossing Schedule (Onshore) (Document ref: A6.4.3.5); and
- Figure 1.2 at volume 6, annex 7.8: Traffic and Transport Figures.

4.1.1.2 This method of cable laying means that during the HDD operation there is no disturbance (i.e. no shuttle working nor road closures) to other users of the road with the exception of material delivery and arrival / departure of construction staff.

4.1.1.3 There will be some locations whereby the haul road crosses the highway and where traffic management will be required or where works are required to expose existing utilities. The traffic management methods to be used will depend on the location of the highway crossing, the nature and level of traffic on the highway link being crossed, what is served by the highway link and the alternative routes available. Methods may include temporary shuttle working, crossings, or temporary closure.

4.1.1.4 Indicative priority, stop/go and signalled shuttle working arrangements are shown in Figure 3.1 to Figure 3.3. On lightly trafficked links, shuttle working can operate on a priority basis or be managed manually without the need for traffic signals. On busier links it is expected that temporary signals will be used.

4.2 Agreement, management and advance notification

4.2.1.1 Where traffic management measures are required these will be agreed in advance with the HAs.

4.2.1.2 Any temporary road closures / introduction of one-way roads and any diversions will be advertised in advance and alternative routes indicated through signage (example shown in Figure 3.4).

4.2.1.3 Where such speed restrictions are required, temporary speed reductions to 30 mph will be sought through Temporary Traffic Regulation Orders.

4.2.1.4 Measures will be put in place to ensure that no unauthorised access is gained to the onshore cable corridor from the highway at crossing points and that the adjacent works sites are secure.

4.2.1.5 Any works within the highway will be reinstated to a standard commensurate to prior to the commencement of the works, unless otherwise agreed with the HAs. The details of and timescales for reinstatement will also be and agreed with the HAs. It is anticipated that the HAs will inspect the reinstatement works to ensure that they meet appropriate standards.

4.3 Haul Road and its crossings with the highway

4.3.1.1 Up to two temporary haul roads will be constructed (typically one per phase – see Table 1.4 and volume 1, chapter 3: Project Description of the Environmental Statement) along the majority of the Hornsea Three onshore cable corridor to provide for HGV access to undertake trenching works and install the cables, with gaps only at some HDD locations and road crossings. The haul road will enable vehicles to move along sections of the Hornsea Three onshore cable corridor and relieve the need for construction traffic to rely on some localised longer sections, of the local road network or avoid certain settlements during construction.

4.3.1.2 The haul road would operate with a low speed limit to ensure the safety of workforce and plant operatives in the vicinity [and where relevant, minimise disturbance to noise sensitive ecological receptors](#). Where the haul road crosses existing highway links, traffic management would be used to ensure that safe crossing by highway traffic and haul road vehicles. Details are set out in Figure 4.1, extracted from The Traffic Signs Manual, Chapter 8, Part 1, Traffic Safety Measures and Signs for Road Works and Temporary Situations, Department for Transport / Highways Agency, 2009.

4.3.1.3 The haul road will be restricted access – limited to Hornsea Three construction traffic.

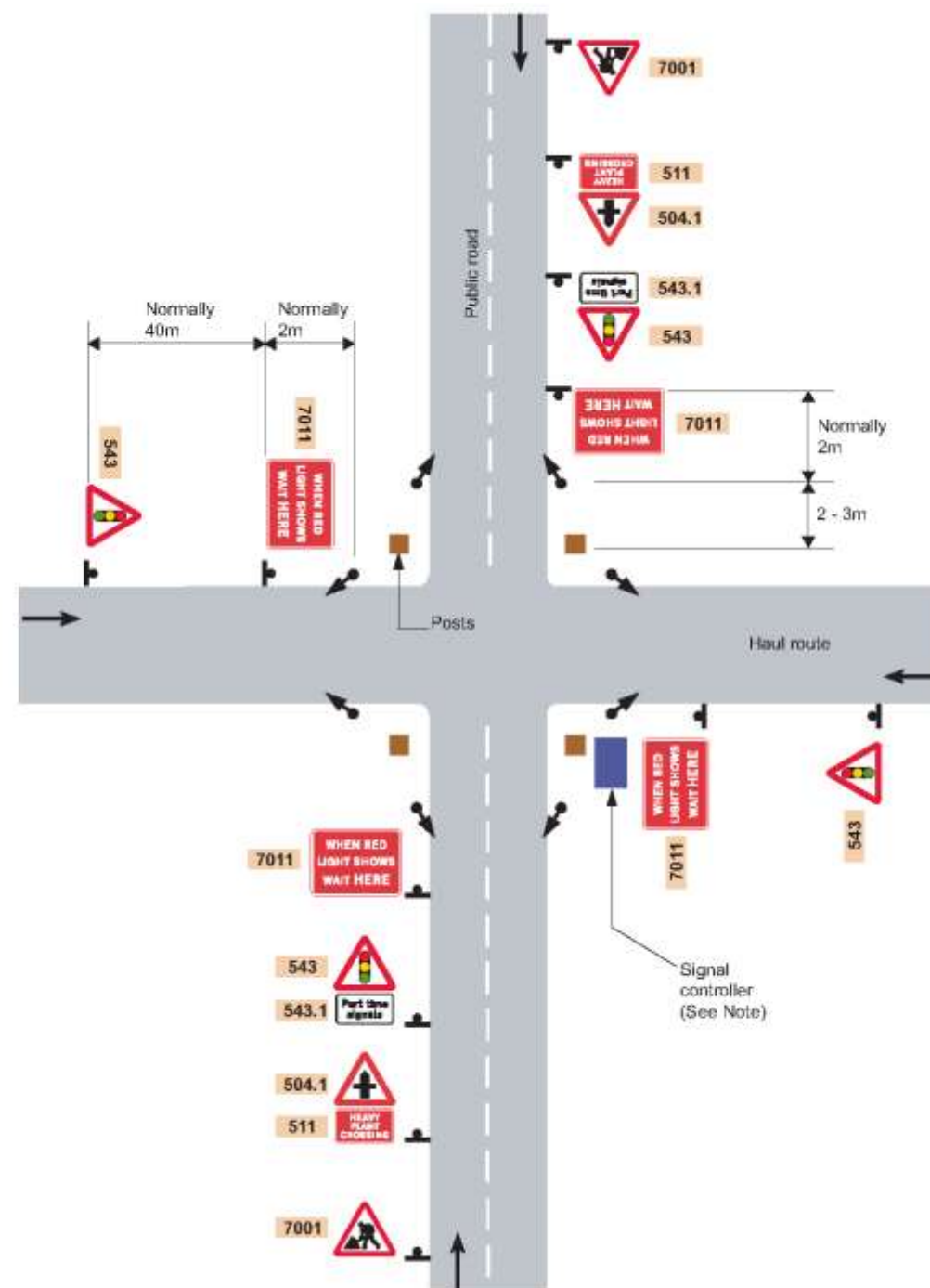


Figure 4.1: Haul Route Crossing.

4.4 Public Rights of Way

4.4.1.1 Several Public Rights of Way (PRoW) and areas of land with informal public access will potentially be affected by the construction of the onshore elements of the Hornsea Three. Prior to any stopping up or localised diversion of a PRoW (or area where informal public access), the project will agree measures, in accordance with the principles established in the Outline CoCP (document reference A8.5), to manage the interface between the works and PRoW with the relevant PRoW officer at NCC.

5 Planned Intervention Schemes

5.1.1.1 The need for physical intervention measures has been identified at three locations during the construction phase of Hornsea Three.

5.1.1.2 For the purpose of the Outline CTMP, outline schemes have been prepared, each of which have been subject to, or continue to be subject to consultation with the relevant highway authorities (NCC and Highways England) as well as local stakeholders (including Cawston Parish Council and Oulton Parish Council).

5.1.1.3 A broad description of the planned works at each location are detailed below and will be subject to detailed design and further safety audit approval as part of the final CTMP. This section sets out the proposals for Hornsea Three only, interactions with other schemes are discussed in Section 9.

5.2 Oulton

5.2.1.1 A series of road improvements and mitigation measures are to be implemented prior to the commencement of any use of the Hornsea Three main construction compound on The Street and its junctions with the B1149 (link 208) and the main construction compound access. Drawings 1554 03 101A, 1554 03 102A, 1554 03 110 and 1554 03 111 contained in **Annex A**, provide the outline scheme which comprise the following key components:

- Improvement of existing bellmouth junction between The Street and the B1149 (Holt Road);
- Up to 8 Passing places along The Street for HGV opposing traffic (using Grasscrete paving) resulting in an overall carriageway width of 6.0m;
- Widening of The Street near Dorking farm access (using full carriageway construction);
- Trimming, but no removal, of vegetation and trees along The Street;
- A means of priority work for southbound vehicles in the vicinity of The Old Railway Gatehouse with a view to minimising the potential for two opposing HGVs to pass by this property simultaneously while also serving as a means of speed attenuation and mitigation to improve noise and vibration risk);
- Improved visibility at the Compound access;
- Temporary lowering of the existing 60mph speed limit to 30mph from the B1149 junction to the Hornsea Three main construction compound access;
- Temporary signage along the B1145 and The Street as agreed with the Highway Authority to provide driver awareness and enforcement;
- Regrading of existing road hump on The Street in the vicinity of the Old Railway Gatehouse to minimise noise and vibration impacts on the Old Railway Gatehouse; and
- Filter trench drainage of The Street along the regrading of the existing road hump.

5.2.1.2 The Applicant would maintain the works to the roadway (through video condition surveys, see Section 7 or visual inspections as appropriate) for the duration of the use of the main construction compound.

5.2.1.3 It has been agreed that all physical intervention works to the highway would temporary in nature and removed once the use of the main Hornsea Three construction is complete (unless otherwise agreed with the relevant highway authority, in consultation with Oulton Parish Council (OPC). The only exceptions to this are the junction improvements at The Street/B1149 junction and regrading of the road hump which would be permanent as they represent an improvement to general highway safety. All signage associated with the construction works would also be removed once the use of the main Hornsea Three construction is complete (unless otherwise agreed with the relevant highway authority, in consultation with OPC). Temporary and permanent works would mostly like be carried out by the Applicant's contractors under licence from the HA.

5.2.1.4 A number of additional management measures will also be implemented at this location:

- No outbound left movements from the main construction compound access to The Street for all Hornsea Three traffic;
- No inbound right movements from The Street to the main construction compound access for all Hornsea Three traffic;
- Monitoring and recording the number of Hornsea Three construction vehicle movements into and out of the main construction compound during active use;
- Consultation with NCC regarding events at Blickling Hall which may necessitate additional traffic management measures to be applied on specific days; and
- Notification of any known abnormal load movements (outside of core working hours) and any changes to the proposed duration of active use of the main construction compound to OPC and The Old Railway Gatehouse.

5.2.1.5 The planned intervention works have been fully consulted and agreed with the Highway Authority to allow Hornsea Three to progress the final detail design.

5.3 Taverham Road

5.3.1.1 A series of highway improvements and mitigation measures are to be implemented on Taverham Road and the A47 junction (link 125) prior to the commencement of any use of Taverham Road by HGVs associated with the construction of Hornsea Three. The measures to be implemented are shown in drawing 1554 03 300A contained in **Annex A** and comprise the following key components:

- Improvement to the Taverham Road bellmouth junction to provide a 15m exit and entry radii;
- Widening of Taverham Road in the vicinity of the A47 to allow HGV opposing traffic to manoeuvre (using full carriageway construction);
- Installation of a single, 35m long passing bay on Taverham Road to the north of the bridge above the River Tun and give way priority system to be implemented, with priority given to traffic turning off of the A47 (using Grasscrete construction);
- Temporary closure of Blind Lane access off the A47;
- Implementation of temporary diversions to account for above temporary road closures during the construction phase;

- No right turning movements from Taverham Road onto the A47 (for all traffic);
- No right turning movements for westbound traffic along the A47 onto Taverham Road suspended (via signing and road marking); and
- Temporary signage as agreed with the Highway Authorities to provide driver awareness and enforcement.

5.3.1.2 The Applicant would maintain the works to the roadway (through video condition surveys, see Section 7 or visual inspections as appropriate) for the duration of the use of Taverham Road for construction traffic movement (expected to be limited to the construction phase for cable sections 14/15/16).

5.3.1.3 It has been agreed that all physical intervention works to the highway would temporary in nature and removed once the Hornsea Three construction is complete (unless otherwise agreed with the relevant highway authority). All signage associated with the construction works would also be removed once the use of the main Hornsea Three construction is complete (unless otherwise agreed with the relevant highway authorities). Temporary and permanent works would mostly like be carried out by the Applicant's contractors under licence from the relevant HA.

5.3.1.4 The planned intervention works have been fully consulted and agreed with the relevant HAs to allow Hornsea Three to progress the final detail design.

5.4 Cawston

5.4.1.1 A series of road improvements and mitigation measures are to be implemented in Cawston (link 88 and 89) and in the vicinity of the village on the B1145 prior to the commencement of any use of the B1145 where it passes through Cawston (Link 88 and 89) by HGVs associated with the construction of Hornsea Three. The measures proposed are shown in drawings 1554 03 320A, 1554 03 322A contained in **Annex A** and comprise the following key components:

- Temporary restriction of parking along the High Street adjacent to Booton Lane;
- Implementation of a 20mph zone through the centre of the village (with exact location to be agreed with HA's);
- Provision of parking at junction of the High Street with Chapel Street;
- Provision of parking along the B1145 High Street opposite Chapel Street;
- Contribution to the provision of a permanent gateway feature at the village entrance on the B1145 (both to the east and west of Cawston) (works to be facilitated by Cawston Parish Council and/or HA);
- Relocation of existing Vehicular Activated Sign (VAS) in advance of school access to the east of the village; and
- Provision of a new permanent VAS in advance of the Village Hall to the west of Cawston (with exact location to be agreed with HA's in consultation with Cawston Parish Council); and

- Temporary signage as agreed with the relevant HAs in consultation with Cawston Parish Council to provide driver awareness and enforcement.

5.4.1.2 The Applicant would maintain the works to the roadway (through video condition surveys, see Section 7 or visual inspections as appropriate) for the duration of the use of link 88 and 89 for construction traffic movement (expected to be limited to the construction phase for cable sections 9 and 10).

5.4.1.3 It has been agreed that all intervention works to the highway would temporary in nature and removed or returned to the pre-construction arrangement once the Hornsea Three construction is complete (unless otherwise agreed with the relevant highway authority). All signage associated with the construction works would also be removed once the use of the main Hornsea Three construction is complete (unless otherwise agreed with the relevant highway authorities). Temporary and permanent works would mostly like be carried out by the Applicant's contractors under licence from the relevant HA.

5.4.1.4 The planned intervention works are subject to ongoing consultation with the relevant HAs and Cawston Parish Council.

56 Management of Highway Safety

5.16.1 Existing accident record

5.1.1.16.1.1.1 Within section 1.4.2 of Annex 7.1 – Transport Assessment, an analysis of existing Personal Injury Accident (PIA) data has been undertaken using a two-stage process. Initially, the injury accident rate of identified links was calculated and if 25% higher than the national average injury accident rate further analysis was undertaken. The further analysis looked at severity, clustering and reasons for accidents and no issues in relation to the existing highway layout or geometries were discovered to be the cause of the incidents.

5.26.2 Monitoring and mitigation for Hornsea Three

5.2.1.16.2.1.1 HGV injury accidents and near misses associated with the Hornsea Three construction vehicles will be monitored to identify whether there are any safety deficiencies in the highway network due to the increased level of HGV traffic associated with the construction works.

5.2.1.26.2.1.2 If localised mitigation measures are required, these will be agreed with the HAs and incorporated into the final CTMPs.

67 Highway Condition

6.1.1.17.1.1.1 Video surveys will be undertaken of those local roads where it is considered that the passage of construction HGVs may cause deterioration of highways. These roads will be agreed with the HAs as part of the final CTMPs. The schedule of highways to be surveyed will be agreed with the HAs. This agreement will be in accordance with requirements under Section 59 of the Highways Act 1980.

7.1.1.2 Once construction activities have ceased in a given location the video survey of the associated highway links will be repeated to identify any significant changes in highway condition. The results will be discussed with the HAs and where it is agreed that damage has resulted from the passage of HGVs associated with construction work a financial contribution will be discussed with the HAs to cover the cost of repairing that damage that is agreed to have resulted from vehicle movements associated with the Project.

6.1.1.27.1.1.3 Where appropriate, visual inspections of highway condition may also be undertaken to provide early identification of any diminishing conditions, or to verify any complaints received from the local community.

78 Implementation and Monitoring of the CTMPs

7.18.1 Implementation of the final CTMPs

7.1.1.18.1.1.1 The Draft DCO submitted with the application requires that no onshore connection works may commence until written details of a CTMP (which accords with this Outline CTMP) has been submitted to and approved by the relevant planning authority in consultation with the relevant highway authority.

7.1.1.28.1.1.2 The construction traffic management plan must contain details of —

- proposed vehicle routeing plans;
- any abnormal indivisible loads that may be delivered by road (including weight, length and width, proposed timing of deliveries and proposed routing), or confirmation that no abnormal indivisible loads will be required for construction of the authorised development;
- condition surveys;
- any highway works proposed;
- construction personnel travel; and
- details of management measures to be implemented (including, but not limited to, wheel cleaning facilities, temporary signage, use of banksmen or escort vehicles and temporary speed restrictions).

7.1.1.38.1.1.3 This Outline CTMP is to be read alongside the Outline CoCP (document reference A8.5), which itself is secured through a Requirement of the Draft DCO as submitted.

7.1.1.48.1.1.4 Once contractors have been appointed, this Outline CTMP will form the basis of the final CTMPs which will be agreed with the HAs. More than one final CTMP will therefore be prepared to cover:

- Specific works, such as landfall, onshore export cable corridor, main construction compound, the HVAC Booster Station and the HVDC converter / HVAC substation works;
- Different sub sets of those specific works, such as enabling works and main works.

7.1.1.58.1.1.5 The final CTMPs will be agreed with the relevant Local Planning Authorities and HAs before the commencement of those works encompassed by the relevant CTMP start on site, and developed in consultation with the appointed construction contractor teams. In preparing the final CTMPs, if any road closures are required the principal contractor will consult with Royal Mail.

7.28.2 Compliance and monitoring

7.2.1.18.2.1.1 Compliance with all the monitoring plans, including the final CTMPs will be monitored by the project, the site manager(s) or their deputy(ies). The project, site manager(s) or their deputy(ies) will ensure that all contractors are aware of the requirements of the final CTMPs and of the monitoring obligations.

7.2.1.28.2.1.2 A central point of contact for the project (which may be the project team, site manager(s) or their deputy(ies)) will be appointed to all monitoring processes during the construction phase and will liaise with the relevant Local Planning Authorities and HAs throughout the works onshore.

7.2.1.38.2.1.3 Establishing this central point of contact will help to ensure that compliance for all traffic management in a given location at a given time will be the responsibility of a single individual to ensure clarity of responsibility and to facilitate effective communication between the project, Local Planning Authorities and HAs.

7.2.1.48.2.1.4 Monitoring activities and responsibilities will be agreed with the relevant Local Planning Authorities and HAs. The final CTMPs will include contact details of those responsible for the final CTMPs and a clear schedule of monitoring activities and timescales.

8.19 Interaction between Hornsea Three and Other Projects

8.19.1 Interaction between Hornsea Three and the A47 Improvement Scheme

[8.1.1.19.1.1.1](#) HE is developing plans to submit a DCO application for improvement works to the A47. The improvement works at the A47/A11 Thickthorn interchange, the A47 at Easton and A47 at Swardeston will seek to increase capacity by re-routing traffic away from the existing junction via two new interchange roads to relieve congestion, reduce journey times, and encourage economic growth. The scheme will look to improve facilities for pedestrians, and cyclists, by upgrading pedestrian crossings and footpaths.

[8.1.1.29.1.1.2](#) HE has already been consulted with and at the point of cross over between the onshore cable works and the proposed alignment of the dualled A47 (just west of Easton roundabout) the onshore cable can be installed by way of a HDD, limiting the direct interface between the two projects.

[8.1.1.39.1.1.3](#) The broader management of the traffic management interactions between the two projects will be discussed and agreed with HA at a later date (at least prior to the commencement of works at the point of interaction). Traffic management interactions will therefore be included within relevant final CTMPs.

8.29.2 Interaction between Hornsea Three and Vattenfall Norfolk Vanguard

[8.2.1.19.2.1.1](#) Vattenfall submitted a DCO application for its Norfolk Vanguard offshore wind farm shortly after the application for Hornsea Three was submitted. Its [proposed](#) landfall is at Happisburgh South on Norfolk's eastern coast and the 60km cable corridor routes west to a substation to the east of Necton. The two export cable corridors cross at land near Reepham. [It is noted that Hornsea Three and Norfolk Vanguard propose to utilise various common road links during their respective construction phases; these include The Street in Oulton and link 88 and 89 through Cawston \(both of which are subject to intervention measures as set out in Section 5\).](#)

[9.2.1.2](#) To manage these interactions, the [final-detailed](#) CTMP [\(s\)](#) for Hornsea Three will set out measures to ensure that the [traffic and transport](#) cumulative environmental impacts with other major projects (namely, Norfolk Vanguard) are managed to levels such that they are acceptable by Norfolk County Council as the local highway authority. [It will also set out how any interactions in the implementation, maintenance and removal of intervention measures at The Street in Oulton, and link 88 and 89 through Cawston \(as set out in Section 5\) would be managed between the projects \(if appropriate\).](#) Appendix A of the Hornsea Three Outline CoCP includes a Communication Plan Framework, which sets out the provision for a Communication Plan to be developed, managed and implemented by the Stakeholder Manager for Hornsea Three.

[8.2.1.29.2.1.3](#) That Communication Plan will set out the process of continued engagement between the Applicant, the Local Highway Authority and other major projects (namely, Norfolk Vanguard). This will ensure that as construction programmes are refined post-consent, this information is regularly shared between parties, particularly traffic demand on shared road links. This will ensure that commitments to manage cumulative construction traffic demand are fully delivered; for example, on a given road the two projects may have committed to programme works that ensure each scheme's peak traffic does not overlap. Regularly programmed sharing of information will ensure that the final approved CTMPs accurately reflect the expected construction traffic demand of both projects, and provide certainty to the Local Highway Authority that commitments remain feasible and deliverable.