NORTH FALLS

Offshore Wind Farm

ENVIRONMENTAL STATEMENT

Appendix 27.1 Transport Assessment

Document Reference:	3.3.64
Volume:	3.3
APFP Regulation:	5(2)(a)
Date:	July 2024
Revision:	0

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Project	North Falls Offshore Wind Farm
Document Title	Environmental Statement Appendix 27.1 Transport Assessment
Document Reference	3.3.64
APFP Regulation	5(2)(a)
Supplier	Royal HaskoningDHV
Supplier Document ID	PB9244-RHD-ZZ-ON-TN-ON-0123

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
0	July 2024	Submission	RHDHV	NFOW	NFOW

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Glossary of Acronyms

AADT	Annual Average Daily Traffic
AAWT	Annual Average Weekday Traffic
AC	Access
ATC	Automatic Traffic Count
DCO	Development Consent Order
EATM	Environmental Assessment of Traffic and Movement
EIA	Environmental Impact Assessment
ES	Environmental Statement
ETG	Expert Topic Group
HGV	Heavy Goods Vehicle
HW	Highway Works
LV	Light Vehicle
OCTMP	Outline Construction Traffic Management Plan
PEIR	Preliminary Environmental Information Report
PPG	Planning Practice Guidance
TA	Transport Assessment
TEMPro	Trip End Model Presentation Programme
TTSA	Traffic and Transport Study Area

Glossary of Terminology

Haul road	The track along the onshore cable route used by construction traffic to access different sections of the onshore cable route.
Heavy Goods Vehicle (HGV)	HGV is the term for any vehicle with a Gross Weight over 3.5 tonnes. This is also used as a proxy for HGVs and buses / coaches recognising the similar size and environmental characteristics of the respective vehicle types.
Landfall	The location where the offshore export cables come ashore at Kirby Brook.
Light Vehicle (LV)	The term 'light vehicle' is used to describe the range of vehicles that would be used by construction employees, i.e. cars, vans, pick-ups, minibuses, etc.
Movement	A two-way trip (i.e. the arrival and departure from site) for the transfer of employees or goods.
National Grid connection point	The grid connection location for the Project. National Grid are proposing to construct new electrical infrastructure (a new substation) to allow the Project to connect to the grid, and this new infrastructure will be located at the National Grid connection point.
Onshore cable corridor(s)	Onshore corridor(s) considered at PEIR within which the onshore cable route, as assessed at ES, is located.
Onshore cable route	Onshore route within which the onshore export cables and associated infrastructure would be located.
Onshore substation	A compound containing electrical equipment required to transform and stabilise electricity generated by the Project so that it can be connected to the National Grid.
Onshore substation works area	Area within which all temporary and permanent works associated within the onshore substation are located, including onshore substation, construction compound, access, landscaping, drainage and earthworks.
Serious Collision	A collision resulting in serious injury for which a person is detained in hospital as an "in-patient", or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushing, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident.
Slight Collision	A collision resulting in a slight injury of a minor character such as a sprain (including neck whiplash injury), bruise or cut which are not judged to be severe, or slight shock requiring roadside attention. This definition includes injuries not requiring medical treatment.
The Applicant	North Falls Offshore Wind Farm Limited (NFOW).
The Project Or 'North Falls'	North Falls Offshore Wind Farm, including all onshore and offshore infrastructure.
Traffic and Transport Study Area (TTSA)	Area where potential impacts from the Project could occur, as defined for each individual EIA topic.
Vehicle (HGV, Traffic) trips	A two-way trip (i.e. the arrival and departure from site) for the transfer of employees or goods.

1 Introduction

1. This Transport Assessment (TA) is provided as Appendix 27.1 to the Chapter 27 Traffic and Transport (Document Reference: 3.1.29) of the Environmental Statement (ES) for North Falls Offshore Wind Farm (herein 'the Project').

2. Following the introductory sections, the TA is structured as follows:

   - Section 2 provides detail of the derivation of baseline and future year traffic flows;
   - Section 3 provides the baseline highway safety data;
   - Section 4 provides details of the derivation of construction traffic demand and the assignment of this demand to the traffic and transport study area (TTSA);
   - Section 5 provides details of the proposed access strategy for the construction and operational phases;
   - Section 6 provides details of the proposed highway works (HW); and
   - Section 7 provides a summary.

1.1 Background

3. The following section provides a brief overview of the Project, further detail is provided within ES Chapter 5 Project Description (Document Reference: 3.1.7).

4. The North Falls array is located off the East Anglian coastline. The offshore cable corridor runs from the array area to the landfall at Kirby Brook between Clacton-on-Sea and Frinton-on-Sea, Essex.

5. Onshore export cables will then transport the electricity to the onshore substation located west of Little Bromley within the Tendring district of Essex before it enters the national grid. The offshore and onshore project locations are shown in ES Figures 1.1 and 1.2 (Document Reference: 3.2.1), respectively. Details of the Project Design Envelope is provided in ES Chapter 5 Project Description (Document Reference: 3.1.7).

1.2 Transport assessment scope

6. It was agreed with Essex County Council (at a meeting on the 9 July 2021) and National Highways (at a meeting on the 7 June 2022) that the TA will constitute an abridged document providing the technical inputs informing the ES. This includes establishing baseline traffic flows, baseline highway safety data, the derivation and distribution of construction traffic and the access strategy.

7. The assessment of likely significant effects upon traffic and transport has been made with specific reference to the relevant National Policy Statements (NPS). The Overarching NPS for Energy (EN-1) (Department of Energy Security and Net Zero) (DESNZ, 2023) outlines that if a project is likely to have significant transport implications, the ES should include a transport appraisal.

8. With reference to EN-1 the relevant guidance for assessing the impact of North Falls on the highway network is Planning Practice Guidance (PPG) is 'Travel

Plans, TA and Statements' (the Transport PPG) (Department for Levelling Up, Housing and Communities, March 2014).

9. The Transport PPG key principles have shaped the development of the TA, which has in turn informed the impact assessment contained in the ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29). In this context, Table 1.1 provides a summary of the requirements of the TA process and where they are considered within ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29) and this document.

Table 1.1 Document map

TA requirements	Where considered
Review of salient policy and guidance	ES Section 27.4.1
Review of baseline highway conditions	ES Section 27.5
Review of baseline highway safety conditions	TA Section 3
Derivation of baseline traffic flows	TA Section 2
Derivation of future year traffic flows	TA Section 2.2
Derivation of construction traffic demand	TA Section 4
Distribution of construction traffic	TA Section 4.4
Access strategy	TA Section 5
HW	TA Section 6
Impact Assessment: Severance; Amenity; Highway Safety; Driver Delay; and Abnormal Loads.	ES Section 27.6
Assessment of Cumulative Effects	ES Section 27.8

10. The terms heavy goods vehicles (HGVs) and light vehicles (LVs) are used throughout this TA and are defined as follows:

- HGV is the term for any vehicle with a Gross Weight over 3.5 tonnes, this TA also uses the term HGV as a proxy for HGVs and buses / coaches recognising the similar size and environmental characteristics of the respective vehicle types.
- LV is used as a term to refer to employee vehicle trips for North Falls and describes the range of vehicle types that could be used by construction employees (e.g. cars, vans, pick-ups, minibuses, etc).

1.3 Consultation

11. Consultation with regard to traffic and transport has been undertaken in line with the general process described in ES Chapter 7 Technical Consultation (Document Reference: 3.1.9) and Table 27.1 of the ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29). The key elements were scoping, a Traffic and Transport 'Method Statement', Preliminary Environmental Information Report (PEIR) and technical consultation via the traffic and transport Expert Topic Group (ETG) meetings.

12. The feedback received throughout the consultation process has been considered in the ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29). This TA has been developed following consideration of the consultation feedback to produce the final assessment submitted within the Development Consent Order (DCO) application.

2 Baseline Traffic Flows

2.1 Baseline traffic data collection

13. The ES Chapter 27 Traffic and Transport is underpinned by the Environmental Assessment for Traffic and Movement (EATM) (Institute of Environmental Management and Assessment, 2023) for the purpose of establishing the potential impacts associated with changes in traffic from North Falls. EATM sets out broad thresholds for where changes in total daily traffic flows and HGVs may be considered significant, for the impacts of:

    - Severance;
    - Amenity;
    - Highway Safety; and
    - Driver Delay.

14. In the context of these thresholds, it is necessary to establish the following baseline traffic flows for all links within the TTSA:

    - Annual average daily traffic flows (AADT) (including HGV component);
    - Annual average weekday traffic flows (AAWT) (including HGV component); and
    - Peak hour traffic flows (including HGV component).

15. The extent of the TTSA is defined within Figure 27.1 of the ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29).

16. Traffic flow data has been captured for all 46 links forming the TTSA. The datasets that are used in the assessment are summarised in Table 2.1 and are presented graphically in Figure 27.1.1.

Table 2.1 Traffic flow data sources

Data set	Source	Spatial coverage	Dates	Notes
Traffic Flows	Road Traffic Statistics (Department for Transport, 2022)	19 of the 46 links within the TTSA, comprising links: 1 - 3, 9, 10, 15, 16, 18 – 21a, 21b - 25, 43, 47 and 48	Traffic flows were obtained for 2022 for all links listed apart from links 24 and 48 which use data from 2019 as more recent data from a year (not affected by the COVID-19 pandemic) was not available.	National road traffic statistics provide a summary of traffic flows and vehicle composition (e.g. HGV, car, motorcycle) for a range of motorways, 'A' road and minor roads across the UK.
Traffic Flows and Vehicle Speeds	Commissioned Automatic Traffic Counts (ATCs)	24 of the 46 links within the TTSA, comprising links: 4 – 8, 13 – 14 and 26 - 42	Traffic flows and vehicle speeds were obtained for 24 hours a day for seven days between the 9 June 2022 and 15 June 2022.	Traffic counts commissioned by the Applicant which provide classified hourly and daily count and speed data. A summary of the ATC survey results are provided as Annex 27.1.1 of this TA.
Traffic Flows	ATCs commissioned by Five Estuaries	Three of the 46 links within the TTSA, comprising links: 44 – 46	Traffic flows were obtained for 24 hours a day for seven days between the 20	Traffic counts commissioned by Five Estuaries Offshore Wind Farm ('Five Estuaries') and shared with the Applicant

Data set	Source	Spatial coverage	Dates	Notes
			September 2022 and 26 September 2022.	which provide classified hourly and daily count and speed data. A summary of the ATC survey results are provided as Annex 27.1.1 of this TA.
Pedestrian, cycle and equestrian counts	Counts commissioned by National Grid	Bentley Road	Counts of the numbers of pedestrians, cycle and equestrian movements for a period of four days (22 November 2023 to 25 November 2023).	Pedestrian, cycle and equestrian traffic counts commissioned by National Grid for the Norwich to Tilbury project and were shared with the Applicant. A summary of the survey results are provided as Annex 27.1.1 of this TA.

2.2 Future year traffic flows

17. It is currently estimated that the earliest date that construction could commence would be 2027.

18. In order to consider a worst-case scenario, a reference year for background traffic of 2027 has been derived. The rationale for this is later years could result in potentially higher background traffic flows and therefore a lesser magnitude of change.

19. To take account of sub-regional growth in housing and employment, a proportionate approach to forecasting future traffic growth for the 2027 reference year has been agreed with Essex County Council and National Highways.

20. The baseline flows have been factored to the future year baseline traffic demand (year 2027) using the Trip End Model Presentation Programme (TEMPro) Version 8 with dataset 80 for the Tendring Area and factoring the growth rate using the National Road Traffic Projections 2022 Core for Car Driver model. Separate factors have been derived for Trunk Roads (A120), A-roads (A133 and A137) and minor roads to allow for a more accurate projection of traffic growth within the TTSA.

21. Details of the growth factors that have been applied are provided within Annex 27.1.2.

2.3 Summary of baseline traffic flows

22. Annex 27.1.3 provides a summary of the forecast future year 2027 traffic flows (including HGV component) for each of the links within the TTSA.

3 Baseline Highway Safety

3.1 Introduction

23. To understand whether the Project could have a significant effect on highway safety, it is necessary to establish a baseline and identify any inherent highway safety issues within the TTSA.

24. This review utilises historic collision data obtained from Essex County Council (known as STATS19 data). STATS19 includes accidents on the public highway that are reported to or by the police and which involve injury or death. The data reported to or by the police are captured on a document known as a STATS19 form. The form collects a wide variety of information about accidents (such as time, date, location, road conditions).

25. Typically collision data is assessed for the latest available five year period as there can be significant variations in trends from year to year. However, due to lower traffic flows in 2020 and 2021 (due to the Covid-19 pandemic) it was agreed with National Highways and Essex County Council (at a meeting on the 5 September 2023) that the assessment should cover the latest five year period, as well as the five years preceding the Covid-19 pandemic.

26. STATS19 data was therefore obtained from Essex County Council for an eight year period (the study period) covering the 01 August 2015 to 31 July 2023 inclusive.

27. The scope of the road safety assessment has been agreed with Essex County Council and National Highways (at meetings on the 9 June 2021 and 7 June 2022 respectively) to consist of:

- Examining the rate of collisions per length of road in miles (known as collision rates); and
- Reviewing the types of collisions at defined clusters to understand any patterns or trends, especially those involving HGVs and vulnerable road users (namely cyclists, pedestrians and motorcyclists).

3.2 Collision rates

28. Collision rates have been calculated in billion vehicle miles to enable direct comparison with national highway safety statistics provided within Road Casualties Great Britain (Department for Transport, 2023). The following formula has been utilised to calculate the collision rate, where 2,921 is the sample size in number of days over which the collision data has been sourced (i.e. there are 2,921 days between 1 August 2015 to 31 July 2023):

$$\text{Collision rate} = \frac{\text{Number of recorded collisions} \times 1 \text{ billion}}{2921 \times \text{AADT} \times \text{length of road}}$$

29. A summary of the analysis is presented in Table 3.1, links which have a collision rate larger than the national average are coloured in blue. Details of the derivation are included as Annex 27.1.4.

Table 3.1 Baseline collision rates per link

Links	Link description	Collision rate (Collisions per billion vehicle miles)	National average collision rate (Collisions per billion vehicle miles)
1, 2	A120 from A12 Junction 29 to Harwich Road Roundabout	57	193
3, 15, 16	A120 from Harwich Road Roundabout to Colchester Road	197	193
4, 5, 7, 8	Bentley Road (later Bromley Rd) from A120 to Lawford Village centre	464	673
9,10	A137/Harwich Road	57	673
13,14	B1035/Clacton Road from A120 Roundabout to B1352	169	333
18, 19, 47	A120 from Colchester Road to Parkeston Roundabout, Harwich	141	193
20, 21a, 21b	A133 from A120 Junction to B1033 Roundabout	189	193
22, 23	A133 from B1033 Roundabout to St John's Road Roundabout	225	193
24, 25	B1027/St John's Road from St John's Road Roundabout to King's Parade Roundabout	360	654
26, 27	B1032 from King's Parade Roundabout to Kirby Cross mini roundabout	250	333
28, 29, 30, 32	B1033 Thorpe Road from Kirby Cross mini roundabout to Tendring Road	205	333
31	Landermere Road from B1033/High Street to SAB	210	654
33, 34	B1033 from A133 roundabout to Tendring Road	296	333
6, 35, 36, 37, 38, 39, 40, 42	B1035 from Lodge Lane to Colchester Road	312	333
41	Crown Lane from A133 to B1035	87	333
43	A133 spur to Frating	102	193
44, 46	Progress Way to B1441 and B1441 to B1033	211	333
45	B1414 from B1441 to B1033, Thorpe-le-Soken	603	333
48	St John's Road from St John's Roundabout to Constable Avenue	460	654
	Links where the calculated collision rate is higher than the national average for comparable roads		

30. It is evident from Table 3.1 that links 3, 15, 16, 22, 23 and 45 have a collision rate that is higher than the national average for comparable road types and may be particularly sensitive to changes in traffic flow / type. The remaining links have collision rates below the national average and are therefore not considered further.

31. The following section provides a review of the types of collisions occurring along these links to understand any emerging patterns or trends that could potentially be exacerbated by an increase in traffic. An assessment of the North Falls construction traffic upon these links is presented within Section 27.6.1 of the ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29).

3.2.1 A120 (Links 3, 15 and 16)

32. Links 3, 15 and 16 comprise of the A120 from the Hare Green Roundabout junction, northeast to the junction with Colchester Road.

33. During the study period, there have been a total of 22 collisions recorded along these links, these comprise of 15 slight and seven serious collisions, no fatalities were recorded. Link 3 also includes collision cluster 12 which is considered in Section 3.3.12.

34. The following sections provide a review of the location and types of collisions occurring along these links to understand if there are any emerging trends or patterns.

35. Nine collisions were recorded along the A120 from the Hare Green Roundabout to the junction with Bentley Road, these comprised of:

- A collision between two cars entering the Hare Green Roundabout, as one car has failed to follow lane discipline and collided with the other car, this collision occurred during the hours of darkness with streetlights present and lit;
- A rear-end shunt type collision between two cars, this collision occurred during the hours of darkness with streetlights present and lit;
- A serious loss of control type collision by a motorcyclist which has led to a collision with the central reservation;
- A rear-end shunt type collision between two cars, as one car driver has performed an emergency stop to avoid colliding with debris in the carriageway;
- A loss of control type collision, resulting in the driver crossing the central reservation into the verge. This collision occurred during the hours of darkness with no streetlighting present;
- Two collisions involving car drivers exiting Little Bromley Road onto the A120 failing to give way to traffic on the A120 leading to a collision;
- A loss of control by a car driver which led to a serious collision with the central island of a roundabout. This collision occurred during the hours of darkness with streetlights present and lit; and
- A failure to give way by a car driver exiting Bentley Road led to a collision with a car on the A120.

36. A total of 13 collisions were recorded along the A120 between Bentley Road and Colchester Road, five of these were serious and the remaining were all slight collisions. These comprised:

- A collision between two cars as one car driver has started to turn right into a side road from the A120 and a car driver behind has attempted to

overtake the right turning car, the right turning car has then collided with the overtaking car as the driver has turned, this collision occurred during the hours of darkness with streetlights present and lit;

- A rear-end shunt type collision between two cars on approach to the Horsley Cross roundabout;
- A collision between a car and an HGV as the car driver has failed to give way to the HGV when travelling around the circulatory of the roundabout;
- A collision between a cyclist and a car on the Horsley Cross roundabout as the car driver has failed to give way when entering the roundabout and has collided with the cyclist;
- A rear-end shunt type collision on approach to the Horsley Cross roundabout as one car was waiting to join the roundabout and a car driver behind has failed to slow down and collided with the rear of the waiting car;
- A serious collision between two cars as a car driver leaving a farm access has failed to give way to a car on the A120, which has led to a collision;
- A rear-end shunt type collision involving three cars as one car driver has slowed to turn right from the A120 onto a farm track, the car drivers behind have then failed to slow down in time colliding with the rear of the turning car;
- A loss of control type collision by a car driver led to a serious collision as the car left the carriageway, this collision occurred during the hours of darkness with streetlights present and lit;
- A loss of control type collision by a car driver led to the car to traveling across the centre line of the road and the car collided with an oncoming car leading to a serious collision;
- A loss of control type collision by a motorcyclist whilst overtaking a car which led to a serious collision;
- A rear-end shunt type collision between two cars as one car driver has performed an emergency stop to avoid colliding with an animal in the carriageway. This collision occurred during the hours of darkness with no streetlighting present;
- A loss of control type collision by a motorcyclist which has led to them falling from the vehicle and colliding with the road surface; and
- A rear-end shunt type collision involving five cars as an emergency vehicle has collided with the rear of a stopped car which has then collided with cars in front of it.

37. To summarise, there have been 22 collisions along links 3, 15 and 16 and these comprise:

- Seven loss of control collisions;
- Seven rear-end shunt type collisions;
- Five failures to give way;
- One collision caused by poor lane discipline;
- One collision involving a car colliding with a cyclist; and

- One collision which took place during an overtaking manoeuvre.

38. It can be assessed that there is a marginal emerging pattern of rear-end shunts and loss of control collisions on links 3, 15 and 16.

3.2.2 A133 (Links 22 and 23)

39. Links 22 and 23 comprise the A133 from the B1033 southwards to St John's Roundabout.

40. During the study period, there have been 64 collisions reported along links 22 and 23, these consist of four fatal collisions, 16 serious collisions and 44 slight collisions. Links 22 and 23 also contain clusters 6 and 7, which are reviewed separately in Section 3.3.6 and Section 3.3.7 respectively.

41. The following collisions occurred between Weeley Roundabout (Cluster 6) and the B1442 roundabout:

- A collision between a car and a cyclist on the circulatory of Weeley Roundabout;
- A collision between a car using the incorrect lane to travel straight ahead on the Weeley roundabout and another car travelling in the correct lane;
- A failure to give way by a car driver joining the Weeley roundabout led to a collision with a cyclist on the circulatory of the roundabout;
- A collision between a car and debris which has fallen from the back of an HGV;
- Two rear-end shunt type collisions between two cars on approach to the Weeley Roundabout from the south;
- Two serious collisions between a car performing a 'u-turn' and a motorcyclist who the car driver has not given way to;
- A rear-end shunt type collision involving three cars as one car driver has slowed down to react to a stationary vehicle ahead;
- A serious loss of control collision involving a motorcyclist falling from their motorcycle;
- A collision between a car performing a 'u-turn' and a motorcyclist who the car driver has not given way to;
- A loss of control type collision by a car driver which has resulted in a head-on collision with an oncoming car. This collision occurred during the hours of darkness with no streetlighting present;
- A serious collision between a car and a pedestrian on the carriageway, no indication of origin of pedestrian as the link has no pedestrian facilities, this collision occurred during the hours of darkness with no streetlighting present;
- Two rear-end shunt type collisions on approach to the Weeley Roundabout due to a car driver failing to react to slowing traffic;
- A collision between a car performing a 'u-turn' (using a layby) and another car who the car driver has not given way to when re-entering the carriageway;

- A head-on collision in the layby on the northbound side of the A133 between two cars, as one has entered the layby into the path of a car exiting the layby;
- Three serious head-on collisions between two cars after one has lost control on Link 22;
- A rear-end shunt between two cars as one driver has failed to react to slowing traffic conditions;
- Two fatal collisions between cars and cyclists in the carriageway as the cars have collided with the cyclists from behind;
- A loss of control type collision by a car driver which has led to a serious collision;
- A serious head-on collision between two cars as one has crossed the centre line and collided with an oncoming vehicle, this collision occurred during the hours of darkness with no streetlighting present;
- Two failures to give way by a car driver performing a 'U-turn' in a layby led to a collision with another car when the car re-entered the carriageway;
- A fatal head-on collision between two cars as one has crossed the centre line and collided with an oncoming car, this collision occurred during the hours of darkness with no streetlighting present;
- A serious collision between a bicycle and a car as the car has attempted to overtake the cyclist;
- A rear-end shunt type collision between a motorcyclist and a car;
- A rear-end shunt type collision between a car and a stationary emergency vehicle which has subsequently colliding with a pedestrian. This collision occurred during the hours of darkness with no streetlighting present;
- A serious collision between an ambulance and a pedestrian as the pedestrian has walked into the path of the ambulance;
- A rear-end shunt type collision between two cars as one car has stopped on the carriageway;
- A head-on collision between two cars as one car attempted to overtake another vehicle, this collision occurred during the hours of darkness with no streetlighting present;
- A fatal collision between two cars as one car driver has lost control of the car and collided head-on with an oncoming car;
- A collision between a motorcycle and a car as the car has turned into the path of the motorcycle; and
- A serious head-on collision between two cars as one car driver has lost control and crossed the centre line of the road colliding with an oncoming car.

42. The following collisions took place on the A133/B1442 roundabout (Cluster 7) and comprised:

- A serious collision between two cars on the roundabout as one car driver has failed to give way when entering the roundabout and has driven into the path of a car travelling around the roundabout;
- Three rear-end shunt type collisions between two cars on approach to the roundabout;
- A loss of control type collision by a car driver which has led to a collision with the central island of the roundabout, this collision occurred during the hours of darkness with streetlights present and lit;
- A failure to give way by a car driver exiting the roundabout led to a collision with a car exiting the roundabout in another lane;
- A failure to give way by a motorcyclist exiting the roundabout led to a collision with a car exiting the roundabout in another lane;
- A failure to give way by a car driver exiting the roundabout led to a collision with a cyclist travelling around the roundabout, this collision occurred during the hours of darkness with streetlights present and lit;
- A loss of control by a motorcyclist which has led to a serious collision involving the motorcyclist colliding with the kerb;
- A rear-end shunt collision between a car and a motorcycle on approach to the roundabout; and
- A serious collision between a cyclist and a car as the car driver has not given way to the cyclist on the circulatory of the roundabout, this collision occurred during the hours of darkness with streetlights present and lit.

43. The following collisions occurred between the A133/B1442 roundabout and St John's Roundabout and comprised:

- A rear-end shunt type collision involving four cars colliding with one another after a car driver has failed to react to slowing traffic conditions, this collision occurred during the hours of darkness with streetlights present and lit;
- A collision between a car, whose driver has attempted to perform a 'U-turn' and a car which has attempted to overtake the turning car;
- A rear-end shunt type collision between a motorcycle and an HGV on the approach to the Little Ravens Way/A133 roundabout, the motorcycle has collided with the rear of the HGV;
- A loss of control by a car driver led to a collision with the central island of the roundabout, this collision occurred during the hours of darkness with the condition of streetlighting being unknown;
- A failure to give way by a car driver entering the roundabout led to a collision with a car travelling on the roundabout;
- A rear-end shunt type collision between two cars in slow moving traffic conditions;
- A loss of control collision by a motorcyclist which has led to a serious collision as the motorcyclist has fallen from the motorcycle, this collision occurred during the hours of darkness with streetlights present but unlit; and

- A collision between a car and a motorcycle as the car was performing a 'U-turn' and the motorcyclist has failed to give way.

44. The following collisions occurred on Link 23 in proximity to St John's Roundabout (Cluster 8) and comprised:

- A collision between a car approaching the roundabout and a pedestrian using a zebra crossing, this collision occurred during the hours of darkness with streetlights present and lit;
- A rear-end shunt type collision between two cars as one has stopped before entering the roundabout and another car has collided with the rear of the waiting car;
- A failure to give way by a car driver entering the roundabout led to a collision with a cyclist travelling around the roundabout;
- Three rear-end shunt type collisions between two cars as one car has exited the roundabout and given way to a pedestrian at the zebra crossing another car has collided with the rear of the stationary car;
- A failure to give way by a car driver entering the roundabout led to a collision with a motorcycle on the roundabout; and
- A serious collision between a motorcycle and a cyclist crossing at a zebra crossing upon exiting the roundabout.

45. To summarise there were 64 collisions on links 22 and 23, these comprised:

- 20 rear-end shunt type collisions;
- Ten collisions involving cars/motorcycles colliding with pedestrians or cyclists in locations other than designated pedestrian/cycle crossings;
- Nine loss of control type collisions by car drivers which have resulted in head-on collisions;
- Eight collisions resulting from car drivers failing to give way before performing a 'U-turn';
- Six single vehicle loss of control type collisions;
- Six collisions resulting from car drivers or motorcyclists failing to give way to other motorised vehicles;
- Two collisions involving cars/motorcycles colliding with pedestrians or cyclists at designated crossings;
- One collision during an overtaking manoeuvre;
- One collision caused by poor lane discipline on a roundabout; and
- One collision caused by debris falling from the back of a vehicle.

46. It can be considered that there is a pattern of rear-end shunt type collisions on this link as well as an emerging pattern of collisions involving cyclists/pedestrians.

3.2.3 B1414 (Link 45)

47. Link 45 consists of the B1414 from the B1441 north-eastwards to the B1033.

48. During the study period there were 19 collisions reported on Link 45, these comprised of: eight serious collisions and 11 slight collisions, no fatalities were reported. These collisions comprised:

- A loss of control type collision involving a single car colliding with a concrete post;
- A serious collision between a pedestrian and a car in the carriageway and not on a designated crossing;
- A collision involving two cars after one car driver has failed to give way when approaching a parked car and colliding with an oncoming car;
- A serious rear-end shunt type collision between two cars;
- A rear-end shunt type collision between a car and a parked car;
- A collision between a motorcyclist and a car as the car driver has overtaken the motorcyclist;
- A serious collision involving a car driver overtaking a slowing car and colliding with a right turning car ahead;
- Two losses of control by a car driver on a curve, one collision occurred during the hours of darkness with no streetlighting present;
- Two rear-end shunt type collisions between a car whose driver had failed to slow in time and a car which was slowing to turn into an access, one of the collisions was classified as a serious collision;
- A serious head-on collision between two cars after one car crossed the centre line of the road;
- A serious rear-end shunt type collision between two cars as one car has failed to slow down in time upon approaching a queue of traffic;
- A rear-end shunt type collision between two cars, this collision occurred during the hours of darkness with no streetlighting present;
- A loss of control type collision by a car driver which has led to a collision with an oncoming car;
- A loss of control type collision by a mobile crane which led to a collision with oncoming cars;
- A serious collision between a pedestrian and a car as the pedestrian was crossing the road (away from a designated crossing);
- A rear-end shunt type collision between two cars on approach to the junction between link 45 and the B1033; and
- A failure to give way by a car driver when exiting Link 45 onto the B1033 led to a collision with a car travelling on the B1033, this collision occurred during the hours of darkness with streetlights present and lit.

49. To summarise there have been 19 collisions reported on Link 45 during the study period, these comprised: seven rear-end shunt type collisions, six loss of control collisions, two failures to give way leading to collisions, two overtaking manoeuvres leading to collisions and two collisions with cyclists and pedestrians away from designated crossings.

50. It can be considered that there is a pattern of rear-end shunt type collisions emerging on Link 45 as well as losses of control type collisions.

3.3 Collision clusters

51. During consultation with Essex County Council and National Highways, it was agreed (at meetings on the 9 June 2021 and 7 June 2022 respectively) that the highway safety review should examine the baseline collision data to identify any areas where there are concentrations of collisions (known as collision clusters). It was agreed that a definition for a collision cluster would be areas where there have been four or more collisions in four years.

52. A review of the STATS19 data has identified a total of 13 locations within the TTSA where there have been more than four collisions in four years, these are summarised in Table 3.2.

Table 3.2 Summary of Collision Clusters

Cluster ID	Location of cluster	Number of collisions
1	Located at the Ardleigh Crown Roundabout at the end of Link 1	22 collisions; five serious and 17 slight collisions
2	Located at the A120/A133 junction between links 1, 2 and 20.	14 collisions; two fatal, four serious and eight slight collisions.
3	Located at the roundabout junction between links 20, 21b and 43.	13 collisions; two serious and 11 slight collisions.
4	Located at the junction between Link 43 and the B1029.	14 collisions; five serious and nine slight collisions.
5	Located at the junction between Link 21b and Shair Lane.	Four collisions; one serious and three slight collisions.
6	Located at the roundabout junction between links 21a, 22 and 33.	Six collisions; one serious and five slight collisions.
7	Located at the roundabout junction between links 22, 23 and 44.	13 collisions; three serious and ten slight collisions.
8	Located at St John's Barrows roundabout between links 23, 24 and 48.	23 collisions; five serious and 18 slight collisions.
9	Located at the junction between Link 24 and the B1369.	Five collisions; one serious and four slight collisions.
10	Located at the junction between Link 24 and Oxford Road.	Five slight collisions.
11	Located along Link 32 through Thorpe-le-Soken.	Five collisions, two serious and three serious collisions.
12	Located at the roundabout junction between Link 2 and Link 3.	Nine collisions; one serious and eight slight collisions.
13	Located at the Parkeston Roundabout junction between links 19 and 47.	Nine collisions; four serious and five slight collisions.

53. The following section provides a review of the types of collisions occurring at these thirteen cluster sites to understand any emerging patterns or trends that could potentially be exacerbated by an increase in traffic. An assessment of the North Falls construction traffic upon these clusters is presented within Section 27.6.1 of ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29).

3.3.1 Cluster 1 – Ardleigh Crown Roundabout junction

54. Cluster 1 consists of the Ardleigh Crown roundabout junction which is a grade-separated junction between the A12, A120 and A1232. It is located at the western end of Link 1.

55. During the study period, there have been 22 collisions reported at Cluster 1, these comprised five serious collisions and 17 slight collisions. These collisions comprised:

- Three rear-end shunt type collisions between two cars on approach to the roundabout from the A12 (north);
- A serious collision due to a loss of control by a motorcyclist falling from the motorcycle;
- A rear-end shunt type collision between a car and an HGV on approach to the roundabout from the A12 (north);
- A failure to give way by a car driver joining the roundabout led to a collision with a car on the roundabout;
- A serious collision between a car and a cyclist on the roundabout after the car failed to give way when joining the roundabout;
- An overtaking manoeuvre on the verge by a car driver on approach to the roundabout from the A120 (east) led to a collision with a stationary car and a lighting column;
- A rear-end shunt on approach to the roundabout from the A120 (east) between two cars;
- A collision between a car and a motorcycle after the car driver has not adhered to traffic signals on the roundabout;
- A collision between a car, whose driver was performing a 'U-turn', and a motorcycle which was passing the car;
- A rear-end shunt type collision between two cars on the A1232 approach to the roundabout;
- A loss of control type collision by a car driver led to a serious collision with the vehicle restraint system;
- A rear-end shunt between two cars on the exit of the roundabout onto the A12 (north);
- A failure to give way by a car driver entering the roundabout from the A120 (west) led to a collision with a car on the roundabout;
- Four rear-end shunt type collisions between two cars on approach to the roundabout from the A120 (west);
- Two collisions between two cars as one car has failed to observe correct lane discipline when exiting the roundabout and collided with a car in the other lane, one of the collisions occurred during the hours of darkness with streetlights present and lit; and
- A loss of control collision involving a motorcyclist colliding with the verge upon exiting the roundabout.

56. To summarise there were 22 collisions reported within Cluster 1, these comprised: 11 rear-end shunt type collisions, three losses of control, two failures to give way leading to collisions, two collisions caused by poor lane discipline upon exiting the roundabout, one collision with a cyclist, one collision caused by a car driver not adhering to traffic signals, one collision caused by a driver failing to give way when performing a 'U-turn' and one collision which occurred during an overtaking manoeuvre.

57. It is assessed that there is an emerging pattern of rear-end shunt type collisions at Cluster 1.

3.3.2 Cluster 2 – A120/A133 Junction

58. Cluster 2 is located at and on the immediate approaches to the junction of the A120 and A133 (between links 1, 2 and 20).

59. During the study period, a total of 14 collisions were recorded, of which eight were classified as slight, four as serious and two resulted in fatal injuries. These collisions comprised:

- A fatal collision between a car and a pedestrian as the pedestrian has walked into the carriageway, this collision occurred during the hours of darkness with streetlights present and lit;
- A loss of control collision by a car driver led to a collision with the verge;
- Two serious rear-end shunt type collisions between two cars. One of the collisions occurred during the hours of darkness with streetlights present and lit;
- A rear-end shunt type collision between two cars as one has slowed to react to roadworks ahead;
- A fatal head-on collision between two cars as one car has been travelling down the wrong side of the dual carriageway, this collision occurred during the hours of darkness with no streetlighting present;
- A loss of control type collision by a car driver changing lanes led to a collision with another car and the central reservation;
- Two losses of control type collisions by car drivers on the A133 slip after exiting the A120 led to the car leaving the carriageway, one of these collisions occurred during the hours of darkness with no streetlighting present;
- A loss of control type collision on the A133 slip road after exiting the A120 by a car driver led to a serious collision with a tree;
- Two rear-end shunt type collisions on the A133 slip road joining the A120 involving two cars;
- A serious loss of control type collision on the A133 slip road onto the A120 by a car driver led to the car leaving the carriageway; and
- A loss of control type collision by a car driver avoiding a collision with a car ahead on the A133 slip road.

60. To summarise there were 14 collisions reported within Cluster 2, these comprised: seven loss of control type collisions, five rear-end shunt type

collisions, one collision involving a pedestrian and one head-on collision caused by a car driver being on the wrong side of the road.

61. It is assessed that that there is an emerging pattern of loss of control collisions at Cluster 2.

3.3.3 Cluster 3 – A133 Roundabout Frating

62. Cluster 3 consists of the A133 Roundabout in Frating, which is a three-armed roundabout with a spur of the A133 on the western arm and the mainline A133 running North-South. It is located at the junction of links 20, 21b and 43.

63. During the study period there were 13 collisions recorded within Cluster 3, 11 of these were classified as slight collisions and two as serious collisions. The collisions comprised:

- Three rear-end shunt type collisions between two cars on approach to the roundabout from the north;
- Four loss of control type collisions by car drivers which have led to a collision with the central island of the roundabout. One of these collisions was classified as serious and occurred during the hours of darkness with streetlights present and lit. The remaining three collisions were classified as slight collisions, one of which occurred during the hours of darkness with streetlights present and but unlit;
- A loss of control collision by a motorcyclist, who has collided with the central island of the roundabout;
- Two losses of control type collisions on the circulatory of the roundabout by car drivers which have led to a collision and the cars coming to rest in a ditch off the carriageway. One of these collisions was classified as serious and the second slight collision occurred during the hours of darkness with streetlights present and lit;
- Two rear-end shunt type collisions between two cars on approach to the roundabout from the south, one of these collisions occurred during the hours of darkness with streetlights present and lit; and
- A collision between two cars on approach to the roundabout due to poor lane discipline by one of the car drivers.

64. To summarise, there were 13 collisions reported at Cluster 3, these comprised: seven loss of control type collisions, five rear-end shunt type collisions and a collision caused by poor lane discipline.

65. It is assessed that there is a pattern of loss of control and rear end shunt type collisions at Cluster 3.

3.3.4 Cluster 4 – A133/B1029 junction

66. Cluster 4 consists of the crossroads junction between the A133 (running east-west) and the B1029 (running north-south). It is located at the end of Link 43.

67. During the study period there were 14 collisions recorded in Cluster 4, five of which were classified as serious and nine as slight collisions. No fatal collisions were reported at this location. The collisions comprised:

- A collision between two cars as one failed to give way when performing a 'U-turn';
- A failure to adhere to traffic signals by a turning car driver led to a collision with a second car which was travelling straight ahead at the junction. This collision occurred during the hours of darkness with streetlights present and lit;
- Ten collisions between two cars on the crossroads as one car driver has failed to give way when turning right across a traffic stream leading to a collision, three of these collisions were classified as serious collisions;
- A rear-end shunt type collision on approach to traffic signals between two cars resulting in a serious collision; and
- A rear-end shunt type collision on approach to the traffic signals between two cars.

68. To summarise, there have been 14 collisions recorded at Cluster 4, these comprised: ten failures to give way by car drivers turning in signal phases with opposing traffic flows, two rear-end shunt type collisions, a failure to give way by a driver performing a 'U-turn' and a failure to adhere to traffic signals by a car driver resulting in a collision.

69. It is assessed that there is a pattern of collisions involving car drivers turning against opposing flows of traffic on the crossroads at Cluster 4.

3.3.5 Cluster 5 – A133/Shair Lane

70. Cluster 5 is located at the junction of the A133 and Shair Lane (on Link 21b).

71. During the study period there have been four collisions recorded at Cluster 5, three of which were recorded as slight collisions and one as serious. No fatal collisions were recorded in Cluster 5. The collisions comprised:

- Three failures to give way by car drivers exiting Shair Lane leading to collisions with cars on the A133, one of these collisions was classified as serious; and
- A rear-end shunt type collision on the A133 as a car driver has slowed down to avoid a vehicle ahead and been collided with from behind, this collision occurred during the hours of darkness with streetlight conditions unknown.

72. To summarise there were four collisions reported in Cluster 5, these comprised three failures to give way by car drivers and a rear-end shunt type collision.

73. It is assessed that there is an emerging pattern of car drivers failing to give way when exiting Shair Lane onto the A133 and colliding with cars on the A133.

3.3.6 Cluster 6 – Weeley Roundabout

74. Cluster 6 is located at the Weeley Roundabout junction between the A133 and Colchester Road (at the intersection of links 21a, 22 and 33).

75. During the study period there have been six collisions reported at this junction, five of these were classified as slight collisions and one as a serious collision. No fatal collisions were reported. The collisions comprised:

- A serious rear-end shunt type collision between two cars on approach to the roundabout from the A133 (west);
- A rear-end shunt type collision on the circulatory of the roundabout as one car driver has stopped on the roundabout and the car behind has collided with the stopped car;
- A loss of control type collision by a motorcyclist led to them falling from the motorcycle;
- A collision between a car exiting the roundabout and a cyclist travelling around the roundabout;
- A collision between a car changing lanes on the roundabout and a motorcycle travelling around the roundabout; and
- A collision between a car entering the roundabout and a cyclist travelling around the roundabout.

76. To summarise there have been six collisions recorded at Cluster 6 during the study period, these comprised: two rear-end shunt type collisions, two collisions between cars and bicycles, one loss of control collision and one failure to give way when changing lanes.

77. It is assessed that there is no emerging pattern of collisions at Cluster 6.

3.3.7 Cluster 7 – Bovill's Roundabout

78. Cluster 7 is located in the vicinity of the Bovill's Roundabout junction (at the intersection of links 22, 23 and 44).

79. During the study period there have been 13 collisions recorded at Cluster 7, ten of which were slight collisions and three were serious collisions. No fatal collisions were reported. The collisions comprised:

- A failure to give way collision by a car driver changing lanes led to a collision between two cars;
- Three rear-end shunt type collisions between two cars on approach to the roundabout;
- A loss of control type collision involving a car colliding with the central island of the roundabout, this collision occurred during the hours of darkness with streetlights present and lit;
- A failure to give way by a car driver exiting the roundabout led to a collision with a car exiting the roundabout in another lane;
- A failure to give way by a motorcyclist exiting the roundabout led to a collision with a car exiting the roundabout in another lane;
- A failure to give way by a car driver exiting the roundabout led to a collision with a cyclist travelling around the roundabout, this collision occurred during the hours of darkness with streetlights present and lit;
- A loss of control type collision by a motorcyclist which has led to a serious collision involving the motorcyclist colliding with the kerb;
- A collision between two cars on the circulatory of the roundabout;

- A serious collision between a cyclist and a car as the car driver has not given way to the cyclist on the circulatory of the roundabout. This collision occurred during the hours of darkness with streetlights present and lit; and
- Two rear-end shunt type collisions between two cars on the approach to the roundabout from Bovills Way.

80. To summarise, there have been 13 collisions reported at Cluster 7, these comprised: five rear-end shunt type collisions, four failures to give way, two loss of control collisions, a collision on the circulatory of the roundabout between two cars and a collision between a car and a cyclist.

81. It is assessed that there is no emerging pattern of collisions at Cluster 7.

3.3.8 Cluster 8 – St John's Barrows Roundabout

82. Cluster 8 is located at and on the approach to the St John's Barrows Roundabout junction (at the intersection of links 23, 24 and 48).

83. During the study period there have been 23 collisions recorded at Cluster 8, 18 of which were classified as slight collisions and five as serious collisions. No fatal collisions were recorded. The collisions comprised:

- A collision between a car approaching the roundabout and a pedestrian using a zebra crossing, this collision occurred during the hours of darkness with streetlights present and lit;
- A rear-end shunt type collision between two cars as one has stopped before entering the roundabout and another car has collided with the rear of the waiting car;
- A failure to give way by a car driver entering the roundabout led to a collision with a cyclist travelling around the roundabout;
- Two rear-end shunt type collisions on approach to the roundabout from London Road between two cars;
- A failure to give way by a car entering the roundabout from London Road leading to a collision with a cyclist on the roundabout;
- A failure to give way by a car entering the roundabout from the B1027 leading to a collision with a cyclist on the roundabout, this collision occurred during the hours of darkness with streetlights present and lit;
- A serious collision between a cyclist crossing the road at a crossing and a car;
- A serious collision between a pedestrian crossing at a zebra crossing and a car. This collision occurred during the hours of darkness with streetlights present and lit;
- A rear-end shunt type collision on approach to the roundabout between two cars;
- A serious collision between a car joining the roundabout and a cyclist travelling around the roundabout;
- Two failures to give way by a car joining the roundabout from the A133 (south) led to a collision with a motorcycle on the roundabout, one of the

collisions occurred during the hours of darkness with streetlights present but unlit;

- A loss of control type collision by a car driver upon exiting St Johns Road led to a collision with the kerb. This collision occurred during the hours of darkness with streetlights present and lit;
- A collision between a car and a cyclist who was crossing the road;
- A loss of control type collision by a motorcyclist led to them falling from the motorcycle, this collision occurred during hours of darkness with streetlights present and lit;
- A failure to give way by a car driver entering the roundabout led to a collision with a car on the roundabout;
- A rear-end shunt type collision between two cars on the circulatory as one car driver has reacted to traffic conditions ahead;
- Three rear-end shunt type collisions between two cars as one car has collided with the rear of a car exiting the roundabout onto the A133 (south) due to them stopping to give way to pedestrians on the zebra crossing;
- A failure to give way by a car driver entering the roundabout led to a collision with a motorcycle on the roundabout; and
- A serious collision between a motorcycle and a cyclist crossing at a zebra crossing upon exiting the roundabout.

84. To summarise there have been 23 collisions recorded at Cluster 8, these comprised: eight rear-end shunt type collisions, five collisions between vehicles and pedestrians/cyclists on designated crossings, four collisions between cars and cyclists away from designated crossings, four failures to give way collisions and two loss of control collisions.

85. It is assessed that there is a pattern of rear-end shunt type collisions in Cluster 8.

3.3.9 Cluster 9 – B1027/B1369

86. Cluster 9 is located in the vicinity of the junction between the B1027 and B1369, it is located on link 24;

87. During the study period there have been five collisions recorded, four were classified as slight and one as serious. No fatal collisions were recorded. The collisions comprised:

- Three failures to give way by right-turning car drivers led to collisions with cars travelling straight ahead;
- A failure to give way by a car turning right out of the B1369 which resulted in a collision with a car turning right into the B1369, this collision occurred during the hours of darkness with streetlights present and lit; and
- A serious collision between a pedestrian in the carriageway and a car. This collision occurred during the hours of darkness with streetlights present and lit.

88. To summarise there have been five collisions recorded at Cluster 9, these comprised: four failures to give way and a collision between a car and a pedestrian.

89. It is assessed that there is a pattern of failures to give way by car drivers at Cluster 9.

3.3.10 Cluster 10 – B1027/Oxford Road

90. Cluster 10 is located in the vicinity of the junction between the B1027 and Oxford Road (on Link 24).

91. During the study period there have been five slight collisions recorded. No serious or fatal collisions have been recorded. The collisions comprised:

- A rear-end shunt type collision between a car and a motorcycle as the car has not slowed in time;
- A collision between a mobility scooter and an HGV as the mobility scooter rider has crossed the road into the path of the HGV;
- Two failures to give way by a car entering the junction and colliding with a car travelling around the junction; and
- A failure to give way by a car entering the junction led to the driver of a second car sustaining injuries from having to perform an emergency stop.

92. To summarise in Cluster 10 there were five collisions recorded, these comprised: three failures to give way, one rear-end shunt type collision and a collision between a mobility scooter and an HGV.

93. It is assessed that there is no pattern of collisions at this cluster.

3.3.11 Cluster 11 – Thorpe-le-Soken

94. Cluster 11 is located on the B1033 in Thorpe-le-Soken between the B1414 and Mill Lane (Link 32).

95. During the study period there has been five collisions recorded, three of which were classified as slight and two as serious. No fatal collisions were recorded. These collisions comprised:

- A collision between a cyclist and a car as the car has attempted to overtake the cyclist;
- A serious collision between a car turning right and a car which has attempted to undertake the turning car;
- A collision between a car and a pedestrian as the car has travelled along the footway and collided with the pedestrian;
- A failure to give way by a car driver leaving a private access onto the B1414 led to a collision with a motorcyclist on the B1414; and
- A serious collision between a car and a pedestrian in the carriageway, this collision occurred during the hours of darkness with streetlights present and lit.

96. To summarise, there have been five collisions recorded at Cluster 11, these comprised: three collisions between cars and pedestrians/cyclists, one collision during an undertaking attempt and one failure to give way collision.

97. It is assessed that there is an emerging pattern of collisions with pedestrians/cyclists in Cluster 11.

3.3.12 Cluster 12 – Hare Green Roundabout

98. Cluster 12 is located at the Hare Green Roundabout junction between the A120 and Harwich Road (between links 2 and 3). It should be noted that prior to 2019 this junction was a simple priority junction and has since been upgraded to a roundabout.

99. During the study period there were nine collisions recorded at the cluster, eight of which were classified as slight collisions and one as a serious collision. There were no fatal collisions reported. The collisions comprised:

- Five failures to give way by a car driver when entering the A120 from Harwich Road leading to a collision with another car. One of these collisions occurred during the hours of darkness with no streetlighting present;
- A failure to give way by a car driver when entering the A120 from Harwich Road leading to a serious collision with another car;
- A failure to give way by a car driver turning right into Harwich Road from the A120 led to a collision with a car on the A120, this collision occurred during the hours of darkness with no streetlighting present;
- A loss of control type collision by a car avoiding a collision with an HGV that had crossed over the centre line; and
- A collision between two cars on entry to the roundabout from the A120 (east) caused by poor lane discipline by a car driver.

100. To summarise there have been nine collisions recorded within Cluster 12, these comprised: seven failures to give way, a loss of control collision and a collision caused by poor lane discipline.

101. It can be considered that there is a historic pattern of failures to give way within Cluster 12, however the seven failures to give way occurred prior to the junction being upgraded to a roundabout in 2020.

3.3.13 Cluster 13 – Parkeston Roundabout

102. Cluster 13 is located at the junction between the A120, Parkeston Road, Station Road and Europa Way (at the intersection of links 19 and 47).

103. During the study period there have been nine collisions recorded at Cluster 13, four of which have been classified as serious and five as slight collisions. No fatal collisions have been reported. The collisions comprised:

- Three failures to give way between car drivers entering the roundabout and cyclists on the roundabout leading to serious collisions;

- A rear-end shunt collision between two cars on approach to the junction, this collision occurred during the hours of darkness with streetlighting unknown;
- A failure to give way by a car driver led to a collision with a cyclist on the roundabout;
- A rear-end shunt collision at the traffic signals on approach to the roundabout between two cars, this collision occurred during the hours of darkness with streetlights present and lit;
- A collision between a car, whose driver has failed to adhere to the traffic signals when entering the roundabout, and a car on the roundabout;
- A rear-end shunt type collision on approach to the roundabout from Parkeston Road, this collision occurred during the hours of darkness with streetlights present and lit; and
- A collision between a cyclist travelling around the roundabout and a car driver exiting the roundabout who has failed to give way.

104. To summarise there have been nine collisions recorded at Cluster 13, these comprised: five collisions involving car drivers not giving way to cyclists on the roundabout, three rear-end shunt type collisions and a car driver failing to adhere to traffic signals leading to a collision.

105. It is assessed that there is a pattern of collisions involving cars colliding with cyclists.

4 Construction Trip Generation and Assignment

4.1 Introduction

106. The traffic generation that has informed the assessment presented in the ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29) was derived and undertaken by way of a 'first principles' approach. The first principles approach generates traffic volumes from an understanding of material quantities and personnel numbers required for the Project and converts these metrics into vehicle trips.

107. The Applicant has commissioned construction consultants Wardell Armstrong to provide industry expertise to develop the methodologies and quantities that underpin the construction traffic forecasts for the Project's onshore infrastructure.

108. A realistic worst-case traffic demand scenario has been developed by examining:

- The likely minimum construction programme duration (and therefore maximum activity intensity);
- Peak demand for materials and personnel;
- Likely mode share; and
- The assignment of traffic.

109. The assumptions that underpin the worst-case scenario are discussed below and have been developed with the input from construction consultants Wardell Armstrong and the Applicant's engineering team.

110. Wardell Armstrong and the Applicant's engineering team have substantial experience gained through the construction of previous projects of a similar scope and scale.

4.2 Construction Options and Scenarios

111. The final design of the Project will be confirmed through detailed engineering design studies that will be undertaken post-consent. In order to provide a precautionary but robust impact assessment at this stage of the development process, realistic worst case scenarios have been defined in terms of the potential effects that may arise. Further details are provided in ES Chapter 6 EIA Methodology (Document Reference: 3.1.8).

112. The main grid connection options considered in the the ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29) are outlined below:

- **Option 1:** Onshore electrical connection at a National Grid connection point within the Tendring peninsula of Essex, with a project alone onshore cable route and onshore substation infrastructure.
- **Option 2:** Onshore electrical connection at a National Grid connection point within the Tendring peninsula of Essex, sharing an onshore cable route and onshore duct installation (but with separate onshore export cables) and co-locating separate project onshore substation infrastructure with Five Estuaries.

113. Construction traffic demand for both options has been derived by Wardell Armstrong. These traffic flows are summarised in Table 4.1 per onshore cable route section (reflecting the extent of onshore Project infrastructure that can be served from each access). The extent of each section is depicted graphically on Figure 27.1.2 and described further in Table 4.2. Details of the derivation of traffic flows (summarised in Table 4.1) are provided within Annex 27.1.5.

114. It can be identified from Table 4.1 that grid connection Option 2 represents the realistic worst case scenario for the traffic and TA.

115. Five Estuaries is also in its application phase, having submitted a DCO to the Planning Inspectorate for the project, which was accepted on 22 April 2024. Although subject to a separate DCO, Five Estuaries shares the same landfall location and onshore cable route (including Bentley Road improvement works) as North Falls, with the two projects also having co-located onshore substations within the same onshore substation works area. The two projects also have the same National Grid connection point.

116. Five Estuaries Offshore Wind Farm Limited (VEOWL) and North Falls Offshore Wind Farm Limited (NFOW) have sought to collaborate and coordinate where possible, which has led to collaborative design of the projects' onshore infrastructure, and also to sharing of detailed project design information.

117. North Falls and Five Estuaries are retaining three potential build out scenarios within their consenting envelope. The following section describes these scenarios and identifies the worst-case scenario for the purpose of assessing cumulative effects within the ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29).

118. Full details on the build out scenarios considered within this assessment are detailed in ES Chapter 5 Project Description (Document Reference: 3.1.7) and ES Chapter 6 EIA Methodology (Document Reference: 3.1.8).

119. This realistic worst case cumulative scenario considers three potential cumulative scenarios, as outlined in ES Chapter 5 Project Description (Document Reference: 3.1.7):

- **Scenario 1:** North Falls 'Option 2' build out is progressed, and VEOWL undertakes landfall, onshore substation construction and cable pull which overlaps with North Falls equivalent works. In this scenario, onshore cable route associated works, including temporary construction compounds, accesses and haul road, all remain in place and are used by the second project during its construction.
- **Scenario 2:** North Falls 'Option 2' build out is progressed, and VEOWL undertakes landfall, onshore substation and onshore cable route construction and cable pull sequentially (i.e. not overlapping) with North Falls. There would be a gap of between 1 and 3 years between each Projects' construction. In this scenario, onshore cable route associated works, including temporary construction compounds, accesses and haul road, all remain in place and are used by the second project during its construction.
- **Scenario 3:** North Falls 'Option 1' build out is progressed, and VEOWL undertakes a separate landfall, onshore substation and onshore cable route construction and cable pull with a multi-year (>3 year) gap between

the two construction activities. In this scenario, there is no reuse in onshore temporary works between the two projects, and all onshore cable route associated works are rebuilt and reinstated in full by the second project.

120. Intuitively, Scenario 1 would result in the highest peak daily traffic flows and therefore represent a worst case for assessing peak daily changes in traffic, noting that:

- Scenario 3 essentially represents the construction of Option 1 twice but with no overlap, i.e. build North Falls Option 1, then build Five Estuaries Option 1.
- Scenario 2 is similar to Scenario 1 in that Five Estuaries will be pulling cables through pre-installed ducts, however, as there would be a gap of between one and three years from the start of construction of North Falls and start of construction of Five Estuaries.

121. Construction traffic demand for Scenario 1 has been derived by Wardell Armstrong and these traffic flows are summarised in Table 4.1. Details of the derivation of traffic flows (summarised in Table 4.1) are provided within Annex 27.1.5.

122. In addition to the main construction works, prior to the commencement of construction, a suite of HW would be implemented along Bentley Road and at the junction of Bentley Road and the A120 (further details are provided within Section 6). The detailed derivation of the numbers of peak and average construction traffic movements to implement these HW is provided within Annex 27.1.5 and summarised in Table 4.1.

Table 4.1 Vehicle Movements per Section per Construction Scenario

Section	Construction Scenarios					
	North Falls Option 1		North Falls Option 2		North Falls / Five Estuaries Cumulative Scenario 1	
	LVs	HGVs	LVs	HGVs	LVs	HGVs
Onshore cable route - Section 1	102	65	146	106	149	109
Onshore cable route - Section 2	56	34	77	33	77	33
Onshore cable route - Section 3	98	67	109	87	112	87
Onshore cable route - Section 4A	59	43	59	39	59	39
Onshore cable route - Section 4B	90	59	84	72	92	72
Onshore cable route - Section 5	71	58	83	57	90	57
Onshore cable route - Section 6&7	78	90	81	91	81	91
Onshore cable route – 400 kV Works	56	24	55	42	55	42
Onshore substation(s)	194	130	194	130	387	260
Bentley Road improvement works *	76	50	76	50	76	50
** There would be no overlap in temporal duration between the construction of the Bentley Road improvement works and the construction of the Project*						

4.3 Material and personnel demand

123. Annex 27.1.6 and Annex 27.1.7 detail the forecast quantity of materials and plant movements and associated HGV and LV trips that could be expected for each of the construction activities for North Falls Option 2 and North Falls / Five Estuaries Scenario 1 respectively.

124. To ensure that any minor omissions or design changes can be accommodated within the assessed traffic flows an appropriate level of contingency (reflecting the uncertainties in the design) has been applied to all HGV and LV trips. Full details are contained within Annex 27.1.5.

125. Having derived the total traffic demand for North Falls (Annex 27.1.5), these movements have been distributed into nine discrete sections based upon the maximum length of onshore cable route that can be served from each access. The extent of each section is depicted graphically within Figure 27.1.2 and described further in Table 4.2.

126. To develop the construction programme, industry guidance for productivity has been utilised to forecast the shortest realistic construction duration for the Project's onshore cable route and landfall (18 months) and for individual activities for each of the nine sections (and therefore maximum intensity). Substation construction is expected to last for 19 months commencing in month six of the construction programme.

127. Annex 27.1.6 and Annex 27.1.7 disaggregates the total North Falls Option 2 and North Falls / Five Estuaries Scenario 1 construction traffic demand (contained within Annex 27.1.5) by section and programme to provide total daily HGV and employee trips per month.

128. The employee movements within Annex 27.1.6 and Annex 27.1.7 have then been converted to LV trips by applying an average employee to vehicle ratio of 1.5 employees per vehicle.

129. It can be observed from Annex 27.1.6 and Annex 27.1.7 that the construction traffic demand fluctuates according to the intensity of activities that are occurring at any point in the programme.

130. For North Falls Option 2, it can be observed from Annex 27.1.6 that the most intense period of construction activity would be month 10 for all vehicles and employees (and LVs) and month 16 for HGVs.

131. For North Falls / Five Estuaries Scenario 1, it can be observed from Annex 27.1.7 that the most intense period of construction activity would be month 10 for all vehicles and employees and month 16 for HGVs.

132. Annex 27.1.6 and Annex 27.1.7 highlight during the peak months that:

- For North Falls Option 2, there could be a combined peak of 726 LV trips (month 10) and 494 HGV trips (month 16).
- For North Falls / Five Estuaries Scenario 1, there could be a combined peak of 898 LV trips (month 10) and 605 HGV trips (month 16).

133. The selection of a discrete peak month per mode would not include a tolerance for 'real-time' programme changes (e.g. slippage/acceleration) and when the trips are assigned, could underestimate impacts on the local highway network. Therefore, to

consider a worst case, the peak trips per section are assumed to occur at the same time, with sections 6&7, 400kV cable route works and onshore substations being amalgamated to occur in the same peak month as they use the same access.

134. The use of a theoretical worst case scenario month for North Falls Option 2 results in a peak of:

- 806 LV trips per day, compared to 726 LV trips per day in month 10.
- 615 HGV trips per day, compared to 494 HGV trips per day in month 16.

135. The use of a theoretical worst case scenario month for North Falls / Five Estuaries Scenario 1 results in a peak of:

- 966 LV trips per day, compared to 898 LV trips per day in month 10.
- 733 HGV trips per day, compared to 605 HGV trips per day in month 16.

136. These peaks are therefore adopted for the purposes of considering a worst case scenario on the local road network. This method has the advantage of assessing the peak impact on all local links and is therefore appropriate for applying EATM screening for environmental impacts.

Table 4.2 Proposed accesses and associated sections for North Falls

Section	Description of section	Access strategy	Route
Section 1	Section 1 comprises of the landfall and onshore cable route from the landfall north west towards the railway line to Frinton-on-Sea.	Traffic accessing section 1 would travel to access (AC) AC-1 and AC-2 on the B1032 (Link 26). Traffic accessing the landfall and section of onshore cable route south of the B1032 would use AC-1. Traffic accessing the section of onshore cable route north of the B1032 would use AC-2. Traffic accessing north of Little Clacton Road would use AC-2 and travel north along the temporary haul road, crossing over at crossing point (CR) CR-1. No construction traffic would be permitted to access or egress on to the public highway from Little Clacton Road.	It has been agreed with Essex County Council (at a meeting on the 5 May 2022) that all HGV traffic would route to AC-1 and AC-2 from the west via the B1032 towards Clacton-on-Sea and the A133.
Section 2	Section 2 comprises of the section of onshore cable route north from the railway line (to Frinton-on-Sea) to the B1033 Thorpe Road.	Traffic accessing section 2 would travel to AC-3A on the B1033 Thorpe Road (Link 28).	All HGV traffic would travel northwest on the B1033 towards the A133.
Section 3	Section 3 comprises of the section of onshore cable route north of the B1033 to B1035 Tendring Road.	All traffic accessing section 3 would utilise AC-4 on the B1035 (Link 35) and travel south along the temporary haul road. Traffic wishing to access south of Golden Lane would cross over at Golden Lane (crossing CR-5), the B1414 (crossing CR-4), Damant's Farm Lane (crossing CR-3) and the B1034 (crossing CR-2). No traffic would be permitted to access or egress from Golden Lane, the B1414, Damant's Farm Lane and the B1034.	It has been agreed with Essex County Council (at a meeting on the 5 May 2022) that all HGV traffic would travel to access AC-4 and AC-5 from the south via the B1035 towards Thorpe Green before travelling west on the B1033 towards the A133.
Section 4A	Section 4A comprises of the section of onshore cable route from the B1035 Tendring Road to Tendring Brook	All traffic accessing section 4A would utilise AC-5 on the B1035 (Link 37) and travel north along the temporary haul road.	
Section 4B	Section 4B comprises of the section of onshore cable route from Tendring Brook to the A120.	All traffic accessing section 4B would utilise AC6 or AC-7[(1)] on the B1035 (Link 6) and would travel south along the temporary haul road. Traffic would then cross over at Stones Green Road (crossings CR-8A or CR-8B), Wolves Hall Lane (crossing CR-7) and Lodge Lane (CR-6). No traffic would be permitted to access or egress from Stones Green Road, Wolves Hall Lane and Lodge Lane.	It has been agreed with Essex County Council (at a meeting on the 5 May 2022) that all HGV traffic would travel from AC6 or AC-7 from the north, via the B1035 towards the A120.
Section 5	Section 5 comprises of the section of onshore cable from the A120 to Bentley Road	Traffic accessing section 5 would travel to access AC-8A and AC-8B on the B1035 Clacton Road (Link 14) and AC-10 (Link 4) on Bentley Road. Traffic accessing to the east of the B1035 would utilise access AC-8A and traffic accessing the west of the B1035 would utilise	HGV traffic would travel from the A120 to AC-8A, AC-8B and AC-10 from the south. No HGV traffic would approach from the north.

Section	Description of section	Access strategy	Route
		access AC-8B. Traffic accessing east of Bentley Road would use access AC-10.	
Section 6&7, 400kV cable route works and Onshore substation	Section 6&7 comprises of the section of onshore cable from Bentley Road to Ardleigh Road.	Traffic accessing sections 6&7 would travel to AC-9 or AC-11 on Bentley Road (Link 4). Traffic would then travel north west along the temporary haul road crossing over at Payne's Lane (CR-9 and CR-9A), Spratt's Lane (CR-10 and CR-10A), Barlon Road (CR-11 and CR-11A) and Ardleigh Road (AC-12). No construction traffic would be permitted to access or egress from Payne's Lane, Spratts Lane, Barlon Road. No construction traffic for Section 6&7, 400kV cable route works and Onshore substation would be permitted to access or egress from Ardleigh Road (AC-12). However, a limited number of vehicle movements would be permitted to travel from AC-12 along Ardleigh Road to AC-13 (~350m) to complete drainage works.	All HGV traffic would travel from the A120 to AC-9 and AC-11 from the south. No HGV traffic would approach from the north.
Notes: *1. The Applicant is aware of proposals to provide a new three arm roundabout from the B1035 to serve the Centurion Way Business Park on the eastern side of the B1035. There is therefore, the possibility of providing a new fourth arm from this roundabout (referred to herein as AC-7) as an alternative to access AC-6. A review of the outline designs for the roundabout noted that the size of the proposed roundabout would not permit a fourth arm to be added. However, should the construction timelines for the Project and Centurion Way Business Park align, there could be the possibility for the Applicant to engage with the developer of the Centurion Way Business Park (and the relevant highway authorities) to explore the potential for amending the design of the roundabout to include a fourth arm. Access AC-7 has therefore been included within the DCO as a potential alternative to AC-6.*			

4.4 Construction traffic assignment

137. Having derived the worst-case traffic demand per section (including the onshore substation), it is necessary to assign the construction traffic to the highway network.

138. A two-stage process to assigning construction traffic movements has been adopted. The first stage assigns traffic from each section to a corresponding access or accesses (known as the destination), and the second stage assigns traffic from the destination to its origin.

4.4.1 Construction traffic assignment (destinations)

139. The destination for all construction traffic will be the temporary construction accesses from the highway network to the respective sections. Table 4.2 describes the proposed approach to the assignment of the peak construction traffic demand (Annexes 27.1.6 and 27.1.7) per section to a corresponding access (destination). Figure 27.1.2 depicts the proposed construction accesses.

4.4.2 Construction traffic assignment (origins)

140. At the time of drafting the ES, the supply chain for materials and workforce cannot be informed by early contractor involvement as the procurement process has not commenced. Therefore, for the purpose of the assessment, traffic distribution is based upon worst case assumptions for HGV distributions utilising assumed supply chain origins and refined socio economics data to identify skills and employee origins for employees.

4.4.2.1 HGV assignment

141. Bulk materials such as concrete and stone aggregate would make up the majority of the total HGV trips for North Falls. A review of the potential supply chain within the TTSA area indicates that while there are a number of local suppliers that may meet some of the demand for North Falls, they are unlikely to meet the substantive material demands required of North Falls.

142. It has therefore been assumed that for the purpose of a worst-case HGV assessment, HGVs have been distributed to the A120 east towards Harwich Port (100%) and the A120 west (100%) towards an origin outside the TTSA.

143. In applying this ‘sensitivity test’ it should be noted that the traffic flow data presented for the A120 links is the maximum flow that could occur from either the east or west. The data does not represent double counting of HGV demand.

144. Trips from any local suppliers (such as quarries) within the TTSA would be captured within extant permissions and baseline traffic flows and therefore are not assessed separately.

4.4.2.2 LV assignment

145. To inform the distribution of employee (LV) trips and approach has been discussed and agreed with Essex County Council.

146. The approach agreed with Essex County Council assumes that employees for North Falls will be distributed in similar proportions to existing employees within the TTSA.

147. Data upon workforce trip distribution has therefore been drawn from the Census Method of Travel to Work data[1] for the three local Middle Layer Super Output Areas (MSOAs) within the TTSA, namely: Tendring 03, 05 and 07.

148. This data identifies where employees who work in Tendring 03, 05 or 07 live. To derive a distribution for North Falls an average of the trip destinations for all three MSOAs has therefore been taken.

149. The exception to this approach is the employee distribution from Colchester and Ipswich as Essex County Council considered that the approach adopted was potentially underestimating trips from these locations. It was therefore agreed to take the maximum value from the three MSOAs rather than the average for trips originating from Colchester and Ipswich

150. This approach therefore results in an overestimation of 120% of generated trips. The employee distribution used is given in Annex 27.1.8.

4.5 Construction traffic assignment summary

151. The following daily turning count diagrams have been produced based on the above assignment of HGVs and LVs:

- Annex 27.1.9 and Annex 27.1.10 contain the peak daily flows for North Falls Option 2 and North Falls / Five Estuaries Scenario 1 respectively.
- Annex 27.1.11 and Annex 27.1.12 contain the average daily flows for North Falls Option 2 and North Falls / Five Estuaries Scenario 1 respectively.

152. The working hours for the Projects are 07:00 to 19:00, therefore it is reasonable to assume that the majority of employees will have arrived prior to the morning peak hours and depart after the evening peak hours. However, there may be limited numbers of HGV and LV trips (e.g. administration staff) who would travel during the network peak hours.

153. In order to understand the potential effects of the Projects construction traffic upon network peak hours, the following assumptions have been agreed with National Highways and Essex County Council:

- LV trips assume 20% of the employees arrive during the morning network peak hour and depart during the evening network peak hour.
- A tenth of the daily HGV trips could occur during the network peak hours, i.e. peak HGV trips are profiled across a 10-hour rather than 12-hour delivery window.

[1] Data sourced from 2011 census data, available at: https://www.nomisweb.co.uk/query/construct/summary.asp?mode=construct&version=0&dataset=1208 [Accessed March 2024]

154. Applying these assumptions, the following turning count diagrams for the network peak hours have been derived (from the peak daily turning count diagrams):

- Annex 27.1.13 and Annex 27.1.14 contain the AM peak flows for North Falls Option 2 and North Falls / Five Estuaries Scenario 1 respectively.
- Annex 27.1.15 and Annex 27.1.16 contain the PM peak flows for North Falls Option 2 and North Falls / Five Estuaries Scenario 1 respectively.

155. Annex 27.1.17 and Annex 27.1.18 provides a summary of the forecast worst-case peak daily and average HGV and LV trips on each of the 46 links within the TTSA for North Falls Option 2 and North Falls / Five Estuaries Scenario 1.

5 Access Strategy

5.1 Construction access

156. The proposed access strategy for construction traffic is outlined within Table 4.2 of this TA.

157. In summary, there could be up to 12 points of access from the public highway, and 15 (in 12 locations) haul road crossings, allowing traffic to cross the highway only. The locations of the proposed accesses and crossings are shown on Figure 27.1.2.

158. It is proposed that all construction accesses and crossings would be temporary and following completion of construction works will be removed.

159. The access locations would allow construction traffic to access and egress from the public highway. Where accesses are located opposite each other, they would also allow construction traffic to cross from one side of the public highway to the other, i.e. to traverse along the temporary haul road and minimise trips on the local highway network.

160. The 15 haul road crossings would allow construction traffic to cross the public highway (but not take direct access), thereby allowing access to be taken from a more suitable location (as detailed in Table 4.2).

161. The outline access designs for the accesses and crossing are provided within Annex 27.1.19 of this TA. The outline access and crossing designs have been developed to be bespoke to each of the 12 access and 11 crossing locations and include details of:

- Junction geometry. This has been informed by swept path analysis of each of the proposed junctions using a maximum legal length articulated HGV;
- Visibility splays. The length of the splays have been informed by speed surveys commissioned by the Applicant; and
- Details of the proposed road markings, gates and extents of surfacing.

162. Prior to the commencement of construction, the technical approvals for the access and crossing designs will be submitted to and agreed with Essex County Council through the development of the Outline Construction Traffic Management Plan (OCTMP) (which is secured by a DCO Requirement). The technical approval process will include submission of finalised drawings, showing full details of access and crossing improvements, including drainage, lighting, signing, and standard construction details.

163. Annex 27.1.20 includes Stage 1 Road Safety Audit and a Road Safety Audit Response Report (on behalf of the designers) for each of the accesses and crossings.

5.2 Operational access

164. Upon completion of the construction works there will be a requirement for periodic visits to the onshore substation to undertake routine checks and carry out maintenance. The onshore substation is not however expected to be permanently manned.

165. These movements would typically be made by LVs, cars, vans etc. however, occasional access may be required by HGVs to deliver larger components.

166. Based upon experience of operating similar sites the Applicant estimates that there could be a total of one LV and two HGVs at an approximate frequency of every two to four months.

167. To allow for this periodic access to the onshore substation for routine checks and maintenance, the construction crossing/access AC-12 on the northern side of Ardleigh Road would be retained as permanent access (OC-39). The location of this access is shown on Figure 27.1.2 (see Annex 27.1.19).

168. The outline access designs for crossing/access AC-12 are provided within Annex 27.1.19 of this TA and include details of:

- Junction geometry. This has been informed by swept path analysis of each of the proposed junctions using a maximum legal length articulated HGV;
- Visibility splays. The length of the splays have been informed by speed surveys commissioned by the Applicant; and
- Details of the proposed road markings, gates and extents of surfacing.

169. This access will be constructed for the construction phase, however upon completion of construction there may be a requirement to amend the access for to accommodate the future long term operational use. Prior to the commencement of construction, the technical approvals for the access will be submitted to and agreed with Essex County Council through the development of the OCTMP (which is secured by a DCO Requirement). The technical approval process will include submission of finalised drawings, showing full details of access and crossing improvements, including drainage, lighting, signing, and standard construction details. The technical approval of crossing/access AC-12 will also include details of any future works that may be required following completion of construction to convert this crossing/access to an operational access OA-39.

170. Annex 27.1.20 includes Stage 1 Road Safety Audit and a Road Safety Audit Response Report (on behalf of the designers) for crossing/access AC-12.

171. Noting the very low numbers of vehicle movements during the operational phase access would be provided via Ardleigh Road. Alternatively, National Grid are proposing the construction of a permanent access road (as part of the Norwich to Tilbury project) from Bentley Road to Ardleigh Road and the widening of Ardleigh Road. Subject to this project securing consent and agreement with National Grid this access road could also be used by North Falls.

172. The Project's transformers are designed not to require replacement during the lifetime of the Project and as such, operational access for abnormal loads is not anticipated to be required, however in the unlikely event that replacement is required access would either be via the new National Grid access or if not available, the temporary haul road would be reinstated from Bentley Road.

6 Highways Works

173. It is proposed that prior to the commencement of construction, a suite of highways works (HW) would be implemented along Bentley Road (Link 4) and at the junction of Bentley Road and the A120. These HW would include:

- Widening of Bentley Road from the A120 to approximately 50m north of AC-9, AC-10 and AC-11;
- Installation of a temporary footway / cycleway alongside Bentley Road; and
- Widening of the A120 / Bentley Road junction.

174. Annex 27.1.19 contains the outline designs of the HWs and Annex 27.1.20 contains the Stage 1 Road Safety Audit and a Road Safety Audit Response Report (on behalf of the designers) for the HWs.

175. Prior to the commencement of construction, the technical approvals for the HW will be submitted to and agreed with Essex County Council and National Highways (where applicable) through the development of the OCTMP (which is secured by a DCO Requirement). The technical approval process will include submission of finalised drawings, showing full details of the HW, including drainage, lighting, signing, and standard construction details.

7 Summary

176. This TA is provided as an appendix (ES Appendix 27.1 (Document Reference: 3.3.64)) to the ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29).

177. As agreed with Essex County Council and National Highways, this TA constitutes an abridged document providing the technical inputs that inform the ES. This TA therefore presents details of the:

- Derivation of background and future year traffic flows;
- Analysis of baseline highway safety conditions;
- Derivation and distribution of construction traffic; and
- Proposed access strategy; and
- Detail of HW.

178. The ES Chapter 27 Traffic and Transport (Document Reference: 3.1.29) contains the assessment of all scoped in traffic and transport impacts, namely:

- Severance;
- Amenity;
- Highway Safety;
- Driver Delay; and
- Abnormal Loads.

8 References

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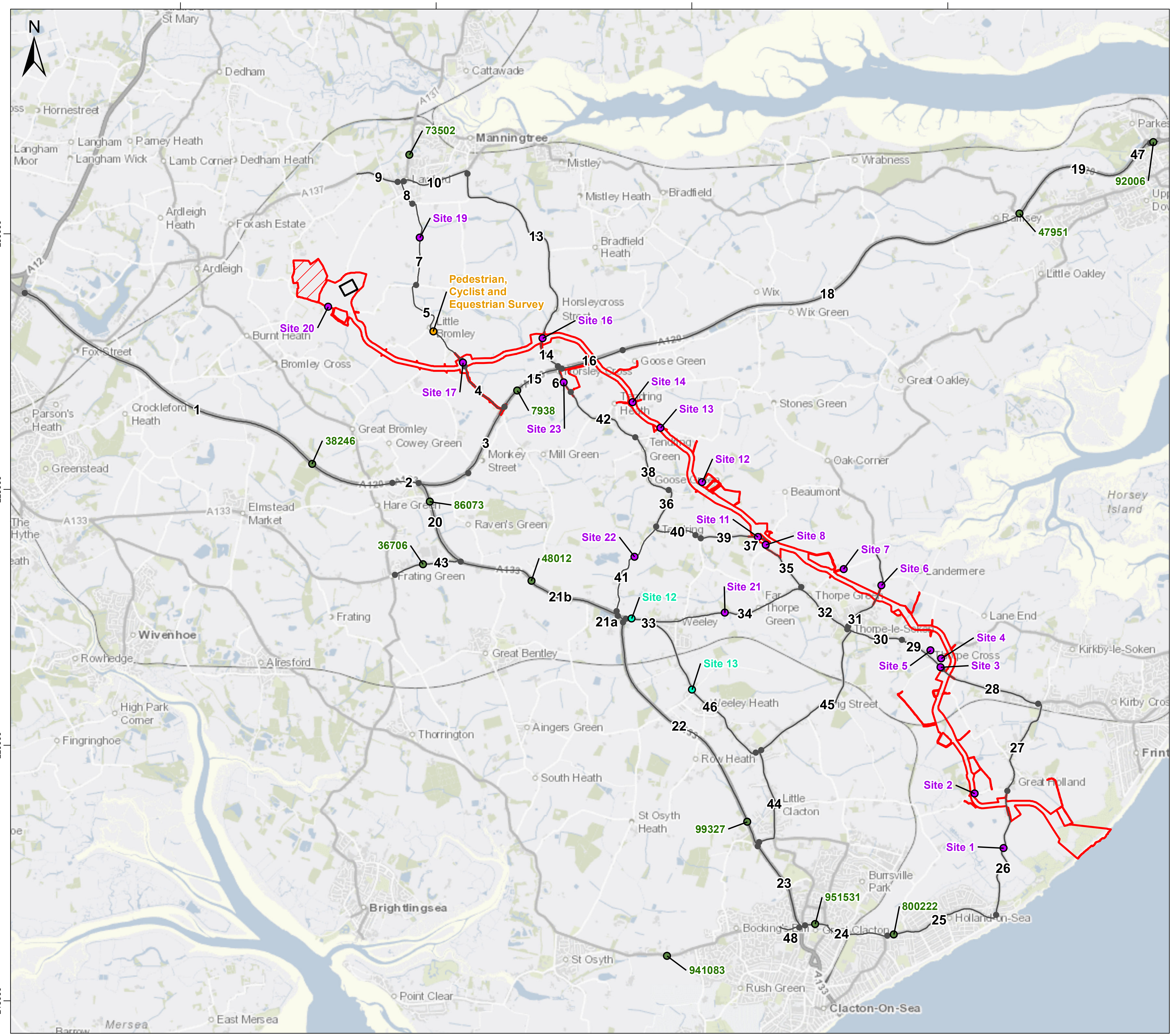
Figures 21.1.1 and 27.1.2



Legend

- Onshore Project Area
- Onshore Substation
- East Anglia Connection Node (EACN)
- Traffic and Transport Links

Traffic Survey Counts

- Department for Transport Traffic Counts
- Norwich to Tilbury Pedestrian, Equestrian and Cyclist Survey
- North Falls Traffic Surveys
- Five Estuaries Traffic Surveys

0 1.25 2.5 5 km

Drawing Title

Traffic Survey Locations

Rev	Date	Remarks	Drwn	Chkd
02	31/05/2024	Second issue	FC	CB
01	06/03/2023	First issue	JH	CB

Drawing Number	Figure Number
PB9244-RHD-ZZ-ON-DR-GS-0517	27.1.1

Scale	Plot Size	Datum	Projection
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Royal HaskoningDHV
Enhancing Society Together

NORTH FALLS
Offshore Wind Farm

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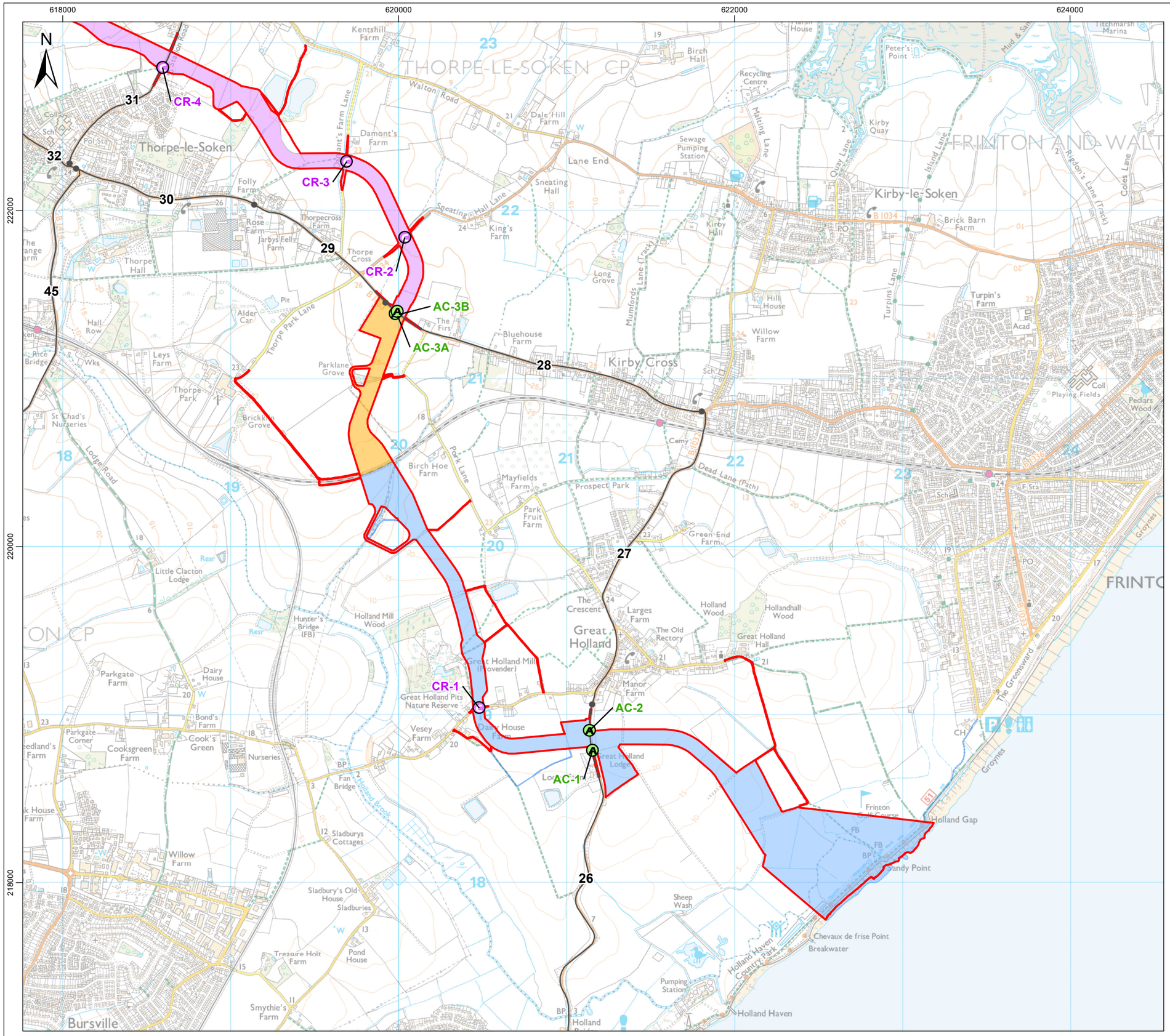

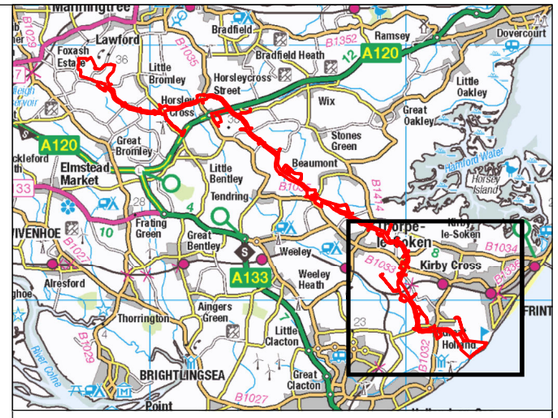

Legend

- Onshore Project Area
- Traffic and Transport Links
- Proposed Access Location
- Proposed Crossing Location

North Falls Onshore Cable Route Sections

- Section 1
- Section 2
- Section 3

0 0.25 0.5 1 km

Drawing Title

Proposed Accesses and Onshore Cable Route Sections

Rev	Date	Remarks	Drwn	Chkd
02	20/06/2024	Second issue	FC	CB
01	06/03/2024	First issue	JH	CB

Drawing Number	Figure Number
PB9244-RHD-ZZ-ON-DR-GS-0518	27.1.2a

Scale	Plot Size	Datum	Projection
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NORTH FALLS
Offshore Wind Farm

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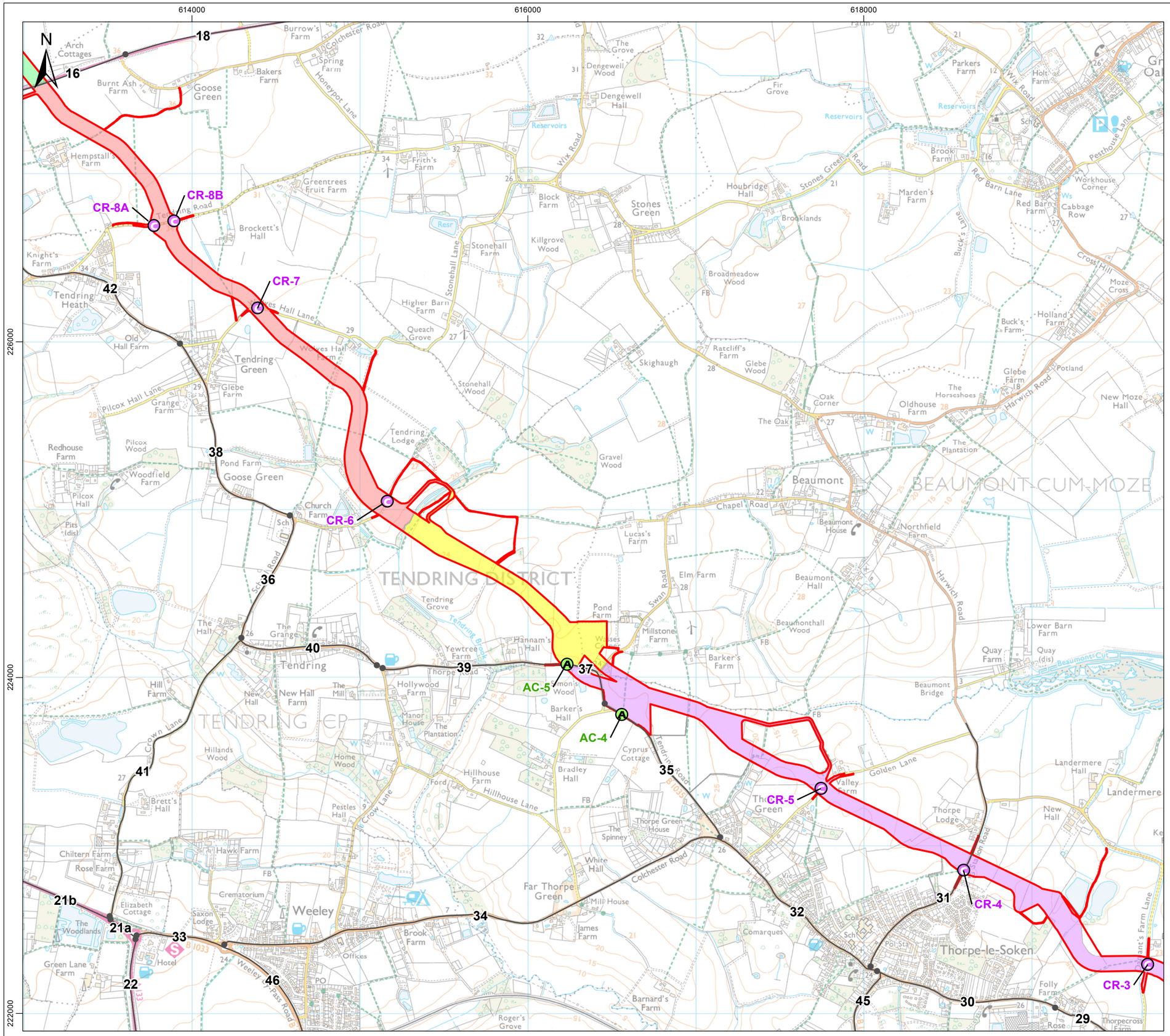

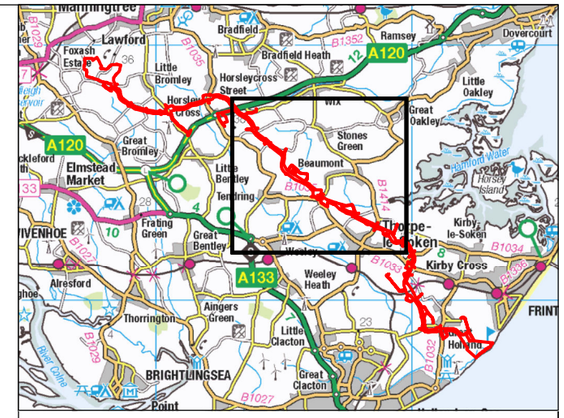

Legend

- Onshore Project Area
- Traffic and Transport Links
- Proposed Access Location
- Proposed Crossing Location

North Falls Onshore Cable Route Sections

- Section 3
- Section 4A
- Section 4B
- Section 5

0 0.25 0.5 1 km

Drawing Title

Proposed Accesses and Onshore Cable Route Sections

Rev	Date	Remarks	Drwn	Chkd
02	20/06/2024	Second issue	FC	CB
01	06/03/2024	First issue	JH	CB

Drawing Number	Figure Number
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Scale	Plot Size	Datum	Projection
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NORTH FALLS
Offshore Wind Farm

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608000 610000 612000

230000 228000 226000

AC-13 AC-12 CR-11 CR-11A CR-10 CR-10A CR-9 CR-9A AC-11 AC-10 AC-9 AC-8B AC-8A AC-7 AC-6

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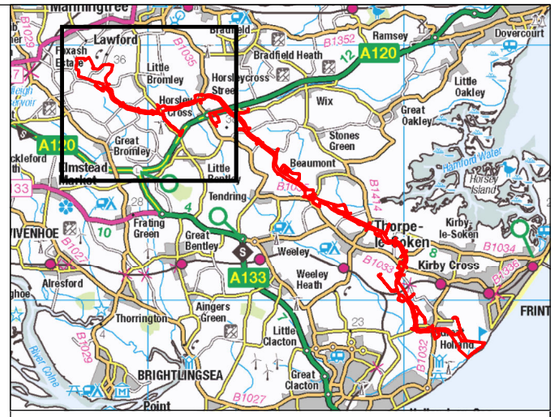
LITTLE BROMLEY CP MISTLEY CP GREAT BROMLEY CP LITTLE BENTLEY CP



Legend

- Onshore Project Area
- Onshore Substation
- East Anglia Connection Node (EACN)
- Traffic and Transport Links
- Proposed Access Location
- Proposed Crossing Location

North Falls Onshore Cable Route Sections

- Section 4B
- Section 5
- Section 6
- Section 7, 400kV Cable Route Works and Onshore Substation

0 0.25 0.5 1 km

Drawing Title

Proposed Accesses and Onshore Cable Route Sections

Rev	Date	Remarks	Drwn	Chkd
02	20/06/2024	Second issue	FC	CB
01	06/03/2024	First issue	JH	CB

Drawing Number	Figure Number
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Scale	Plot Size	Datum	Projection
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NORTH FALLS
Offshore Wind Farm

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Annex 27.1.1 Summary of Traffic Survey Data

Essex ATC 1, B1032

Produced by Road Data Services Ltd.

Channel 1 - Northbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	3318	56	1	3375
6-22	3712	59	1	3772
6-24	3777	59	1	3837
0-24	3823	59	1	3883
10/06/2022				
7-19	3407	50	4	3461
6-22	3799	56	4	3859
6-24	3917	57	4	3978
0-24	3963	57	5	4025
11/06/2022				
7-19	2831	24	3	2858
6-22	3165	29	3	3197
6-24	3268	30	3	3301
0-24	3324	30	3	3357
12/06/2022				
7-19	2144	12	6	2162
6-22	2433	15	6	2454
6-24	2481	15	6	2502
0-24	2543	15	6	2564
13/06/2022				
7-19	3226	50	6	3282
6-22	3614	53	6	3673
6-24	3682	54	6	3742
0-24	3723	54	6	3783
14/06/2022				
7-19	3311	51	3	3365
6-22	3730	56	3	3789
6-24	3810	57	3	3870
0-24	3850	57	3	3910
15/06/2022				
7-19	3395	39	3	3437
6-22	3829	44	3	3876
6-24	3885	45	3	3933
0-24	3940	46	3	3989

Average				
7-19	3090	40	4	3134
6-22	3737	54	2	3793
6-24	3814	54	3	3872
0-24	3595	45	4	3644

Channel 2 - Southbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	3248	45	0	3293
6-22	3580	47	1	3628
6-24	3640	47	1	3688
0-24	3679	47	2	3728
10/06/2022				
7-19	3231	40	3	3274
6-22	3619	44	3	3666
6-24	3700	45	3	3748
0-24	3743	45	3	3791
11/06/2022				
7-19	2761	23	3	2787
6-22	3085	24	3	3112
6-24	3178	26	4	3208
0-24	3233	26	4	3263
12/06/2022				
7-19	2075	10	0	2085
6-22	2317	12	0	2329
6-24	2359	12	0	2371
0-24	2414	12	0	2426
13/06/2022				
7-19	3136	42	5	3183
6-22	3477	47	5	3529
6-24	3521	48	5	3574
0-24	3563	48	5	3616
14/06/2022				
7-19	3257	48	3	3308
6-22	3616	52	3	3671
6-24	3669	53	3	3725
0-24	3699	53	3	3755
15/06/2022				
7-19	3321	47	4	3372
6-22	3695	52	4	3751
6-24	3766	53	4	3823
0-24	3815	53	4	3872

Average				
7-19	3004	36	3	3043
6-22	3597	48	2	3648
6-24	3405	41	3	3448
0-24	3449	41	3	3493

Essex ATC 2, Little Clacton Road

Produced by Road Data Services Ltd.

Channel 1 - Eastbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	2343	10	1	2354
6-22	2584	12	1	2597
6-24	2637	12	1	2650
0-24	2673	12	1	2686
10/06/2022				
7-19	2278	11	6	2295
6-22	2537	11	8	2556
6-24	2607	11	8	2626
0-24	2634	12	8	2654
11/06/2022				
7-19	1892	2	1	1895
6-22	2115	2	1	2118
6-24	2185	2	1	2188
0-24	2226	2	1	2229
12/06/2022				
7-19	1462	1	2	1465
6-22	1628	2	2	1632
6-24	1658	2	2	1662
0-24	1696	2	2	1700
13/06/2022				
7-19	2240	14	2	2256
6-22	2485	19	2	2506
6-24	2528	19	2	2549
0-24	2551	19	2	2572
14/06/2022				
7-19	2227	18	2	2247
6-22	2509	22	3	2534
6-24	2552	22	3	2577
0-24	2575	22	3	2600
15/06/2022				
7-19	2163	15	6	2184
6-22	2439	16	7	2462
6-24	2483	16	7	2506
0-24	2508	16	7	2531

Average				
7-19	2086	10	3	2099
6-22	2511	16	3	2530
6-24	2561	16	4	2582
0-24	2409	12	3	2425

Channel 2 - Westbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	2233	18	1	2252
6-22	2488	19	1	2508
6-24	2522	19	1	2542
0-24	2558	19	1	2578
10/06/2022				
7-19	2213	12	4	2229
6-22	2489	12	5	2506
6-24	2543	12	5	2560
0-24	2575	13	5	2593
11/06/2022				
7-19	1871	10	1	1882
6-22	2094	11	1	2106
6-24	2144	11	1	2156
0-24	2174	11	1	2186
12/06/2022				
7-19	1450	3	2	1455
6-22	1631	3	2	1636
6-24	1652	3	2	1657
0-24	1687	3	2	1692
13/06/2022				
7-19	2154	20	3	2177
6-22	2384	20	3	2407
6-24	2411	20	3	2434
0-24	2447	20	3	2470
14/06/2022				
7-19	2160	15	3	2178
6-22	2394	16	3	2413
6-24	2431	16	3	2450
0-24	2464	16	3	2483
15/06/2022				
7-19	2187	11	5	2203
6-22	2427	11	5	2443
6-24	2473	11	5	2489
0-24	2507	11	5	2523

Average				
7-19	2038	13	3	2054
6-22	2436	16	2	2454
6-24	2476	16	3	2495
0-24	2345	13	3	2361

Essex ATC 3, B1033 Thorpe Road

Produced by Road Data Services Ltd.

Channel 1 - Northwestbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	3987	81	10	4078
6-22	4628	85	10	4723
6-24	4689	86	10	4785
0-24	4887	86	10	4983
10/06/2022				
7-19	4013	82	14	4109
6-22	4729	87	15	4831
6-24	4836	87	15	4938
0-24	5021	87	15	5123
11/06/2022				
7-19	3966	28	5	3999
6-22	4611	36	7	4654
6-24	4739	36	7	4782
0-24	4852	36	7	4895
12/06/2022				
7-19	3619	9	7	3635
6-22	4081	12	9	4102
6-24	4149	12	9	4170
0-24	4250	12	9	4271
13/06/2022				
7-19	3727	87	10	3824
6-22	4332	93	10	4435
6-24	4387	93	10	4490
0-24	4595	93	10	4698
14/06/2022				
7-19	3847	86	14	3947
6-22	4529	93	17	4639
6-24	4582	94	17	4703
0-24	4790	95	17	4902
15/06/2022				
7-19	4055	78	16	4149
6-22	4780	83	16	4879
6-24	4841	83	16	4940
0-24	5059	84	16	5159

Average				
7-19	3888	64	11	3963
6-22	4600	88	10	4698
6-24	4669	89	14	4771
0-24	4779	70	12	4862

Channel 2 - Southeastbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	3891	56	12	3959
6-22	4448	60	13	4521
6-24	4589	60	13	4662
0-24	4668	60	13	4741
10/06/2022				
7-19	3991	60	16	4067
6-22	4595	61	16	4672
6-24	4765	61	16	4842
0-24	4838	61	17	4916
11/06/2022				
7-19	3849	28	4	3881
6-22	4360	31	5	4396
6-24	4528	32	5	4565
0-24	4642	32	5	4679
12/06/2022				
7-19	3447	12	5	3464
6-22	3837	12	5	3854
6-24	3925	12	5	3942
0-24	4048	12	5	4065
13/06/2022				
7-19	3730	68	6	3804
6-22	4250	69	7	4326
6-24	4341	69	7	4417
0-24	4415	70	7	4492
14/06/2022				
7-19	3861	59	14	3934
6-22	4430	62	16	4508
6-24	4565	62	16	4643
0-24	4625	63	16	4704
15/06/2022				
7-19	4097	62	12	4171
6-22	4721	67	15	4803
6-24	4850	67	15	4932
0-24	4918	68	15	5001

Average				
7-19	3838	49	10	3897
6-22	4489	64	10	4562
6-24	4622	64	13	4699
0-24	4593	52	11	4657

Essex ATC 4, B1034 Sneating Hall Lane

Produced by Road Data Services Ltd.

Channel 1 - Northeastbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	1268	22	7	1297
6-22	1425	23	9	1457
6-24	1460	23	9	1492
0-24	1474	23	9	1506
10/06/2022				
7-19	1395	26	7	1428
6-22	1592	28	7	1627
6-24	1647	29	7	1683
0-24	1666	30	7	1703
11/06/2022				
7-19	1525	3	3	1531
6-22	1658	4	3	1665
6-24	1706	5	3	1714
0-24	1737	5	3	1745
12/06/2022				
7-19	1231	8	3	1242
6-22	1366	8	3	1377
6-24	1386	9	3	1398
0-24	1415	9	3	1427
13/06/2022				
7-19	1210	28	2	1240
6-22	1360	29	2	1391
6-24	1399	29	2	1430
0-24	1421	30	2	1453
14/06/2022				
7-19	1179	24	8	1211
6-22	1324	27	9	1360
6-24	1352	27	9	1388
0-24	1368	27	9	1404
15/06/2022				
7-19	1289	27	9	1325
6-22	1454	28	11	1493
6-24	1485	28	11	1524
0-24	1505	28	11	1544

Average				
7-19	1300	20	6	1325
6-22	1431	27	5	1463
6-24	1469	27	8	1503
0-24	1512	22	6	1540

Channel 2 - Southwestbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	1143	29	7	1179
6-22	1299	31	7	1337
6-24	1308	31	7	1346
0-24	1367	31	7	1405
10/06/2022				
7-19	1180	22	8	1210
6-22	1339	23	9	1371
6-24	1373	23	9	1405
0-24	1423	23	9	1455
11/06/2022				
7-19	1325	8	1	1334
6-22	1565	8	1	1574
6-24	1609	9	1	1619
0-24	1641	9	1	1651
12/06/2022				
7-19	1275	7	1	1283
6-22	1428	7	1	1436
6-24	1445	7	2	1454
0-24	1477	7	2	1486
13/06/2022				
7-19	1115	26	5	1146
6-22	1284	26	5	1315
6-24	1298	26	5	1329
0-24	1358	26	5	1389
14/06/2022				
7-19	1067	27	8	1102
6-22	1239	27	9	1275
6-24	1253	27	9	1289
0-24	1306	27	9	1342
15/06/2022				
7-19	1128	35	8	1171
6-22	1311	36	8	1355
6-24	1328	36	8	1372
0-24	1388	36	8	1432

Average				
7-19	1176	22	5	1204
6-22	1294	29	5	1328
6-24	1312	29	8	1348
0-24	1423	23	6	1451

Essex ATC 5, Damant's Farm Lane

Produced by Road Data Services Ltd.

Channel 1 - Southbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	163	1	0	164
6-22	172	1	0	173
6-24	174	1	0	175
0-24	177	1	0	178
10/06/2022				
7-19	148	0	0	148
6-22	169	0	0	169
6-24	173	0	0	173
0-24	176	0	0	176
11/06/2022				
7-19	103	0	0	103
6-22	115	0	0	115
6-24	117	0	0	117
0-24	119	0	0	119
12/06/2022				
7-19	69	0	0	69
6-22	83	0	0	83
6-24	85	0	0	85
0-24	92	0	0	92
13/06/2022				
7-19	162	2	0	164
6-22	184	2	0	186
6-24	187	2	0	189
0-24	188	2	0	190
14/06/2022				
7-19	154	1	0	155
6-22	176	2	0	178
6-24	176	2	0	178
0-24	178	2	0	180
15/06/2022				
7-19	166	3	0	169
6-22	185	4	0	189
6-24	189	4	0	193
0-24	189	4	0	193

Average				
7-19	138	1	0	139
6-22	177	2	0	179
6-24	180	2	0	182
0-24	160	1	0	161

Channel 2 - Northbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	192	1	0	193
6-22	206	1	0	207
6-24	206	1	0	207
0-24	212	1	0	213
10/06/2022				
7-19	190	1	0	191
6-22	214	1	0	215
6-24	220	1	0	221
0-24	223	1	0	224
11/06/2022				
7-19	124	2	0	126
6-22	140	2	0	142
6-24	141	2	0	143
0-24	144	2	0	146
12/06/2022				
7-19	103	0	0	103
6-22	117	0	0	117
6-24	119	0	0	119
0-24	120	0	0	120
13/06/2022				
7-19	180	2	0	182
6-22	199	2	0	201
6-24	199	2	0	201
0-24	204	2	0	206
14/06/2022				
7-19	179	0	0	179
6-22	202	1	0	203
6-24	203	1	0	204
0-24	209	1	0	210
15/06/2022				
7-19	189	0	0	189
6-22	219	0	0	219
6-24	220	0	0	220
0-24	225	0	0	225

Average				
7-19	165	1	0	166
6-22	208	1	0	209
6-24	210	1	0	211
0-24	191	1	0	192

Essex ATC 6, B1414 Laundermere Road

Produced by Road Data Services Ltd.

Channel 1 - Northbound | **Vehicle Class** | **Week 1**

Day / Time \ Classes	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	527	27	0	554
6-22	581	36	0	617
6-24	591	36	0	627
0-24	599	38	0	637
10/06/2022				
7-19	530	29	10	569
6-22	567	32	11	610
6-24	587	32	11	630
0-24	598	32	11	641
11/06/2022				
7-19	489	3	0	492
6-22	555	4	0	559
6-24	570	4	0	574
0-24	577	4	0	581
12/06/2022				
7-19	457	6	0	463
6-22	516	6	0	522
6-24	524	6	0	530
0-24	532	6	0	538
13/06/2022				
7-19	755	21	5	781
6-22	828	25	6	859
6-24	842	25	6	873
0-24	862	26	6	894
14/06/2022				
7-19	740	32	1	773
6-22	837	32	1	870
6-24	851	32	1	884
0-24	866	33	1	900
15/06/2022				
7-19	807	19	4	830
6-22	888	25	4	917
6-24	892	25	4	921
0-24	904	26	4	934

Average				
7-19	615	20	3	637
6-22	740	30	3	773
6-24	753	30	4	787
0-24	705	24	3	732

Channel 2 - Southbound | **Vehicle Class** | **Week 1**

Day / Time \ Classes	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	658	39	4	701
6-22	745	40	5	790
6-24	756	40	5	801
0-24	767	42	9	818
10/06/2022				
7-19	671	29	2	702
6-22	735	35	4	774
6-24	757	35	4	796
0-24	791	36	7	834
11/06/2022				
7-19	503	15	1	519
6-22	551	18	1	570
6-24	567	18	1	586
0-24	582	19	3	604
12/06/2022				
7-19	396	14	1	411
6-22	436	16	1	453
6-24	444	16	1	461
0-24	460	16	1	477
13/06/2022				
7-19	671	30	5	706
6-22	721	36	6	763
6-24	735	36	6	777
0-24	740	39	6	785
14/06/2022				
7-19	696	17	7	720
6-22	785	22	7	814
6-24	787	22	7	816
0-24	800	25	7	832
15/06/2022				
7-19	678	30	13	721
6-22	732	38	13	783
6-24	760	38	13	811
0-24	776	42	13	831

Average				
7-19	610	25	5	640
6-22	744	34	5	783
6-24	759	34	7	800
0-24	702	31	7	740

Essex ATC 7, Golden Lane

Produced by Road Data Services Ltd.

Channel 1 - Westbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	572	19	0	591
6-22	647	23	1	671
6-24	653	23	1	677
0-24	682	23	1	706
10/06/2022				
7-19	553	17	1	571
6-22	644	19	1	664
6-24	654	19	1	674
0-24	683	19	2	704
11/06/2022				
7-19	397	5	0	402
6-22	463	6	0	469
6-24	473	6	0	479
0-24	489	6	0	495
12/06/2022				
7-19	380	1	0	381
6-22	434	1	0	435
6-24	445	1	0	446
0-24	453	1	0	454
13/06/2022				
7-19	523	15	2	540
6-22	585	19	3	607
6-24	588	19	3	610
0-24	617	20	5	642
14/06/2022				
7-19	531	11	0	542
6-22	597	15	1	613
6-24	601	15	1	617
0-24	625	15	1	641
15/06/2022				
7-19	572	15	1	588
6-22	607	15	1	623
6-24	607	15	1	623
0-24	634	15	2	651

Average				
7-19	504	12	1	516
6-22	616	18	1	635
6-24	621	18	1	640
0-24	598	14	2	613

Channel 2 - Eastbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	517	22	3	542
6-22	582	30	3	615
6-24	595	30	3	628
0-24	603	30	3	636
10/06/2022				
7-19	572	15	3	590
6-22	643	24	3	670
6-24	661	24	3	688
0-24	675	25	3	703
11/06/2022				
7-19	423	2	0	425
6-22	466	7	0	473
6-24	477	8	0	485
0-24	488	8	0	496
12/06/2022				
7-19	305	3	0	308
6-22	331	3	0	334
6-24	340	3	0	343
0-24	350	3	0	353
13/06/2022				
7-19	511	17	3	531
6-22	555	24	3	582
6-24	567	24	3	594
0-24	578	26	3	607
14/06/2022				
7-19	476	12	2	490
6-22	535	17	3	555
6-24	545	17	3	565
0-24	556	17	3	576
15/06/2022				
7-19	506	16	0	522
6-22	513	25	0	538
6-24	513	25	0	538
0-24	526	25	0	551

Average				
7-19	473	12	2	487
6-22	566	24	2	591
6-24	578	24	2	603
0-24	539	19	2	560

Essex ATC 8, B1035 Tendring Road

Produced by Road Data Services Ltd.

Channel 1 - Northbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	710	17	0	727
6-22	813	17	0	830
6-24	832	17	0	849
0-24	849	17	0	866
10/06/2022				
7-19	651	15	4	670
6-22	755	16	4	775
6-24	769	16	4	789
0-24	790	16	4	810
11/06/2022				
7-19	569	8	1	578
6-22	646	8	1	655
6-24	661	8	1	670
0-24	676	8	1	685
12/06/2022				
7-19	471	3	1	475
6-22	526	3	1	530
6-24	533	3	1	537
0-24	545	3	1	549
13/06/2022				
7-19	644	10	2	656
6-22	715	11	2	728
6-24	725	11	2	738
0-24	743	11	2	756
14/06/2022				
7-19	663	15	7	685
6-22	758	15	7	780
6-24	771	16	7	794
0-24	785	16	7	808
15/06/2022				
7-19	702	11	2	715
6-22	797	13	2	812
6-24	812	13	2	827
0-24	828	13	2	843

Average				
7-19	630	11	2	644
6-22	768	14	2	784
6-24	782	15	3	799
0-24	745	12	2	760

Channel 2 - Southbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	814	14	2	830
6-22	892	14	2	908
6-24	903	14	2	919
0-24	908	14	2	924
10/06/2022				
7-19	789	15	6	810
6-22	877	16	6	899
6-24	892	16	6	914
0-24	899	16	6	921
11/06/2022				
7-19	730	8	0	738
6-22	799	8	0	807
6-24	812	8	0	820
0-24	823	8	0	831
12/06/2022				
7-19	559	1	3	563
6-22	619	1	3	623
6-24	625	1	3	629
0-24	635	1	3	639
13/06/2022				
7-19	724	16	6	746
6-22	801	18	6	825
6-24	815	18	6	839
0-24	819	18	6	843
14/06/2022				
7-19	788	17	5	810
6-22	881	18	5	904
6-24	895	18	5	918
0-24	900	18	5	923
15/06/2022				
7-19	817	16	3	836
6-22	898	18	4	920
6-24	909	19	4	932
0-24	914	19	4	937

Average				
7-19	746	12	4	762
6-22	870	17	3	890
6-24	883	17	5	904
0-24	843	13	4	860

Essex ATC 9, Whitehall Lane

Produced by Road Data Services Ltd.

Channel 1 - Eastbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	54	2	0	56
6-22	59	2	0	61
6-24	60	2	0	62
0-24	61	2	0	63
10/06/2022				
7-19	64	3	0	67
6-22	68	3	0	71
6-24	72	3	0	75
0-24	72	3	0	75
11/06/2022				
7-19	38	0	0	38
6-22	45	0	0	45
6-24	46	0	0	46
0-24	47	0	0	47
12/06/2022				
7-19	28	1	0	29
6-22	31	1	0	32
6-24	31	1	0	32
0-24	31	1	0	32
13/06/2022				
7-19	40	2	0	42
6-22	45	2	0	47
6-24	45	2	0	47
0-24	46	2	0	48
14/06/2022				
7-19	57	3	0	60
6-22	64	3	0	67
6-24	65	3	0	68
0-24	66	3	0	69
15/06/2022				
7-19	63	3	0	66
6-22	71	3	0	74
6-24	72	3	0	75
0-24	72	3	0	75

Average				
7-19	49	2	0	51
6-22	61	3	0	64
6-24	63	3	0	65
0-24	56	2	0	58

Channel 2 - Westbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	51	2	0	53
6-22	54	2	0	56
6-24	54	2	0	56
0-24	54	2	0	56
10/06/2022				
7-19	52	1	0	53
6-22	58	1	0	59
6-24	59	1	0	60
0-24	59	1	0	60
11/06/2022				
7-19	35	0	0	35
6-22	39	0	0	39
6-24	41	0	0	41
0-24	41	0	0	41
12/06/2022				
7-19	30	1	0	31
6-22	34	1	0	35
6-24	35	1	0	36
0-24	35	1	0	36
13/06/2022				
7-19	40	0	0	40
6-22	42	0	0	42
6-24	42	0	0	42
0-24	42	0	0	42
14/06/2022				
7-19	50	3	0	53
6-22	54	3	0	57
6-24	54	3	0	57
0-24	54	3	0	57
15/06/2022				
7-19	52	3	0	55
6-22	59	3	0	62
6-24	60	3	0	63
0-24	60	3	0	63

Average				
7-19	44	1	0	46
6-22	53	2	0	55
6-24	54	2	0	56
0-24	49	1	0	51

Essex ATC 10, Swan Road

Produced by Road Data Services Ltd.

Channel 1 - Southwestbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	501	1	0	502
6-22	555	1	0	556
6-24	558	1	0	559
0-24	567	1	0	568
10/06/2022				
7-19	470	6	0	476
6-22	529	6	0	535
6-24	537	6	0	543
0-24	546	6	0	552
11/06/2022				
7-19	417	0	1	418
6-22	448	0	1	449
6-24	455	0	1	456
0-24	459	0	1	460
12/06/2022				
7-19	307	0	0	307
6-22	338	0	0	338
6-24	339	0	0	339
0-24	347	0	0	347
13/06/2022				
7-19	423	2	1	426
6-22	478	2	1	481
6-24	480	2	1	483
0-24	493	2	1	496
14/06/2022				
7-19	452	1	0	453
6-22	513	1	0	514
6-24	514	1	0	515
0-24	528	1	0	529
15/06/2022				
7-19	488	1	0	489
6-22	539	1	0	540
6-24	542	2	0	544
0-24	557	2	0	559

Average				
7-19	437	2	0	439
6-22	523	2	0	525
6-24	526	2	0	529
0-24	500	2	0	502

Channel 2 - Northeastbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	500	1	0	501
6-22	561	1	0	562
6-24	574	1	0	575
0-24	577	1	0	578
10/06/2022				
7-19	550	0	1	551
6-22	592	1	1	594
6-24	609	1	1	611
0-24	613	1	1	615
11/06/2022				
7-19	441	0	0	441
6-22	478	0	0	478
6-24	490	0	0	490
0-24	499	0	0	499
12/06/2022				
7-19	320	0	0	320
6-22	349	0	0	349
6-24	354	0	0	354
0-24	357	0	0	357
13/06/2022				
7-19	445	0	3	448
6-22	490	0	3	493
6-24	495	0	3	498
0-24	502	0	3	505
14/06/2022				
7-19	503	0	0	503
6-22	557	0	0	557
6-24	564	0	0	564
0-24	576	0	0	576
15/06/2022				
7-19	495	2	0	497
6-22	558	2	0	560
6-24	567	2	0	569
0-24	567	2	0	569

Average				
7-19	465	0	1	466
6-22	552	1	1	553
6-24	562	1	1	563
0-24	527	1	1	528

Essex ATC 11. B1035 Thorpe Road

Produced by Road Data Services Ltd.

Channel 1 - Eastbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	1140	23	4	1167
6-22	1255	23	4	1282
6-24	1282	23	4	1309
0-24	1290	23	4	1317
10/06/2022				
7-19	1178	20	6	1204
6-22	1289	23	6	1318
6-24	1317	23	6	1346
0-24	1327	23	6	1356
11/06/2022				
7-19	1041	10	1	1052
6-22	1141	11	1	1153
6-24	1165	11	1	1177
0-24	1181	11	1	1193
12/06/2022				
7-19	757	3	2	762
6-22	837	3	2	842
6-24	848	3	2	853
0-24	861	3	2	866
13/06/2022				
7-19	1044	22	4	1070
6-22	1145	24	4	1173
6-24	1162	25	4	1191
0-24	1168	25	4	1197
14/06/2022				
7-19	1125	29	6	1160
6-22	1240	31	6	1277
6-24	1263	31	6	1300
0-24	1273	31	6	1310
15/06/2022				
7-19	1161	31	3	1195
6-22	1278	33	4	1315
6-24	1294	34	4	1332
0-24	1304	34	4	1342

Average				
7-19	1064	20	4	1087
6-22	1241	27	3	1272
6-24	1264	27	5	1296
0-24	1201	21	4	1226

Channel 2 - Westbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	1065	13	3	1081
6-22	1206	13	3	1222
6-24	1228	13	3	1244
0-24	1256	13	3	1272
10/06/2022				
7-19	980	16	2	998
6-22	1128	17	2	1147
6-24	1148	17	2	1167
0-24	1178	17	2	1197
11/06/2022				
7-19	858	8	0	866
6-22	956	8	0	964
6-24	976	8	0	984
0-24	996	8	0	1004
12/06/2022				
7-19	683	2	0	685
6-22	758	2	0	760
6-24	765	2	0	767
0-24	783	2	0	785
13/06/2022				
7-19	939	18	5	962
6-22	1050	18	5	1073
6-24	1060	18	5	1083
0-24	1090	18	5	1113
14/06/2022				
7-19	934	18	7	959
6-22	1077	18	7	1102
6-24	1090	18	7	1115
0-24	1115	18	7	1140
15/06/2022				
7-19	1035	24	2	1061
6-22	1166	27	4	1197
6-24	1183	27	4	1214
0-24	1210	27	4	1241

Average				
7-19	928	14	3	945
6-22	1125	19	3	1147
6-24	1142	19	4	1165
0-24	1090	15	3	1107

Essex ATC 12, Lodge Lane

Produced by Road Data Services Ltd.

Channel 1 - Westbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	10	0	0	10
6-22	12	0	0	12
6-24	12	0	0	12
0-24	12	0	0	12
10/06/2022				
7-19	10	0	0	10
6-22	11	1	0	12
6-24	11	1	0	12
0-24	11	1	0	12
11/06/2022				
7-19	5	0	0	5
6-22	5	0	0	5
6-24	5	0	0	5
0-24	6	0	0	6
12/06/2022				
7-19	3	0	0	3
6-22	3	0	0	3
6-24	3	0	0	3
0-24	4	0	0	4
13/06/2022				
7-19	9	0	0	9
6-22	9	0	0	9
6-24	9	0	0	9
0-24	9	0	0	9
14/06/2022				
7-19	10	0	0	10
6-22	10	0	0	10
6-24	10	0	0	10
0-24	10	0	0	10
15/06/2022				
7-19	10	0	0	10
6-22	10	0	0	10
6-24	10	1	0	11
0-24	10	1	0	11

Average				
7-19	8	0	0	8
6-22	10	0	0	11
6-24	10	0	0	11
0-24	9	0	0	9

Channel 2 - Eastbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	13	0	0	13
6-22	14	0	0	14
6-24	14	0	0	14
0-24	14	0	0	14
10/06/2022				
7-19	9	0	0	9
6-22	10	1	0	11
6-24	10	1	0	11
0-24	10	1	0	11
11/06/2022				
7-19	5	0	0	5
6-22	6	0	0	6
6-24	6	0	0	6
0-24	6	0	0	6
12/06/2022				
7-19	3	0	0	3
6-22	3	0	0	3
6-24	3	0	0	3
0-24	4	0	0	4
13/06/2022				
7-19	11	0	0	11
6-22	11	0	0	11
6-24	12	0	0	12
0-24	12	0	0	12
14/06/2022				
7-19	9	0	0	9
6-22	9	0	0	9
6-24	9	0	0	9
0-24	9	0	0	9
15/06/2022				
7-19	8	0	1	9
6-22	9	0	1	10
6-24	9	0	1	10
0-24	9	0	1	10

Average				
7-19	8	0	0	8
6-22	11	0	0	11
6-24	11	0	0	11
0-24	9	0	0	9

Essex ATC 13 Wolves Hall Lane

Produced by Road Data Services Ltd.

Channel 1 - Westbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	36	1	1	38
6-22	47	1	1	49
6-24	47	1	1	49
0-24	47	1	1	49
10/06/2022				
7-19	35	0	0	35
6-22	40	0	0	40
6-24	40	0	0	40
0-24	40	0	0	40
11/06/2022				
7-19	37	1	0	38
6-22	40	1	0	41
6-24	41	1	0	42
0-24	41	1	0	42
12/06/2022				
7-19	36	0	0	36
6-22	38	0	0	38
6-24	38	0	0	38
0-24	38	0	0	38
13/06/2022				
7-19	37	3	0	40
6-22	47	3	0	50
6-24	47	3	0	50
0-24	48	3	0	51
14/06/2022				
7-19	40	1	0	41
6-22	47	1	0	48
6-24	47	1	0	48
0-24	49	1	0	50
15/06/2022				
7-19	37	1	0	38
6-22	44	1	0	45
6-24	48	1	0	49
0-24	48	1	0	49

Average				
7-19	37	1	0	38
6-22	45	1	0	46
6-24	46	1	0	47
0-24	44	1	0	46

Channel 2 - Eastbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	29	0	1	30
6-22	47	0	1	48
6-24	47	0	1	48
0-24	47	0	1	48
10/06/2022				
7-19	36	0	1	37
6-22	41	0	1	42
6-24	42	0	1	43
0-24	43	0	1	44
11/06/2022				
7-19	38	1	0	39
6-22	46	1	0	47
6-24	48	1	0	49
0-24	48	1	0	49
12/06/2022				
7-19	22	1	1	24
6-22	27	1	1	29
6-24	27	1	1	29
0-24	27	1	1	29
13/06/2022				
7-19	36	1	0	37
6-22	44	1	0	45
6-24	44	1	0	45
0-24	46	1	0	47
14/06/2022				
7-19	33	0	0	33
6-22	42	0	0	42
6-24	42	0	0	42
0-24	44	0	0	44
15/06/2022				
7-19	30	0	0	30
6-22	41	0	0	41
6-24	41	0	0	41
0-24	42	0	0	42

Average				
7-19	32	0	0	33
6-22	43	0	0	43
6-24	43	0	0	44
0-24	42	0	0	43

Essex ATC 14, Stone Green Road

Produced by Road Data Services Ltd.

Channel 1 - Eastbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	121	0	0	121
6-22	141	0	0	141
6-24	144	0	0	144
0-24	144	0	0	144
10/06/2022				
7-19	137	1	0	138
6-22	159	1	0	160
6-24	162	1	0	163
0-24	162	1	0	163
11/06/2022				
7-19	104	2	3	109
6-22	121	2	3	126
6-24	124	2	3	129
0-24	126	2	3	131
12/06/2022				
7-19	102	0	1	103
6-22	112	0	2	114
6-24	112	0	2	114
0-24	114	0	2	116
13/06/2022				
7-19	101	4	0	105
6-22	118	5	0	123
6-24	119	5	0	124
0-24	121	5	0	126
14/06/2022				
7-19	108	2	0	110
6-22	120	2	0	122
6-24	122	2	0	124
0-24	122	2	0	124
15/06/2022				
7-19	114	4	0	118
6-22	127	4	0	131
6-24	129	4	0	133
0-24	130	4	0	134

Average				
7-19	112	2	1	115
6-22	133	2	0	135
6-24	135	2	0	138
0-24	131	2	1	134

Channel 2 - Westbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	119	2	0	121
6-22	128	2	0	130
6-24	131	2	0	133
0-24	131	2	0	133
10/06/2022				
7-19	127	0	0	127
6-22	149	0	0	149
6-24	149	0	0	149
0-24	152	0	0	152
11/06/2022				
7-19	109	1	2	112
6-22	118	1	2	121
6-24	122	1	2	125
0-24	126	1	2	129
12/06/2022				
7-19	105	0	3	108
6-22	113	0	3	116
6-24	113	0	3	116
0-24	116	0	3	119
13/06/2022				
7-19	110	6	1	117
6-22	131	6	1	138
6-24	131	6	1	138
0-24	136	6	1	143
14/06/2022				
7-19	110	2	1	113
6-22	123	2	2	127
6-24	123	2	2	127
0-24	131	2	2	135
15/06/2022				
7-19	118	3	1	122
6-22	133	3	1	137
6-24	137	3	1	141
0-24	140	3	2	145

Average				
7-19	114	2	1	117
6-22	133	3	1	136
6-24	134	3	1	138
0-24	133	2	1	137

Essex ATC 15, Colchester Road

Produced by Road Data Services Ltd.

Channel 1 - Southbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	519	11	2	532
6-22	602	11	2	615
6-24	622	11	2	635
0-24	622	11	2	635
10/06/2022				
7-19	534	9	4	547
6-22	595	10	4	609
6-24	621	10	4	635
0-24	633	10	4	647
11/06/2022				
7-19	441	2	0	443
6-22	506	3	0	509
6-24	516	3	0	519
0-24	531	3	0	534
12/06/2022				
7-19	322	10	1	333
6-22	369	10	1	380
6-24	378	10	1	389
0-24	385	10	1	396
13/06/2022				
7-19	532	10	0	542
6-22	602	10	0	612
6-24	615	10	0	625
0-24	622	10	0	632
14/06/2022				
7-19	535	10	2	547
6-22	614	10	3	627
6-24	625	10	3	638
0-24	636	10	3	649
15/06/2022				
7-19	513	9	3	525
6-22	589	10	3	602
6-24	600	10	3	613
0-24	617	10	3	630

Average				
7-19	485	9	2	496
6-22	600	10	2	612
6-24	617	10	2	629
0-24	578	9	2	589

Channel 2 - Northbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	529	11	4	544
6-22	590	11	4	605
6-24	597	11	4	612
0-24	597	11	4	612
10/06/2022				
7-19	594	11	1	606
6-22	679	14	1	694
6-24	687	14	1	702
0-24	719	15	1	735
11/06/2022				
7-19	404	3	0	407
6-22	456	3	0	459
6-24	470	3	0	473
0-24	483	3	0	486
12/06/2022				
7-19	359	12	2	373
6-22	400	12	2	414
6-24	402	12	2	416
0-24	413	12	2	427
13/06/2022				
7-19	539	14	1	554
6-22	624	16	1	641
6-24	629	16	1	646
0-24	649	17	1	667
14/06/2022				
7-19	533	16	1	550
6-22	613	18	1	632
6-24	618	18	1	637
0-24	647	18	1	666
15/06/2022				
7-19	585	14	1	600
6-22	654	15	1	670
6-24	661	15	1	677
0-24	691	15	1	707

Average				
7-19	506	12	1	519
6-22	632	15	1	648
6-24	638	15	2	655
0-24	600	13	1	614

Essex ATC 16, B1035 Clacton Road

Produced by Road Data Services Ltd.

Channel 1 - Northbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	3328	58	21	3407
6-22	3781	61	27	3869
6-24	3909	63	30	4002
0-24	4032	66	35	4133
10/06/2022				
7-19	3319	65	20	3404
6-22	3793	68	24	3885
6-24	3932	69	27	4028
0-24	4030	75	36	4141
11/06/2022				
7-19	2419	30	18	2467
6-22	2747	33	21	2801
6-24	2863	35	24	2922
0-24	3026	39	33	3098
12/06/2022				
7-19	1935	31	11	1977
6-22	2184	35	17	2236
6-24	2263	37	20	2320
0-24	2435	41	31	2507
13/06/2022				
7-19	3441	67	21	3529
6-22	3946	70	33	4049
6-24	4070	72	36	4178
0-24	4203	77	46	4326
14/06/2022				
7-19	3379	54	21	3454
6-22	3857	57	27	3941
6-24	3994	61	31	4086
0-24	4105	64	39	4208
15/06/2022				
7-19	3426	54	20	3500
6-22	3892	58	27	3977
6-24	4015	60	30	4105
0-24	4123	62	35	4220

Average				
7-19	3035	51	19	3105
6-22	3854	63	20	3936
6-24	3984	65	31	4080
0-24	3708	61	36	3805

Channel 2 - Southbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	3821	42	10	3873
6-22	4305	44	10	4359
6-24	4416	46	10	4472
0-24	4534	50	10	4594
10/06/2022				
7-19	3946	38	16	4000
6-22	4494	41	18	4553
6-24	4598	44	18	4660
0-24	4746	55	20	4821
11/06/2022				
7-19	3098	17	14	3129
6-22	3445	20	16	3481
6-24	3548	21	16	3585
0-24	3682	29	18	3729
12/06/2022				
7-19	2346	21	7	2374
6-22	2629	23	11	2663
6-24	2683	25	11	2719
0-24	2825	28	13	2866
13/06/2022				
7-19	3805	31	13	3849
6-22	4331	36	16	4383
6-24	4435	36	16	4487
0-24	4534	40	18	4592
14/06/2022				
7-19	3991	45	13	4049
6-22	4580	49	19	4648
6-24	4709	50	20	4779
0-24	4859	57	21	4937
15/06/2022				
7-19	3919	38	11	3968
6-22	4424	40	13	4477
6-24	4527	42	13	4582
0-24	4661	46	17	4724

Average				
7-19	3561	33	12	3606
6-22	4427	42	11	4480
6-24	4537	44	15	4596
0-24	4263	44	17	4323

Essex ATC 17, Bentley Road

Produced by Road Data Services Ltd.

Channel 1 - Northbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	598	4	0	602
6-22	677	5	0	682
6-24	727	5	0	732
0-24	753	6	2	761
10/06/2022				
7-19	581	10	2	593
6-22	654	13	2	669
6-24	727	14	2	743
0-24	762	15	4	781
11/06/2022				
7-19	444	3	0	447
6-22	492	3	0	495
6-24	511	4	0	515
0-24	535	4	0	539
12/06/2022				
7-19	339	1	2	342
6-22	385	2	2	389
6-24	397	2	2	401
0-24	406	3	2	411
13/06/2022				
7-19	532	12	1	545
6-22	604	12	2	618
6-24	635	12	2	649
0-24	647	12	2	661
14/06/2022				
7-19	574	5	1	580
6-22	662	5	1	668
6-24	686	5	1	692
0-24	701	5	1	707
15/06/2022				
7-19	544	4	0	548
6-22	667	5	0	672
6-24	688	6	0	694
0-24	705	7	0	712

Average				
7-19	516	6	1	522
6-22	653	8	1	662
6-24	693	8	1	702
0-24	644	7	2	653

Channel 2 - Southbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	324	5	0	329
6-22	363	6	0	369
6-24	379	6	1	386
0-24	390	6	1	397
10/06/2022				
7-19	286	8	1	295
6-22	321	9	1	331
6-24	335	9	2	346
0-24	341	9	3	353
11/06/2022				
7-19	245	5	0	250
6-22	271	5	0	276
6-24	285	5	0	290
0-24	288	5	0	293
12/06/2022				
7-19	181	1	0	182
6-22	211	1	0	212
6-24	214	1	0	215
0-24	219	1	0	220
13/06/2022				
7-19	284	11	1	296
6-22	305	11	1	317
6-24	315	11	1	327
0-24	319	12	1	332
14/06/2022				
7-19	306	1	0	307
6-22	329	1	0	330
6-24	337	1	2	340
0-24	346	1	2	349
15/06/2022				
7-19	350	8	0	358
6-22	391	10	0	401
6-24	399	10	0	409
0-24	405	10	0	415

Average				
7-19	282	6	0	288
6-22	342	7	0	349
6-24	353	7	1	362
0-24	330	6	1	337

Essex ATC 18, Steam Mill Road

Produced by Road Data Services Ltd.

Channel 1 - Eastbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	1116	24	9	1149
6-22	1308	24	10	1342
6-24	1341	24	10	1375
0-24	1362	24	10	1396
10/06/2022				
7-19	1153	21	8	1182
6-22	1327	22	9	1358
6-24	1385	22	9	1416
0-24	1404	22	9	1435
11/06/2022				
7-19	822	4	0	826
6-22	960	4	0	964
6-24	1008	4	0	1012
0-24	1032	4	0	1036
12/06/2022				
7-19	709	7	1	717
6-22	820	8	1	829
6-24	847	8	1	856
0-24	880	8	1	889
13/06/2022				
7-19	1134	22	6	1162
6-22	1286	23	6	1315
6-24	1323	23	6	1352
0-24	1336	23	6	1365
14/06/2022				
7-19	1170	26	7	1203
6-22	1321	26	7	1354
6-24	1360	26	7	1393
0-24	1379	27	7	1413
15/06/2022				
7-19	1194	28	13	1235
6-22	1379	30	13	1422
6-24	1416	31	13	1460
0-24	1434	31	13	1478

Average				
7-19	1043	19	6	1068
6-22	1324	25	6	1356
6-24	1365	25	9	1399
0-24	1261	20	7	1287

Channel 2 - Westbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	1241	19	16	1276
6-22	1407	19	16	1442
6-24	1420	19	16	1455
0-24	1456	19	16	1491
10/06/2022				
7-19	1342	13	3	1358
6-22	1499	14	4	1517
6-24	1524	14	4	1542
0-24	1559	15	4	1578
11/06/2022				
7-19	941	3	1	945
6-22	1057	3	1	1061
6-24	1082	3	1	1086
0-24	1110	3	1	1114
12/06/2022				
7-19	799	7	2	808
6-22	895	7	2	904
6-24	907	7	2	916
0-24	932	7	2	941
13/06/2022				
7-19	1221	17	3	1241
6-22	1382	17	3	1402
6-24	1398	17	3	1418
0-24	1453	17	3	1473
14/06/2022				
7-19	1283	20	4	1307
6-22	1453	20	4	1477
6-24	1470	20	4	1494
0-24	1514	21	4	1539
15/06/2022				
7-19	1317	22	16	1355
6-22	1496	22	16	1534
6-24	1505	22	16	1543
0-24	1547	22	16	1585

Average				
7-19	1163	14	6	1184
6-22	1447	18	6	1472
6-24	1463	18	9	1490
0-24	1367	15	7	1389

Essex ATC 19, Bromley Road

Produced by Road Data Services Ltd.

Channel 1 - Northbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	816	16	2	834
6-22	914	18	2	934
6-24	974	19	2	995
0-24	1006	20	4	1030
10/06/2022				
7-19	821	26	1	848
6-22	927	29	1	957
6-24	1002	30	1	1033
0-24	1043	33	4	1080
11/06/2022				
7-19	620	7	2	629
6-22	688	9	2	699
6-24	716	9	2	727
0-24	744	9	2	755
12/06/2022				
7-19	484	4	1	489
6-22	542	4	1	547
6-24	554	4	1	559
0-24	567	4	1	572
13/06/2022				
7-19	772	18	0	790
6-22	870	20	0	890
6-24	906	20	0	926
0-24	923	20	0	943
14/06/2022				
7-19	787	15	3	805
6-22	908	16	3	927
6-24	933	17	3	953
0-24	956	18	3	977
15/06/2022				
7-19	770	18	1	789
6-22	929	19	1	949
6-24	952	20	1	973
0-24	971	23	1	995

Average				
7-19	724	15	1	741
6-22	910	20	1	931
6-24	953	21	1	976
0-24	887	18	2	907

Channel 2 - Southbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	651	4	1	656
6-22	745	7	2	754
6-24	787	7	3	797
0-24	797	7	3	807
10/06/2022				
7-19	661	12	0	673
6-22	737	13	0	750
6-24	771	13	0	784
0-24	784	13	1	798
11/06/2022				
7-19	498	4	1	503
6-22	561	4	1	566
6-24	591	4	1	596
0-24	600	4	1	605
12/06/2022				
7-19	391	2	0	393
6-22	446	2	0	448
6-24	451	2	0	453
0-24	459	2	0	461
13/06/2022				
7-19	614	14	1	629
6-22	704	14	1	719
6-24	725	14	1	740
0-24	732	14	1	747
14/06/2022				
7-19	625	5	0	630
6-22	700	6	0	706
6-24	713	6	2	721
0-24	722	6	2	730
15/06/2022				
7-19	679	8	1	688
6-22	782	8	1	791
6-24	796	8	1	805
0-24	803	8	1	812

Average				
7-19	588	7	1	596
6-22	734	10	1	744
6-24	758	10	1	769
0-24	700	8	1	709

Essex ATC 20, Ardleigh Road

Produced by Road Data Services Ltd.

Channel 1 - Westbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	37	0	0	37
6-22	40	0	0	40
6-24	41	0	0	41
0-24	41	0	0	41
10/06/2022				
7-19	36	0	0	36
6-22	37	0	0	37
6-24	37	0	0	37
0-24	37	0	0	37
11/06/2022				
7-19	39	0	0	39
6-22	43	0	0	43
6-24	44	0	0	44
0-24	45	0	0	45
12/06/2022				
7-19	22	0	0	22
6-22	27	0	0	27
6-24	30	0	0	30
0-24	30	0	0	30
13/06/2022				
7-19	39	0	0	39
6-22	41	0	0	41
6-24	41	0	0	41
0-24	41	0	0	41
14/06/2022				
7-19	26	0	0	26
6-22	27	0	0	27
6-24	27	0	0	27
0-24	27	0	0	27
15/06/2022				
7-19	31	0	0	31
6-22	34	0	0	34
6-24	34	0	0	34
0-24	34	0	0	34

Average				
7-19	33	0	0	33
6-22	36	0	0	36
6-24	36	0	0	36
0-24	36	0	0	36

Channel 2 - Eastbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	51	0	0	51
6-22	53	0	0	53
6-24	53	0	0	53
0-24	53	0	0	53
10/06/2022				
7-19	32	0	0	32
6-22	37	0	0	37
6-24	38	0	0	38
0-24	38	0	0	38
11/06/2022				
7-19	26	0	0	26
6-22	29	0	0	29
6-24	31	0	0	31
0-24	31	0	0	31
12/06/2022				
7-19	17	0	0	17
6-22	25	0	0	25
6-24	26	0	0	26
0-24	26	0	0	26
13/06/2022				
7-19	32	0	0	32
6-22	35	0	0	35
6-24	36	0	0	36
0-24	36	0	0	36
14/06/2022				
7-19	29	0	0	29
6-22	29	0	0	29
6-24	29	0	0	29
0-24	29	0	0	29
15/06/2022				
7-19	36	0	0	36
6-22	39	0	0	39
6-24	39	0	0	39
0-24	39	0	0	39

Average				
7-19	32	0	0	32
6-22	39	0	0	39
6-24	39	0	0	39
0-24	36	0	0	36

Essex ATC 21, B1033 Colchester Road

Produced by Road Data Services Ltd.

Channel 1 - Eastbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	4096	83	21	4200
6-22	4698	97	24	4819
6-24	4866	98	24	4988
0-24	4959	98	25	5082
10/06/2022				
7-19	4475	89	24	4588
6-22	5142	99	26	5267
6-24	5362	100	26	5488
0-24	5465	102	26	5593
11/06/2022				
7-19	4624	27	4	4655
6-22	5145	32	5	5182
6-24	5337	34	5	5376
0-24	5473	35	5	5513
12/06/2022				
7-19	4016	23	5	4044
6-22	4464	23	6	4493
6-24	4564	24	6	4594
0-24	4716	24	6	4746
13/06/2022				
7-19	4020	94	18	4132
6-22	4544	107	18	4669
6-24	4661	107	18	4786
0-24	4774	109	18	4901
14/06/2022				
7-19	4072	75	30	4177
6-22	4651	93	32	4776
6-24	4791	93	32	4916
0-24	4881	95	32	5008
15/06/2022				
7-19	4463	94	19	4576
6-22	5150	106	21	5277
6-24	5302	106	21	5429
0-24	5394	108	21	5523

Average				
7-19	4252	89	17	4339
6-22	4837	100	17	4955
6-24	4996	101	24	5121
0-24	5095	82	19	5195

Channel 2 - Westbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	4173	80	23	4276
6-22	4889	90	26	5005
6-24	4960	91	26	5077
0-24	5211	95	26	5332
10/06/2022				
7-19	4281	89	20	4390
6-22	5076	102	23	5201
6-24	5182	102	23	5307
0-24	5412	102	23	5537
11/06/2022				
7-19	4514	29	10	4553
6-22	5314	37	10	5361
6-24	5461	38	10	5509
0-24	5585	38	10	5633
12/06/2022				
7-19	4307	13	11	4331
6-22	4896	15	13	4924
6-24	4970	15	13	4998
0-24	5105	15	13	5133
13/06/2022				
7-19	3985	90	20	4095
6-22	4667	101	24	4792
6-24	4733	101	24	4858
0-24	5001	102	25	5128
14/06/2022				
7-19	4119	92	28	4239
6-22	4841	106	31	4978
6-24	4902	106	31	5039
0-24	5152	106	31	5289
15/06/2022				
7-19	4343	89	26	4458
6-22	5159	102	26	5287
6-24	5230	102	26	5358
0-24	5508	105	26	5639

Average				
7-19	4246	69	20	4335
6-22	4926	100	19	5045
6-24	5001	100	26	5128
0-24	5282	80	22	5384

Essex ATC 22, Crown Lane

Produced by Road Data Services Ltd.

Channel 1 - Northbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	1363	14	1	1378
6-22	1635	16	1	1652
6-24	1693	16	1	1710
0-24	1760	17	1	1778
10/06/2022				
7-19	1439	16	0	1455
6-22	1698	18	1	1717
6-24	1763	19	1	1783
0-24	1830	19	1	1850
11/06/2022				
7-19	1124	10	4	1138
6-22	1295	11	4	1310
6-24	1367	11	4	1382
0-24	1420	12	4	1436
12/06/2022				
7-19	883	2	3	888
6-22	1041	3	3	1047
6-24	1075	4	3	1082
0-24	1106	5	3	1114
13/06/2022				
7-19	1308	14	5	1327
6-22	1557	15	5	1577
6-24	1598	15	5	1618
0-24	1681	15	5	1701
14/06/2022				
7-19	1469	19	1	1489
6-22	1718	21	2	1741
6-24	1767	21	2	1790
0-24	1851	22	2	1875
15/06/2022				
7-19	1360	18	3	1381
6-22	1649	21	3	1673
6-24	1699	21	3	1723
0-24	1767	21	3	1791

Average				
7-19	1278	13	2	1294
6-22	1651	18	2	1671
6-24	1704	18	2	1725
0-24	1631	16	3	1649

Channel 2 - Southbound — **Vehicle Class** — **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	1326	19	3	1348
6-22	1510	20	3	1533
6-24	1555	20	3	1578
0-24	1592	20	3	1615
10/06/2022				
7-19	1477	29	0	1506
6-22	1670	32	2	1704
6-24	1713	33	2	1748
0-24	1747	34	2	1783
11/06/2022				
7-19	1123	10	2	1135
6-22	1283	12	2	1297
6-24	1332	12	2	1346
0-24	1371	13	2	1386
12/06/2022				
7-19	877	3	1	881
6-22	990	4	1	995
6-24	1022	4	1	1027
0-24	1049	4	1	1054
13/06/2022				
7-19	1359	37	1	1397
6-22	1515	37	2	1554
6-24	1561	38	2	1601
0-24	1592	40	3	1635
14/06/2022				
7-19	1398	23	0	1421
6-22	1564	29	1	1594
6-24	1604	29	1	1634
0-24	1649	30	1	1680
15/06/2022				
7-19	1374	25	3	1402
6-22	1549	25	6	1580
6-24	1598	26	6	1630
0-24	1633	29	6	1668

Average				
7-19	1276	21	1	1299
6-22	1562	29	2	1592
6-24	1606	29	3	1638
0-24	1519	24	3	1546

Essex ATC 23, B1035

Produced by Road Data Services Ltd.

Channel 1 - Northbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	2345	38	8	2391
6-22	2698	44	8	2750
6-24	2772	44	8	2824
0-24	2885	44	8	2937
10/06/2022				
7-19	2431	50	9	2490
6-22	2793	54	9	2856
6-24	2874	55	9	2938
0-24	2978	55	9	3042
11/06/2022				
7-19	1913	22	8	1943
6-22	2164	25	8	2197
6-24	2252	26	8	2286
0-24	2327	28	8	2363
12/06/2022				
7-19	1556	9	12	1577
6-22	1783	10	12	1805
6-24	1820	10	12	1842
0-24	1873	10	12	1895
13/06/2022				
7-19	2190	47	11	2248
6-22	2509	51	13	2573
6-24	2561	51	13	2625
0-24	2675	52	13	2740
14/06/2022				
7-19	2464	40	14	2518
6-22	2799	40	15	2854
6-24	2866	41	15	2922
0-24	2986	42	15	3043
15/06/2022				
7-19	2399	44	8	2451
6-22	2820	47	10	2877
6-24	2886	47	10	2943
0-24	2990	48	10	3048

Average				
7-19	2185	36	10	2231
6-22	2724	47	8	2779
6-24	2792	48	11	2850
0-24	2673	40	11	2724

Channel 2 - Southbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / 1,2	OGV1 / Bus 5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
09/06/2022				
7-19	2554	34	8	2596
6-22	2872	34	8	2914
6-24	2943	34	8	2985
0-24	2993	34	8	3035
10/06/2022				
7-19	2693	28	9	2730
6-22	2971	29	10	3010
6-24	3045	31	10	3086
0-24	3097	31	11	3139
11/06/2022				
7-19	2219	16	2	2237
6-22	2466	19	2	2487
6-24	2535	19	2	2556
0-24	2593	20	2	2615
12/06/2022				
7-19	1636	7	4	1647
6-22	1824	9	5	1838
6-24	1853	9	5	1867
0-24	1899	9	5	1913
13/06/2022				
7-19	2470	34	12	2516
6-22	2725	36	13	2774
6-24	2790	36	13	2839
0-24	2837	36	13	2886
14/06/2022				
7-19	2585	32	9	2626
6-22	2895	34	9	2938
6-24	2956	34	9	2999
0-24	3016	34	9	3059
15/06/2022				
7-19	2598	38	8	2644
6-22	2900	39	8	2947
6-24	2977	39	8	3024
0-24	3022	40	8	3070

Average				
7-19	2394	27	7	2428
6-22	2873	34	7	2914
6-24	2942	35	10	2987
0-24	2780	29	8	2817

Site 12 – B1033 Colchester Road

(ATC 11)

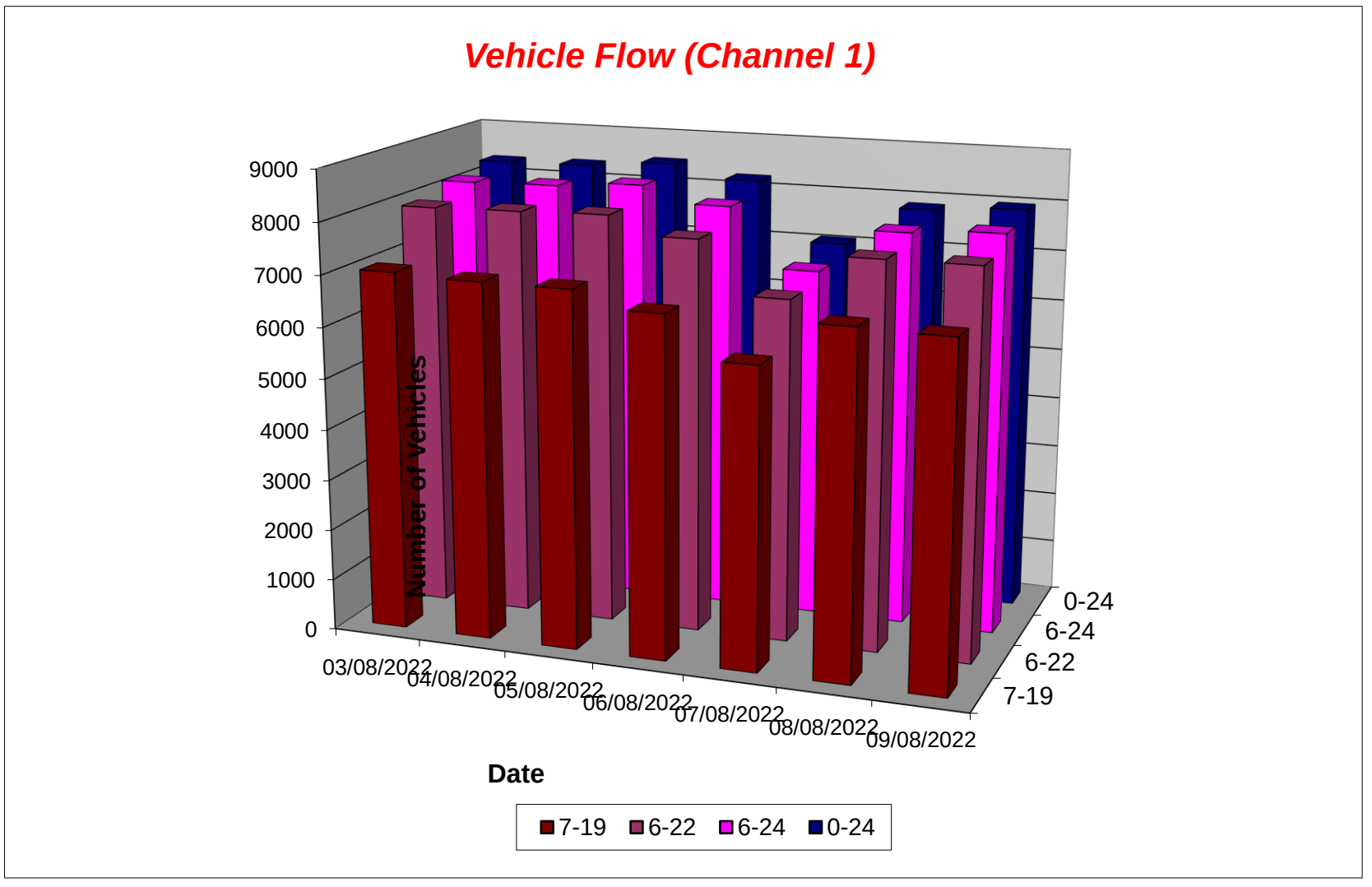
Tendring District, Essex ATC 11, B1033 Colchester Road

Produced by Streetwise Services Ltd.

Channel 1 - Eastbound **Vehicle Flow** **Week 1**

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday	5 Day Ave	7 Day Ave
1	35	38	48	51	87	28	39	38	47
2	22	14	20	32	38	21	12	18	23
3	19	22	18	26	22	9	11	16	18
4	10	6	12	22	17	15	25	14	15
5	20	18	15	10	17	18	12	17	16
6	44	35	38	80	24	39	45	40	44
7	114	156	127	199	72	125	117	128	130
8	355	321	332	309	130	361	315	337	303
9	430	399	465	480	326	397	467	432	423
10	648	662	640	774	658	632	600	636	659
11	838	770	613	613	544	673	620	703	667
12	751	693	652	667	619	652	627	675	666
13	666	634	651	678	622	584	643	636	640
14	537	564	634	653	633	569	551	571	592
15	580	545	599	586	651	584	588	579	590
16	571	577	563	540	471	509	572	558	543
17	536	597	618	486	484	605	531	577	551
18	575	610	618	487	366	603	622	606	554
19	553	611	593	384	349	525	519	560	505
20	367	363	425	394	307	338	352	369	364
21	255	313	294	266	241	227	260	270	265
22	189	185	218	182	212	173	182	189	192
23	151	135	165	150	114	126	173	150	145
24	69	84	122	170	68	48	89	82	93

7-19	7040	6983	6978	6657	5853	6694	6655	6870	6694
6-22	7965	8000	8042	7698	6685	7557	7566	7826	7645
6-24	8185	8219	8329	8018	6867	7731	7828	8058	7882
0-24	8335	8352	8480	8239	7072	7861	7972	8200	8044



Tendring District, Essex ATC 11, B1033 Colchester Road

Produced by Streetwise Services Ltd.

Channel 1 - Eastbound **Average Speed** **Week 1**

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
1	41.0	42.1	42.0	41.5	41.0	44.6	43.8
2	42.1	43.0	41.2	45.6	40.8	41.8	40.5
3	42.3	42.8	43.8	41.1	43.8	48.0	41.2
4	36.5	42.6	45.1	40.7	38.9	45.3	40.7
5	44.2	45.8	41.5	44.8	46.8	44.4	44.0
6	43.6	42.7	42.5	32.7	46.1	44.8	44.1
7	42.2	42.1	42.2	33.6	43.9	42.9	43.3
8	40.4	41.2	40.9	33.9	42.3	41.3	41.8
9	39.7	41.2	41.1	32.9	41.7	40.9	40.9
10	39.3	39.2	39.5	29.7	36.4	38.3	29.6
11	38.6	38.9	15.9	15.7	15.2	26.6	19.3
12	39.4	39.8	33.2	34.4	40.5	32.8	38.9
13	38.9	39.6	39.8	38.5	41.2	39.6	38.7
14	40.4	39.7	40.0	40.0	40.0	40.1	39.8
15	40.4	40.4	40.3	40.4	40.3	39.8	40.5
16	41.3	40.5	41.0	40.9	41.8	41.4	39.8
17	40.9	41.8	40.6	41.3	42.2	41.6	41.1
18	42.2	42.4	41.6	41.5	42.0	42.4	41.6
19	41.9	41.2	41.5	42.2	41.9	42.0	42.3
20	42.3	42.1	42.2	41.7	41.8	42.0	42.4
21	41.3	41.1	41.6	40.7	41.3	42.4	42.5
22	40.6	40.9	39.9	40.7	40.1	42.2	41.1
23	41.7	42.6	40.9	40.5	41.4	42.4	40.3
24	41.2	40.7	41.4	40.1	43.3	46.2	41.4
10-12	39.0	39.3	24.8	25.5	28.7	29.6	29.1
14-16	40.8	40.4	40.7	40.6	40.9	40.6	40.1
0-24	40.4	40.6	38.4	36.3	38.8	39.1	38.2

7 Day Ave	38.8

85th Percentile

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
1	48.7	48.6	49.0	48.7	48.9	53.7	53.2
2	48.5	53.3	43.4	53.9	48.7	48.9	43.5
3	48.6	53.3	53.3	48.8	48.5	63.5	48.3
4	43.3	53.8	53.2	48.0	48.4	48.1	48.3
5	48.3	48.8	48.2	53.5	53.1	48.8	53.0
6	48.8	48.6	48.6	38.9	53.8	53.4	53.5
7	48.0	49.0	48.4	38.4	48.5	48.5	48.2
8	43.8	48.9	48.4	43.7	48.8	48.5	48.9
9	43.8	48.2	43.7	43.5	48.6	48.2	43.6
10	43.7	43.7	43.3	38.5	43.8	43.3	43.8
11	43.0	44.0	33.6	33.5	25.5	38.1	38.9
12	43.4	43.2	43.2	43.4	43.2	43.6	43.3
13	43.9	43.5	43.2	43.4	48.1	43.2	43.5
14	48.8	43.1	43.6	43.3	43.1	43.9	43.1
15	43.4	44.0	43.1	43.1	43.3	43.1	43.6
16	49.0	43.7	48.5	48.2	48.1	48.4	43.4
17	48.9	48.0	48.9	49.0	48.0	48.3	49.0
18	48.1	48.6	48.3	48.1	48.5	48.9	48.1
19	48.9	48.1	48.8	48.4	48.7	48.8	48.9
20	48.4	48.1	48.4	48.4	48.5	48.3	48.6
21	48.5	48.8	48.3	48.5	48.8	48.7	48.3
22	48.8	48.3	43.9	48.2	43.1	48.3	48.1
23	48.1	48.0	48.6	48.5	48.2	48.1	48.5
24	48.6	48.3	48.6	43.3	53.7	58.0	48.2
10-12	43.5	43.4	38.4	38.6	43.5	43.3	44.0
14-16	48.3	43.3	48.1	48.5	48.4	43.8	43.1
0-24	48.6	48.9	48.6	43.2	48.1	48.3	48.0

7 Day Ave	47.7

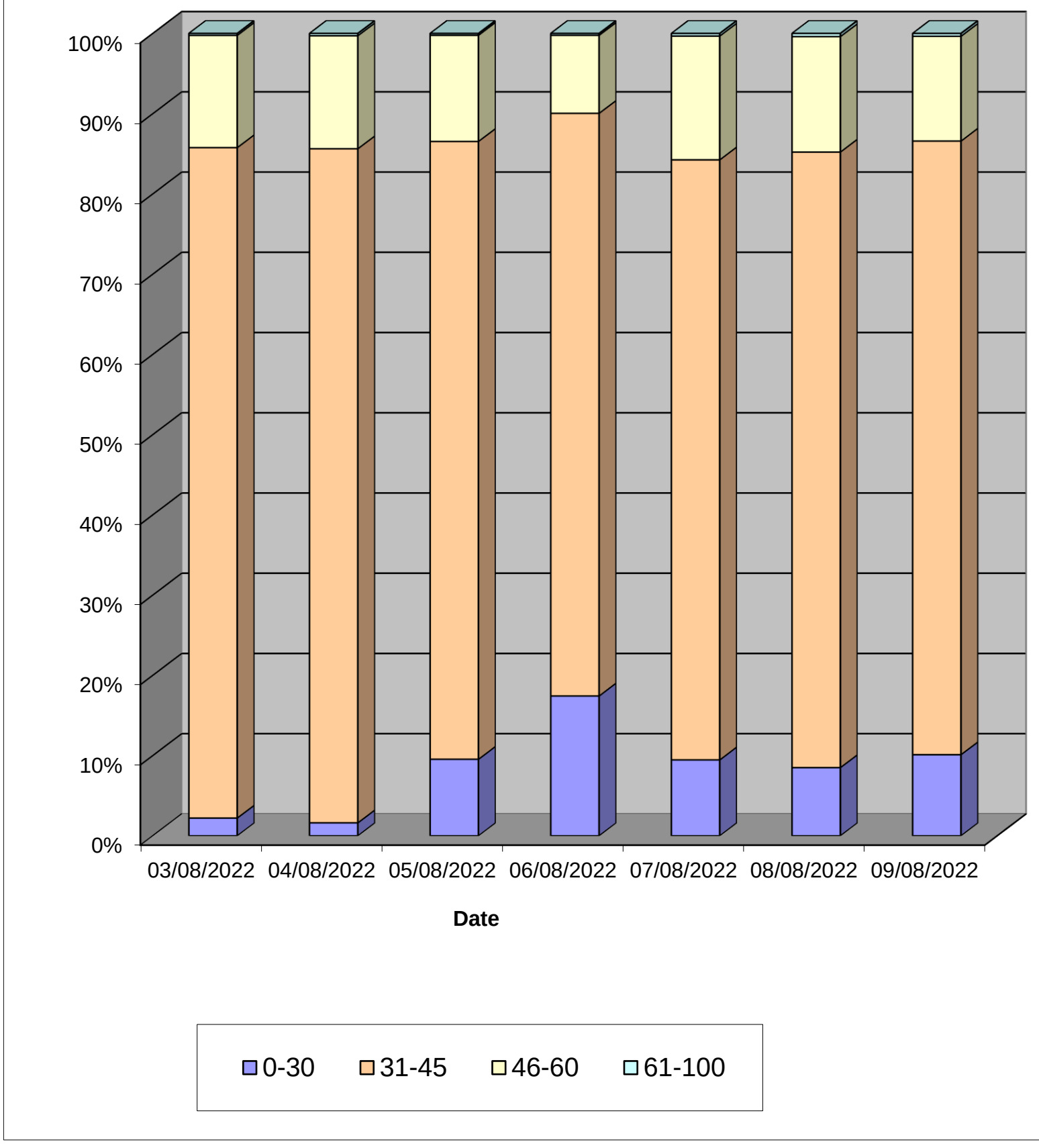
Tendring District, Essex ATC 11, B1033 Colchester Road

Produced by Streetwise Services Ltd.

Channel 1 - Eastbound **Speed Summary** **Week 1**

Speed (MPH)	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
0-30	184	135	809	1436	669	668	806
31-45	6965	7017	6530	5983	5289	6031	6097
46-60	1166	1176	1122	801	1091	1131	1041
61-100	20	24	19	19	23	31	28
TOTAL	**8335**	**8352**	**8480**	**8239**	**7072**	**7861**	**7972**

Speed Summary (MPH)



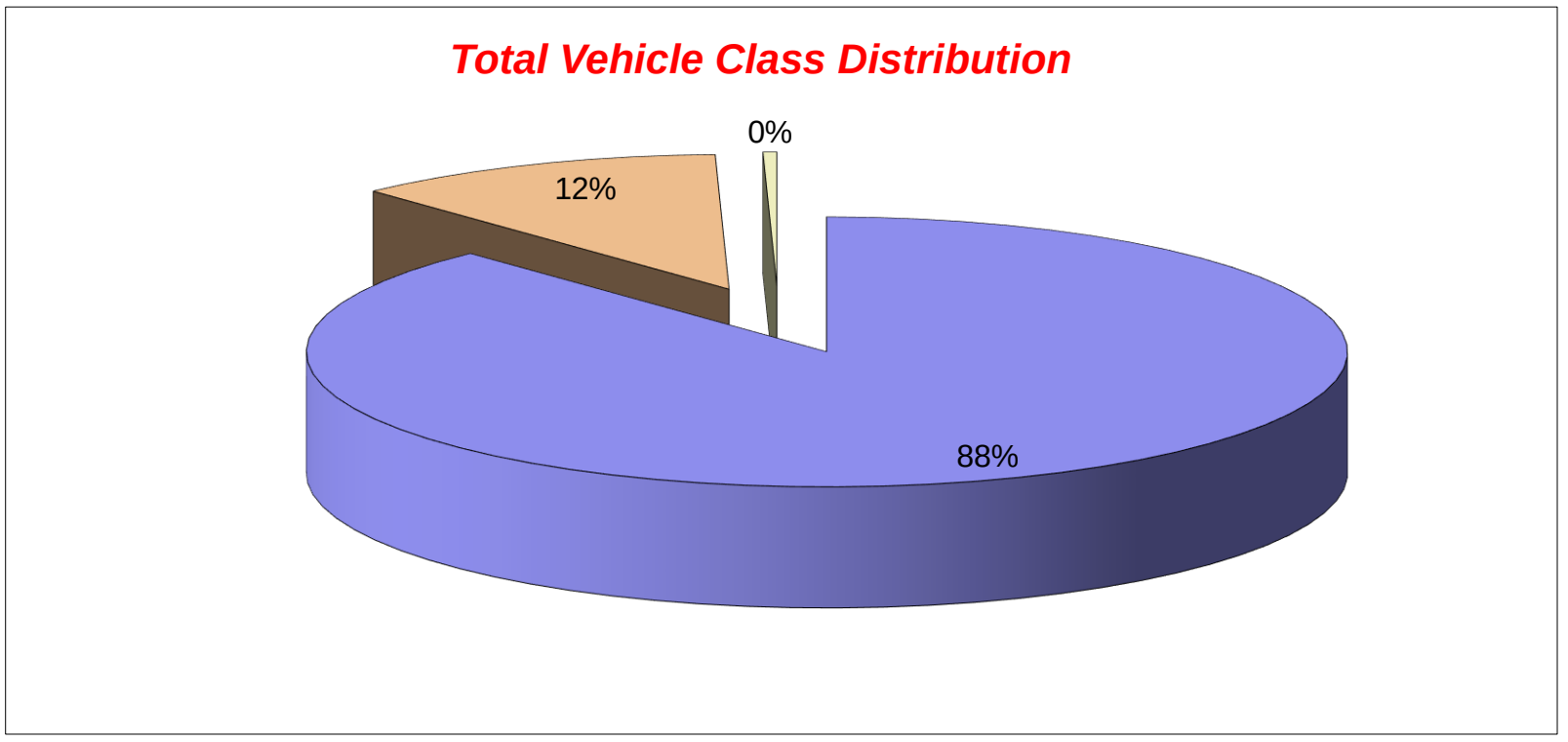
Tendring District, Essex ATC 11, B1033 Colchester Road

Produced by Streetwise Services Ltd.

Channel 1 - Eastbound **Vehicle Class** **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
03/08/2022				
7-19	6096	923	21	**7040**
6-22	6922	1014	29	**7965**
6-24	7123	1033	29	**8185**
0-24	7242	1062	31	**8335**
04/08/2022				
7-19	5972	978	33	**6983**
6-22	6877	1086	37	**8000**
6-24	7072	1110	37	**8219**
0-24	7170	1142	40	**8352**
05/08/2022				
7-19	6010	921	47	**6978**
6-22	6951	1042	49	**8042**
6-24	7216	1064	49	**8329**
0-24	7333	1098	49	**8480**
06/08/2022				
7-19	6149	485	23	**6657**
6-22	7086	588	24	**7698**
6-24	7387	606	25	**8018**
0-24	7569	645	25	**8239**
07/08/2022				
7-19	5451	389	13	**5853**
6-22	6226	445	14	**6685**
6-24	6390	463	14	**6867**
0-24	6570	488	14	**7072**
08/08/2022				
7-19	5740	918	36	**6694**
6-22	6488	1030	39	**7557**
6-24	6653	1039	39	**7731**
0-24	6759	1062	40	**7861**
09/08/2022				
7-19	5735	883	37	**6655**
6-22	6551	972	43	**7566**
6-24	6788	997	43	**7828**
0-24	6900	1029	43	**7972**

Average				
7-19	5879	785	30	**6694**
6-22	6729	882	34	**7645**
6-24	6947	902	34	**7882**
0-24	7078	932	35	**8044**



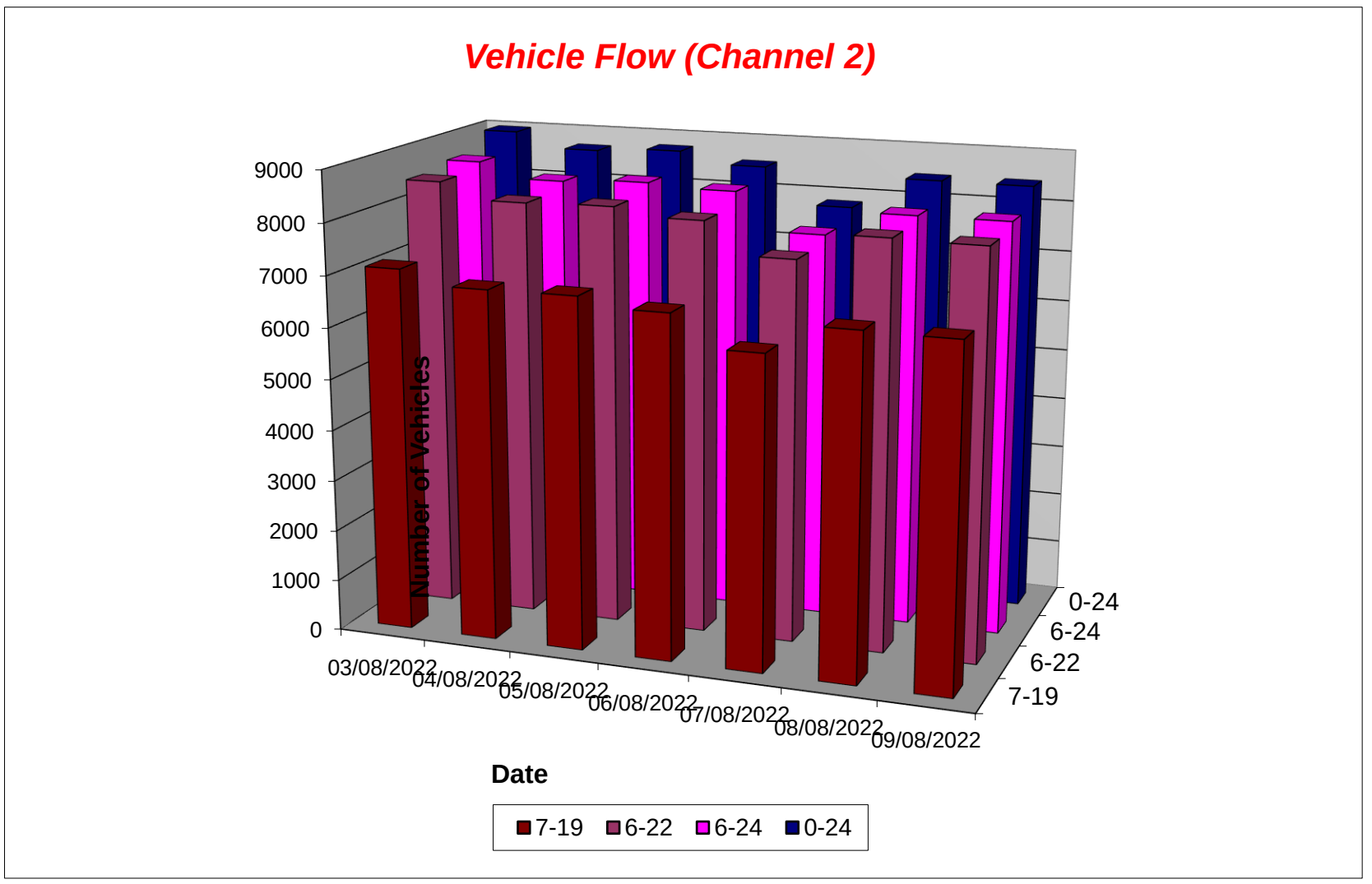
Tendring District, Essex ATC 11, B1033 Colchester Road

Produced by Streetwise Services Ltd.

Channel 2 - Westbound **Vehicle Flow** **Week 1**

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday	5 Day Ave	7 Day Ave
1	31	20	32	39	64	17	16	23	31
2	19	10	16	25	26	14	4	13	16
3	18	27	20	21	16	17	22	21	20
4	33	30	37	27	18	28	32	32	29
5	66	72	85	31	36	85	68	75	63
6	197	201	175	66	74	223	235	206	167
7	455	453	416	155	102	485	457	453	360
8	596	593	523	315	200	587	563	572	482
9	606	571	524	472	279	569	592	572	516
10	529	520	577	622	404	524	480	526	522
11	533	536	491	551	409	502	414	495	491
12	544	464	588	711	537	472	518	517	548
13	578	448	508	559	481	500	433	493	501
14	480	556	507	501	552	512	506	512	516
15	565	577	609	536	572	550	568	574	568
16	687	679	646	546	618	594	619	645	627
17	746	706	673	610	686	669	694	698	683
18	660	637	634	626	673	626	674	646	647
19	591	561	581	634	671	539	562	567	591
20	409	366	437	562	605	400	388	400	452
21	289	292	297	384	421	255	286	284	318
22	219	220	204	277	238	179	182	201	217
23	86	95	118	162	95	73	96	94	104
24	41	48	62	104	48	35	39	45	54

7-19	7115	6848	6861	6683	6082	6644	6623	6818	6694
6-22	8487	8179	8215	8061	7448	7963	7936	8156	8041
6-24	8614	8322	8395	8327	7591	8071	8071	8295	8199
0-24	8978	8682	8760	8536	7825	8455	8448	8665	8526



Tendring District, Essex ATC 11, B1033 Colchester Road

Produced by Streetwise Services Ltd.

Channel 2 - Westbound **Average Speed** **Week 1**

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
1	37.6	40.9	37.5	40.6	38.0	40.8	38.9
2	43.5	37.5	34.7	38.8	40.5	40.5	35.5
3	40.6	40.7	40.6	37.5	38.2	39.0	39.8
4	40.5	42.0	41.2	41.1	41.1	43.0	38.8
5	43.8	41.9	41.8	43.3	42.2	42.4	42.6
6	40.8	42.5	42.5	40.5	43.0	42.3	42.6
7	40.0	41.0	39.5	38.8	40.8	39.2	39.1
8	37.7	38.5	38.8	36.7	40.5	37.2	36.9
9	37.2	37.9	37.5	33.0	38.4	36.4	35.9
10	36.4	36.6	35.5	31.1	37.3	35.6	35.3
11	36.2	35.8	32.5	30.6	34.0	33.2	33.5
12	35.2	36.1	34.5	32.3	35.9	34.6	34.5
13	35.5	36.9	35.6	34.8	35.8	35.2	35.8
14	35.8	35.1	35.9	35.0	35.6	36.0	35.5
15	36.1	36.6	34.7	36.2	35.8	35.6	35.4
16	34.7	33.9	33.9	34.8	35.3	35.4	35.5
17	23.7	33.5	34.0	35.2	34.1	35.3	33.4
18	31.8	33.9	34.2	34.6	35.3	35.3	34.3
19	35.4	35.3	36.0	35.7	35.3	35.7	36.2
20	37.3	37.0	35.8	34.8	35.2	36.1	35.7
21	36.8	36.3	35.9	35.4	35.1	36.2	37.1
22	36.0	35.6	35.5	33.5	36.4	36.4	35.4
23	36.1	37.5	37.0	35.6	37.4	37.4	37.3
24	36.9	40.3	38.0	36.4	38.7	38.2	38.4
10-12	35.7	36.0	33.6	31.6	35.1	33.9	34.1
14-16	35.3	35.2	34.3	35.5	35.5	35.5	35.4
0-24	35.2	36.4	35.8	34.4	35.9	36.1	35.8
						7 Day Ave	35.7

85th Percentile

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
1	43.3	48.3	43.7	48.6	43.2	53.6	43.8
2	48.5	43.3	43.5	43.3	48.2	48.8	43.3
3	48.9	48.2	48.6	43.1	43.3	48.5	48.7
4	48.5	48.5	48.2	53.2	48.8	48.2	43.4
5	48.4	48.2	48.5	48.1	48.1	48.9	53.8
6	48.8	48.6	48.7	48.4	48.5	48.4	48.7
7	43.8	48.4	43.8	44.0	43.8	43.3	43.4
8	43.7	43.9	43.4	43.5	43.8	43.8	43.1
9	43.7	43.5	43.9	38.5	43.3	43.2	43.4
10	44.0	43.2	38.7	39.0	44.0	43.4	38.3
11	43.3	43.7	38.1	38.2	38.8	38.2	38.7
12	38.5	38.7	38.6	38.4	38.7	38.9	38.3
13	38.4	43.6	38.7	38.4	38.9	38.6	43.8
14	43.7	38.8	38.0	43.3	43.9	43.4	38.2
15	43.2	43.2	38.4	43.5	43.4	43.4	38.6
16	38.4	38.8	38.4	38.1	38.1	43.9	44.0
17	33.5	38.2	38.3	38.5	39.0	38.6	38.2
18	38.8	39.0	39.0	39.0	43.8	38.9	38.9
19	38.5	38.1	38.8	43.6	38.7	38.5	43.1
20	43.4	43.1	43.7	38.9	38.4	43.3	44.0
21	43.5	43.8	43.4	38.7	38.0	43.9	43.6
22	38.2	38.4	38.7	38.4	38.2	38.3	43.6
23	38.6	43.5	43.3	38.7	43.2	43.3	48.9
24	43.5	48.1	43.4	43.1	48.5	43.2	43.6
10-12	38.7	43.1	38.4	38.8	38.4	38.3	38.2
14-16	38.9	38.2	38.9	43.7	38.1	43.0	43.9
0-24	43.4	43.0	43.1	38.5	43.3	43.7	43.1
						7 Day Ave	42.6

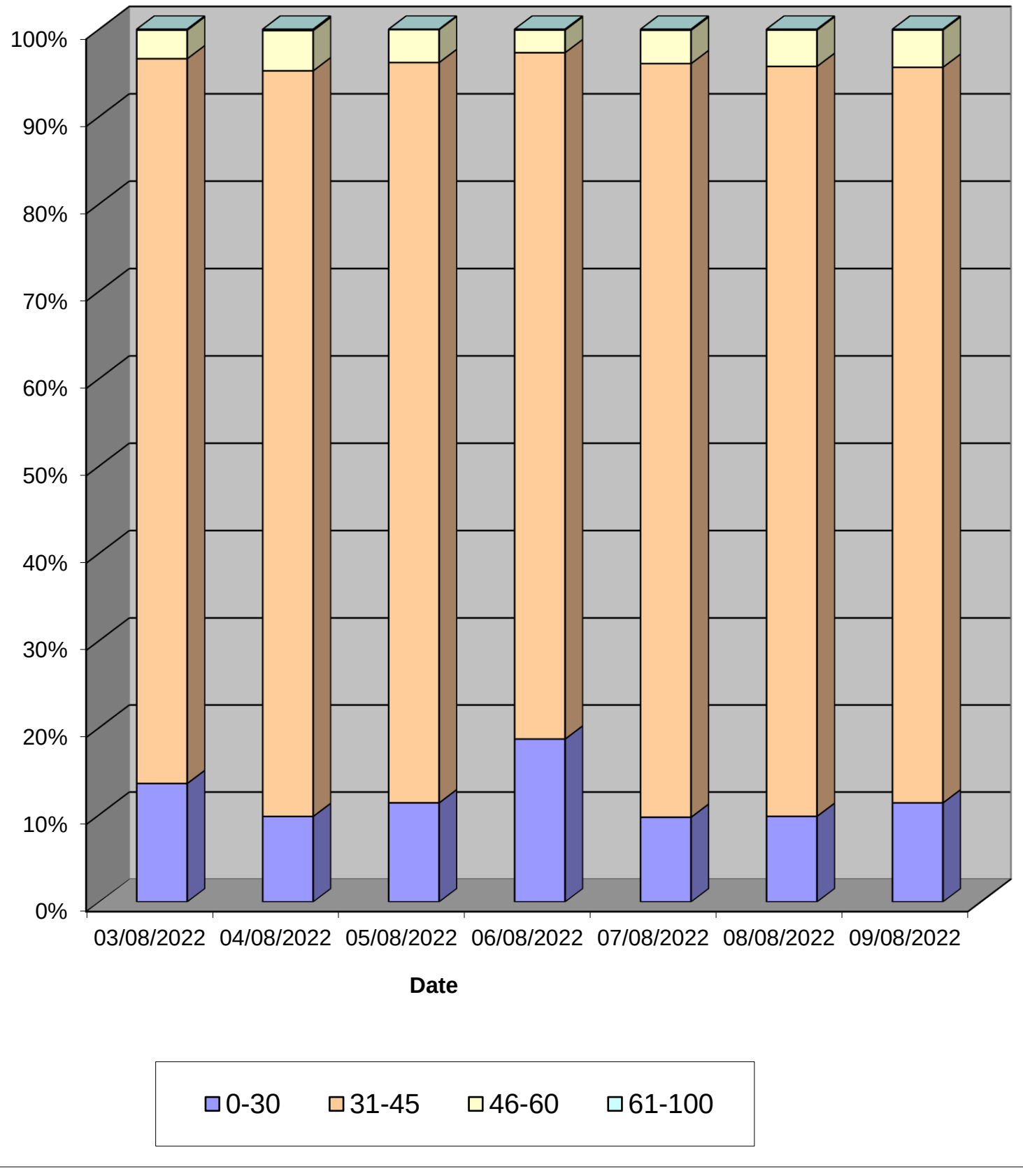
Tendring District, Essex ATC 11, B1033 Colchester Road

Produced by Streetwise Services Ltd.

Channel 2 - Westbound **Speed Summary** **Week 1**

Speed (MPH)	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
0-30	1221	852	997	1597	761	831	961
31-45	7455	7418	7430	6711	6757	7265	7120
46-60	294	400	330	221	299	352	360
61-100	8	12	3	7	8	7	7
TOTAL	**8978**	**8682**	**8760**	**8536**	**7825**	**8455**	**8448**

Speed Summary (MPH)



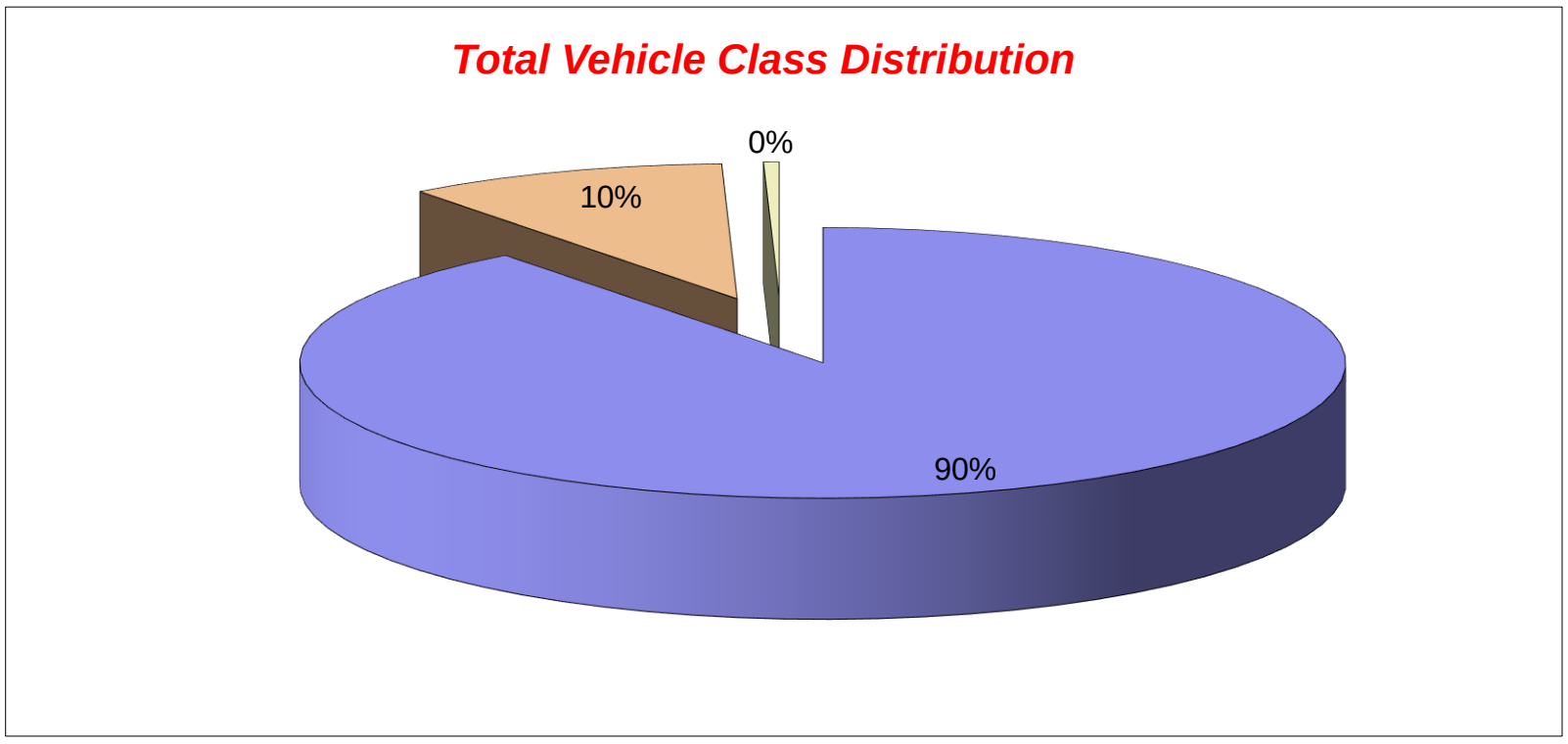
Tendring District, Essex ATC 11, B1033 Colchester Road

Produced by Streetwise Services Ltd.

Channel 2 - Westbound **Vehicle Class** **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
03/08/2022				
7-19	6234	833	48	**7115**
6-22	7463	970	54	**8487**
6-24	7583	977	54	**8614**
0-24	7882	1042	54	**8978**
04/08/2022				
7-19	6020	789	39	**6848**
6-22	7214	923	42	**8179**
6-24	7346	934	42	**8322**
0-24	7629	1010	43	**8682**
05/08/2022				
7-19	6100	717	44	**6861**
6-22	7323	842	50	**8215**
6-24	7493	851	51	**8395**
0-24	7790	918	52	**8760**
06/08/2022				
7-19	6260	407	16	**6683**
6-22	7545	492	24	**8061**
6-24	7799	504	24	**8327**
0-24	7972	539	25	**8536**
07/08/2022				
7-19	5742	320	20	**6082**
6-22	7039	386	23	**7448**
6-24	7175	392	24	**7591**
0-24	7380	420	25	**7825**
08/08/2022				
7-19	5784	821	39	**6644**
6-22	6956	966	41	**7963**
6-24	7063	967	41	**8071**
0-24	7375	1035	45	**8455**
09/08/2022				
7-19	5852	733	38	**6623**
6-22	7029	867	40	**7936**
6-24	7150	881	40	**8071**
0-24	7451	956	41	**8448**

Average				
7-19	5999	660	35	**6694**
6-22	7224	778	39	**8041**
6-24	7373	787	39	**8199**
0-24	7640	846	41	**8526**



Tendring District, Essex ATC 11, B1033 Colchester Road

Produced by Streetwise Services Ltd.

Channel 1 - Eastbound

	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday	5-DAY MEAN	7-DAY MEAN
0000-2400 Vehicle Flow	8335	8352	8480	8239	7072	7861	7972	**8200**	**8044**
Mean Speed	40.4	40.6	38.4	36.3	38.8	39.1	38.2	**39.3**	**38.8**
85%ile Speed	48.6	48.9	48.6	43.2	48.1	48.3	48.0	**48.5**	**47.7**
No. Vehicles > 60 MPH Limit	20	24	19	19	23	31	28	**24**	**23**
% Vehicles > 60 MPH Limit	0.2	0.3	0.2	0.2	0.3	0.4	0.4	**0.3**	**0.3**
No. Vehicles > 75 MPH	1	0	1	0	1	0	0	**0**	**0**
% Vehicles > 75 MPH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**

Channel 2 - Westbound

	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday	5-DAY MEAN	7-DAY MEAN
0000-2400 Vehicle Flow	8978	8682	8760	8536	7825	8455	8448	**8665**	**8526**
Mean Speed	35.2	36.4	35.8	34.4	35.9	36.1	35.8	**35.9**	**35.7**
85%ile Speed	43.4	43.0	43.1	38.5	43.3	43.7	43.1	**43.3**	**42.6**
No. Vehicles > 60 MPH Limit	8	12	3	7	8	7	7	**7**	**7**
% Vehicles > 60 MPH Limit	0.1	0.1	0.0	0.1	0.1	0.1	0.1	**0.1**	**0.1**
No. Vehicles > 75 MPH	1	0	0	0	0	0	0	**0**	**0**
% Vehicles > 75 MPH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**

Channels 1+2 - Eastbound & Westbound

	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday	5-DAY MEAN	7-DAY MEAN
0000-2400 Vehicle Flow	17313	17034	17240	16775	14897	16316	16420	**16865**	**16571**
Mean Speed	37.8	38.5	37.1	35.4	37.4	37.6	37.0	**37.6**	**37.2**
85%ile Speed	46.0	46.0	45.8	40.9	45.7	46.0	45.5	**45.9**	**45.1**
No. Vehicles > 60 MPH Limit	28	36	22	26	31	38	35	**32**	**31**
% Vehicles > 60 MPH Limit	0.2	0.2	0.1	0.2	0.2	0.2	0.2	**0.2**	**0.2**
No. Vehicles > 75 MPH	2	0	1	0	1	0	0	**1**	**1**
% Vehicles > 75 MPH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**

Class No	Vehicle Description	Class No	Vehicle Description
1	Car, Light Van Taxi	5	Rigid 2 Axle HGV + 2 Axle (Close coupled) Trailer
1	Light Goods Vehicle	6	Rigid 3 Axle HGV + 2 Axle Drawbar Trailer
1	Car or Light Goods Vehicle + 1 Axle Caravan or Trailer	6	Rigid 3 Axle HGV + 3 Axle Drawbar Trailer
1	Car or Light Goods Vehicle + 2 Axle Caravan or Trailer	7	Artic, 2 Axle Tractor + 1 Axle Semi-Trailer
2	Rigid 2 Axle Heavy Goods Vehicle	8	Artic, 2 Axle Tractor + 2 Axle Semi-Trailer
3	Rigid 3 Axle Heavy Goods Vehicle	9	Artic, 2 Axle Tractor + 3 Axle Semi-Trailer
3	Rigid 3 Axle Heavy Goods Vehicle	10	Artic, 3 Axle Tractor + 1 Axle Semi-Trailer
4	Rigid 4 Axle Heavy Goods Vehicle	10	Artic, 3 Axle Tractor + 2 Axle Semi-Trailer
4	Rigid 4 Axle Heavy Goods Vehicle	11	Artic, 3 Axle Tractor + 3 Axle Semi-Trailer
5	Rigid 2 Axle HGV + 2 Axle Drawbar Trailer	12	Bus or Coach, 2 Axle
5	Rigid 2 Axle HGV + 3 Axle Drawbar Trailer	12	Bus or Coach, 3 Axle
5	Rigid 2 Axle HGV + 1 Axle Caravan or Trailer	13	Vehicle with 7 or more Axles

Site 13 – B1441 Clacton Road

(ATC 10)

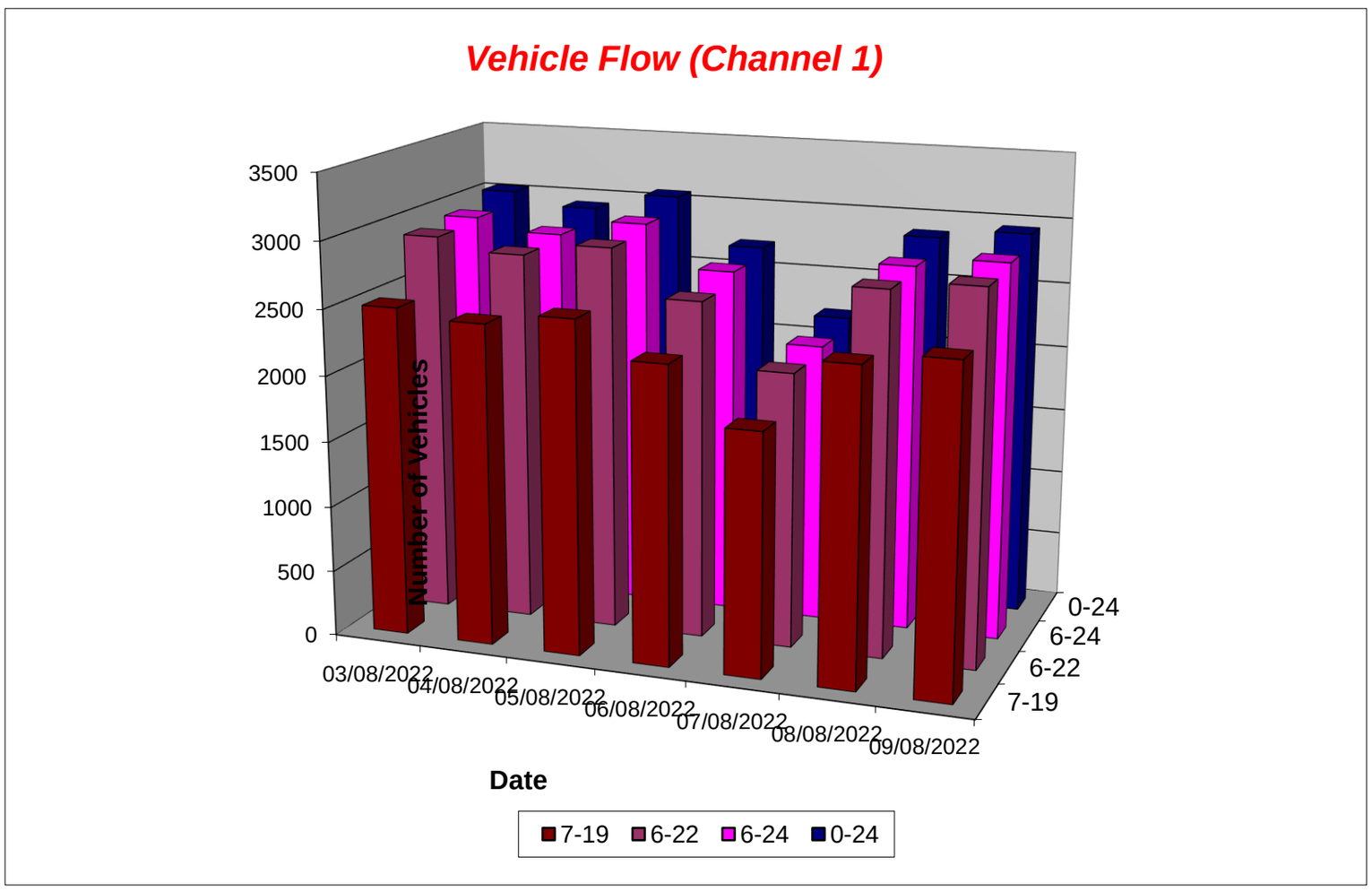
Tendring District, Essex ATC 10, B1441 Clacton Road

Produced by Streetwise Services Ltd.

Channel 1 - Northbound **Vehicle Flow** **Week 1**

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday	5 Day Ave	7 Day Ave
1	9	8	10	15	23	3	3	7	10
2	8	3	5	8	8	3	0	4	5
3	5	11	7	4	5	5	3	6	6
4	3	9	7	7	7	6	8	7	7
5	15	12	17	8	9	15	15	15	13
6	53	45	51	16	20	57	58	53	43
7	140	127	124	51	23	141	133	133	106
8	211	209	183	128	56	257	217	215	180
9	236	212	215	173	85	238	234	227	199
10	193	221	230	208	151	201	210	211	202
11	210	215	231	247	187	204	199	212	213
12	226	197	207	233	209	178	204	202	208
13	226	211	227	235	192	196	205	213	213
14	224	177	224	215	206	186	180	198	202
15	187	191	206	184	153	183	203	194	187
16	205	199	205	178	123	206	190	201	187
17	237	234	225	152	147	189	233	224	202
18	183	205	215	140	159	199	213	203	188
19	166	168	161	166	169	136	176	161	163
20	114	111	138	107	101	118	99	116	113
21	85	72	77	81	82	81	82	79	80
22	62	64	44	66	46	42	45	51	53
23	18	24	29	52	32	24	24	24	29
24	12	8	28	34	10	8	14	14	16

7-19	2504	2439	2529	2259	1837	2373	2464	2462	2344
6-22	2905	2813	2912	2564	2089	2755	2823	2842	2694
6-24	2935	2845	2969	2650	2131	2787	2861	2879	2740
0-24	3028	2933	3066	2708	2203	2876	2948	2970	2823



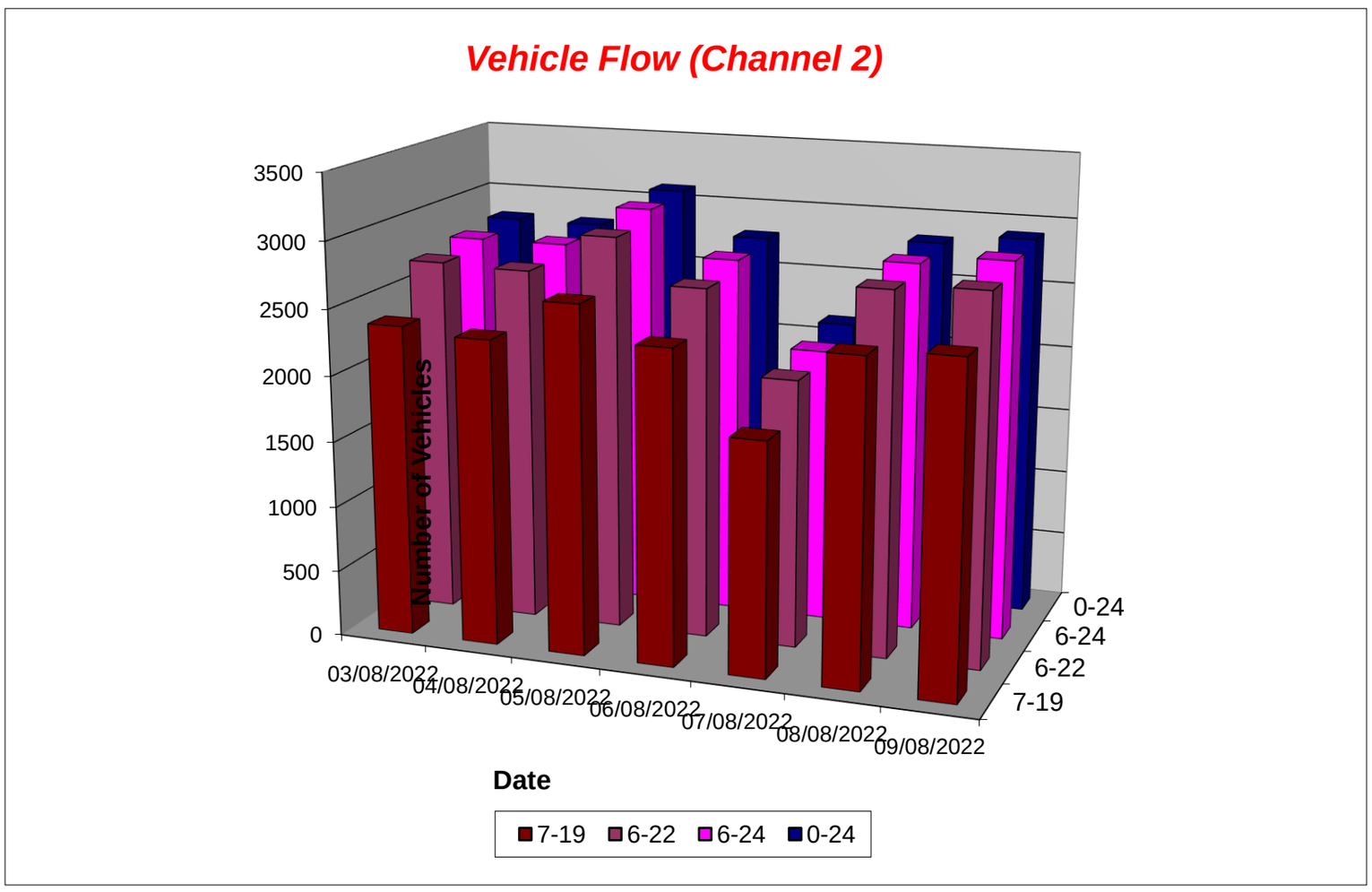
Tendring District, Essex ATC 10, B1441 Clacton Road

Produced by Streetwise Services Ltd.

Channel 2 - Southbound **Vehicle Flow** **Week 1**

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday	5 Day Ave	7 Day Ave
1	14	6	9	12	20	3	11	9	11
2	4	5	4	6	11	3	2	4	5
3	2	2	2	6	3	2	1	2	3
4	1	2	4	6	9	4	7	4	5
5	6	7	2	2	5	2	4	4	4
6	14	12	8	10	8	11	7	10	10
7	34	48	46	24	17	51	45	45	38
8	132	117	114	99	48	146	134	129	113
9	154	151	163	131	75	154	156	156	141
10	162	183	180	230	145	156	188	174	178
11	165	167	226	277	179	225	227	202	209
12	195	175	240	315	191	188	183	196	212
13	211	178	236	268	176	212	181	204	209
14	219	185	234	182	164	202	198	208	198
15	204	222	215	189	216	224	225	218	214
16	203	214	256	183	138	201	236	222	204
17	277	234	269	180	188	249	274	261	239
18	250	276	279	197	142	283	286	275	245
19	195	219	225	124	108	195	196	206	180
20	135	153	136	115	105	118	106	130	124
21	100	106	103	80	83	95	90	99	94
22	72	64	68	65	61	53	70	65	65
23	35	51	56	37	42	38	47	45	44
24	23	24	35	43	15	18	32	26	27

7-19	2367	2321	2637	2375	1770	2435	2484	2449	2341
6-22	2708	2692	2990	2659	2036	2752	2795	2787	2662
6-24	2766	2767	3081	2739	2093	2808	2874	2859	2733
0-24	2807	2801	3110	2781	2149	2833	2906	2891	2770



Tendring District, Essex ATC 10, B1441 Clacton Road

Produced by Streetwise Services Ltd.

Channel 1 - Northbound **Average Speed** **Week 1**

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
1	39.1	36.8	34.5	37.3	39.3	34.7	38.0
2	43.9	38.0	42.5	39.2	39.2	38.0	-
3	41.0	42.5	35.9	44.9	38.0	36.0	36.3
4	42.2	39.1	40.5	35.9	44.8	37.2	37.4
5	40.3	39.2	41.4	38.0	42.7	41.0	41.2
6	39.3	40.8	39.6	38.5	38.9	39.1	40.4
7	36.5	37.6	37.2	37.6	37.6	38.2	37.5
8	36.0	35.6	36.1	35.5	36.5	35.4	35.1
9	33.5	34.7	34.6	35.3	34.7	34.4	33.9
10	33.6	34.1	33.0	34.7	35.3	33.8	34.5
11	32.7	33.6	32.9	32.8	33.9	34.2	34.2
12	32.6	32.6	33.0	33.8	34.8	28.8	32.6
13	34.1	28.9	33.6	34.4	33.5	33.8	33.7
14	33.4	33.9	33.5	33.2	34.4	34.4	33.2
15	33.3	33.2	33.1	33.6	34.7	32.8	33.3
16	35.5	35.0	34.4	35.2	36.0	34.4	33.7
17	34.2	34.0	34.8	34.7	35.0	35.3	34.1
18	34.5	34.5	34.7	35.8	35.0	35.9	34.9
19	35.0	35.0	34.8	34.7	35.9	35.7	34.9
20	35.4	35.6	35.8	34.8	37.0	36.0	35.8
21	34.4	36.8	37.1	34.7	35.9	35.7	35.5
22	35.5	35.6	36.1	33.8	34.9	36.2	37.7
23	35.8	35.9	37.8	35.8	35.6	37.7	38.2
24	37.0	39.2	36.4	36.5	46.8	34.2	39.2
10-12	32.7	33.1	33.0	33.3	34.4	31.7	33.4
14-16	34.5	34.1	33.8	34.4	35.3	33.6	33.5
0-24	34.4	34.3	34.5	34.6	35.2	34.6	34.6
						7 Day Ave	34.6

85th Percentile

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
1	43.7	48.6	39.0	43.7	43.9	43.7	43.2
2	48.5	43.3	55.9	43.9	48.7	38.9	-
3	48.6	48.3	43.3	56.3	48.5	38.5	43.5
4	55.8	43.8	55.7	43.0	55.9	48.1	38.3
5	55.8	43.8	48.2	43.5	48.1	43.8	48.3
6	43.8	56.1	43.6	43.9	43.8	43.4	48.0
7	43.0	44.0	43.4	43.4	43.5	43.5	43.5
8	38.8	38.9	43.4	43.7	43.8	38.5	38.2
9	38.8	38.2	38.7	38.5	38.6	38.2	38.9
10	38.7	38.7	38.3	38.5	38.8	38.3	38.6
11	38.0	39.0	38.6	38.5	38.0	38.1	38.8
12	38.4	38.2	38.2	38.4	38.2	38.6	38.9
13	38.9	38.5	38.2	38.4	38.1	38.2	38.3
14	38.8	38.1	38.6	38.3	38.1	38.9	38.5
15	38.4	39.0	38.1	38.1	38.3	38.1	38.1
16	39.0	38.7	38.5	38.2	43.1	38.4	38.6
17	38.9	38.0	38.9	44.0	43.0	38.3	38.4
18	38.1	38.6	38.3	43.1	38.5	38.9	39.0
19	43.9	38.1	38.8	38.4	38.7	43.8	38.1
20	38.4	43.1	43.4	38.4	43.5	43.3	43.9
21	38.5	43.8	43.3	43.5	43.8	43.7	43.6
22	43.8	43.3	43.9	38.2	38.1	38.3	43.3
23	43.1	43.0	43.6	43.5	43.2	38.1	43.1
24	48.6	43.3	43.6	43.3	48.7	38.0	43.5
10-12	38.5	38.4	38.4	38.6	38.5	38.3	38.2
14-16	38.3	38.3	38.1	38.5	38.4	38.8	39.0
0-24	38.6	38.9	38.6	38.2	38.1	38.3	38.1
						7 Day Ave	38.4

Tendring District, Essex ATC 10, B1441 Clacton Road

Produced by Streetwise Services Ltd.

Channel 2 - Southbound **Average Speed** **Week 1**

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
1	38.7	34.7	37.4	35.9	38.9	33.0	36.6
2	39.2	46.5	34.2	40.9	39.6	38.0	35.5
3	40.5	51.8	46.8	38.4	43.8	45.5	28.0
4	33.0	44.2	38.0	45.1	45.2	38.0	35.9
5	39.2	39.4	35.5	51.8	37.0	38.0	45.5
6	36.2	36.8	37.7	37.5	38.0	39.1	36.9
7	34.6	35.5	35.6	35.3	35.9	38.0	35.8
8	34.0	35.4	35.0	35.3	34.8	35.2	34.5
9	31.7	33.7	34.3	33.2	34.0	33.3	33.2
10	33.3	33.0	31.8	31.2	33.5	31.8	31.7
11	32.7	31.5	32.2	31.2	33.3	32.1	31.5
12	31.6	31.6	31.8	31.3	32.8	31.8	32.6
13	31.5	30.4	33.0	32.1	33.1	32.7	31.9
14	32.6	32.8	31.8	32.8	33.3	32.6	32.8
15	33.7	34.2	33.0	33.1	33.7	32.7	32.6
16	34.5	34.0	33.3	34.2	34.3	33.8	33.0
17	33.3	33.7	33.7	33.7	34.7	34.4	33.0
18	33.2	34.5	33.5	33.9	33.4	34.6	33.8
19	34.7	34.5	34.8	34.0	35.2	35.5	34.6
20	34.8	34.8	34.7	34.4	37.1	36.2	35.4
21	34.0	35.3	35.3	35.2	34.0	34.2	35.8
22	36.1	36.7	34.0	34.2	34.3	34.6	35.8
23	34.9	34.6	36.9	34.1	37.2	34.6	38.4
24	36.5	37.7	35.6	35.0	36.0	38.3	35.9
10-12	32.1	31.6	32.0	31.3	33.1	31.9	32.0
14-16	34.1	34.1	33.1	33.6	33.9	33.2	32.8
0-24	33.4	33.7	33.4	33.0	34.2	33.7	33.4

7 Day Ave	33.5

85th Percentile

Hr Ending	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
1	48.0	48.4	43.0	38.1	43.5	38.3	43.7
2	43.3	65.8	38.7	56.1	48.2	43.6	38.8
3	43.5	55.8	56.0	55.8	55.7	48.8	28.3
4	33.9	55.7	48.6	65.6	55.8	48.5	38.7
5	56.0	48.5	43.2	55.7	43.8	48.2	48.4
6	38.4	43.2	38.5	43.1	43.1	48.9	56.3
7	43.8	43.6	43.7	43.4	43.5	48.4	43.7
8	38.8	43.4	43.8	44.0	43.8	43.3	43.4
9	38.7	38.9	38.4	38.5	38.8	38.8	38.1
10	38.7	38.5	38.9	38.5	38.3	38.2	38.4
11	39.0	33.2	38.7	39.0	39.0	38.4	38.3
12	38.3	38.7	38.1	38.2	38.8	38.2	38.7
13	38.5	38.7	38.6	38.4	38.7	38.9	38.3
14	38.4	38.6	38.7	38.4	38.9	38.6	38.8
15	38.7	43.8	38.0	38.3	38.9	38.4	38.2
16	43.2	43.2	38.4	38.5	38.4	38.4	38.6
17	38.4	38.8	38.4	38.1	38.1	38.9	39.0
18	38.5	38.2	38.3	38.5	39.0	38.6	38.2
19	43.8	44.0	44.0	39.0	43.8	43.9	43.9
20	43.5	43.1	43.8	43.6	43.7	43.5	43.1
21	38.4	43.1	43.7	43.9	43.4	38.3	44.0
22	43.5	43.8	38.4	38.7	38.0	43.9	43.6
23	43.2	43.4	48.7	38.4	48.2	43.3	43.6
24	43.6	43.5	43.3	43.7	43.2	43.3	43.9
10-12	38.5	38.1	38.4	38.1	38.5	38.2	38.6
14-16	38.7	43.1	38.4	38.8	38.4	38.3	38.2
0-24	38.9	38.2	38.9	38.7	38.1	38.0	38.9

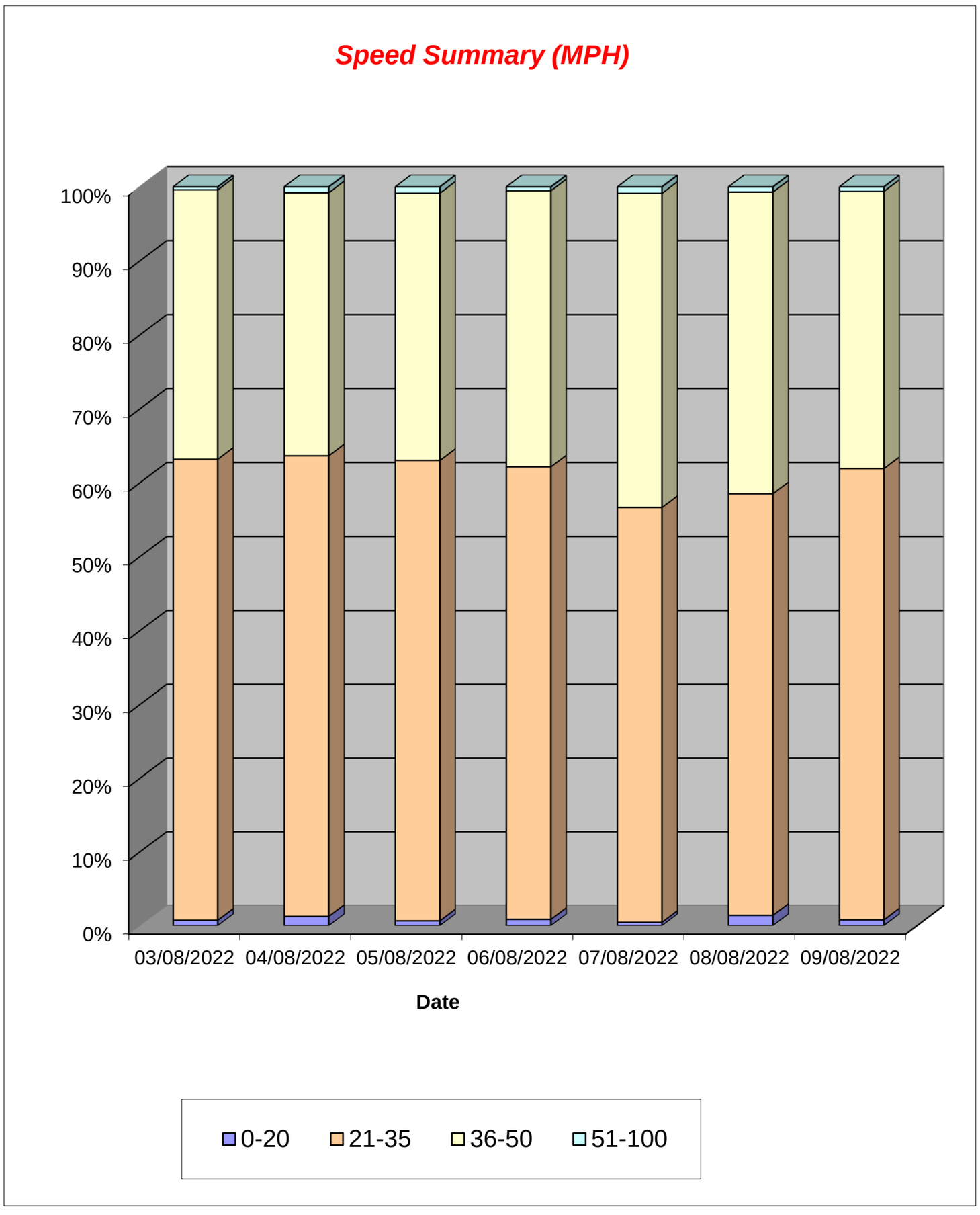
7 Day Ave	38.5

Tendring District, Essex ATC 10, B1441 Clacton Road

Produced by Streetwise Services Ltd.

Channel 1 - Northbound **Speed Summary** **Week 1**

Speed (MPH)	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
0-20	22	37	20	23	10	40	23
21-35	1891	1830	1912	1660	1238	1643	1802
36-50	1103	1043	1108	1011	936	1173	1105
51-100	12	23	26	14	19	20	18
TOTAL	**3028**	**2933**	**3066**	**2708**	**2203**	**2876**	**2948**



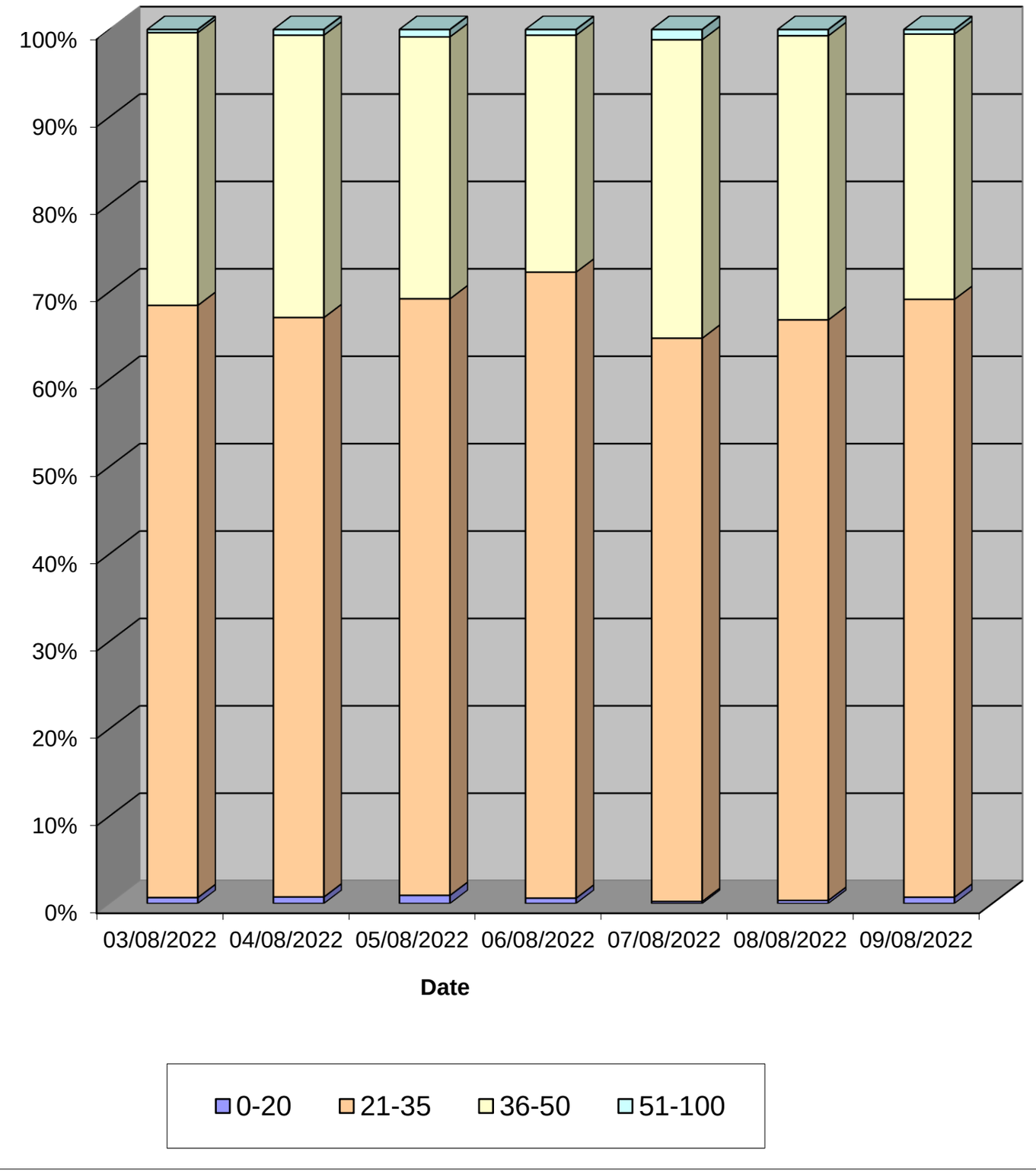
Tendring District, Essex ATC 10, B1441 Clacton Road

Produced by Streetwise Services Ltd.

Channel 2 - Southbound **Speed Summary** **Week 1**

Speed (MPH)	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday
0-20	19	21	29	17	5	10	21
21-35	1902	1857	2123	1992	1385	1882	1988
36-50	876	905	932	754	734	921	882
51-100	10	18	26	18	25	20	15
TOTAL	**2807**	**2801**	**3110**	**2781**	**2149**	**2833**	**2906**

Speed Summary (MPH)



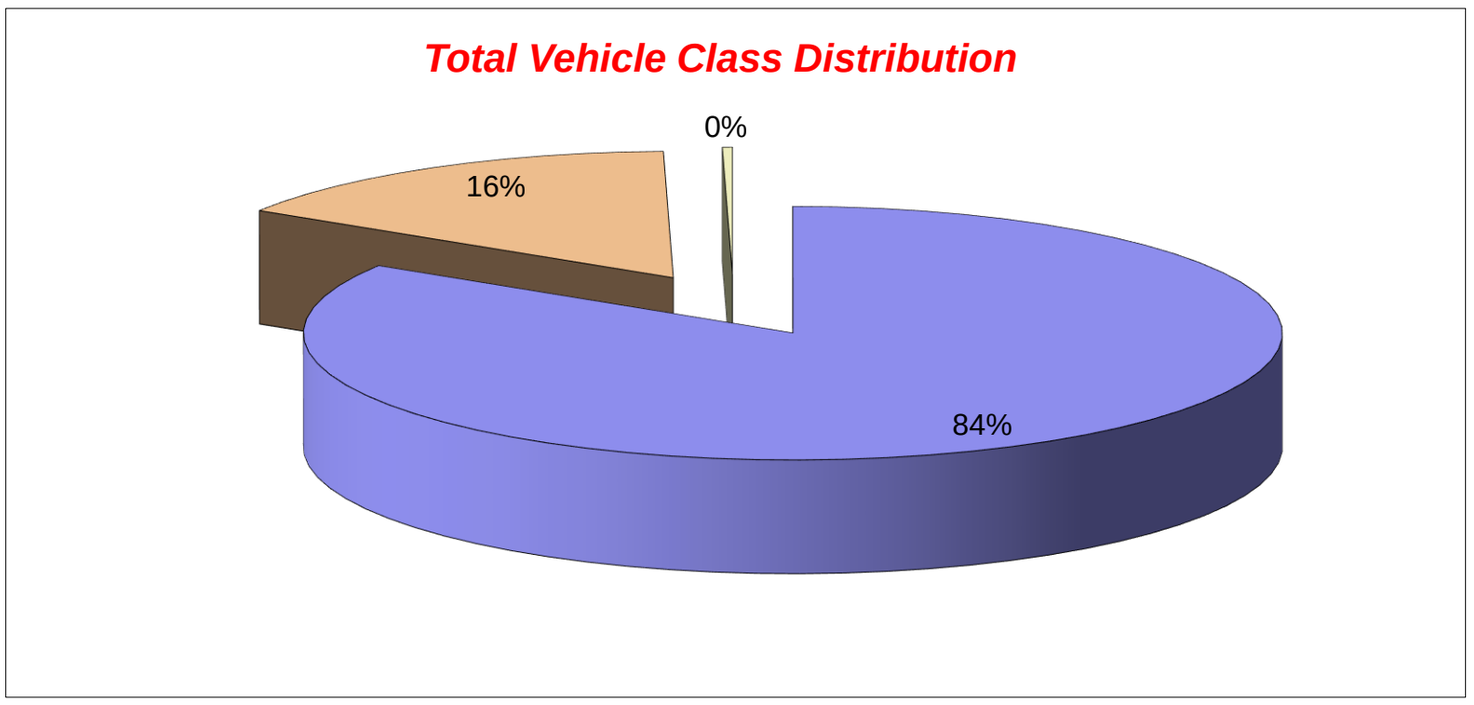
Tendring District, Essex ATC 10, B1441 Clacton Road

Produced by Streetwise Services Ltd.

Channel 1 - Northbound **Vehicle Class** **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
03/08/2022				
7-19	2044	453	7	**2504**
6-22	2367	529	9	**2905**
6-24	2396	530	9	**2935**
0-24	2465	551	12	**3028**
04/08/2022				
7-19	1991	440	8	**2439**
6-22	2304	501	8	**2813**
6-24	2334	503	8	**2845**
0-24	2400	523	10	**2933**
05/08/2022				
7-19	2089	431	9	**2529**
6-22	2404	499	9	**2912**
6-24	2458	502	9	**2969**
0-24	2532	523	11	**3066**
06/08/2022				
7-19	2009	243	7	**2259**
6-22	2282	274	8	**2564**
6-24	2362	280	8	**2650**
0-24	2405	294	9	**2708**
07/08/2022				
7-19	1670	166	1	**1837**
6-22	1895	193	1	**2089**
6-24	1932	198	1	**2131**
0-24	1996	206	1	**2203**
08/08/2022				
7-19	1933	436	4	**2373**
6-22	2256	494	5	**2755**
6-24	2285	497	5	**2787**
0-24	2350	517	9	**2876**
09/08/2022				
7-19	2038	420	6	**2464**
6-22	2340	472	11	**2823**
6-24	2373	477	11	**2861**
0-24	2436	499	13	**2948**

Average				
7-19	1968	370	6	**2344**
6-22	2264	423	7	**2694**
6-24	2306	427	7	**2740**
0-24	2369	445	9	**2823**



Tendring District, Essex ATC 10, B1441 Clacton Road

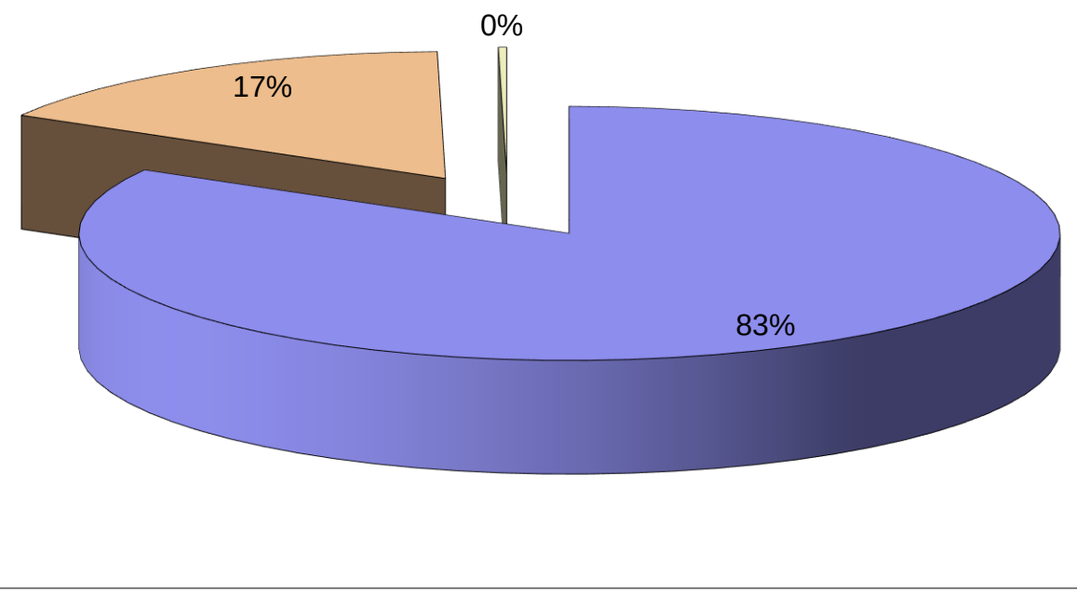
Produced by Streetwise Services Ltd.

Channel 2 - Southbound **Vehicle Class** **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
03/08/2022				
7-19	1920	442	5	**2367**
6-22	2209	492	7	**2708**
6-24	2264	495	7	**2766**
0-24	2298	502	7	**2807**
04/08/2022				
7-19	1861	452	8	**2321**
6-22	2181	502	9	**2692**
6-24	2244	514	9	**2767**
0-24	2273	519	9	**2801**
05/08/2022				
7-19	2114	514	9	**2637**
6-22	2412	569	9	**2990**
6-24	2493	579	9	**3081**
0-24	2516	585	9	**3110**
06/08/2022				
7-19	2080	285	10	**2375**
6-22	2331	318	10	**2659**
6-24	2409	320	10	**2739**
0-24	2445	326	10	**2781**
07/08/2022				
7-19	1581	186	3	**1770**
6-22	1819	214	3	**2036**
6-24	1868	222	3	**2093**
0-24	1919	227	3	**2149**
08/08/2022				
7-19	2008	422	5	**2435**
6-22	2270	476	6	**2752**
6-24	2322	480	6	**2808**
0-24	2341	486	6	**2833**
09/08/2022				
7-19	2001	477	6	**2484**
6-22	2264	522	9	**2795**
6-24	2333	532	9	**2874**
0-24	2359	538	9	**2906**

Average				
7-19	1938	397	7	**2341**
6-22	2212	442	8	**2662**
6-24	2276	449	8	**2733**
0-24	2307	455	8	**2770**

Total Vehicle Class Distribution



Tendring District, Essex ATC 10, B1441 Clacton Road

Produced by Streetwise Services Ltd.

Channel 1 - Northbound

	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday	5-DAY MEAN	7-DAY MEAN
0000-2400 Vehicle Flow	3028	2933	3066	2708	2203	2876	2948	**2970**	**2823**
Mean Speed	34.4	34.3	34.5	34.6	35.2	34.6	34.6	**34.5**	**34.6**
85%ile Speed	38.6	38.9	38.6	38.2	38.1	38.3	38.1	**38.5**	**38.4**
No. Vehicles > 30 MPH Limit	2506	2426	2545	2268	1909	2389	2435	**2460**	**2354**
% Vehicles > 30 MPH Limit	82.8	82.7	83.0	83.8	86.7	83.1	82.6	**82.8**	**83.5**
No. Vehicles > 45 MPH	61	74	68	67	61	72	72	**69**	**68**
% Vehicles > 45 MPH	2.0	2.5	2.2	2.5	2.8	2.5	2.4	**2.3**	**2.4**

Channel 2 - Southbound

	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday	5-DAY MEAN	7-DAY MEAN
0000-2400 Vehicle Flow	2807	2801	3110	2781	2149	2833	2906	**2891**	**2770**
Mean Speed	33.4	33.7	33.4	33.0	34.2	33.7	33.4	**33.5**	**33.5**
85%ile Speed	38.9	38.2	38.9	38.7	38.1	38.0	38.9	**38.6**	**38.5**
No. Vehicles > 30 MPH Limit	1942	1978	2160	1807	1539	1957	1944	**1996**	**1904**
% Vehicles > 30 MPH Limit	69.2	70.6	69.5	65.0	71.6	69.1	66.9	**69.0**	**68.8**
No. Vehicles > 45 MPH	54	90	74	60	86	82	79	**76**	**75**
% Vehicles > 45 MPH	1.9	3.2	2.4	2.2	4.0	2.9	2.7	**2.6**	**2.8**

Channels 1+2 - Northbound & Southbound

	03/08/2022 Wednesday	04/08/2022 Thursday	05/08/2022 Friday	06/08/2022 Saturday	07/08/2022 Sunday	08/08/2022 Monday	09/08/2022 Tuesday	5-DAY MEAN	7-DAY MEAN
0000-2400 Vehicle Flow	5835	5734	6176	5489	4352	5709	5854	**5862**	**5593**
Mean Speed	33.9	34.0	34.0	33.8	34.7	34.2	34.0	**34.0**	**34.1**
85%ile Speed	38.8	38.6	38.8	38.5	38.1	38.1	38.5	**38.5**	**38.5**
No. Vehicles > 30 MPH Limit	4448	4404	4705	4075	3448	4346	4379	**4456**	**4258**
% Vehicles > 30 MPH Limit	76.2	76.8	76.2	74.2	79.2	76.1	74.8	**76.0**	**76.2**
No. Vehicles > 45 MPH	115	164	142	127	147	154	151	**145**	**143**
% Vehicles > 45 MPH	2.0	2.9	2.3	2.3	3.4	2.7	2.6	**2.5**	**2.6**

Class No	Vehicle Description	Class No	Vehicle Description
1	Car, Light Van Taxi	5	Rigid 2 Axle HGV + 2 Axle (Close coupled) Trailer
1	Light Goods Vehicle	6	Rigid 3 Axle HGV + 2 Axle Drawbar Trailer
1	Car or Light Goods Vehicle + 1 Axle Caravan or Trailer	6	Rigid 3 Axle HGV + 3 Axle Drawbar Trailer
1	Car or Light Goods Vehicle + 2 Axle Caravan or Trailer	7	Artic, 2 Axle Tractor + 1 Axle Semi-Trailer
2	Rigid 2 Axle Heavy Goods Vehicle	8	Artic, 2 Axle Tractor + 2 Axle Semi-Trailer
3	Rigid 3 Axle Heavy Goods Vehicle	9	Artic, 2 Axle Tractor + 3 Axle Semi-Trailer
3	Rigid 3 Axle Heavy Goods Vehicle	10	Artic, 3 Axle Tractor + 1 Axle Semi-Trailer
4	Rigid 4 Axle Heavy Goods Vehicle	10	Artic, 3 Axle Tractor + 2 Axle Semi-Trailer
4	Rigid 4 Axle Heavy Goods Vehicle	11	Artic, 3 Axle Tractor + 3 Axle Semi-Trailer
5	Rigid 2 Axle HGV + 2 Axle Drawbar Trailer	12	Bus or Coach, 2 Axle
5	Rigid 2 Axle HGV + 3 Axle Drawbar Trailer	12	Bus or Coach, 3 Axle
5	Rigid 2 Axle HGV + 1 Axle Caravan or Trailer	13	Vehicle with 7 or more Axles

Intelligent Data Collection Limited
Norwich to Tilbury

Client:	Arcadis
Project Number:	ID07263
Site Number:	Site 5
Site Name:	A120
Dates of Survey:	22.11.2023-25.11.2023
Survey Type:	Pedestrian & Cycle Count

Quality Assurance and Issue Record

Quality Assurance

Revision	Rev A			
Date	10.12.2023			
Prepared by	Strahinja Tasic			
Signature				
Checked by	Luke Martin			
Signature				
Project Director	Paul O'Neill			
Signature				
Project Number	ID07263			
File Ref	ID07263 Norwich to Tilbury - Pedestrian & Cycle Count Site 5			

Issue Record

	Date			
Issued to	11.12.2023			
Melissa Gordedo	E-mail			

Intelligent Data Collection Limited

Client: Arcadis
Project Number: ID07263
Site Number: Site 5
Site Name: A120
Dates of Survey: 22.11.2023-25.11.2023
Survey Type: Pedestrian & Cycle Count

X Coordinate	Y Coordinate	Google Maps Link
51.911653	1.051151	Click Here

Site Layout

Additional Notes (Factors which may impact on survey results such as accidents, roadworks, special events)

Intelligent Data Collection Limited

Client: Arcadis
Project Number: ID07263
Site Number: Site 5
Site Name: A120
Dates of Survey: 22.11.2023-25.11.2023
Survey Type: Pedestrian & Cycle Count

AM Peak Totals

	Movement 1				Movement 2			
Date	Peds	Cyclists	Equestrian	Total	Peds	Cyclists	Equestrian	Total
22.11.2023	0	0	0	**0**	0	1	0	**1**
23.11.2023	0	2	0	**2**	3	1	0	**4**
24.11.2023	0	1	0	**1**	0	2	0	**2**
25.11.2023	0	2	0	**2**	0	0	0	**0**

PM Peak Totals

	Movement 1				Movement 2			
Date	Peds	Cyclists	Equestrian	Total	Peds	Cyclists	Equestrian	Total
22.11.2023	1	0	0	**1**	0	0	0	**0**
23.11.2023	0	0	0	**0**	0	1	0	**1**
24.11.2023	0	1	0	**1**	0	1	0	**1**
25.11.2023	0	0	0	**0**	0	0	0	**0**

Daily Totals

	Movement 1				Movement 2			
Date	Peds	Cyclists	Equestrian	Total	Peds	Cyclists	Equestrian	Total
22.11.2023	1	6	0	**7**	1	4	0	**5**
23.11.2023	4	13	0	**17**	4	8	0	**12**
24.11.2023	1	4	0	**5**	0	3	0	**3**
25.11.2023	1	15	0	**16**	1	18	3	**22**

Annex 27.1.2 Details of Growth Factors

A120 - AADT 2022-2027		
Level	Area	Local Growth Figure
Authority	Tendring	1.053
Using NRTP 2022 Core for Car Driver, Trunk Road Type		

A120 - AAWT 2022-2027		
Level	Area	Local Growth Figure
Authority	Tendring	1.052
Using NRTP 2022 Core for Car Driver, Trunk Road Type		

A133/A137 - AADT 2022-2027		
Level	Area	Local Growth Figure
Authority	Tendring	1.036
Using NRTP 2022 Core for Car Driver, A Road Type		

A133/A137 - AAWT 2022-2027		
Level	Area	Local Growth Figure
Authority	Tendring	1.036
Using NRTP 2022 Core for Car Driver, A Road Type		

Local Roads - AADT 2022-2027		
Level	Area	Local Growth Figure
Authority	Tendring	1.036
Using NRTP 2022 Core for Car Driver, Minor Road Type		

Local Roads - AAWT 2022-2027		
Level	Area	Local Growth Figure
Authority	Tendring	1.036
Using NRTP 2022 Core for Car Driver, Minor Road Type		

Local Roads - AADT 2019-2022		
Level	Area	Local Growth Figure
Authority	Tendring	1.012
Using NRTP 2022 Core for Car Driver, Minor Road Type		

Local Roads - AAWT 2019-2022		
Level	Area	Local Growth Figure
Authority	Tendring	1.012
Using NRTP 2022 Core for Car Driver, Minor Type Road		

Annex 27.1.3 Forecast Future Year (2027) Traffic Flows

Link Details							2019 Surveyed Flows				2022 Surveyed Flows				2022 Base Flows				2027 Base Flows			
							Base		Base		Base		Base		Base		Base		Base		Base	
Link	Survey Type	Survey Year	Traffic Count Reference	Link Description	Link Sensitivity T&T	Average Speed (Miles per Hour)	Total Vehicles	HGVs	Total Vehicles	HGVs	Total Vehicles	HGVs	Total Vehicles	HGVs	Total Vehicles	HGVs	Total Vehicles	HGVs	Total Vehicles	HGVs	Total Vehicles	HGVs
1	DfT - AADT	2022	DfT 38246	A120 from the A12 to the A133	Negligible	Posted Speed					42,681	2,503	46,073	2,951	42,681	2,503	46,073	2,951	44,925	2,635	48,491	3,106
2	DfT - AADT	2022	DfT 38246	A120 from the A133 to Harwich Road	Negligible	Posted Speed					42,681	2,503	46,073	2,951	42,681	2,503	46,073	2,951	44,925	2,635	48,491	3,106
3	DfT - AADT	2022	DFT 7938	A120 from Harwich Road to Bentley Road	Negligible	Posted Speed					14,921	1,707	16,107	2,013	14,921	1,707	16,107	2,013	15,706	1,797	16,952	2,118
4	NF ATC	2022	NF ATC 17	Bentley Road from the A120 to Little Bromley	Low	43					990	16	1,069	19	990	16	1,069	19	1,026	17	1,107	20
5	NF ATC	2022	NF ATC 17	Bentley Road through Little Bromley	High	43					990	16	1,069	19	990	16	1,069	19	1,026	17	1,107	20
6	NF ATC	2022	NF ATC 23	B1035 south of the A120 to Tendring Green	Low	42					5,541	88	5,981	103	5,541	88	5,981	103	5,740	91	6,196	107
7	NF ATC	2022	NF ATC 19	Bromley Road north of Little Bromley	Low	42					1,616	29	1,744	35	1,616	29	1,744	35	1,674	30	1,807	36
8	NF ATC	2022	NF ATC 19	Bromley Road south of the A137	High	42					1,616	29	1,744	35	1,616	29	1,744	35	1,674	30	1,807	36
9	DfT - AADT	2022	DfT 73502	A137 east-west through Lawford	Medium	Posted Speed					12,738	360	13,750	424	12,738	360	13,750	424	13,196	373	14,244	440
10	DfT - AADT	2022	DfT 73502	A137 north-south through Lawford	Low	Posted Speed					12,738	360	13,750	424	12,738	360	13,750	424	13,196	373	14,244	440
~~11~~	~~NF ATC~~	~~2022~~	~~NF ATC 13~~	~~Parsonage Lane and Wolves Hall Lane east of the B1035~~ - No Longer Used	Medium								0	0								
~~12~~	~~NF ATC~~	~~2022~~	~~NF ATC 14~~	~~Stones Green Road~~ - No Longer Used	High								0	0								
13	NF ATC	2022	NF ATC 16	B1035 south of the B1352	Medium	30					8,128	157	8,774	185	8,128	157	8,774	185	8,421	163	9,089	192
14	NF ATC	2022	NF ATC 16	B1035 north of the A120	Low	30					8,128	157	8,774	185	8,128	157	8,774	185	8,421	163	9,089	192
15	DfT - AADT	2022	DFT 7938	A120 from Bentley Road to the B1035	Negligible	Posted Speed					14,921	1,707	16,107	2,013	14,921	1,707	16,107	2,013	15,706	1,797	16,952	2,118
16	DfT - AADT	2022	DFT 7938	A120 from the B1035 to Colchester Road	Negligible	Posted Speed					14,921	1,707	16,107	2,013	14,921	1,707	16,107	2,013	15,706	1,797	16,952	2,118
~~17~~	~~NF ATC~~	~~2022~~	~~NF ATC 15~~	~~Colchester Road south of the A120~~ - No Longer Used	~~Low~~								0	0								
18	DfT - AADT	2022	DfT 47951	A120 from Colchester Road to the B1352	Negligible	Posted Speed					9,565	1,424	10,325	1,679	9,565	1,424	10,325	1,537	10,068	1,499	10,867	1,618
19	DfT - AADT	2022	DfT 47951	A120 from the B1352 to Parkeston Road	Negligible	Posted Speed					9,565	1,424	10,325	1,679	9,565	1,424	10,325	1,537	10,068	1,499	10,867	1,618
20	DfT - AADT	2022	DfT 86073	A133 south of the A120	Negligible	Posted Speed					30,895	1,229	33,351	1,449	30,895	1,229	33,351	1,449	32,006	1,273	34,546	1,501
21a	DfT - AADT	2022	DfT 48012	A133 to Crown Lane	Low	Posted Speed					31,110	974	33,583	1,148	31,110	974	33,583	1,148	32,229	1,009	34,787	1,190
21b	DfT - AADT	2022	DfT 48013	A133 from Crown Lane to the B1034	Low	Posted Speed					31,110	974	33,583	1,148	31,110	974	33,583	1,148	32,229	1,009	34,787	1,190
22	DfT - AADT	2022	DfT 99327	A133 south of the B1033 to Progress Way	Negligible	Posted Speed					20,556	554	22,190	653	20,556	554	22,190	653	21,295	574	22,986	677
23	DfT - AADT	2022	DfT 99327	A133 south of Progress Way to the B1032	Negligible	Posted Speed					20,556	554	22,190	653	20,556	554	22,190	653	21,295	574	22,986	677
24	DfT - AADT	2019	DfT 951531	B1032 east of the A133 to Holland Road	High	Posted Speed	12,133	255	13,097	301	0	0	0	0	12,276	258	13,251	304	12,718	267	13,568	311
25	DfT - AADT	2022	DfT 800222	B1032 from Holland Road to Kings Parade	High	Posted Speed					12,791	185	13,808	218	12,791	185	13,808	218	13,252	192	14,304	226
26	NF ATC	2022	NF ATC 1	B1032 from Kings Parade to the south of Great Holland	Low	36					7,137	93	7,705	109	7,137	93	7,705	109	7,395	96	7,981	113
27	NF ATC	2022	NF ATC 1	B1032 through Great Holland	High	36					7,137	93	7,705	109	7,137	93	7,705	109	7,395	96	7,981	113
28	NF ATC	2022	NF ATC 3	B1033 north of the B1032 through Kirby Cross to Pork Lane	High	44					9,518	146	10,275	172	9,518	146	10,275	172	9,861	151	10,644	178
29	NF ATC	2022	NF ATC 3	B1033 from Pork Lane to the south of Thorpe-le-Soken	Low	44					9,518	146	10,275	172	9,518	146	10,275	172	9,861	151	10,644	178
30	NF ATC	2022	NF ATC 3	B1033 south of the B1414 through Thorpe-le-Soken	High	44					9,518	146	10,275	172	9,518	146	10,275	172	9,861	151	10,644	178
31	NF ATC	2022	NF ATC 6	B1414 east of the B1033	High	36					1,472	65	1,589	76	1,472	65	1,589	76	1,525	67	1,646	79
32	NF ATC	2022	NF ATC 3	B1033 north of the B1414 through Thorpe-le-Soken	High	44					9,518	146	10,275	172	9,518	146	10,275	172	9,861	151	10,644	178
33	NF ATC	2022	NF ATC 21	B1033 from the B1441 to the B1035 through Weeley	Medium	47					10,580	203	11,420	239	10,580	203	11,420	239	10,961	210	11,831	248
34	NF ATC	2022	NF ATC 21	B1033 from the A133 to the B1441	Low	47					10,580	203	11,420	239	10,580	203	11,420	239	10,961	210	11,831	248
35	NF ATC	2022	NF ATC 8	B1035 north of B1033 to Whitehall Lane	Low	34					1,619	32	1,748	37	1,619	32	1,748	37	1,678	33	1,811	39
36	NF ATC	2022	NF ATC 23	B1035 through Tendring Green from Parsonage Lane to Stones Green Road	Low	42					5,541	88	5,981	103	5,541	88	5,981	103	5,740	91	6,196	107
37	NF ATC	2022	NF ATC 8	B1035 north of Whitehall Lane to Swan Road	Low	34					1,619	32	1,748	37	1,619	32	1,748	37	1,678	33	1,811	39
38	NF ATC	2022	NF ATC 23	B1035 through Goose Green	High	42					5,541	88	5,981	103	5,541	88	5,981	103	5,740	91	6,196	107
39	NF ATC	2022	NF ATC 11	B1035 north of Swan Road to the south of Tendring	Low	39					2,333	43	2,519	51	2,333	43	2,519	51	2,417	45	2,609	53
40	NF ATC	2022	NF ATC 11	B1035 through Tendring to Crown Lane	High	39					2,333	43	2,519	51	2,333	43	2,519	51	2,417	45	2,609	53
41	NF ATC	2022	NF ATC 22	Crown Lane	Low	35					3,195	45	3,449	54	3,195	45	3,449	54	3,310	47	3,573	55
42	NF ATC	2022	NF ATC 11	B1035 from Crown Lane to Lodge Lane	High	39					2,333	43	2,519	51	2,333	43	2,519	51	2,417	45	2,609	53
43	DfT - AADT	2022	DfT 36706	A133/Colchester Road from A133/Colchester Road roundabout to end of TTSA	Low	Posted Speed					11,899	619	12,845	730	11,899	619	12,845	730	12,327	641	13,305	756
44	VE ATC	2022	VE ATC 12	B1441 (Progress Way) from A133/St Osyth Road/Progress Way Roundabout to B1414	High	Posted Speed					5,584	916	6,028	1,080	5,584	916	6,028	1,080	5,785	949	6,244	1,119
45	VE ATC	2022	VE ATC 13	B1414 east of B1441 to B1033 in Thorpe-le-Soken	High	Posted Speed					5,214	720	5,628	849	5,214	720	5,628	849	5,402	746	5,831	879
46	VE ATC	2022	VE ATC 12	B1441 from B1414 to B1033 in Weeley	High	Posted Speed					5,584	916	6,028	1,080	5,584	916	6,028	1,080	5,785	949	6,244	1,119
47	DfT - AADT	2022	DfT 92006	A120 from Parkeston Roundabout to St Nicholas Roundabout	Low	Posted Speed					13,066	1,274	14,104	1,502	13,066	1,274	14,104	1,502	13,753	1,341	14,845	1,581
48	DfT - AADT	2019	DfT 941083	St John's Road from St Osyth Roundabout to end of TTSA	High	Posted Speed	15203	208	16,411	245					15,382	210	16,604	248	15,751	215	17,001	254

Annex 27.1.4 Calculation of Collision Rates

Study parameters	
Start date	01/08/2015
End date	31/07/2023
Number of days	2921

Links	Description of links	Length of links (Miles)	Number of recorded collsions (2015 - 2023)	Annual Average Daily Traffic Flows	Road Type	Calculated collion rate (per billion vehicle miles)	UK Average collision rate (per billion vehicle miles)
1,2	A120 from to Harwich Road Roundabout	6.1	44	42,681	RA (Rural A)	57	193
3,15,16	A120 from Harwich Road Roundabout to Colchester Road	2.6	22	14,921	RA (Rural A)	197	193
4,5,7,8	Bentley Road (later Bromley Rd) from A120 to Lawford Village centre	3.4	6	1,303	UA (Urban A)	464	673
9,10	A137/Harwich Road	1.4	3	12,738	UA (Urban A)	57	673
13, 14	B1035 Clacton Road from A120 roundabout to B1352	3.2	13	8,128	RO (Rural Other)	169	333
18,19, 47	A120 from Colchester Road to Parkeston Roundabout, Harwich	7.7	34	10,732	RA (Rural A)	141	193
20, 21a, 21b	A133 from A120 Junction to B1033 Roundabout	3.3	57	31,038	RA (Rural A)	189	193
22,23	A133 from B1033 Roundabout to St John's Road Roundabout	4.5	61	20,556	RA (Rural A)	225	193
24,25	B1027/St John's Road from St John's Road Roundabout to King's Parade Roundabout	2.5	33	12,533	UO (Urban Other)	360	654
26,27	B1032 from King's Parade Roundabout to Kirby Cross mini roundabout	2.9	15	7,137	RO (Rural Other)	250	333
28,29,30,32	B1035 Thorpe Road from Kirby Cross mini roundabout to Tendring Road	3.3	19	9,518	RO (Rural Other)	205	333
31	Landermere Road from B1033/High Street to SAB	1.1	1	1,472	UO (Urban Other)	210	654
33,34	B1033 from A133 roundabout to Tendring Road	2.3	21	10,580	RO (Rural Other)	296	333
6,35,36,37,38,39,40,42	B1035 from Lodge Lane to Colchester Road	4.9	15	3,358	RO (Rural Other)	312	333
41	Crown Lane from A133 to B1035	1.2	1	3,195	RO (Rural Other)	87	333
43	A133 spur to Frating	0.8	3	11,899	RA (Rural A)	102	193
44, 46	Progress Way to B1441 and B1441 to B1033	3.5	12	5,584	RO (Rural Other)	211	333
45	B1414 from B1441 to B1033, Thorpe-le-Soken	2.1	19	5,214	RO (Rural Other)	603	333
48	St John's Road from St John's Roundabout to Constable Avenue	0.3	6	15,382	UO (Urban Other)	460	654

Road Type	National average collision rates per road type (2016-2022 Average) (per billion vehicle miles)
RA (Rural A)	193
UA (Urban A)	673
RO (Rural Other)	333
UO (Urban Other)	654

Key	
Links where the calculated collision rate is higher than the national average for comparable roads	

Annex 27.1.5 Summary of HGV and LV Trips per Section (All Scenarios)

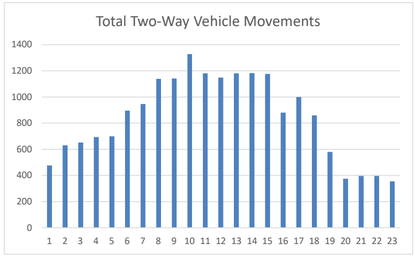
North Falls Offshore Wind Farm - Annex 27.1.5

Average Total Two-Way Vehicle Movements Per Day

Including contingency

	Months																						
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
Section 1	95	85	133	121	131	144	193	195	187	162	191	165	161	143	107	133	132	142	0	0	0	0	0
Section 2	0	0	72	68	73	100	107	83	102	78	84	103	74	72	67	70	0	0	0	0	0	0	0
Section 3	92	138	81	107	123	176	194	200	191	156	152	98	88	86	86	86	144	94	0	0	0	0	0
Section 4A	0	0	72	120	101	22	19	105	109	96	87	81	79	67	70	0	0	0	0	0	0	0	0
Section 4B	95	136	79	78	123	110	131	150	175	122	144	61	86	85	85	85	85	93	0	0	0	0	0
Section 5	101	135	79	98	61	122	131	138	67	91	76	148	80	135	93	0	0	0	0	0	0	0	0
Section 6&7	94	137	136	102	87	122	71	54	114	135	154	117	104	156	88	86	158	167	0	0	0	0	0
400kV Works	0	0	0	0	0	0	0	74	57	108	93	56	73	2	0	0	0	0	0	0	0	0	0
Beach Access	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Substation	0	0	0	0	0	100	100	140	140	380	200	320	436	436	580	420	480	364	580	376	396	396	356
Total	477	631	652	694	699	896	946	1139	1142	1328	1181	1149	1181	1182	1176	880	999	860	580	376	396	396	356

Overall	Minimum	Maximum	Average
Section 1	0	195	146
Section 2	0	107	64
Section 3	0	200	127
Section 4A	0	120	57
Section 4B	0	175	107
Section 5	0	148	86
Section 6&7	0	167	116
400kV Works	0	108	26
Beach Access	0	0	0
Substation	0	580	270
Total	356	1328	840

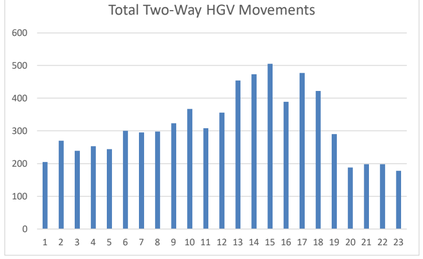


Average Total Two-Way HGV Movements Per Day

Including contingency

	Months																						
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
Section 1	42	32	56	55	43	49	54	56	61	41	39	39	46	35	32	56	55	65	0	0	0	0	0
Section 2	0	0	19	15	22	34	23	6	22	14	13	26	23	21	16	19	0	0	0	0	0	0	0
Section 3	39	61	30	43	46	59	66	54	50	26	37	27	37	35	35	35	67	43	0	0	0	0	0
Section 4A	0	0	19	43	35	6	3	19	21	12	12	30	28	16	19	0	0	0	0	0	0	0	0
Section 4B	42	59	28	27	54	35	32	35	40	20	38	10	35	34	34	34	34	42	0	0	0	0	0
Section 5	41	58	28	34	12	29	32	32	14	9	14	46	29	58	42	0	0	0	0	0	0	0	0
Section 6&7	41	60	59	36	32	38	35	3	30	31	37	11	16	54	37	35	81	90	0	0	0	0	0
400kV Works	0	0	0	0	0	0	0	23	15	24	18	7	22	2	0	0	0	0	0	0	0	0	0
Beach Access	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Substation	0	0	0	0	0	50	50	70	70	190	100	160	218	218	290	210	240	182	290	188	198	198	178
Total	205	270	239	253	244	300	295	298	323	367	308	356	454	473	505	389	477	422	290	188	198	198	178

Overall	Minimum	Maximum	Average
Section 1	32	65	48
Section 2	0	34	15
Section 3	26	67	44
Section 4A	0	43	15
Section 4B	10	59	35
Section 5	0	58	27
Section 6&7	3	90	40
400kV Works	0	24	6
Beach Access	0	0	0
Substation	0	290	114
Total	178	505	314

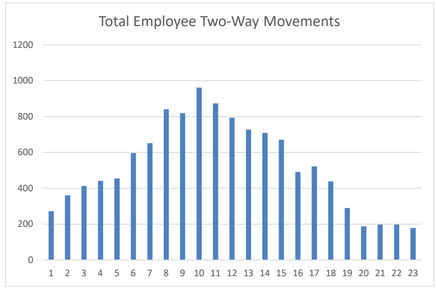


Average Total Employees Two Way Movements per day

Including contingency

	Months																						
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
Section 1	53	53	77	66	88	95	139	139	126	121	152	126	115	108	75	77	77	77	0	0	0	0	0
Section 2	0	0	53	53	51	66	84	77	80	64	71	77	51	51	51	51	0	0	0	0	0	0	0
Section 3	53	77	51	64	77	117	128	146	141	130	115	71	51	51	51	51	77	51	0	0	0	0	0
Section 4A	0	0	53	77	66	16	16	86	88	84	75	51	51	51	51	0	0	0	0	0	0	0	0
Section 4B	53	77	51	51	69	75	99	115	135	102	106	51	51	51	51	51	51	51	0	0	0	0	0
Section 5	60	77	51	64	49	93	99	106	53	82	62	102	51	77	51	0	0	0	0	0	0	0	0
Section 6&7	53	77	77	66	55	84	36	51	84	104	117	106	88	102	51	51	77	77	0	0	0	0	0
400kV Works	0	0	0	0	0	0	0	51	42	84	75	49	51	0	0	0	0	0	0	0	0	0	0
Beach Access	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Substation	0	0	0	0	0	50	50	70	70	190	100	160	218	218	290	210	240	182	290	188	198	198	178
Total	272	361	413	441	455	596	651	841	819	961	873	793	727	709	671	491	522	438	290	188	198	198	178

Overall	Minimum	Maximum	Average
Section 1	53	152	98
Section 2	0	84	49
Section 3	51	146	83
Section 4A	0	88	43
Section 4B	51	135	72
Section 5	0	106	60
Section 6&7	36	117	75
400kV Works	0	84	20
Beach Access	0	0	0
Substation	0	290	114
Total	178	961	525



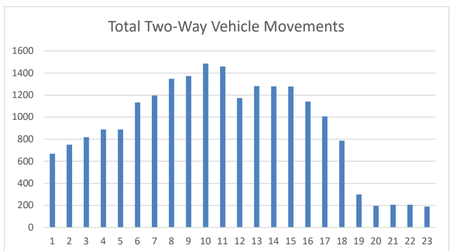
Five Estuaries and North Falls Offshore Wind Farms - Annex 27.1.5

Average Total Two-Way Vehicle Movements Per Day

Including contingency

	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Section 1	95	122	140	157	221	265	311	304	295	239	270	228	145	150	113	140	139	149	0	0	0	0	0
Section 2	86	82	73	72	66	110	106	82	107	101	141	105	74	72	81	84	0	0	0	0	0	0	0
Section 3	103	148	163	193	221	213	221	165	174	172	215	133	209	194	117	153	152	104	0	0	0	0	0
Section 4A	86	82	79	105	22	19	19	105	108	116	59	57	53	93	109	78	81	84	0	0	0	0	0
Section 4B	95	137	136	136	130	184	153	161	140	159	184	107	169	184	163	144	85	93	0	0	0	0	0
Section 5	101	85	134	105	127	141	148	163	135	169	149	144	109	79	80	48	48	57	0	0	0	0	0
Section 6&7	103	94	94	121	102	141	179	134	142	134	142	156	104	177	195	173	151	92	0	0	0	0	0
400kV Works	0	0	0	0	0	0	0	70	108	113	105	56	87	0	0	0	0	0	0	0	0	0	0
Substation	0	0	0	0	0	60	60	163	163	284	194	187	331	331	420	321	351	207	299	197	207	207	190
Total	669	750	819	889	889	1133	1197	1347	1372	1487	1459	1173	1281	1280	1278	1141	1007	786	299	197	207	207	190

Overall	Minimum	Maximum	Average
Section 1	95	311	194
Section 2	0	141	80
Section 3	103	221	169
Section 4A	19	116	75
Section 4B	85	184	142
Section 5	48	169	112
Section 6&7	92	195	135
400kV Works	0	113	30
Substation	60	420	232
Total	669	1487	1109

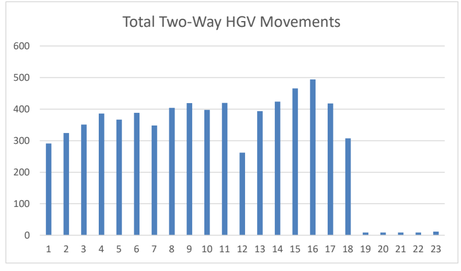


Average Total Two-Way HGV Movements Per Day

Including contingency

	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Section 1	42	62	63	86	95	106	104	86	81	71	78	80	46	42	38	63	62	72	0	0	0	0	0
Section 2	33	29	22	21	24	26	20	29	21	15	26	30	23	21	30	33	0	0	0	0	0	0	0
Section 3	50	71	81	87	84	67	64	41	57	42	52	25	72	77	42	76	75	53	0	0	0	0	0
Section 4A	33	29	28	39	6	3	3	25	22	28	10	8	6	18	34	27	30	33	0	0	0	0	0
Section 4B	42	60	59	59	61	71	36	42	34	40	58	16	48	67	72	67	34	42	0	0	0	0	0
Section 5	41	32	57	39	50	48	38	39	33	45	36	34	34	28	29	32	32	41	0	0	0	0	0
Section 6&7	50	41	41	55	47	57	73	30	36	32	36	35	16	58	91	85	74	41	0	0	0	0	0
400kV Works	0	0	0	0	0	0	0	19	42	31	30	7	36	0	0	0	0	0	0	0	0	0	0
Substation	0	0	0	0	0	10	10	93	93	94	94	27	113	113	130	111	111	25	9	9	9	9	12
Total	291	324	351	386	367	388	348	404	419	398	420	262	394	424	466	494	418	307	9	9	9	9	12

Overall	Minimum	Maximum	Average
Section 1	38	106	71
Section 2	0	33	22
Section 3	25	87	62
Section 4A	3	39	21
Section 4B	16	72	50
Section 5	28	57	38
Section 6&7	16	91	50
400kV Works	0	42	9
Substation	9	130	59
Total	262	494	381

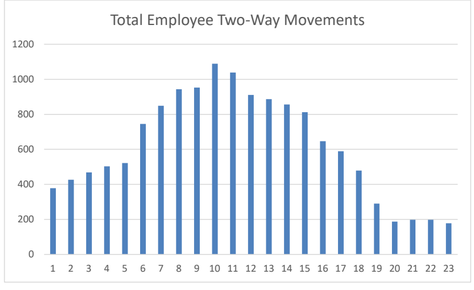


Average Total Employees Two Way Movements per day

Including contingency

	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Section 1	53	60	77	71	126	159	207	218	214	168	192	148	99	108	75	77	77	77	0	0	0	0	0
Section 2	53	53	51	51	42	84	86	53	86	86	115	75	51	51	51	51	0	0	0	0	0	0	0
Section 3	53	77	82	106	137	146	157	124	117	130	163	108	137	117	75	77	77	51	0	0	0	0	0
Section 4A	53	53	51	66	16	16	16	80	86	88	49	49	47	75	75	51	51	51	0	0	0	0	0
Section 4B	53	77	77	77	69	113	117	119	106	119	126	91	121	117	91	77	51	51	0	0	0	0	0
Section 5	60	53	77	66	77	93	110	124	102	124	113	110	75	51	51	16	16	16	0	0	0	0	0
Section 6&7	53	53	53	66	55	84	106	104	106	102	106	121	88	119	104	88	77	51	0	0	0	0	0
400kV Works	0	0	0	0	0	0	0	51	66	82	75	49	51	0	0	0	0	0	0	0	0	0	0
Substation	0	0	0	0	0	50	50	70	70	190	100	160	218	218	290	210	240	182	290	188	198	198	178
Total	378	426	468	503	522	745	849	943	953	1089	1039	911	887	856	812	647	589	479	290	188	198	198	178

Overall	Minimum	Maximum	Average
Section 1	53	218	123
Section 2	0	115	58
Section 3	51	163	107
Section 4A	16	88	54
Section 4B	51	126	92
Section 5	16	124	74
Section 6&7	51	121	85
400kV Works	0	82	21
Substation	50	290	172
Total	378	1089	728

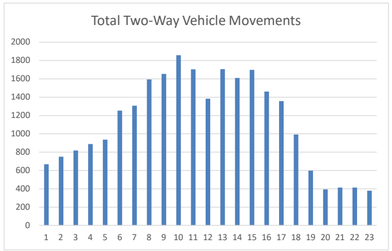


Average Total Two-Way Vehicle Movements Per Day

Including contingency

	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Section 1	95	122	140	157	221	265	327	313	303	247	276	231	145	150	114	140	139	149	0	0	0	0	0
Section 2	86	82	73	72	66	110	106	82	107	115	141	106	74	72	81	84	0	0	0	0	0	0	0
Section 3	103	148	163	193	221	229	236	193	207	187	215	133	209	194	117	153	152	104	0	0	0	0	0
Section 4A	86	82	79	105	22	19	19	105	108	116	59	57	67	93	110	78	81	84	0	0	0	0	0
Section 4B	95	137	136	136	130	184	153	175	164	174	198	107	169	184	163	144	85	93	0	0	0	0	0
Section 5	101	85	134	105	127	141	148	178	157	183	149	144	109	79	80	48	48	57	0	0	0	0	0
Section 6&7	103	94	94	121	102	141	179	134	157	156	157	156	104	177	195	173	151	92	0	0	0	0	0
400kV Works	0	0	0	0	0	0	0	70	108	113	105	59	87	0	0	0	0	0	0	0	0	0	0
Beach Access	0	0	0	0	48	54	19	17	18	0	18	17	81	0	0	0	0	0	0	0	0	0	0
Substation 1	0	0	0	0	0	50	60	163	163	284	194	187	331	331	420	321	351	207	299	197	207	207	190
Substation 2	0	0	0	0	0	60	60	163	163	284	194	187	331	331	420	321	351	207	299	197	207	207	190
Total	669	750	819	889	937	1253	1307	1593	1655	1858	1705	1384	1707	1611	1699	1462	1358	994	598	394	414	414	380

Overall	Minimum	Maximum	Average
Section 1	95	327	196
Section 2	0	141	81
Section 3	103	236	175
Section 4A	19	116	76
Section 4B	85	198	146
Section 5	48	183	115
Section 6&7	92	195	138
400kV Works	0	113	30
Beach Access	0	81	15
Substation Project 1	50	420	231
Substation Project 2	60	420	232
Total	380	1858	1314

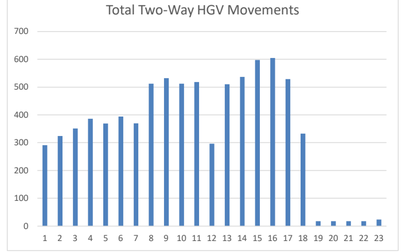


Average Total Two-Way HGV Movements Per Day

Including contingency

	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Section 1	42	62	63	86	95	106	109	90	85	75	75	83	46	42	39	63	62	72	0	0	0	0	0
Section 2	33	29	22	21	24	26	20	29	21	18	26	31	23	21	30	33	0	0	0	0	0	0	0
Section 3	50	71	81	87	84	72	68	45	61	46	52	25	72	77	42	76	75	53	0	0	0	0	0
Section 4A	33	29	28	39	6	3	3	25	22	28	10	8	9	18	35	27	30	33	0	0	0	0	0
Section 4B	42	60	59	59	61	71	36	45	38	44	61	16	48	67	72	67	34	42	0	0	0	0	0
Section 5	41	32	57	39	50	48	38	43	36	48	36	34	34	28	29	32	32	41	0	0	0	0	0
Section 6&7	50	41	41	55	47	57	73	30	40	35	40	35	16	58	91	85	74	41	0	0	0	0	0
400kV Works	0	0	0	0	0	0	0	19	42	31	30	10	36	0	0	0	0	0	0	0	0	0	0
Beach Access	0	0	0	0	2	1	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Substation Project 1	0	0	0	0	0	0	10	93	93	94	94	27	113	113	130	111	111	25	9	9	9	9	12
Substation Project 2	0	0	0	0	0	10	10	93	93	94	94	27	113	113	130	111	111	25	9	9	9	9	12
Total	291	324	351	386	369	394	369	512	532	512	518	296	511	537	597	605	529	333	18	18	18	18	24

Overall	Minimum	Maximum	Average
Section 1	39	109	72
Section 2	0	33	23
Section 3	25	87	63
Section 4A	3	39	21
Section 4B	16	72	51
Section 5	28	57	39
Section 6&7	16	91	51
400kV Works	0	42	9
Beach Access	0	2	0
Substation Project 1	0	130	56
Substation Project 2	0	130	57
Total	291	605	443

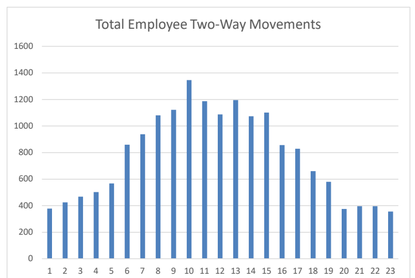


Average Total Employees Two Way Movements per day

Including contingency

	Months																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Section 1	53	60	77	71	126	159	218	223	218	172	201	148	99	108	75	77	77	77	0	0	0	0	0
Section 2	53	53	51	51	42	84	86	53	86	97	115	75	51	51	51	51	0	0	0	0	0	0	0
Section 3	53	77	82	106	137	157	168	148	146	141	163	108	137	117	75	77	77	51	0	0	0	0	0
Section 4A	53	53	51	66	16	16	16	80	86	88	49	49	58	75	75	51	51	51	0	0	0	0	0
Section 4B	53	77	77	77	69	113	117	130	126	130	137	91	121	117	91	77	51	51	0	0	0	0	0
Section 5	60	53	77	66	77	93	110	135	121	135	113	110	75	51	51	16	16	16	0	0	0	0	0
Section 6&7	53	53	53	66	55	84	106	104	117	121	117	121	88	119	104	88	77	51	0	0	0	0	0
400kV Works	0	0	0	0	0	0	0	51	66	82	75	49	51	0	0	0	0	0	0	0	0	0	0
Beach Access	0	0	0	0	46	53	17	17	17	0	17	17	80	0	0	0	0	0	0	0	0	0	0
Substation Project 1	0	0	0	0	0	50	50	70	70	190	100	160	218	218	290	210	240	182	290	188	198	198	178
Substation Project 2	0	0	0	0	0	50	50	70	70	190	100	160	218	218	290	210	240	182	290	188	198	198	178
Total	378	426	468	503	568	859	938	1081	1123	1346	1187	1088	1196	1074	1102	857	829	661	580	376	396	396	356

Overall	Minimum	Maximum	Average
Section 1	53	223	124
Section 2	0	115	58
Section 3	51	168	112
Section 4A	16	88	55
Section 4B	51	137	95
Section 5	16	135	76
Section 6&7	51	121	88
400kV Works	0	82	21
Beach Access	0	80	15
Substation Project 1	50	290	172
Substation Project 2	50	290	172
Total	378	1346	871



Annex 27.1.6 Derivation of HGV and LV Trips for North Falls Option 2

Vendor Coversheet

Project Name:	**Five Estuaries Offshore Wind Farm Project**	**Package No:**	WP01 008, WP2 009

Document Title:	VE_NF Joint Onshore Cable Routing – Combined Five Estuaries and North Falls - Construction Metrics (Single Cable Install)
Classification:	Confidential

Vendor Doc. No:	VE_NF Joint Onshore Cable Routing – Combined Five Estuaries and North Falls - Construction Metrics (Single Cable Install)	**Vendor Revision:**	01
Date:	05 October 2023	**Pages:**	

Employers Doc. No:	004944952-01	**Employer Revision:**	1
Document Status:	For Review and Approval		

Registered office:
Awel y Môr Offshore Wind Farm Ltd
RWE Renewables UK Ltd
Windmill Hill Business Park
Whitehill Way, Swindon, SN5 6PB

Client	**RWE**
Projects	**Five Estuaries and North Falls Offshore Windfarms**
Document Title	**Landfall and Onshore Cable Route Construction Metrics - Combined Project With Shared Cable Route Hall Road - Single Projects Cable Installation - NF Version**
RWE Ecodoc Reference	**004944952-01**
Version	**1.0**
Date	**05/10/2023**
Prepared By	**Alastair Macfarlane** **Renewable Energy Engineer**
Reviewed By	**Peter Macfarlane** **Associate Director**
Approved By	**Aidan Harber** **Technical Director**

Notes:

1. Construction Metrics based on western project of Wardell Armstrong VE-NF - Draft Combined Cable Corridor Rev 02 - dated 31.05.2023, Wardell Armstrong VE-NF - Draft TCC Locations Rev 5 - dated 15.06.2023 and Wardell Armstrong VE-NF- Draft Combined Off Route Access Rev 4 - dated 15.06.2023. Any changes in these shapefiles may result in updates of these construction metrics.

2. Tabs in red are working and only used to populate other sections of the metrics and not for reference within main construction metrics output
3. No bulking or compaction ratios have been considered within the calculation of soils generated or materials required.
4. Section 1 = Landfall to Railway (Assumed Access point off Clacton Road)
Section 2 = Railway to B1033 Thorpe Road (Assumed Access point off B1033 Thorpe Road)
Section 3 = B1033 Thorpe Road to B1035 Tendering Road (Assumed Access point off B1035 Tendering Road)
Section 4A = B1035 to Tendering Brook (Assumed Access point off Swan Road)
Section 4B = Tendering Brook to A120 (Assumed Access point off B1035 immediately south of Horsley Cross Roundabout)
Section 5 = A120 to Bentley Road (Assumed Access point off B1035 Clacton Road)
Section 6 and 7 = Bentley Road to Ardleigh Road (Section 6) and Ardleigh Road to Project Substation (Section 6) (Assumed Access off Bentley Road)
5. Short HDD of minor obstacles has not been considered separate to trenching within construction metrics as direct trenching considered to be worst case assessment in terms of materials volumes and traffic movements associated with these crossings.

6. These construction metrics assumes the following:
-construction of cable duct for both Five Estuaries and North Falls Projects together with installation of cables for only one project. Metrics accounts for construction of TJB and JB for the second project accounted for within these metrics as detailed by I. MacLean via email 21/09/2023. Metrics associated with works at the beach have been removed to reflect proposals for NF project.
-Lengths used within assessment of metrics measured by taking an average of measurement of centreline of Project 1 (22.5m offset from western boundary of combined projects cable route alignment) and Project 2(22.5m offset from eastern boundary of combined projects cable route alignment) assuming Landfall at Holland Brook and crossing of Ardleigh Road at eastern crossing point.
-Input metrics for TJB permanent footprint size of 20L x 5W x 1.5H used within assessment, these differ from North Falls Inputs which are smaller and therefore metrics slightly conservative.
-Beach access allowed for the Five Estuaries Project but not for North Falls Project
- Construction of two haul roads for Section 6 & 7 of the onshore cable route to service the onshore cable route and project substations.
- Values used for 400kV section of route provided by I. MacLean 27th June 2023 via email including
    - 2 circuits per project
    - similar arrangement and assumption to be maintained as remainder of cable route
    - single haul road for each project
    - 400kV route to be accessed via the substation and therefore no access to be considered
    - Western Project (Project 1) - 500m Section Length
    - Eastern Project (Project 2) - 750m Section Length
    - No additional haul road length to be included for either project
    - TCC to be located within the substation area, no TCC to be assumed for 400kV route
    - One HDD of 100m length to be assumed for each project.

Contents

Appendix D. Programme and Average Monthly Vehicle Movements

Section 1 (Including Landfall & Transition Bay Works)

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	66	897	13.6	13.6	13.6															
Mobilisation of Welfare and Operation Plant to TCC	22	71	3.2																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	110	1,448		13.2	13.2	13.2	13.2	13.2												
Cable Construction Works																				
Trench Excavation and duct installation	154	1,121					7.3	7.3	7.3	7.3	7.3	7.3	7.3							
Trench Backfill with CBS and protective covers	154	592					3.8	3.8	3.8	3.8	3.8	3.8	3.8							
Jointing Bay Excavation	198	230						1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2				
Jointing Bay Base Construction	198	156						0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8				
Pulling and connection of cables	110	162											1.5	1.5	1.5	1.5	1.5			
Backfill over Jointing Bays	198	145							0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7			
HDD At Landfall																				
Establish Landfall HDD construction compound / Topsoil Strip in Landfall Laydown Area	44	636					14.5	14.5												
Mobilisation of HDD Kit and Welfare to Landfall Compound	22	50						2.3												
HDD Drilling works & Ducting (assume working 24/7 7 days a week but 22 delivery days a month)	90	1,331							20.2	20.2	20.2									
Demobilisation of HDD kit and welfare	22	50										2.3								
Transition Bays at Landfall																				
Excavation of transition bays	44	64										1.5	1.5							
Construction of transition bay and link box base and walls	44	56										1.3	1.3							
Connection of Cables in Transition Bays	22	4												0.2						
Transition bay backfill and roof and backfill over transition bay	22	65											1.5							
Landfall Compound Removal and Reinstatement	66	636											1.5	14.5	14.5					
Long / Moderate HDD crossing of B1032 Clacton Road																				
Establish HDD Entry and Exit Pit Compounds	22	307				13.9														
Mobilisation of HDD Kit and Welfare to compounds	22	22				1.0														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	66	113					1.7	1.7	1.7											
Demobilisation of HDD Kit and welfare for exit pit to next major HDD	22	17								0.8										
Remove of onshore HDD Entry and Exit Compounds - exit pit materials reused at next major HDD	44	204								0.0		9.3								
Long / Moderate HDD crossing of Railway - Exit Pit Only																				
Establish HDD Exit Pit Compounds - material from previous minor HDD reused	22	0								0.0										
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous major HDD reused	22	0								0.0										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	66	48									0.7	0.7	0.7							
Demobilisation of HDD Kit and welfare	22	5												0.2						
Remove of onshore HDD Entry Compound	22	103												4.7						

Appendix D. Programme and Average Monthly Vehicle Movements

Minor HDD crossing of EA Main River																				
Establish HDD Entry and Exit Pit Compounds	22	204				9.3														
Mobilisation of HDD Kit and Welfare to compounds	22	10					0.5													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38						1.7												
Demobilisation of HDD Kit and welfare to next minor HDD	22	0							0.0											
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	0							0.0											
Minor HDD crossing of Little Clacton Road																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	0							0.0											
Mobilisation of HDD Kit and Welfare to compounds - plant from previous minor HDD reused	22	0							0.0											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	38								0.9	0.9									
Demobilisation of HDD Kit and welfare to next minor HDD	22	0										0.0								
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	0										0.0								
Minor HDD crossing of Minor Watercourse																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	0										0.0								
Mobilisation of HDD Kit and Welfare to compounds - plant from previous minor HDD reused	22	0										0.0								
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38											1.7							
Demobilisation of HDD Kit and welfare to next minor HDD	22	10												0.5						
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	204												9.3						
Minor HDD crossing of Intermediate Pressure Gas Main																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	204							9.3											
Mobilisation of HDD Kit and Welfare to compounds - plant from previous minor HDD reused	22	10							0.5											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38								1.7										
Demobilisation of HDD Kit and welfare to next minor HDD	22	0									0.0									
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	0									0.0									
Minor HDD crossing of Minor Watercourse South of Railway Line																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - plant from previous minor HDD reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38										1.7								
Demobilisation of HDD Kit and welfare	22	10											0.5							
Remove of onshore HDD Entry and Exit Compounds	22	204											9.3							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	110	1,448														13.2	13.2	13.2	13.2	13.2
Demobilisation of Welfare from TCC	22	71																		3.2
TCC and access road Removal	66	897																13.6	13.6	13.6
Average Section Skip HGV Movements Per Day	396	345	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total HGVs per day			17.7	27.6	27.6	38.3	41.8	47.3	46.3	38.2	36.4	31.4	34.0	34.3	19.5	18.2	16.2	27.6	27.6	30.9
Total two-way HGV movements per day			35.4	55.3	55.3	76.5	83.6	94.5	92.6	76.4	72.9	62.8	68.0	68.6	39.0	36.4	32.5	55.3	55.3	61.7

Appendix D. Programme and Average Monthly Vehicle Movements

Section 1 (Including Landfall & Transition Bay Works)

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	1	2	2	2	2	3	3	3	3	3	4	3	3	3	3	3	3
30T Excavator	2	2	3	3	4	5	3	3	3	5	6	4	3	3	3	3	3	3
20T Dumper	3	3	3	3	5	7	6	6	6	7	8	6	6	6	3	4	4	4
Smooth Drum vibrio road roller	1	1	2	1	2	2	2	1	1	2	2	2	1	1	1	2	2	2
21T excavator	1	1	1	2	3	4	3	4	4	4	5	3	2	3	1	2	2	2
5T Forward Tipping Dumper	1	1	2	2	3	4	3	4	4	4	5	3	2	3	1	2	2	2
Loading shovel	1	1	2	2	3	3	3	7	7	7	4	3	3	3	2	3	3	3
Trench Roller					2	2	2	3	3	3	3	2	1	1	1			
Tractor & fencing kit	1	1	1	1	2	2	1	1	1	1	1	2	1	1	1	1	1	1
Tractor & trailer	1	1	2	1	2	2	1	2	2	2	3	2	1	2	1	2	2	2
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & cable drum trailer											1	1	1	1	1			
Tractor & soil tiller, roller, seeder														1	1	1	1	1
Cement mixer											1	1						
Mobile crane											1	1						
Grader	1	1	2	1	1	1	2	1	1	1								
Cable laying tracked crane												1						
Cable winch											1	1	1	1	1			
Pre-cast concrete truck											1	1						
Mobile concrete pump						1	1	1	1	1	1	1	1	1				
Telehandler	1	1	2	1	2	2	2	2	2	2	3	1	1	1				
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Crawler Crane					1	1	1	1	1	1	2	1						
Mobile generator deliveries (corrected for 2 per delivery)	1	1	2	2	4	6	6	6	6	8	10	8	5	5	2	2	2	2
Temporary lighting deliveries (corrected for 8 per delivery)	1	1	2	2	4	5	3	4	4	5	6	4	3	3	2	2	2	2
Road surface paver & roller	1	1	1															
Pump deliveries (corrected for 4 per delivery)					1	2	2	2	2	3	5	3	2	2	1			
Total Plant Onsite In Section Per Month	20	43	30	26	44	54	47	54	54	62	75	58	40	44	28	30	30	30
Total Deliveries / Removals	20	0	10	6	18	10	11	11	0	8	21	23	18	4	16	10	0	30
Average Deliveries / Removals Per Day	0.9	0.0	0.5	0.3	0.8	0.5	0.5	0.5	0.0	0.4	1.0	1.0	0.8	0.2	0.7	0.5	0.0	1.4
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	0	1	1	2	1	1	1	0	1	2	3	2	1	2	1	0	3

Appendix D. Programme and Average Monthly Vehicle Movements

Section 1 (Including Landfall & Transition Bay Works)
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	66	198	3	3	3															
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	110	330		3	3	3	3	3												
Cable Construction Works																				
Trench Excavation and duct installation	154	308					2	2	2	2	2	2	2							
Trench Backfill with CBS and protective covers	154	308					2	2	2	2	2	2	2							
Jointing Bay Excavation	198	396						2	2	2	2	2	2	2	2	2				
Jointing Bay Base Construction	198	396						2	2	2	2	2	2	2	2	2				
Pulling and connection of cables	110	330											3	3	3	3	3			
Backfill over Jointing Bays	198	396							2	2	2	2	2	2	2	2	2			
HDD At Landfall																				
Establish Landfall HDD construction compound	44	132					3	3												
HDD Drilling works & Ducting (assume working 24/7 7 days a week) Includes Admin of HDD Compound	90	2,880							32	32	32									
Transition Bays at Landfall																				
Excavation of transition bays	44	88										2	2							
Construction of transition bay and link box base and walls	44	132										3	3							
Connection of Cables in Transition Bays	22	66												3						
Transition bay backfill and roof and backfill over transition bay	44	132											3	3						
Landfall Compound Removal and Reinstatement	44	132												3	3					
Long / Moderate HDD crossing of B1032 Clacton Road																				
Establish HDD Entry and Exit Pit Compounds	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	66	594					9	9	9											
Remove of onshore HDD Entry and Exit Compound	44	66								1		2								
Long / Moderate HDD crossing of Railway - Exit Pit Only																				
Establish HDD Entry Pit Compound	22	22								1										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	66	198									3	3	3							
Remove of onshore HDD Entry Compound	22	44												2						
Minor HDD crossing of EA Main River																				
Establish HDD Entry and Exit Pit Compound	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110						5												
Remove of onshore HDD Entry and Exit Compound	22	22							1											
Minor HDD crossing of Little Clacton Road																				
Establish HDD Entry and Exit Pit Compound	22	22							1											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220								5	5									
Remove of onshore HDD Entry and Exit Compound	22	22										1								
Minor HDD crossing of Minor Watercourse																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	22										1								
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	110											5							
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	44												2						
Minor HDD crossing of Intermediate Pressure Gas Main																				
Establish HDD Entry and Exit Pit Compounds	22	44							2											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110								5										
Remove of onshore HDD Entry and Exit Compounds	22	22									1									
Minor HDD crossing of Minor Watercourse South of Railway Line																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22											5								
Remove of onshore HDD Entry and Exit Compounds	22												2							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	130	390														3	3	3	3	3
TCC and access road Removal	78	234																3	3	3
Plant Operators																				
Overall Plant Operators	468	14,768	17	17	25	21	34	40	35	41	41	45	52	41	29	33	22	25	25	25
Section 1 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average Total Employees per day			24	27	35	32	57	72	94	99	97	76	87	67	45	49	34	35	35	35
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	54	70	64	114	144	188	198	194	152	174	134	90	98	68	70	70	70

Appendix D. Programme and Average Monthly Vehicle Movements

Section 1 (Including Landfall & Transition Bay Works)
Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	35	55	55	77	84	95	93	76	73	63	68	69	39	36	32	55	55	62
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	40	62	62	85	93	105	103	85	81	70	76	77	44	41	36	62	62	69
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	0	1	1	2	1	1	1	0	1	2	3	2	1	2	1	0	3
Average total two-way HGV Movements Per Day	**42**	**62**	**63**	**86**	**95**	**106**	**104**	**86**	**81**	**71**	**78**	**80**	**46**	**42**	**38**	**63**	**62**	**72**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	54	70	64	114	144	188	198	194	152	174	134	90	98	68	70	70	70
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**60**	**77**	**71**	**126**	**159**	**207**	**218**	**214**	**168**	**192**	**148**	**99**	**108**	**75**	**77**	**77**	**77**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**95**	**122**	**140**	**157**	**221**	**265**	**311**	**304**	**295**	**239**	**270**	**228**	**145**	**150**	**113**	**140**	**139**	**149**

Section 2

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	44	548	12.5	12.5																
Mobilisation of Welfare and Operation Plant to TCC	22	23	1.0																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	0	386			8.8	8.8														
Cable Construction Works																				
Trench Excavation and duct installation	44	227						5.2	5.2											
Trench Backfill with CBS and protective covers	44	120						2.7	2.7											
Jointing Bay Excavation	66	77									1.2	1.2	1.2							
Jointing Bay Base Construction	66	52									0.8	0.8	0.8							
Pulling and connection of cables	44	54											1.2	1.2						
Backfill over Jointing Bays	66	49										0.7	0.7	0.7						
Long / Moderate HDD crossing of Railway - Entry Pit Only																				
Establish HDD Entry Pit Compound	22	204								9.3										
Mobilisation of HDD Kit and Welfare to compounds	22	17								0.8										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	66	91									1.4	1.4	1.4							
Demobilisation of HDD Kit and welfare	22	17												0.8						
Remove of onshore HDD Entry Compound	22	204												9.3						
Minor HDD crossing of Affinity Water 21" SI water main																				
Establish HDD Entry and Exit Pit Compounds	22	205					9.3													
Mobilisation of HDD Kit and Welfare to compounds	22	10					0.5													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38						1.7												
Demobilisation of HDD Kit and welfare to next minor HDD	22	0							0.0											
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	0							0.0											
Minor HDD crossing of Porklane Grove Woodland																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at crossing of Affinity Water 21" SI water main reused	22	0							0.0											
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at crossing of Affinity Water 21" SI water main reused	22	0							0.0											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38								1.7										
Demobilisation of HDD Kit and welfare to next minor HDD - entry pit equipment reused at next minor HDD	22	1									0.0									
Remove of onshore HDD Entry and Exit Compounds - entry pit materials reused at next minor HDD	22	103									4.7									
Minor HDD crossing of B1033 Thorpe Road - Entry Pit Only																				
Establish HDD Entry Pit Compound - materials from previous minor HDD at crossing of Porklane Grove Woodland reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at crossing of Porklane Grove Woodland reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	22										1.0								
Demobilisation of HDD Kit and welfare	22	9											0.4							
Remove of onshore HDD Entry Compound	22	102											4.7							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	44	386													8.8	8.8				
Demobilisation of Welfare from TCC	22	23																1.0		
TCC and access road Removal	44	548															12.5	12.5		
Average Section Skip HGV Movements Per Day	352	177	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
Total HGVs per day			14.0	13.0	9.3	9.3	10.3	10.1	8.4	12.3	8.5	5.6	10.9	12.5	9.3	9.3	13.0	14.0	0.0	0.0
Total two-way HGV movements per day			28.0	25.9	18.6	18.6	20.5	20.2	16.8	24.6	17.1	11.1	21.7	25.0	18.6	18.6	25.9	28.0	0.0	0.0

Section 2

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	1	1	1	1		2	1	2	2	3	3	2	2	2	2		
30T Excavator	2	2	2	2	2	3	3	2	3	3	3	3	2	2	2	2		
20T Dumper	3	3	3	3		4	4		2	4	6	3	2	2	2	2		
Smooth Drum vibrio road roller	1	1	1	1	1		1	1	1		1	1	1	1	1	1		
21T excavator	1	1	1	1	1	3	3	1	2	2	3	2	1	1	1	1		
5T Forward Tipping Dumper	1	1	1	1	1	3	3	1	2	2	3	2	1	1	1	1		
Loading shovel	1	1	1	1	1	3	3	1	2	1	3	2	2	2	2	2		
Trench Roller						2	2			1	1	1						
Tractor & fencing kit	1	1	1	1	1		1	1	1		1	1	1	1	1	1		
Tractor & trailer	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1		
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Tractor & cable drum trailer											1	1						
Tractor & soil tiller, roller, seeder													1	1	1	1		
Cement mixer																		
Mobile crane																		
Grader	1	1	1	1	1		1	1	1									
Cable laying tracked crane																		
Cable winch											1	1						
Pre-cast concrete truck																		
Mobile concrete pump									1	1	1							
Telehandler	1	1	1	1	1	2	2	1	2	1	1							
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Crawler Crane						1	1											
Mobile generator deliveries (corrected for 2 per delivery)	1	1	1	1	1	2	3	1	4	3	5	3	1	1	1	1		
Temporary lighting deliveries (corrected for 8 per delivery)	1	1	2	2	1	3	3	1	3	2	3	2	2	2	1	1		
Road surface paver & roller	1	1																
Pump deliveries (corrected for 4 per delivery)						1	1		1	2	2	1						
Total Plant Onsite In Section Per Month	20	20	20	20	16	32	37	16	32	28	42	30	20	20	19	19	0	0
Total Deliveries / Removals	20	0	2	0	4	24	7	21	16	12	14	12	12	0	1	19	0	0
Average Deliveries / Removals Per Day	0.9	0.0	0.1	0.0	0.2	1.1	0.3	1.0	0.7	0.5	0.6	0.5	0.5	0.0	0.0	0.9	0.0	0.0
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	0	1	0	1	3	1	2	2	2	2	2	2	0	1	2	0	0

Section 2
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	44	132	3	3																
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	44	132			3	3														
Cable Construction Works																				
Trench Excavation and duct installation	44	88						2	2											
Trench Backfill with CBS and protective covers	44	88						2	2											
Jointing Bay Excavation	66	132									2	2	2							
Jointing Bay Base Construction	66	132									2	2	2							
Pulling and connection of cables	44	132											3	3						
Backfill over Jointing Bays	66	132										2	2	2						
Long / Moderate HDD crossing of Railway - Entry Pit Only																				
Establish HDD Exit Pit Compound	22	44								2										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	66	396									6	6	6							
Remove of onshore HDD Exit Compound	22	44												2						
Minor HDD crossing of Affinity Water 21" SI water main																				
Establish HDD Entry and Exit Pit Compounds	22	44					2													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110						5												
Remove of onshore HDD Entry and Exit Compounds	22	22							1											
Minor HDD crossing of Porklane Grove Woodland																				
Establish HDD Entry and Exit Pit Compound	22	22							1											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	22	110								5										
Remove of onshore HDD Entry and Exit Compound	22	22									1									
Minor HDD crossing of B1033 Thorpe Road - Entry Pit Only																				
Establish HDD Entry Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	22	66										3								
Remove of onshore HDD Entry Compound	22	44											2							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	52	156													3	3				
TCC and access road Removal	52	156															3	3		
Plant Operators																				
Overall Plant Operators	416	7,982	17	17	16	16	13	25	29	13	23	20	31	23	16	16	16	16		
Section 2 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	416	1,664	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Average Total Employees per day			24	24	23	23	19	38	39	24	39	39	52	34	23	23	23	23	0	0
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	48	46	46	38	76	78	48	78	78	104	68	46	46	46	46	0	0

Section 2

Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	28	26	19	19	21	20	17	25	17	11	22	25	19	19	26	28	0	0
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	31	29	21	21	23	23	19	27	19	13	24	28	21	21	29	31	0	0
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	0	1	0	1	3	1	2	2	2	2	2	2	0	1	2	0	0
Average total two-way HGV Movements Per Day	**33**	**29**	**22**	**21**	**24**	**26**	**20**	**29**	**21**	**15**	**26**	**30**	**23**	**21**	**30**	**33**	**0**	**0**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	48	46	46	38	76	78	48	78	78	104	68	46	46	46	46	0	0
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**53**	**51**	**51**	**42**	**84**	**86**	**53**	**86**	**86**	**115**	**75**	**51**	**51**	**51**	**51**	**0**	**0**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**86**	**82**	**73**	**72**	**66**	**110**	**106**	**82**	**107**	**101**	**141**	**105**	**74**	**72**	**81**	**84**	**0**	**0**

Section 3
Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	66	1,227	18.6	18.6	18.6															
Mobilisation of Welfare and Operation Plant to TCC	22	48	2.2																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	132	1,613		12.2	12.2	12.2	12.2	12.2	12.2											
Cable Construction Works																				
Trench Excavation and duct installation	176	1,206				6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9							
Trench Backfill with CBS and protective covers	176	637				3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6							
Jointing Bay Excavation	220	254					1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2				
Jointing Bay Base Construction	220	173					0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8				
Pulling and connection of cables	110	194											1.8	1.8	1.8	1.8	1.8			
Backfill over Jointing Bays	220	162						0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7			
Long / Moderate HDD Crossing of B1035 Tendering Road and B1035 Thorpe Road , South-East of Junction with Swan Road/ Crossing of Swan Road, Woodland Block and Watercourse to the South - Entry Pit Only																				
Establish HDD Entry Pit Compound	44	204			4.6	4.6														
Mobilisation of HDD Kit and Welfare to compound	22	17				0.8														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	88	91					1.0	1.0	1.0	1.0										
Demobilisation of HDD Kit and welfare to HDD compound at Damants Farm Lane	22	0									0.0									
Remove of onshore HDD Entry Compound- entry pit materials reused at Damants Farm Lane HDD	22	0									0.0									
Long / Moderate HDD crossing of Affinity Water 21" SI water main and Damant's Farm Lane - Entry and Exit																				
Establish HDD Entry and Exit Pit Compounds- Materials from Swan Road crossing reused for Entry pit	22	103									4.7									
Mobilisation of HDD Kit and Welfare to compounds- Equipment from Swan Road crossing reused for Entry pit	22	5									0.2									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	88	165										1.9	1.9	1.9	1.9					
Demobilisation of HDD Kit and welfare	22	22														1.0				
Remove of onshore HDD Compounds	22	307														14.0				
Minor HDD crossing of Golden Lane																				
Establish HDD Entry and Exit Pit Compounds	22	204					9.3													
Mobilisation of HDD Kit and Welfare to compounds	22	10					0.5													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	54						1.2	1.2											
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Golden Lane	22	0								0.0										
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Golden Lane	22	0								0.0										
Minor HDD crossing of Woodland Block North East of Thorpe-le-Soken																				
Establish HDD Entry and Exit Pits Compound - materials from previous minor HDD of Horse Paddocks reused	22	0								0.0										
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD of Horse Paddocks reused	22	0								0.0										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	54									1.2	1.2								
Demobilisation of HDD Kit and welfare to next minor HDD at B1041 Landemere Road	22	0											0.0							
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at B1414 Landemere Road	22	0											0.0							
Minor HDD crossing of B1414 Landemere Road																				
Establish HDD Entry and Exit Pit Compounds- materials from previous minor HDD at Golden Lane reused	22	0											0.0							
Mobilisation of HDD Kit and Welfare to compounds- equipment from previous minor HDD at Golden Lane reused	22	0											0.0							
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	54												2.5						
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Woodland Block NE Thorpe-le-Soken	22	10													0.5					
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Woodland Block NE Thorpe-le-Soken	22	204													9.3					
Minor HDD Crossing of Horse Paddocks and Public Right of Way Footpath																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at B1041 Landemere Road reused	22	204				9.3														
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at B1041 Landemere Road reused	22	10				0.5														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	54					1.2	1.2												
Demobilisation of HDD Kit and welfare	22	0							0.0											
Remove of onshore HDD Entry and Exit Compounds	22	0							0.0											
Minor HDD crossing of B1034 Sneating Hall Lane																				
Establish HDD Entry and Exit Pit Compounds	22	0							0.0											
Mobilisation of HDD Kit and Welfare to compounds	22	0							0.0											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	54								2.5										
Demobilisation of HDD Kit and welfare- equipment for exit pit reused at next minor HDD at B1033 Thorpe Road	22	9									0.4									
Remove of onshore HDD Entry and Exit Compounds - materials for exit pit reused at next minor HDD at B1033 Thorpe Road	22	102									4.6									
Minor HDD crossing of B1033 Thorpe Road - Exit Pit Only																				
Establish HDD Exit Pit Compound- materials from previous minor HDD at B1034 Sneating Hall Lane reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - exit pit equipment from previous minor HDD at B1034 Sneating Hall Lane reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	24										1.1								
Demobilisation of HDD Kit and welfare	22	1											0.0							
Remove of onshore HDD Exit Compound	22	102											4.6							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	110	1,613													14.7	14.7	14.7	14.7	14.7	
Demobilisation of Welfare from TCC	22	71																		3.2
TCC and access road Removal	66	1,227																18.6	18.6	18.6
Average Section Skip HGV Movements Per Day	396	423	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Total HGVs per day			21.8	31.9	36.5	38.9	37.7	29.9	28.7	17.7	25.4	18.4	22.5	9.8	31.8	35.1	18.2	34.3	34.3	22.9
Total two-way HGV movements per day			43.7	63.8	73.0	77.8	75.4	59.8	57.4	35.4	50.8	36.8	45.1	19.7	63.6	70.3	36.5	68.6	68.6	45.8

Section 3

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	2	2	1	1	2	3	3	3	2	4	2	4	4	3	3	3	2
30T Excavator	2	3	3	3	4	4	5	3	3	3	4	3	4	4	3	3	3	2
20T Dumper	3	3	3	6	5	7	8	6	6	6	7	4	7	7	3	4	4	2
Smooth Drum vibrio road roller	1	2	2	1	1	1	2				1		1	1	1	2	2	1
21T excavator	1	1	1	3	3	3	3	3	3	3	4	2	3	3	1	2	2	1
5T Forward Tipping Dumper	1	2	2	3	3	3	3	3	4	3	4	2	3	3	1	2	2	1
Loading shovel	1	2	2	3	3	3	4	3	3	3	5	1	3	3	2	3	3	2
Trench Roller				2	2	2	2	2	2	2	3	1	1	1	1			
Tractor & fencing kit	1	1	1	1	1	1	1	1	1		1		1	1	1	1	1	1
Tractor & trailer	1	2	2	3	2	1	2	1	1	1	2	1	1	1	1	2	2	1
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & cable drum trailer											1	1	1	1	1			
Tractor & soil tiller, roller, seeder													1	1	1	1	1	1
Cement mixer																		
Mobile crane																		
Grader	1	2	2	1	2	1	2				1							
Cable laying tracked crane																		
Cable winch											1	1	1	1	1			
Pre-cast concrete truck																		
Mobile concrete pump					1	1	1			1	1	1	1	1				
Telehandler	1	2	2	3	3	1	2	2	2	2	2	1	1	1				
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Crawler Crane				1	1	1	1			1	1							
Mobile generator deliveries (corrected for 2 per delivery)	1	2	3	4	3	6	7	6	6	5	8	4	6	6	2	2	2	1
Temporary lighting deliveries (corrected for 8 per delivery)	1	2	3	3	5	5	6	3	3	3	6	2	4	4	2	2	2	1
Road surface paver & roller	1	1	1															
Pump deliveries (corrected for 4 per delivery)				1	2	3	3	2	2	3	3	2	2	2	1			
Total Plant Onsite In Section Per Month	20	30	32	42	45	48	58	41	42	41	62	31	48	48	28	30	30	19
Total Deliveries / Removals	20	10	2	18	9	11	10	17	1	7	21	31	17	0	20	10	0	30
Average Deliveries / Removals Per Day	0.9	0.5	0.1	0.8	0.4	0.5	0.5	0.8	0.0	0.3	1.0	1.4	0.8	0.0	0.9	0.5	0.0	1.4
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	1	1	2	1	1	1	2	1	1	2	3	2	0	2	1	0	3

Section 3
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	66	198	3	3	3															
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	132	396		3	3	3	3	3	3											
Cable Construction Works																				
Trench Excavation and duct installation	176	352				2	2	2	2	2	2	2	2							
Trench Backfill with CBS and protective covers	176	352				2	2	2	2	2	2	2	2							
Jointing Bay Excavation	220	440					2	2	2	2	2	2	2	2	2	2				
Jointing Bay Base Construction	220	440					2	2	2	2	2	2	2	2	2	2				
Pulling and connection of cables	110	330											3	3	3	3	3			
Backfill over Jointing Bays	220	440						2	2	2	2	2	2	2	2	2	2			
Long / Moderate HDD Crossing of B1035 Tendering Road and B1035 Thorpe Road , South-East of Junction with Swan Road - Entry Pit Only																				
Establish HDD Entry Pit Compound	44	88			2	2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin	88	528					6	6	6	6										
Remove of onshore HDD Entry Compound	22	22									1									
Long / Moderate HDD crossing of Affinity Water 21" SI water main and Damant's Farm Lane - Entry and Exit																				
Establish HDD Entry and Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin	88	792										9	9	9	9					
Remove of onshore HDD Entry and Exit Compound	22	44														2				
Minor HDD crossing of Golden Lane																				
Establish HDD Entry and Exit Pit Compound	22	44					2													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220						5	5											
Remove of onshore HDD Entry and Exit Compound	22	22								1										
Minor HDD crossing of Woodland Block North East of Thorpe-le-Soken																				
Establish HDD Entry and Exit Pit Compound	22	22								1										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220									5	5								
Remove of onshore HDD Entry and Exit Compound	22	22											1							
Minor HDD crossing of B1414 Landemere Road																				
Establish HDD Entry and Exit Pit Compound	22	22											1							
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110												5						
Remove of onshore HDD Entry and Exit Compound	22	44													2					
Minor HDD Crossing of Horse Paddocks and Public Right of Way Footpath																				
Establish HDD Entry and Exit Pit Compound	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220					5	5												
Remove of onshore HDD Entry and Exit Compound	22	22							1											
Minor HDD crossing of B1034 Sneating Hall Lane																				
Establish HDD Entry Pit Compound	22	22							1											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110								5										
Remove of onshore HDD Entry Compound	22	22									1									
Minor HDD crossing of B1033 Thorpe Road - Exit Pit Only																				
Establish HDD Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	44										2								
Remove of onshore HDD Exit Compound	22	44											2							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	130	390													3	3	3	3	3	
TCC and access road Removal	78	234																3	3	3
Plant Operators																				
Overall Plant Operators	468	13,520	17	25	25	33	34	33	41	29	30	29	44	22	35	35	22	25	25	16
Section 3 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average Total Employees per day			24	35	37	48	62	66	71	56	53	59	74	49	62	53	34	35	35	23
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	70	74	96	124	132	142	112	106	118	148	98	124	106	68	70	70	46

Section 3

Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	44	64	73	78	75	60	57	35	51	37	45	20	64	70	36	69	69	46
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	48	70	80	85	83	66	63	39	56	41	50	22	70	77	40	75	75	50
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	1	1	2	1	1	1	2	1	1	2	3	2	0	2	1	0	3
Average total two-way HGV Movements Per Day	**50**	**71**	**81**	**87**	**84**	**67**	**64**	**41**	**57**	**42**	**52**	**25**	**72**	**77**	**42**	**76**	**75**	**53**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	70	74	96	124	132	142	112	106	118	148	98	124	106	68	70	70	46
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**77**	**82**	**106**	**137**	**146**	**157**	**124**	**117**	**130**	**163**	**108**	**137**	**117**	**75**	**77**	**77**	**51**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**103**	**148**	**163**	**193**	**221**	**213**	**221**	**165**	**174**	**172**	**215**	**133**	**209**	**194**	**117**	**153**	**152**	**104**

Section 4A

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	44	548	12.5	12.5																
Mobilisation of Welfare and Operation Plant to TCC	22	23	1.0																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	44	513			11.7	11.7														
Cable Construction Works																				
Trench Excavation and duct installation	66	376								5.7	5.7	5.7								
Trench Backfill with CBS and protective covers	66	199								3.0	3.0	3.0								
Jointing Bay Excavation	66	77										1.2	1.2	1.2						
Jointing Bay Base Construction	66	52										0.8	0.8	0.8						
Pulling and connection of cables	44	54														1.2	1.2			
Backfill over Jointing Bays	66	49													0.7	0.7	0.7			
Long / Moderate HDD Crossing of B1035 Tendering Road and B1035 Thorpe Road , South-East of Junction with Swan Road/ Crossing of Swan Road, Woodland Block and Watercourse to the South - Exit Pit Only																				
Establish HDD Exit Pit Compounds	22	103				4.7														
Mobilisation of HDD Kit and Welfare to compounds	22	5				0.2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	88	73					0.8	0.8	0.8	0.8										
Demobilisation of HDD Kit and welfare to HDD exit pit compound at Tendering Brook	22	0									0.0									
Remove of onshore HDD Entry Compound - materials reused at next Long / moderate HDD at crossing of Tendering Brook.	22	0									0.0									
Long / Moderate HDD crossing of Tendering Brook and Lodge Lane - Exit Pit Only																				
Establish HDD Exit Pit Compound - materials from previous long / moderate HDD at crossing of Swan Road reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous long / moderate HDD at Swan Road reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	88	73										0.8	0.8	0.8	0.8					
Demobilisation of HDD Kit and welfare	22	5														0.2				
Remove of onshore HDD Exit Compound	22	103														4.7				
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	44	513															11.7	11.7		
Demobilisation of Welfare from TCC	0	23																		1.0
TCC and access road Removal	0	548																	12.5	12.5
Average Section Skip HGV Movements Per Day	396	180	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total HGVs per day			14.0	12.9	12.1	17.0	1.3	1.3	1.3	10.0	9.2	11.9	3.2	3.2	2.0	7.3	14.1	12.1	12.9	14.0
Total two-way HGV movements per day			27.9	25.8	24.2	34.0	2.6	2.6	2.6	20.0	18.3	23.9	6.5	6.5	4.0	14.6	28.2	24.2	25.8	27.9

Section 4A

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	1	1	2					2				2	3	3	2	2	2
30T Excavator	2	2	2	3				3	3	3	2	2	2	3	3	2	2	2
20T Dumper	3	3	3	3				4	4	4	2	2	2	3	3	2	2	2
Smooth Drum vibrio road roller	1	1	1	1					1					1	1	1	1	1
21T excavator	1	1	1	2				3	3	3	1	1	1	2	1	1	1	1
5T Forward Tipping Dumper	1	1	1	2				3	3	3	1	1	1	2	1	1	1	1
Loading shovel	1	1	1	2				3	3	3			1	2	2	2	2	2
Trench Roller								2	2	2			1	1	1			
Tractor & fencing kit	1	1	1	1					1					1	1	1	1	1
Tractor & trailer	1	1	1	1				2	1	1	1	1		1	1	1	1	1
Tractor & Fuel bowser (or self-propelled)	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1
Tractor & Water bowser (for dust suppression)	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1
Tractor & cable drum trailer														1	1			
Tractor & soil tiller, roller, seeder															1	1	1	1
Cement mixer																		
Mobile crane																		
Grader	1	1	1	1					1									
Cable laying tracked crane																		
Cable winch														1	1			
Pre-cast concrete truck																		
Mobile concrete pump										1	1	1						
Telehandler	1	1	1	1				2	2	2	1	1						
Mobile self-contained welfare unit	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1
Crawler Crane								1	1	1								
Mobile generator deliveries (corrected for 2 per delivery)	1	1	1	2				2	3	4	2	2	2	3	2	1	1	1
Temporary lighting deliveries (corrected for 8 per delivery)	1	1	2	2				3	3	3	1	1	1	2	2	2	1	1
Road surface paver & roller	1	1																
Pump deliveries (corrected for 4 per delivery)								1	1	2	1	1	1	1	1			
Total Plant Onsite In Section Per Month	20	20	20	26	0	0	0	32	37	35	16	16	17	30	28	20	19	19
Total Deliveries / Removals	20	0	2	6	26	0	0	32	7	8	19	0	7	13	30	0	1	19
Average Deliveries / Removals Per Day	0.9	0.0	0.1	0.3	1.2	0.0	0.0	1.5	0.3	0.4	0.9	0.0	0.3	0.6	1.4	0.0	0.0	0.9
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	0	1	1	3	0	0	3	1	1	2	0	1	2	3	0	1	2

Section 4A
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	44	132	3	3																
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	44	132			3	3														
Cable Construction Works																				
Trench Excavation and duct installation	66	132								2	2	2								
Trench Backfill with CBS and protective covers	66	132								2	2	2								
Jointing Bay Excavation	66	132										2	2	2						
Jointing Bay Base Construction	66	132										2	2	2						
Pulling and connection of cables	44	132														3	3			
Backfill over Jointing Bays	66	132													2	2	2			
Long / Moderate HDD Crossing of B1035 Tendering Road and B1035 Thorpe Road , South-East of Junction with Swan Road - Exit Pit Only																				
Establish HDD Exit Pit Compounds	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	88	264					3	3	3	3										
Remove of onshore HDD Exit Compound	22	22									1									
Long / Moderate HDD crossing of Tendering Brook and Lodge Lane - Exit Pit Only																				
Establish HDD Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	88	264										3	3	3	3					
Remove of onshore HDD Exit Compound	22	44														2				
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	52	156															3	3		
TCC and access road Removal	52	156																	3	3
Plant Operators																				
Overall Plant Operators	468	7,202	17	17	16	21	0	0	0	25	29	25	11	11	12	23	22	16	16	16
Section 4 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Project Engineering Personnel Based at TCC South of A120																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average Total Employees per day			24	24	23	30	7	7	7	36	39	40	22	22	21	34	34	23	23	23
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	48	46	60	14	14	14	72	78	80	44	44	42	68	68	46	46	46

Section 4A
Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	28	26	24	34	3	3	3	20	18	24	6	6	4	15	28	24	26	28
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	31	29	27	38	3	3	3	22	21	27	8	8	5	16	31	27	29	31
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	0	1	1	3	0	0	3	1	1	2	0	1	2	3	0	1	2
Average total two-way HGV Movements Per Day	**33**	**29**	**28**	**39**	**6**	**3**	**3**	**25**	**22**	**28**	**10**	**8**	**6**	**18**	**34**	**27**	**30**	**33**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	48	46	60	14	14	14	72	78	80	44	44	42	68	68	46	46	46
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**53**	**51**	**66**	**16**	**16**	**16**	**80**	**86**	**88**	**49**	**49**	**47**	**75**	**75**	**51**	**51**	**51**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**86**	**82**	**79**	**105**	**22**	**19**	**19**	**105**	**108**	**116**	**59**	**57**	**53**	**93**	**109**	**78**	**81**	**84**

Section 4B

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	88	1,227	13.9	13.9	13.9	13.9														
Mobilisation of Welfare and Operation Plant to TCC	22	71	3.2																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	110	1,288		11.7	11.7	11.7	11.7	11.7												
Cable Construction Works																				
Trench Excavation and duct installation	132	988						7.5	7.5	7.5	7.5	7.5	7.5							
Trench Backfill with CBS and protective covers	132	521						3.9	3.9	3.9	3.9	3.9	3.9							
Jointing Bay Excavation	176	204							1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2				
Jointing Bay Base Construction	176	138							0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8				
Pulling and connection of cables	88	144												1.6	1.6	1.6	1.6			
Backfill over Jointing Bays	176	130								0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7			
Long / Moderate HDD crossing of A120 - Entry Pit Only																				
Establish HDD Entry Pit Compounds	44	204					4.6	4.6												
Mobilisation of HDD Kit and Welfare to compounds	22	17						0.8												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	67							1.5	1.5										
Demobilisation of HDD Kit and welfare to HDD compound at Tendering Brook	22	0									0.0									
Remove of onshore HDD Entry Compound - materials reused at next Long / moderate HDD at crossing of Tendering Brook.	22	0									0.0									
Long / Moderate HDD crossing of Tendering Brook and Lodge Lane - Entry Pit Only																				
Establish HDD Entry and Exit Pit Compounds - materials from previous long / moderate HDD at crossing of A120	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous long / moderate HDD at A120 crossing reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	88	67										0.8	0.8	0.8	0.8					
Demobilisation of HDD Kit and welfare	22	17														0.8				
Remove of onshore HDD Entry Compound	22	204														9.3				
Minor HDD crossing of Stones Green Road																				
Establish HDD Exit Pit Compounds	22	205					9.3													
Mobilisation of HDD Kit and Welfare to compounds	22	10					0.5													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	40						1.8												
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Wolves Hall Lane	22	0							0.0											
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Wolves Hall Lane	22	0							0.0											
Minor HDD crossing of Wolves Hall Lane																				
Establish HDD Exit Pit Compounds - materials from previous minor HDD at Stones Green Road reused	22	0							0.0											
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at Stones Green Road reused	22	0							0.0											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	40								1.8										
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Affinity Water 21" SI water main	22	0									0.0									
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Affinity Water 21" SI water main	22	0									0.0									
Minor HDD crossing of Affinity Water 21" SI Water Main																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at Wolves Hall Lane reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at Wolves Hall Lane reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	40										1.8								
Demobilisation of HDD Kit and welfare	22	10											0.5							
Remove of onshore HDD Entry and Exit Compounds	22	205											9.3							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	88	1,288													14.6	14.6	14.6	14.6		
Demobilisation of Welfare from TCC	22	71																		3.2
TCC and access road Removal	88	1,227															13.9	13.9	13.9	13.9
Average Section Skip HGV Movements Per Day	396	364	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total HGVs per day			18.1	26.6	26.6	26.6	27.0	31.3	15.8	18.4	15.0	17.6	25.5	6.0	20.6	29.9	31.9	29.5	14.9	18.1
Total two-way HGV movements per day			36.2	53.1	53.1	53.1	54.0	62.6	31.6	36.8	30.1	35.2	51.1	12.0	41.3	59.8	63.7	59.0	29.7	36.2

Section 4B

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	2	2	2	2	1	2	2	3	2	3	2	3	4	4	3	2	2
30T Excavator	2	3	3	3	3	3	3	3	3	3	4	3	3	4	4	3	2	2
20T Dumper	3	3	3	3	3	6	6	6	6	6	7	4	6	7	4	4	2	2
Smooth Drum vibrio road roller	1	2	2	2	1	1	1				1		1	1	1	2	1	1
21T excavator	1	1	1	1	2	3	3	3	3	3	3	2	3	3	1	2	1	1
5T Forward Tipping Dumper	1	2	2	2	2	3	3	3	4	3	3	2	3	3	1	2	1	1
Loading shovel	1	2	2	2	2	3	3	3	3	3	4	1	3	3	3	3	2	2
Trench Roller						2	2	2	2	2	2	1	1	1	1			
Tractor & fencing kit	1	1	1	1	1	1	1		1		1		1	1	1	1	1	1
Tractor & trailer	1	2	2	2	1	3	2	1	1	1	1	1	2	1	1	2	1	1
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & cable drum trailer												1	1	1	1			
Tractor & soil tiller, roller, seeder													1	1	1	1	1	1
Cement mixer																		
Mobile crane																		
Grader	1	2	2	2	1	1	1											
Cable laying tracked crane																		
Cable winch												1	1	1	1			
Pre-cast concrete truck																		
Mobile concrete pump							1	1		1	1	1	1	1				
Telehandler	1	2	2	2	1	3	2	2	2	2	2	1	1	1				
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Crawler Crane						1	1	1		1	1							
Mobile generator deliveries (corrected for 2 per delivery)	1	2	2	2	2	4	5	5	6	5	6	4	5	6	4	2	1	1
Temporary lighting deliveries (corrected for 8 per delivery)	1	2	2	2	2	3	3	3	3	3	4	2	3	4	3	2	1	1
Road surface paver & roller	1	1	1	1														
Pump deliveries (corrected for 4 per delivery)						1	2	3	2	3	3	2	2	2	1			
Total Plant Onsite In Section Per Month	20	30	30	30	26	42	44	41	42	41	49	31	44	48	35	30	19	19
Total Deliveries / Removals	20	10	0	0	6	18	6	5	7	7	8	22	13	6	13	13	11	19
Average Deliveries / Removals Per Day	0.9	0.5	0.0	0.0	0.3	0.8	0.3	0.2	0.3	0.3	0.4	1.0	0.6	0.3	0.6	0.6	0.5	0.9
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	1	0	0	1	2	1	1	1	1	1	2	2	1	2	2	1	2

Section 4B
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	88	264	3	3	3	3														
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	110	330		3	3	3	3	3												
Cable Construction Works																				
Trench Excavation and duct installation	132	264						2	2	2	2	2	2							
Trench Backfill with CBS and protective covers	132	264						2	2	2	2	2	2							
Jointing Bay Excavation	176	352							2	2	2	2	2	2	2	2				
Jointing Bay Base Construction	176	352							2	2	2	2	2	2	2	2				
Pulling and connection of cables	88	264												3	3	3	3			
Backfill over Jointing Bays	176	352								2	2	2	2	2	2	2	2			
Long / Moderate HDD crossing of A120 - Entry Pit Only																				
Establish HDD Entry Compound	44	88					2	2												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	264							6	6										
Remove of onshore HDD Entry Compound	22	22									1									
Long / Moderate HDD crossing of Tendering Brook and Lodge Lane - Entry Pit Only																				
Establish HDD Entry and Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	88	528										6	6	6	6					
Remove of onshore HDD Entry Compound	22	44														2				
Minor HDD crossing of Stones Green Road																				
Establish HDD Exit Pit Compound	22	22					1													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110						5												
Remove of onshore HDD Exit Compound	22	22							1											
Minor HDD crossing of Wolves Hall Lane																				
Establish HDD Exit Pit Compound	22	22							1											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110								5										
Remove of onshore HDD Entry and Exit Compound	22	22									1									
Minor HDD crossing of Affinity Water 21" SI Water Main																				
Establish HDD Entry and Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	22	110										5								
Remove of onshore HDD Entry and Exit Compounds	22	44											2							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	104	312													3	3	3	3		
TCC and access road Removal	104	312															3	3	3	3
Plant Operators																				
Overall Plant Operators	468	12,350	17	25	25	25	21	33	33	29	30	29	35	22	33	35	26	25	16	16
Section 4 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Project Engineering Personnel Based at TCC South of A120																				
Head Engineer, 2 x Admin Staff, QS, Assistant QS, Overall Site Foreman, H&S Supervisor, H&S Assistant, Environmental Clerk, Assistant Environmental Clerk, Lead Surveyor, 2 x catering staff, 2 x client representative, 2 x owners engineers, 3 x additional allowance and additional 5 for second project	468	11,700	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Average Total Employees per day			24	35	35	35	31	51	53	54	48	54	57	41	55	53	41	35	23	23
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	70	70	70	62	102	106	108	96	108	114	82	110	106	82	70	46	46

Section 4B
Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	36	53	53	53	54	63	32	37	30	35	51	12	41	60	64	59	30	36
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	40	59	59	59	60	69	35	41	33	39	57	14	46	66	70	65	33	40
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	1	0	0	1	2	1	1	1	1	1	2	2	1	2	2	1	2
Average total two-way HGV Movements Per Day	**42**	**60**	**59**	**59**	**61**	**71**	**36**	**42**	**34**	**40**	**58**	**16**	**48**	**67**	**72**	**67**	**34**	**42**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	70	70	70	62	102	106	108	96	108	114	82	110	106	82	70	46	46
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**77**	**77**	**77**	**69**	**113**	**117**	**119**	**106**	**119**	**126**	**91**	**121**	**117**	**91**	**77**	**51**	**51**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**95**	**137**	**136**	**136**	**130**	**184**	**153**	**161**	**140**	**159**	**184**	**107**	**169**	**184**	**163**	**144**	**85**	**93**

Section 5

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	66	897	13.6	13.6	13.6															
Mobilisation of Welfare and Operation Plant to TCC	22	71	3.2																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	66	754			11.4	11.4	11.4													
Cable Construction Works																				
Trench Excavation and duct installation	110	749						6.8	6.8	6.8	6.8	6.8								
Trench Backfill with CBS and protective covers	110	396						3.6	3.6	3.6	3.6	3.6								
Jointing Bay Excavation	132	153							1.2	1.2	1.2	1.2	1.2	1.2						
Jointing Bay Base Construction	132	104							0.8	0.8	0.8	0.8	0.8	0.8						
Pulling and connection of cables	66	108											1.6	1.6	1.6					
Backfill over Jointing Bays	132	98								0.7	0.7	0.7	0.7	0.7	0.7					
Long / Moderate HDD crossing of A120 - Exit Pit Only																				
Establish HDD Exit Pit Compound	22	103					4.7													
Mobilisation of HDD Kit and Welfare to compound	22	5						0.2												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	36							0.8	0.8										
Demobilisation of HDD Kit and welfare	22	5									0.2									
Remove of onshore HDD Exit Compound	22	103										4.7								
Minor HDD crossing of Bentley Road - Entry Only																				
Establish HDD Entry Pit Compound	22	102				4.6														
Mobilisation of HDD Kit and Welfare to compound	22	9				0.4														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	32					1.5													
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of B1035 and 21" SI Water Main	22	0						0.0												
Remove of onshore HDD Entry Compound -materials reused at next minor HDD at crossing of B1035 and 21" SI Water Main	22	0						0.0												
Minor HDD crossing of B1035 and 21" SI Water Main																				
Establish HDD Entry and Exit Pit Compounds -materials for entry pit reused from previous minor HDD of Bentley Road	22	102						4.7												
Mobilisation of HDD Kit and Welfare to compounds - equipment for entry pit reused from previous minor HDD of Bentley Road	22	1						0.0												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	61							1.4	1.4										
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of the water main East of B1035	22	10									0.5									
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of the water main East of the B1035	22	205											9.3							
Minor HDD crossing of Water Main East of B1035																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at crossing of B1035 and 21" SI Water Main reused	44	205					4.6	4.6												
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at crossing of B1035 and 21" SI Water Main reused	22	10						0.5												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	61							1.4	1.4										
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of watercourse to west of B1035	22	0									0.0									
Remove of onshore HDD Entry and Exit Compounds - Materials reused at next minor HDD at crossing of watercourse to west of B1035	22	0									0.0									
Minor HDD crossing of Watercourse West of B1035																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at crossing of water main east of B1035 reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at crossing of watermain east of B1035 reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	61										1.4	1.4							
Demobilisation of HDD Kit and welfare	22	10												0.5						
Remove of onshore HDD Entry and Exit Compounds	22	205												9.3						
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	66	754													11.4	11.4	11.4			
Demobilisation of Welfare from TCC	0	71																		3.2
TCC and access road Removal	0	897																13.6	13.6	13.6
Average Section Skip HGV Movements Per Day	396	308	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
		Total HGVs per day	17.6	14.4	25.8	17.3	23.0	21.2	16.7	17.5	14.6	19.9	15.8	14.9	14.6	12.2	12.2	14.4	14.4	17.6
		Total two-way HGV movements per day	35.2	28.7	51.6	34.5	46.0	42.4	33.4	34.9	29.1	39.9	31.6	29.7	29.2	24.4	24.4	28.7	28.7	35.2

Section 5

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	1	2	2	2	2		2	3	3	3	4	3	2	2			
30T Excavator	2	2	3	3	3	4	3	3	3	4	3	4	3	2	2			
20T Dumper	3	3	3	3	3	4	4	6	6	7	6	7	3	2	2			
Smooth Drum vibrio road roller	1	1	2	1	1	1				1	1	1	1	1	1			
21T excavator	1	1	1	2	2	3	3	3	3	3	3	3	1	1	1			
5T Forward Tipping Dumper	1	1	2	2	2	3	3	3	4	3	3	3	1	1	1			
Loading shovel	1	1	2	2	2	3	3	3	3	4	3	3	2	2	2			
Trench Roller						2	2	2	2	2	1	1	1					
Tractor & fencing kit	1	1	1	1	1	1			1	1	1	1	1	1	1			
Tractor & trailer	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1			
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Tractor & cable drum trailer											1	1	1					
Tractor & soil tiller, roller, seeder												1	1	1	1			
Cement mixer																		
Mobile crane																		
Grader	1	1	2	1	1	1												
Cable laying tracked crane																		
Cable winch											1	1	1					
Pre-cast concrete truck																		
Mobile concrete pump							1	1		1	1	1						
Telehandler	1	1	2	1	1	2	2	2	2	2	1	1						
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Crawler Crane						1	1	1		1								
Mobile generator deliveries (corrected for 2 per delivery)	1	1	2	2	2	4	4	5	6	6	5	6	2	1	1			
Temporary lighting deliveries (corrected for 8 per delivery)	1	1	2	2	2	4	3	3	3	4	3	4	2	2	2			
Road surface paver & roller	1	1	1															
Pump deliveries (corrected for 4 per delivery)						1	2	3	2	3	2	2	1					
Total Plant Onsite In Section Per Month	20	20	30	26	26	40	35	41	42	49	42	48	28	20	20	19	19	19
Total Deliveries / Removals	20	0	10	6	0	14	9	6	7	9	11	6	20	8	20	0	0	19
Average Deliveries / Removals Per Day	0.9	0.0	0.5	0.3	0.0	0.6	0.4	0.3	0.3	0.4	0.5	0.3	0.9	0.4	0.9	0.0	0.0	0.9
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	0	1	1	0	2	1	1	1	1	1	1	2	1	2	0	0	2

Section 5
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	66	198	3	3	3															
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	22	66	3																	
Installation of Auxiliary Supply Trench	44	132			3	3	3													
Cable Construction Works																				
Trench Excavation and duct installation	110	220						2	2	2	2	2								
Trench Backfill with CBS and protective covers	110	220						2	2	2	2	2								
Jointing Bay Excavation	132	264							2	2	2	2	2	2						
Jointing Bay Base Construction	132	264							2	2	2	2	2	2						
Pulling and connection of cables	66	198											3	3	3					
Backfill over Jointing Bays	132	264								2	2	2	2	2	2					
Long / Moderate HDD crossing of A120 - Exit Pit Only																				
Establish HDD Exit Pit Compound	22	44					2													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	132							3	3										
Remove of onshore HDD Exit Compound	22	44										2								
Minor HDD crossing of Bentley Road - Entry Only																				
Establish HDD Entry Pit Compound	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	66					3													
Remove of onshore HDD Entry Compound	22	22						1												
Minor HDD crossing of B1035 and 21" SI Water Main																				
Establish HDD Entry and Exit Pit Compound	22	22						1												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220							5	5										
Remove of onshore HDD Entry and Exit Compound	22	44											2							
Minor HDD crossing of Water Main East of B1035																				
Establish HDD Entry and Exit Pit Compound	44	88					2	2												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220							5	5										
Remove of onshore HDD Entry and Exit Compound	22	22									1									
Minor HDD crossing of Watercourse West of B1035																				
Establish HDD Entry and Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220										5	5							
Remove of onshore HDD Entry and Exit Compound	22	44												2						
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	78	234													3	3	3			
TCC and access road Removal	0	#DIV/0!																3	3	3
Plant Operators																				
Overall Plant Operators	468	9,620	17	17	25	21	21	30	25	29	30	35	31	35	22	16	16	0	0	0
Section 5 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average Total Employees per day			27	24	35	30	35	42	50	56	46	56	51	50	34	23	23	7	7	7
Maximum Total Employee Two-way Movements Per Day (car/small van)			54	48	70	60	70	84	100	112	92	112	102	100	68	46	46	14	14	14

Section 5
Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	35	29	52	35	46	42	33	35	29	40	32	30	29	24	24	29	29	35
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	39	32	56	38	50	46	37	38	32	44	35	33	32	27	27	32	32	39
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	0	1	1	0	2	1	1	1	1	1	1	2	1	2	0	0	2
Average total two-way HGV Movements Per Day	**41**	**32**	**57**	**39**	**50**	**48**	**38**	**39**	**33**	**45**	**36**	**34**	**34**	**28**	**29**	**32**	**32**	**41**
Maximum Total Employee Two-way Movements Per Day (car/small van)	54	48	70	60	70	84	100	112	92	112	102	100	68	46	46	14	14	14
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**60**	**53**	**77**	**66**	**77**	**93**	**110**	**124**	**102**	**124**	**113**	**110**	**75**	**51**	**51**	**16**	**16**	**16**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**101**	**85**	**134**	**105**	**127**	**141**	**148**	**163**	**135**	**169**	**149**	**144**	**109**	**79**	**80**	**48**	**48**	**57**

Section 6 & 7

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	66	1,170	17.7	17.7	17.7															
Mobilisation of Welfare and Operation Plant to TCC	22	71	3.2																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	88	1,696				19.3	19.3	19.3	19.3											
Cable Construction Works																				
Trench Excavation and duct installation	132	899							6.8	6.8	6.8	6.8	6.8	6.8						
Trench Backfill with CBS and protective covers	132	475							3.6	3.6	3.6	3.6	3.6	3.6						
Jointing Bay Excavation	154	179								1.2	1.2	1.2	1.2	1.2	1.2	1.2				
Jointing Bay Base Construction	154	122								0.8	0.8	0.8	0.8	0.8	0.8	0.8				
Pulling and connection of cables	88	126												1.4	1.4	1.4	1.4			
Backfill over Jointing Bays	154	113									0.7	0.7	0.7	0.7	0.7	0.7	0.7			
Minor HDD crossing of Bentley Road - Exit Only																				
Establish HDD Exit Pit Compound	22	102				4.6														
Mobilisation of HDD Kit and Welfare to compound	22	1				0.0														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	20					0.9													
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Payne's Lane	22	0						0.0												
Remove of onshore HDD Entry Compound -materials reused at next minor HDD at crossing of Payne's Lane	22	0						0.0												
Minor HDD crossing of Payne's Lane																				
Establish HDD Entry and Exit Pit Compounds -materials for exit pit reused from previous minor HDD of Bentley Road	22	102						4.6												
Mobilisation of HDD Kit and Welfare to compounds - equipment for exit pit reused from previous minor HDD of Bentley Road	22	9						0.4												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	46							2.1											
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Sprat's Lane	22	0								0.0										
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Sprat's Lane	22	0								0.0										
Minor HDD crossing of Sprat's Lane																				
Establish HDD Entry and Exit Pit Compounds -materials from previous minor HDD of Payne's Lane reused	22	0								0.0										
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD of Payne's Lane reused	22	0								0.0										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	46									2.1									
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Barlon Lane	22	0										0.0								
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Barlon Lane	22	0										0.0								
Minor HDD crossing of Barlon Lane																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at crossing of Sprat's Lane reused	22	0										0.0								
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at crossing of Sprat's Lane reused	22	0										0.0								
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	46											2.1							
Demobilisation of HDD Kit and welfare - equipment for entry pit reused at next minor HDD at crossing of Ardleigh Road	22	0												0.0						
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Ardleigh Road	22	0												0.0						
Minor HDD crossing of Ardleigh Road																				
Establish HDD Entry and Exit Pit Compound - materials from previous minor HDD at crossing of Barlon Lane reused	22	0												0.0						
Mobilisation of HDD Kit and Welfare to compound - equipment from previous minor HDD at crossing of Barlon Lane reused	22	0												0.0						
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	46													1.1	1.1				
Demobilisation of HDD Kit and welfare	22	9															0.4			
Remove of onshore HDD Entry Compound	44	204															4.6	4.6		
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	88	1,696														19.3	19.3	19.3	19.3	
Demobilisation of Welfare from TCC	22	71																		3.2
TCC and access road Removal	88	1,170															13.3	13.3	13.3	13.3
Average Section Skip HGV Movements Per Day	396	364	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total HGVs per day			21.9	18.6	18.6	24.9	21.1	25.2	32.7	13.3	16.1	14.0	16.1	15.4	6.1	25.4	40.7	38.1	33.5	17.4
Total two-way HGV movements per day			43.7	37.3	37.3	49.8	42.2	50.5	65.4	26.6	32.3	28.0	32.3	30.9	12.2	50.7	81.4	76.3	67.0	34.9

Section 6&7

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	1	1	2	1	3	1	2	2	3	2	3	2	3	5	4	3	2
30T Excavator	2	2	2	3	2	3	3	3	3	3	3	3	3	3	5	4	3	2
20T Dumper	3	3	3	3	3	5	4	6	6	6	6	6	4	6	5	4	4	2
Smooth Drum vibrio road roller	1	1	1	1	1	2	1	1				1		1	1	2	2	1
21T excavator	1	1	1	2	1	2	3	3	3	3	3	3	2	3	1	2	2	1
5T Forward Tipping Dumper	1	1	1	2	1	2	3	3	3	4	3	3	2	3	1	2	2	1
Loading shovel	1	1	1	2	1	3	3	3	3	3	3	3	1	3	4	4	3	2
Trench Roller							2	2	2	2	2	2	1	1	1			
Tractor & fencing kit	1	1	1	1	1	1	1	1		1		1		1	1	1	1	1
Tractor & trailer	1	1	1	1	1	2	3	2	1	1	1	2	1	2	1	2	2	1
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & cable drum trailer												1	1	1	1			
Tractor & soil tiller, roller, seeder														1	1	1	1	1
Cement mixer																		
Mobile crane																		
Grader	1	1	1	1	1	2	1	1				1						
Cable laying tracked crane																		
Cable winch												1	1	1	1			
Pre-cast concrete truck																		
Mobile concrete pump								1	1		1	1	1	1				
Telehandler	1	1	1	1	1	2	3	2	2	2	2	2	1	1				
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Crawler Crane							1	1	1		1	1						
Mobile generator deliveries (corrected for 2 per delivery)	1	1	1	2	1	2	3	5	5	6	5	6	4	5	5	3	2	1
Temporary lighting deliveries (corrected for 8 per delivery)	1	1	1	2	2	3	3	3	3	3	3	3	2	3	4	3	2	1
Road surface paver & roller	1	1	1															
Pump deliveries (corrected for 4 per delivery)							1	2	3	2	3	3	2	2	1			
Total Plant Onsite In Section Per Month	20	20	20	26	20	35	39	44	41	42	41	49	31	44	41	35	30	19
Total Deliveries / Removals	20	0	0	8	6	15	14	9	5	7	7	8	18	13	15	14	5	30
Average Deliveries / Removals Per Day	0.9	0.0	0.0	0.4	0.3	0.7	0.6	0.4	0.2	0.3	0.3	0.4	0.8	0.6	0.7	0.6	0.2	1.4
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	0	0	1	1	2	2	1	1	1	1	1	2	2	2	2	1	3

Section 6&7
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	66	198	3	3	3															
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	88	286				3	3	3	4											
Cable Construction Works																				
Trench Excavation and duct installation	132	264							2	2	2	2	2	2						
Trench Backfill with CBS and protective covers	132	264							2	2	2	2	2	2						
Jointing Bay Excavation	154	308								2	2	2	2	2	2	2				
Jointing Bay Base Construction	154	308								2	2	2	2	2	2	2				
Pulling and connection of cables	88	264												3	3	3	3			
Backfill over Jointing Bays	154	308									2	2	2	2	2	2	2			
Minor HDD crossing of Bentley Road - Exit Only																				
Establish HDD Exit Pit Compound	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	44					2													
Remove of onshore HDD Entry Compound	22	22						1												
Minor HDD crossing of Payne's Lane																				
Establish HDD Entry and Exit Pit Compound	22	22						1												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110							5											
Remove of onshore HDD Entry and Exit Compound	22	22								1										
Minor HDD crossing of Sprat's Lane																				
Establish HDD Entry and Exit Pit Compound	22	22								1										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110									5									
Remove of onshore HDD Entry and Exit Compound	22	22										1								
Minor HDD crossing of Barlon Lane																				
Establish HDD Entry and Exit Pit Compound	22	22										1								
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110											5							
Remove of onshore HDD Entry and Exit Compound	22	22												1						
Minor HDD crossing of Ardleigh Road																				
Establish HDD Entry and Exit Pit Compound	22	22												1						
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220													5	5				
Remove of onshore HDD Entry Compound	44	88															2	2		
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	104	312														3	3	3	3	
TCC and access road Removal	104	312															3	3	3	3
Plant Operators																				
Overall Plant Operators	468	11,934	17	17	17	21	16	29	31	33	29	30	29	36	22	33	30	28	25	16
Section 5 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average Total Employees per day			24	24	24	30	25	38	48	47	48	46	48	55	40	54	47	40	35	23
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	48	48	60	50	76	96	94	96	92	96	110	80	108	94	80	70	46

Section 6&7
Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	44	37	37	50	42	50	65	27	32	28	32	31	12	51	81	76	67	35
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	48	41	41	54	46	55	71	29	35	31	35	34	14	56	89	83	73	38
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	0	0	1	1	2	2	1	1	1	1	1	2	2	2	2	1	3
Average total two-way HGV Movements Per Day	**50**	**41**	**41**	**55**	**47**	**57**	**73**	**30**	**36**	**32**	**36**	**35**	**16**	**58**	**91**	**85**	**74**	**41**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	48	48	60	50	76	96	94	96	92	96	110	80	108	94	80	70	46
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**53**	**53**	**66**	**55**	**84**	**106**	**104**	**106**	**102**	**106**	**121**	**88**	**119**	**104**	**88**	**77**	**51**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**103**	**94**	**94**	**121**	**102**	**141**	**179**	**134**	**142**	**134**	**142**	**156**	**104**	**177**	**195**	**173**	**151**	**92**

Appendix D. Programme and Average Monthly Vehicle Movements

400kV Route

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	0	0																		
Mobilisation of Welfare and Operation Plant to TCC	0	0																		
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	44	339								7.7	7.7									
Cable Construction Works																				
Trench Excavation and duct installation	22	171										7.8								
Trench Backfill with CBS and protective covers	22	57										2.6								
Jointing Bay Excavation	22	26											1.2							
Jointing Bay Base Construction	22	19											0.9							
Pulling and connection of cables	22	32												1.5						
Backfill over Jointing Bays	22	17												0.8						
Minor HDD crossing of Grange Road																				
Establish HDD Entry and Exit Pit Compounds	22	206									9.4									
Mobilisation of HDD Kit and Welfare to compounds	22	10									0.5									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	49										2.2								
Demobilisation of HDD Kit and welfare	22	10											0.5							
Remove of onshore HDD Entry and Exit Compounds	22	206											9.4							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	22	339													15.4					
Demobilisation of Welfare from TCC	0	0																		
TCC and access road Removal	0	0																		
Average Section Skip HGV Movements Per Day	66	14									0.2	0.2	0.2							
Total HGVs per day			0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	17.7	12.8	12.1	2.2	15.4	0.0	0.0	0.0	0.0	0.0
Total two-way HGV movements per day			0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	35.5	25.6	24.2	4.5	30.8	0.0	0.0	0.0	0.0	0.0

Appendix D. Programme and Average Monthly Vehicle Movements

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer																		
30T Excavator								1	2		2	2	2					
20T Dumper								2	3	3	3	2	2					
Smooth Drum vibrio road roller								3	3	4	4	2	2					
21T excavator								1	1		1		1					
5T Forward Tipping Dumper								1	2	3	2	1	1					
Loading shovel								1	2	3	2	1	1					
Trench Roller								1	2	3	2	1	2					
Tractor & fencing kit										2		1						
Tractor & trailer								1	1		1		1					
Tractor & Fuel bowser (or self-propelled)								1	1	2	2		1					
Tractor & Water bowser (for dust suppression)								1	1	1	1	1	1					
Tractor & cable drum trailer								1	1	1	1	1	1					
Tractor & soil tiller, roller, seeder												1						
Cement mixer													1					
Mobile crane																		
Grader																		
Cable laying tracked crane								1	1		1							
Cable winch																		
Pre-cast concrete truck												1						
Mobile concrete pump																		
Telehandler											1							
Mobile self-contained welfare unit								1	1	2	1							
Crawler Crane								1	1	1	1	1	1					
Mobile generator deliveries (corrected for 2 per delivery)										1								
Temporary lighting deliveries (corrected for 8 per delivery)								1	2	2	3	2	1					
Road surface paver & roller								2	2	3	2	1	2					
Pump deliveries (corrected for 4 per delivery)																		
Total Plant Onsite in Section Per Month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Deliveries / Removals	0	0	0	0	0	0	0	20	26	32	31	19	20	0	0	0	0	0
Average Deliveries / Removals Per Day	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,9	1,2	1,5	1,4	0,9	0,9	0,0	0,0	0,0	0,0	0,0
Average Total two-way HGV movements (Deliveries / Removals) Per Day	0	0	0	0	0	0	0	2	3	3	3	2	2	0	0	0	0	0

Appendix D. Programme and Average Monthly Vehicle Movements

400kV Route

Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	0	0																		
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	44	132								3	3									
Cable Construction Works																				
Trench Excavation and duct installation	22	44										2								
Trench Backfill with CBS and protective covers	22	44										2								
Jointing Bay Excavation	22	44											2							
Jointing Bay Base Construction	22	44											2							
Pulling and connection of cables	22	44												2						
Backfill over Jointing Bays	22	44												2						
Minor HDD crossing of Payne's Lane																				
Establish HDD Entry and Exit Pit Compound	22	44									2									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	22	110										5								
Remove of onshore HDD Entry and Exit Compound	22	44											2							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	26	78													3					
TCC and access road Removal	0	0																		
Plant Operators																				
Overall Plant Operators	156	3,302								18	23	26	26	16	18					
400kV Route Engineering Personnel																				
1 x Engineer/Surveyor, 1 x Foreman	156	312								2	2	2	2	2	2					
Average Total Employees per day			0	0	0	0	0	0	0	23	30	37	34	22	23	0	0	0	0	0
Maximum Total Employee Two-way Movements Per Day (car/small van)			0	0	0	0	0	0	0	46	60	74	68	44	46	0	0	0	0	0

Appendix D. Programme and Average Monthly Vehicle Movements

Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements	0	0	0	0	0	0	0	15	35	26	24	4	31	0	0	0	0	0
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle	0	0	0	0	0	0	0	17	39	28	27	5	34	0	0	0	0	0
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	0	0	0	0	0	0	0	2	3	3	3	2	2	0	0	0	0	0
Average total two-way HGV Movements Per Day	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**42**	**31**	**30**	**7**	**36**	**0**	**0**	**0**	**0**	**0**
Maximum Total Employee Two-way Movements Per Day (car/small van)	0	0	0	0	0	0	0	46	60	74	68	44	46	0	0	0	0	0
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**51**	**66**	**82**	**75**	**49**	**51**	**0**	**0**	**0**	**0**	**0**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**70**	**108**	**113**	**105**	**56**	**87**	**0**	**0**	**0**	**0**	**0**

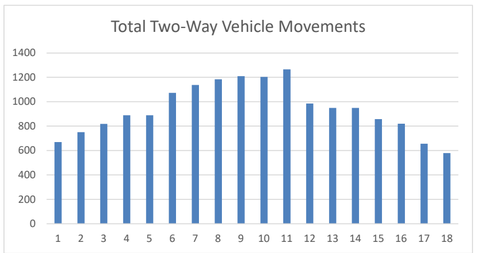
Five Estuaries and North Falls Offshore Wind Farms - Annex 27.1.6

Average Total Two-Way Vehicle Movements Per Day

Including miscellaneous allowances

	Months																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Section 1	95	122	140	157	221	265	311	304	295	239	270	228	145	150	113	140	139	149
Section 2	86	82	73	72	66	110	106	82	107	101	141	105	74	72	81	84	0	0
Section 3	103	148	163	193	221	213	221	165	174	172	215	133	209	194	117	153	152	104
Section 4A	86	82	79	105	22	19	19	105	108	116	59	57	53	93	109	78	81	84
Section 4B	95	137	136	136	130	184	153	161	140	159	184	107	169	184	163	144	85	93
Section 5	101	85	134	105	127	141	148	163	135	169	149	144	109	79	80	48	48	57
Section 6&7	103	94	94	121	102	141	179	134	142	134	142	156	104	177	195	173	151	92
400kV Works	0	0	0	0	0	0	0	70	108	113	105	56	87	0	0	0	0	0
Total	669	750	819	889	889	1073	1137	1184	1209	1203	1265	986	950	949	858	820	656	579

Overall	Minimum	Maximum	Average
Section 1	95	311	194
Section 2	0	141	80
Section 3	103	221	169
Section 4A	19	116	75
Section 4B	85	184	142
Section 5	48	169	112
Section 6&7	92	195	135
400kV Works	0	113	30
Total	579	1265	938

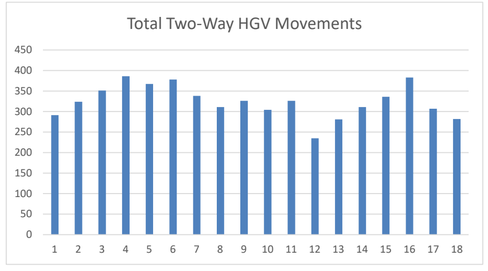


Average Total Two-Way HGV Movements Per Day

Including miscellaneous allowances

	Months																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Section 1	42	62	63	86	95	106	104	86	81	71	78	80	46	42	38	63	62	72
Section 2	33	29	22	21	24	26	20	29	21	15	26	30	23	21	30	33	0	0
Section 3	50	71	81	87	84	67	64	41	57	42	52	25	72	77	42	76	75	53
Section 4A	33	29	28	39	6	3	3	25	22	28	10	8	6	18	34	27	30	33
Section 4B	42	60	59	59	61	71	36	42	34	40	58	16	48	67	72	67	34	42
Section 5	41	32	57	39	50	48	38	39	33	45	36	34	34	28	29	32	32	41
Section 6&7	50	41	41	55	47	57	73	30	36	32	36	35	16	58	91	85	74	41
400kV Works	0	0	0	0	0	0	0	19	42	31	30	7	36	0	0	0	0	0
Total	291	324	351	386	367	378	338	311	326	304	326	235	281	311	336	383	307	282

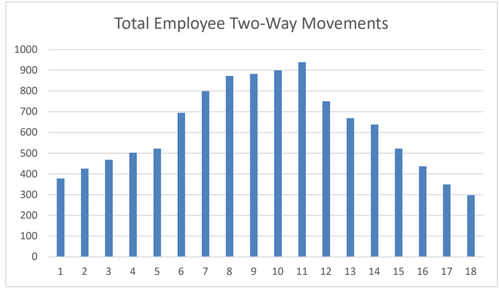
Overall	Minimum	Maximum	Average
Section 1	38	106	71
Section 2	0	33	22
Section 3	25	87	62
Section 4A	3	39	21
Section 4B	16	72	50
Section 5	28	57	38
Section 6&7	16	91	50
400kV Works	0	42	9
Total	235	386	324



Average Total Employees Two Way Movements per day

	Months																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Section 1	53	60	77	71	126	159	207	218	214	168	192	148	99	108	75	77	77	77
Section 2	53	53	51	51	42	84	86	53	86	86	115	75	51	51	51	51	0	0
Section 3	53	77	82	106	137	146	157	124	117	130	163	108	137	117	75	77	77	51
Section 4A	53	53	51	66	16	16	16	80	86	88	49	49	47	75	75	51	51	51
Section 4B	53	77	77	77	69	113	117	119	106	119	126	91	121	117	91	77	51	51
Section 5	60	53	77	66	77	93	110	124	102	124	113	110	75	51	51	16	16	16
Section 6&7	53	53	53	66	55	84	106	104	106	102	106	121	88	119	104	88	77	51
400kV Works	0	0	0	0	0	0	0	51	66	82	75	49	51	0	0	0	0	0
Total	378	426	468	503	522	695	799	873	883	899	939	751	669	638	522	437	349	297

Overall	Minimum	Maximum	Average
Section 1	53	218	123
Section 2	0	115	58
Section 3	51	163	107
Section 4A	16	88	54
Section 4B	51	126	92
Section 5	16	124	74
Section 6&7	51	121	85
400kV Works	0	82	21
Total	297	939	614



Contractor Coversheet

Project Name:	FE_NF_Mott Macdonald Co-Located Substation Studies	**Package No:**	PROJECTCODE 12 - Electrical Systems

Document Title:	Co-located AIS Substations Early Design - Bentley Road, Ardleigh Road and New Link Road Construction Methodologies and Parameters Technical Note
Classification:	Confidential

Contractor Doc. No:	104560-MMD-00-XX-TN-CE-1051	**Contractor Revision:**	04
Date:	01/11/2023	**Pages:**	37

Employer Doc. No:	004885045-04	**Employer Revision:**	NA
Document Status:	Preliminary		
Reason for Issue	Review		

MOTT MACDONALD

Co-Located Substation Early Design

Bentley Road, Ardleigh Road and New Link Road Construction Methodologies and Parameters

September 2023

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Co-Located Substation Early Design

Bentley Road, Ardleigh Road and New Link Road Construction Methodologies and Parameters

September 2023

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
Rev01	18/09/23	O. Jeffcock/ Matthew Stedman	J. Weeks	A. F. Crespo	First Issue
Rev02	27/09/23	O. Jeffcock/ Matthew Stedman	J. Weeks	A. F. Crespo	Cycle track added
Rev03	20/10/23	O. Jeffcock	J. Weeks	A. F. Crespo	Option 3 added
Rev04	01/11/23	O. Jeffcock	J. Weeks	A. F. Crespo	Option 3 revised

Document reference: 104560-MMD-00-XX-TN-CE-1051 | 004885045-04 |

Information class: Secure

Contents

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1 Introduction

RWE Renewables have procured Mott MacDonald to review the potential for a Co-Located substation site to accommodate the onshore substations for the Five Estuaries and North Falls Windfarms. This document presents an overview of the relevant impact metrics during the road improvements works and road construction required to facilitate the construction of the two substations.

1.1 Site location

The proposed substation site is located near Little Bromley, a village within the Tendring District of Essex. The centre of the proposed development is at approximate grid reference TM 08105 28880, nearest postcode is CO11 2ND and Colchester city is located approximately 5km southwest. The location of the site boundary is indicated in Figure 1.1.The site is constrained by Grange Road along its west and north border and Ardleigh Road along the south border. The eastern border is a field boundary.

Figure 1.1: Site location

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To facilitate the construction of the two substations, it is proposed that road improvements are made to Ardleigh Road and Bentley Road and two new haul roads are constructed linking the two roads. The first haul road follows the cable corridor from Bentley Road to the substation site. This will be referred to as the cable corridor haul road. The second haul road will be used for Abnormal Invisible Loads (AILs) so will be referred to as the AIL haul road.

It is assumed that the transformers and cable drums will be delivered to Harwich International Port approximately 16.5km northeast of the site. The transformer movements are seen as the worst case in terms of geometry requirements and have been modelled using a AL50 Girder 24 axial transporter. The vehicles will travel south from the port on the A120 before heading

northwest on Bentley Road. The vehicles will then make a lefthand turn and head west on the new AIL haul road which connects to Ardleigh road and leads to the substation site. The majority of other construction traffic will reach the A120 – Bentley Road junction from the south. After travelling north on Bentley Road, the construction traffic will make a left hand turn onto the cable corridor haul road to the substation site. The construction metrics associated with the cable corridor haul road will not be included in this technical note. The road will be included in the programme as it must be constructed before the Ardleigh Road improvements and the AIL haul road can be constructed.

When leaving the site, construction traffic will follow the same route back to the A120 – Bentley Road junction. There will be no right turn for vehicles at the junction. Therefore, all construction traffic will make a left turn and travel north on the A120, using the first roundabout to turn around if required.

This technical note presents the construction parameters for three options for the road improvements. Option 1 is the standard widening of Ardleigh Road and Bentley Road, and the installation of the new haul road. Option 2 and 3 include all tasks in option 1 with the addition of a cycle track along Bentley Road up to the cable haul road section.

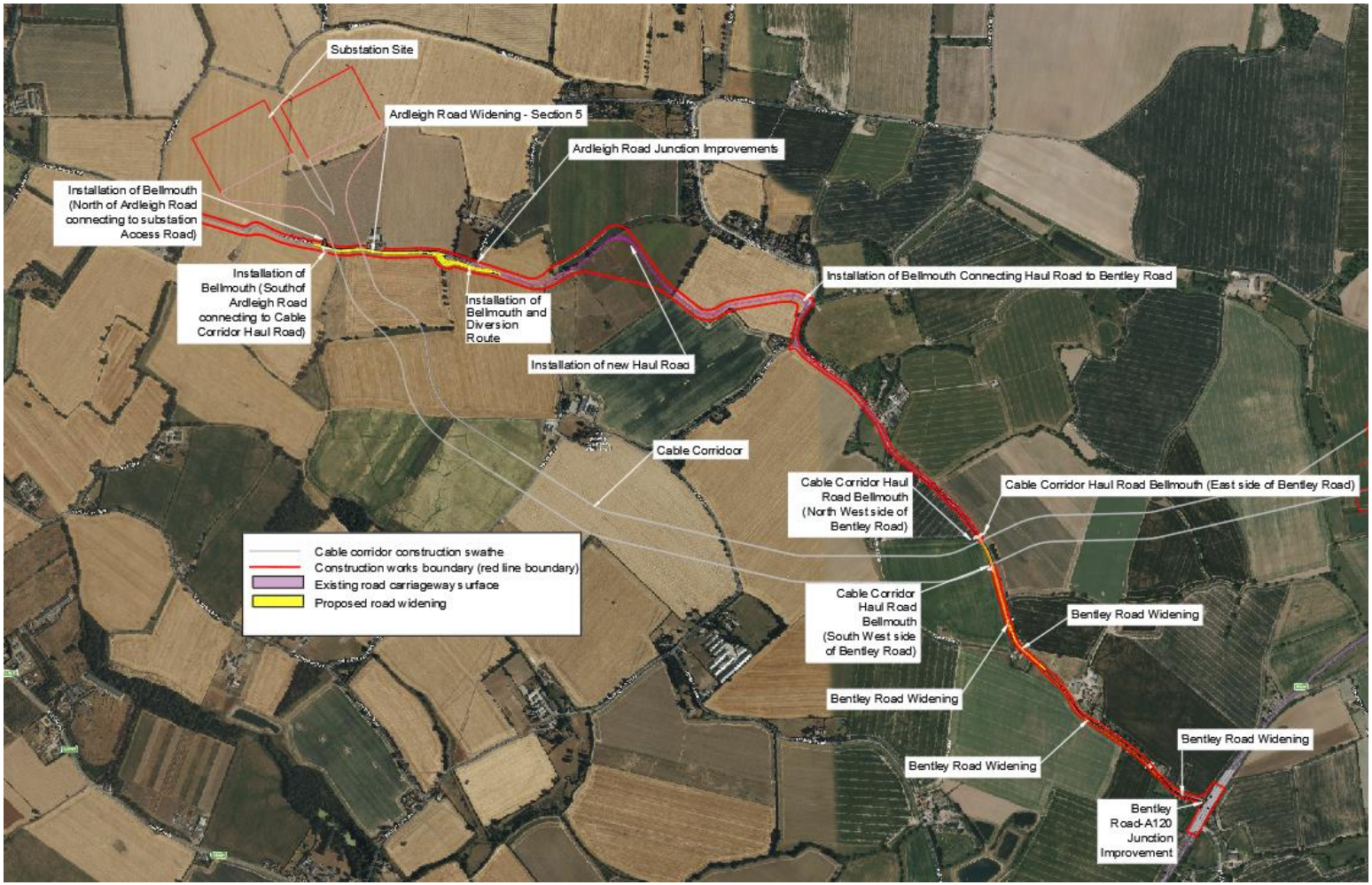
For option 1 and 2, the works on Bentley Road include widening of the A120 – Bentley Road bellmouth, 4 sections of widening to Bentley Road, diversions of OHLs, the relocation of utility poles and the removal or cutting back of hedgerows and trees. Refer to drawing 004781329 for the A120 – Bentley Road junction improvements. Refer to drawings 004786178, 004786179, 004786180, 004786181 and 004786182 for the Bentley Road improvements.

For option 3, the works include the widening of the A120 – Bentley Road bellmouth with 3 sections of widening to Bentley Road. The widening works are similar to option 1 but the widened road width is 6.5m with a separate cycle track as per drawing 107850-MMD-04-XX-DWG-D-1896.

The new AIL haul road is approximately 1.1km long and spans between Bentley Road and Ardleigh Road. The works to facilitate the construction on the road include the construction of a new bellmouth connecting the new road to Bentley Road, the construction of swales, a culvert for the road crossing and swale crossings. Refer to drawing 004786173 for details of the new haul road.

The works on Ardleigh Road include widening of the existing road, improvements to the Ardleigh Road Junction, a road diversion to the south of Ardleigh Road, construction of swales, swale crossings, the demolition of existing culvert, construction of new culvert, removal of trees and the cycle track. Refer to drawings 004786174, 004786175, 004786176, 004786177 00480102 and 004921122 for details.

Figure 1.2: Site layout plan



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2 Construction methodologies

2.1 Construction Methodologies

An overview of the construction works is outlined in Table 2.1. The table shows the programme for all the works at both Ardleigh Road, Bentley Road and the new haul road.

Table 2.1: Construction Activities

Step	Construction Activity
	Cable haul road access work assumed undertaken by others
1	Bentley Road - Cable Corridor Haul Road Bellmouth East side of Bentley Road)
2	Bentley Road - Cable Corridor Haul Road Bellmouth (Northern Bellmouth, West side of Bentley Road)
	A120 - Bentley Road Bellmouth improvements
3	Relocation of UKPN Electricity Post
4	A120 – Bentley Road Junction Improvements
	Bentley Road Improvements
5	Bentley Road Widening - Section 1
6	Bentley Road Widening - Section 2
7	Bentley Road Widening - Section 3
8	Bentley Road Widening - Section 4
9	Bentley Road - Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)
10	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)
11	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)
	Ardleigh Road Improvements
12	Ardleigh Road Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)
13	Installation of Bellmouth and Diversion Route
14	Ardleigh Road Junction Improvements
	New Haul Road
15	Installation of new AIL Haul Road
16	Installation of Bellmouth (Connection for Haul Road to Bentley Road)
17	Vegetation clearance, Utility diversions Between Cable route Hall Road bellmouths and AIL Haul Road

Within Option 2 and 3 the cycle track works are completed within the Bentley Road Widening works, either as part of the road widening (Option 2) or as a separate concurrent activity (Option 3).

Table 2.2 shows the construction activities that will be implemented for each of the road widening sections and the new haul road.

Table 2.2: Construction activities

Step	Construction Activity
1	Installation of Traffic Management
2	Utility Diversions
3	Vegetation clearance
4	Topsoil Strip
5	Realignment/Creation of Drainage features
6	Excavate to Formation
7	Installation of subbase/ Capping
8	Installation of Pavement Material
9	White Lining
10	Removal of Traffic Management

2.2 Construction Programme

2.2.1 Assumptions

The below assumptions have been used for the development of the programme and estimation of the overall programme duration:

- Access for the construction of the cable construction haul road between Bentley Road and Ardleigh Road and the associated bellmouths off Bentley Road, would be from the east, utilising the continuing cable construction haul road. This enables the haul road to be constructed whilst the Bentley Road improvements are made. The activates have arbitrarily been shown to occur at the same time however the cable works designer will need to confirm their programme for these works.
- Widening of sections 1 and 3 and subsequently sections 2 and 4 of Bentley Road will occur simultaneously these works would require a significant length of traffic management which will need to be agreed with the Local Highways Authority.
- Under Option 3 it has been assumed that the cycle track can be constructed with additional resource within the same time frame as Option 1, due to the separation between the carriageway and the cycle track.

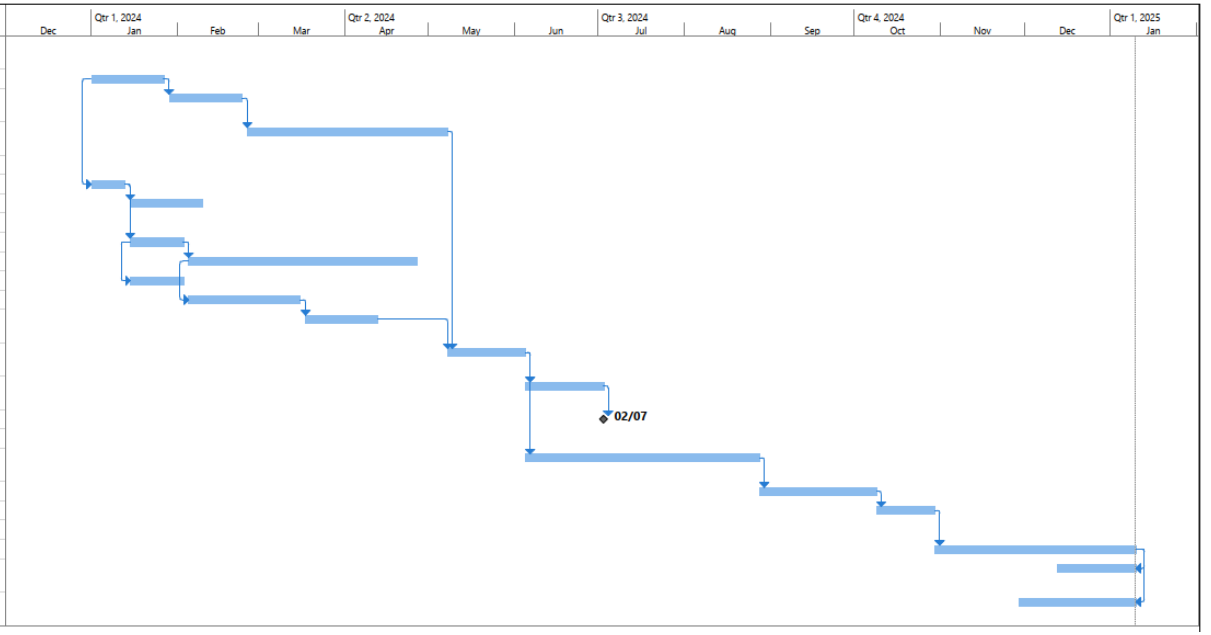
2.2.2 Option 1 and 3 Construction Programme

Figure 2.1 presents construction overview of key activities and durations (working days) for option 1 and 3.

Note the dates are only for reference and only durations are relevant.

Figure 2.1: Programme for Option 1 and Option 3

ID	Task Mode	Task Name	Duration	Start	Finish
1		Cable Haul Road Access works assumed undertaken by others	1 day?	Tue 08/08/23	Tue 08/08/23
2		Installation of Bellmouth (East side of Bentley Road)	4 wks	Mon 01/01/24	Fri 26/01/24
3		Installation of Bellmouth (Northern Bellmouth, West side of Bentley Road)	4 wks	Mon 29/01/24	Fri 23/02/24
4		Installation of Haul Road (Assumed 50m per day, to be confirmed by others)	52 days	Mon 26/02/24	Tue 07/05/24
5		A120 - Bentley Road Bellmouth improvements	1 day	Tue 08/08/23	Tue 08/08/23
6		Relocation of UKPN Electricity Post	2 wks	Mon 01/01/24	Fri 12/01/24
7		Junction Improvements	4 wks	Mon 15/01/24	Fri 09/02/24
8		Bentley Road Improvements	1 day	Tue 08/08/23	Tue 08/08/23
9		Widening - Section 1	3 wks	Mon 15/01/24	Fri 02/02/24
10		Widening - Section 2	12 wks	Mon 05/02/24	Fri 26/04/24
11		Widening - Section 3	3 wks	Mon 15/01/24	Fri 02/02/24
12		Widening - Section 4	6 wks	Mon 05/02/24	Fri 15/03/24
13		Installation of Bellmouth (Southern Bellmouth, West side of Bentley Road)	4 wks	Mon 18/03/24	Fri 12/04/24
14		Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	4 wks	Wed 08/05/24	Tue 04/06/24
15		Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	4 wks	Wed 05/06/24	Tue 02/07/24
16		FIRST ACCESS TO SUBSTATION SITE	0 days	Tue 02/07/24	Tue 02/07/24
17		Ardleigh Road Improvements	1 day	Tue 08/08/23	Tue 08/08/23
18		Widening - Section 5 (Between Bellmouth and Ardielgh Road Diversion)	12 wks	Wed 05/06/24	Tue 27/08/24
19		Installation of Bellmouth and Diversion Route	6 wks	Wed 28/08/24	Tue 08/10/24
20		Ardliegh Road Junction Improvements	3 wks	Wed 09/10/24	Tue 29/10/24
21		New Haul Road	1 day	Tue 08/08/23	Tue 08/08/23
22		Installation of new Haul Road (Assumed 25m per day)	52 days	Wed 30/10/24	Thu 09/01/25
23		Installation of Bellmouth (Connection for Haul road to Bentley Road)	4 wks	Fri 13/12/24	Thu 09/01/25
24		Vegetation clearence, Utility diversions Bewteen Cable route Hall road bellmouths and New Haul Road	6 wks	Fri 29/11/24	Thu 09/01/25



Source: MML.

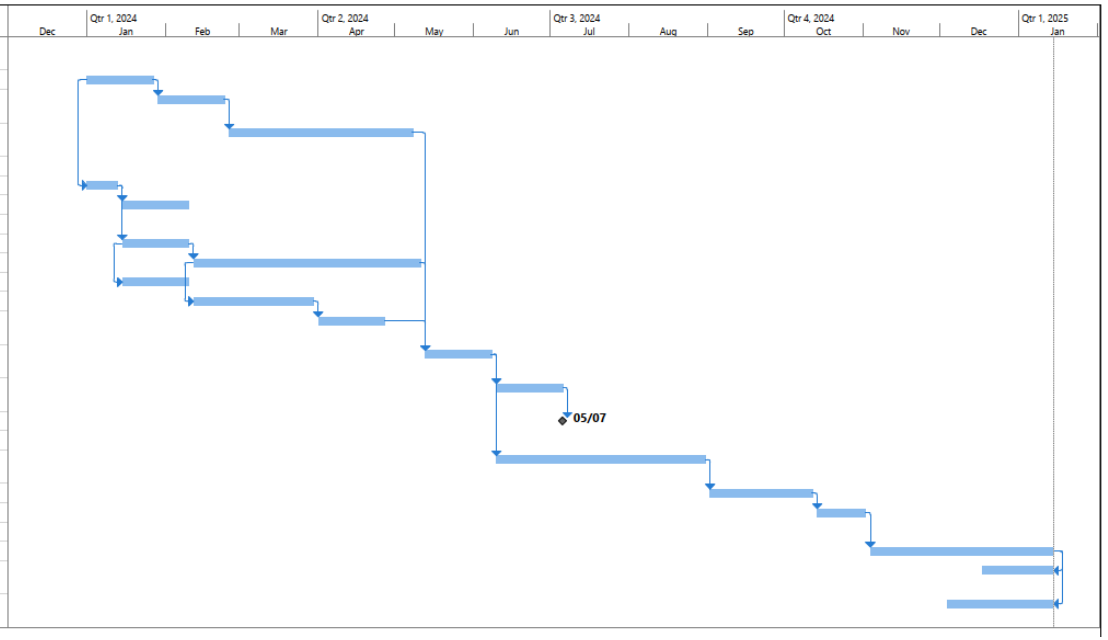
2.2.3 Option 2 Construction programme

Figure 2.2 presents construction overview of key activities and durations (working days) for option 2.

Note the dates are only for reference and only durations are relevant.

Figure 2.2: Programme for Option 2

ID	Task Mode	Task Name	Duration	Start	Predecessors	Finish
1		Cable Haul Road Access works assumed undertaken by others	1 day?	Tue 08/08/23		Tue 08/08/23
2		Installation of Bellmouth (East side of Bentley Road)	4 wks	Mon 01/01/24		Fri 26/01/24
3		Installation of Bellmouth (Northern Bellmouth, West side of Bentley Road)	4 wks	Mon 29/01/24	2	Fri 23/02/24
4		Installation of Haul Road (Assumed 50m per day, to be confirmed by others)	52 days	Mon 26/02/24	3	Tue 07/05/24
5		A120 - Bentley Road Bellmouth improvements	1 day	Tue 08/08/23		Tue 08/08/23
6		Relocation of UKPN Electricity Post	2 wks	Mon 01/01/24	2SS	Fri 12/01/24
7		Junction Improvements	4 wks	Mon 15/01/24	6	Fri 09/02/24
8		Bentley Road Improvements	1 day	Tue 08/08/23		Tue 08/08/23
9		Widening - Section 1 + Cycle track	4 wks	Mon 15/01/24	6	Fri 09/02/24
10		Widening - Section 2 + Cycle track	13 wks	Mon 12/02/24	9	Fri 10/05/24
11		Widening - Section 3 + Cycle track	4 wks	Mon 15/01/24	9SS	Fri 09/02/24
12		Widening - Section 4 + Cycle track	7 wks	Mon 12/02/24	10SS	Fri 29/03/24
13		Installation of Bellmouth (Southern Bellmouth, West side of Bentley Road)	4 wks	Mon 01/04/24	12	Fri 26/04/24
14		Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	4 wks	Mon 13/05/24	13,4,10	Fri 07/06/24
15		Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	4 wks	Mon 10/06/24	14	Fri 05/07/24
16		FIRST ACCESS TO SUBSTATION SITE	0 days	Fri 05/07/24	15	Fri 05/07/24
17		Ardleigh Road Improvements	1 day	Tue 08/08/23		Tue 08/08/23
18		Widening - Section 5 (Between Bellmouth and Ardielgh Road Diversion)	12 wks	Mon 10/06/24	14	Fri 30/08/24
19		Installation of Bellmouth and Diversion Route	6 wks	Mon 02/09/24	18	Fri 11/10/24
20		Ardliegh Road Junction Improvements	3 wks	Mon 14/10/24	19	Fri 01/11/24
21		New Haul Road	1 day	Tue 08/08/23		Tue 08/08/23
22		Installation of new Haul Road (Assumed 25m per day)	52 days	Mon 04/11/24	20	Tue 14/01/25
23		Installation of Bellmouth (Connection for Haul road to Bentley Road)	4 wks	Wed 18/12/24	22FF	Tue 14/01/25
24		Vegetation clearence, Utility diversions Bewteen Cable route Hall road bellmouths and New Haul Road	6 wks	Wed 04/12/24	22FF	Tue 14/01/25



Source: MML.

2.3 Employment Levels

2.3.1 Option 1 employment levels

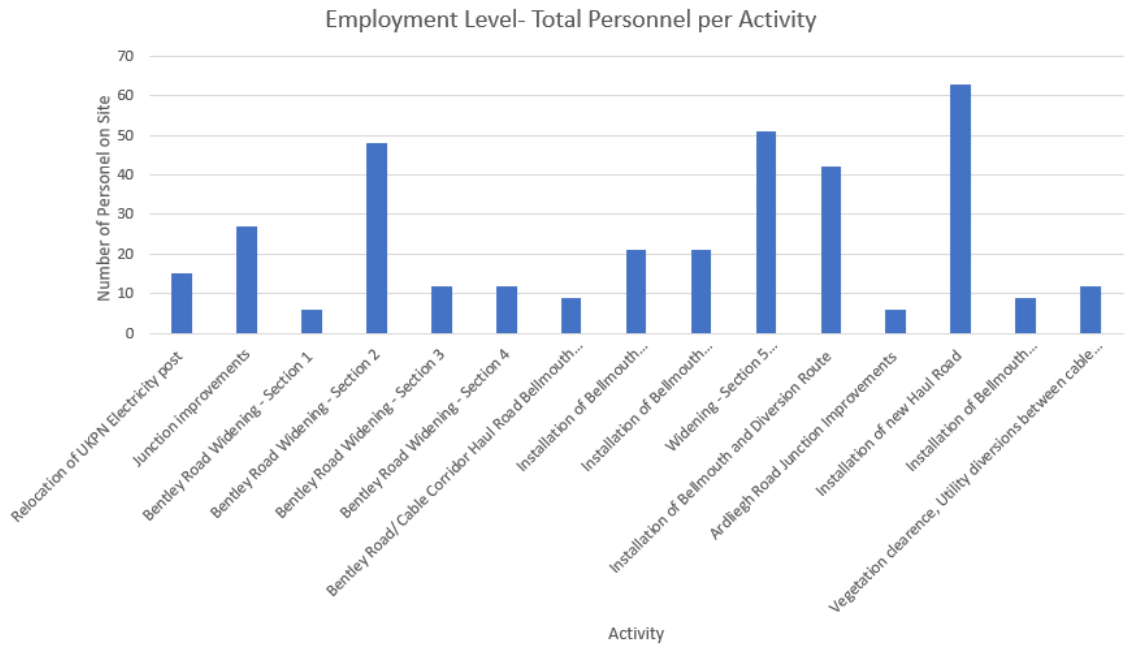
Table 2.3 shows the number of personnel on site for each activity throughout the access construction for option 1, note that administrative, supervisory and management staff have been added to one activity only within each month to avoid duplication.

Table 2.3: Option 1 Employment levels

		Months													
Phase	**Activity**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Total**
Relocation of UKPN Electricity post	Relocation of UKPN Electricity post	15													15
A120 - Bentley Road Bellmouth improvements	Junction improvements	6	21												27
Bentley Road Improvements	Bentley Road Widening - Section 1	6													6
	Bentley Road Widening - Section 2		6	21	21										48
	Bentley Road Widening - Section 3	6	6												12
	Bentley Road Widening - Section 4		6	6											12
	Bentley Road/ Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)				9										9
	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)					21									21
	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)						21								21
Ardleigh Road Improvements	Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)						9	21	21						51
	Installation of Bellmouth and Diversion Route									21	21				42
	Ardleigh Road Junction Improvements										6				6
New Haul Road	Installation of new Haul Road											21	21	21	63
	Installation of Bellmouth (Connection for Haul road to Bentley Road)													9	9
Vegetation clearance, Utility diversions between cable route hall road bellmouths and new haul road	Vegetation clearance, Utility diversions between cable route hall road bellmouths and new haul road												6	6	12
	Total average persons on site	33	39	27	30	21	30	21	21	21	27	21	21	30	
	Total labour days per month (Assuming 24 working days per Month)	792	936	648	720	504	720	504	504	504	648	504	504	720	

Figure 2.3 presents an estimated overview of the employment levels expected during each phase of the access construction.

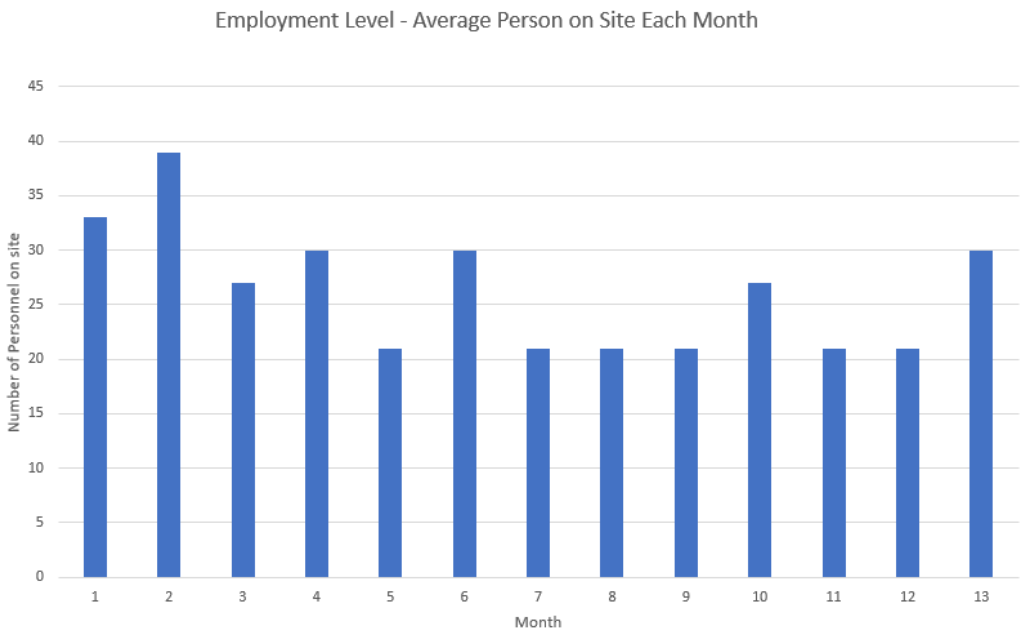
Figure 2.3: Employment levels per activity Option 1



Source: MML

Figure 2.4 presents an estimated overview of the employment levels each month through the duration of the access construction.

Figure 2.4: Employment levels per month Option 1



Source: MML

2.3.2 Option 2 and 3 employment levels

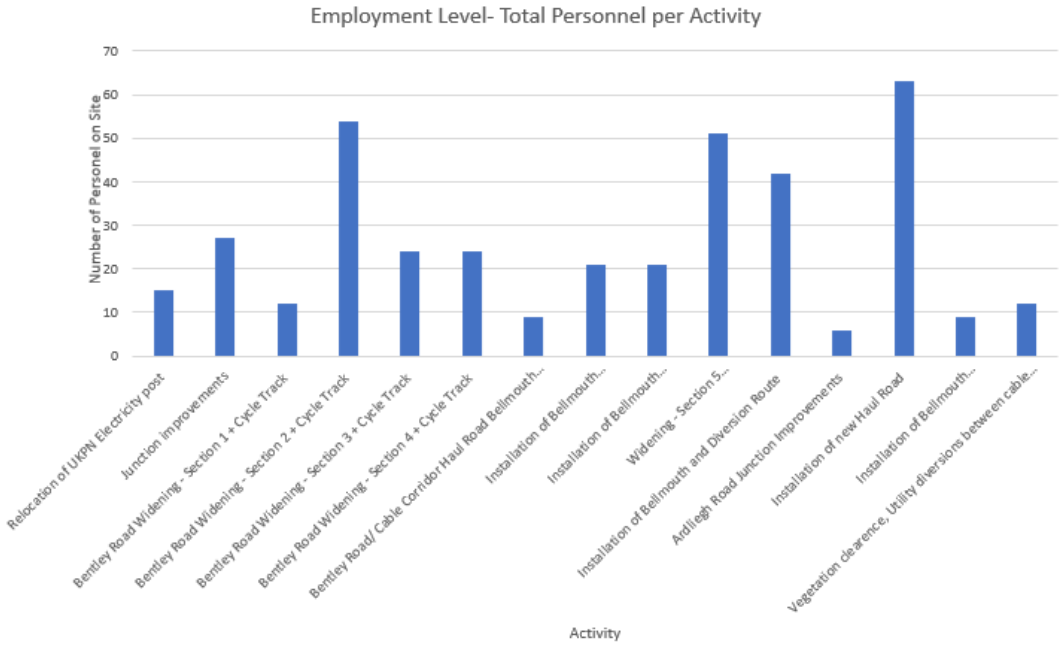
Table 2.4 shows the number of personnel on site for each activity throughout the access construction for option 2 and 3, note that administrative, supervisory and management staff have been added to one activity only within each month to avoid duplication.

Table 2.4: Option 2 and Option 3 Employment Levels

		Months													
Phase	**Activity**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Total**
Relocation of UKPN Electricity post	Relocation of UKPN Electricity post	15													15
A120 - Bentley Road Bellmouth improvements	Junction improvements	6	21												21
Bentley Road Improvements	Bentley Road Widening - Section 1 + Cycle Track	12													12
	Bentley Road Widening - Section 2 + Cycle Track		12	21	21										54
	Bentley Road Widening - Section 3 + Cycle Track	12	12												24
	Bentley Road Widening - Section 4 + Cycle Track		12	12											24
	Bentley Road/ Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)				9										9
	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)					21									21
	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)						21								21
Ardleigh Road Improvements	Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)						9	21	21						51
	Installation of Bellmouth and Diversion Route									21	21				42
	Ardleigh Road Junction Improvements										6				6
New Haul Road	Installation of new Haul Road											21	21	21	63
	Installation of Bellmouth (Connection for Haul road to Bentley Road)													9	9
Vegetation clearance, Utility diversions between cable route hall road bellmouths and new haul road	Vegetation clearance, Utility diversions between cable route hall road bellmouths and new haul road												6	6	12
	Total average persons on site	45	57	33	30	21	30	21	21	21	27	21	21	30	
	Total labour days per month (Assuming 24 working days per Month)	1080	1368	792	720	504	720	504	504	504	648	504	504	720	

Figure 2.5 presents an estimated overview of the employment levels expected during each phase of the access construction.

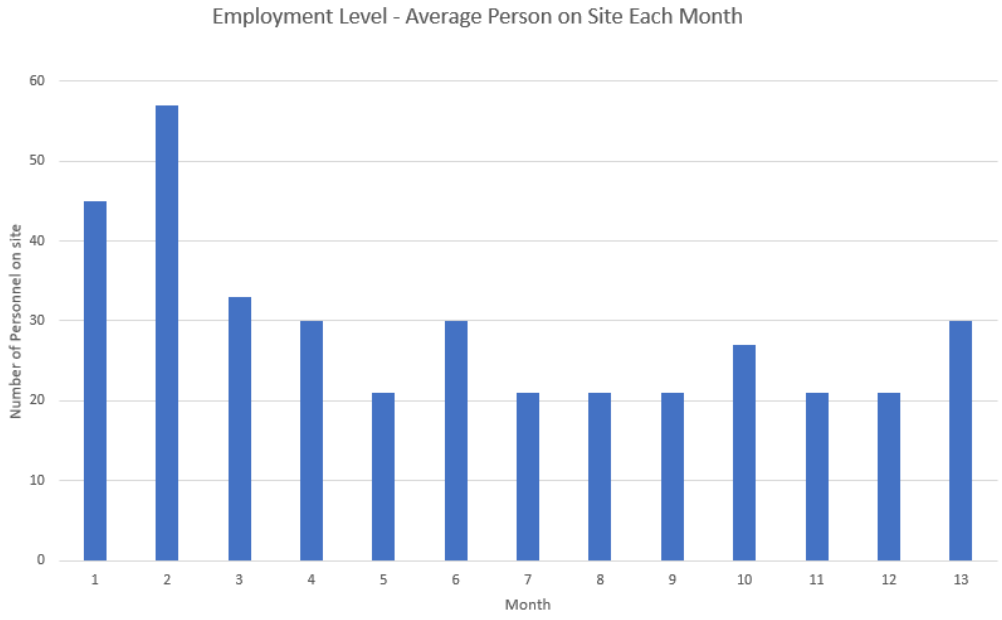
Figure 2.5: Employment levels per activity Option 2 and Option 3



Source: MML

Figure 2.6 presents an estimated overview of the employment levels each month through the duration of the access construction.

Figure 2.6: Employment levels per month Option 2 and Option 3



Source: MML

2.4 HGV Movements

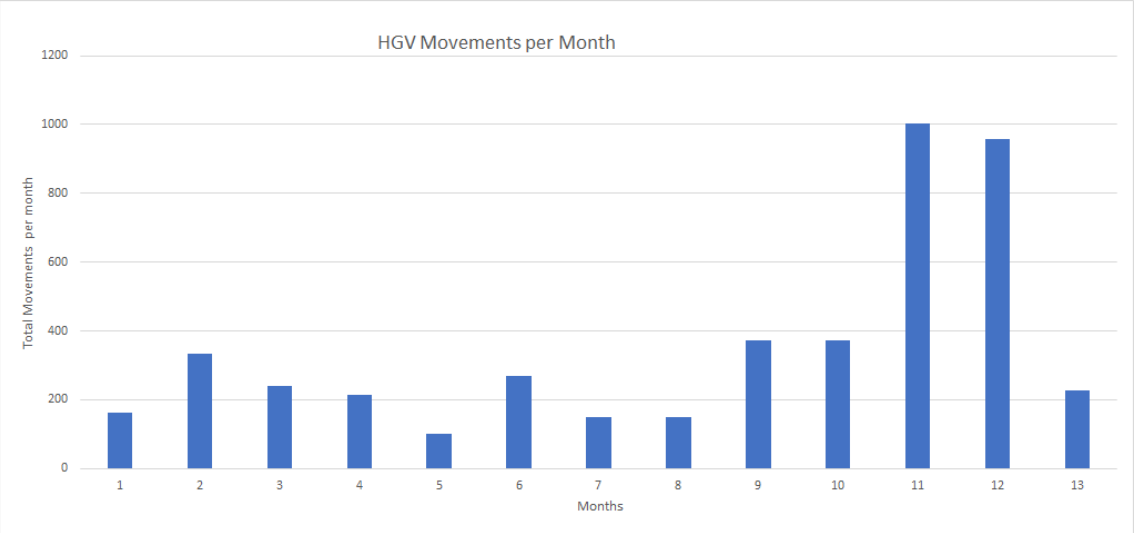
2.4.1 Option 1 HGV movements

Table 2.5 and Figure 2.7 show the number HGV movements for each activity throughout the construction of Option 1. Please note, the movements shown are two-way movements.

Table 2.5: HGV movements For Option 1

			Months													
Phase	**Activity**	**Movements per month**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Total**
A120 - Bentley Road Bellmouth improvements	Junction improvements	45	45	45												90
Bentley Road Improvements	Bentley Road Widening - Section 1	68	68													68
	Bentley Road Widening - Section 2	130		130	130	130										390
	Bentley Road Widening - Section 3	48	48	48												144
	Bentley Road Widening - Section 4	111		111	111											111
	Bentley Road/ Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)	84				84										84
	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	100					100									100
	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	119						119								119
Ardleigh Road Improvements	Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)	149						149	149	149						447
	Installation of Bellmouth and Diversion Route	373									373	373				746
	Ardleigh Road Junction Improvements	45											45			46
New Haul Road	Installation of new Haul Road (assumed to be completed via access from the cable haul road)	958											958	958	958	2874
	Installation of Bellmouth (Connection for Haul Road to Bentley Road)	226													226	226
		Movements per month (excl. Haul Road)	161	334	241	214	100	268	149	149	373	373	1003	958	226	
		Maximum monthly vehicles (excl. Haul Road)	373													
		Average monthly vehicle (excl. Haul Road)	325													

Figure 2.7: HGV two way movements per month Option 1



Source: MML

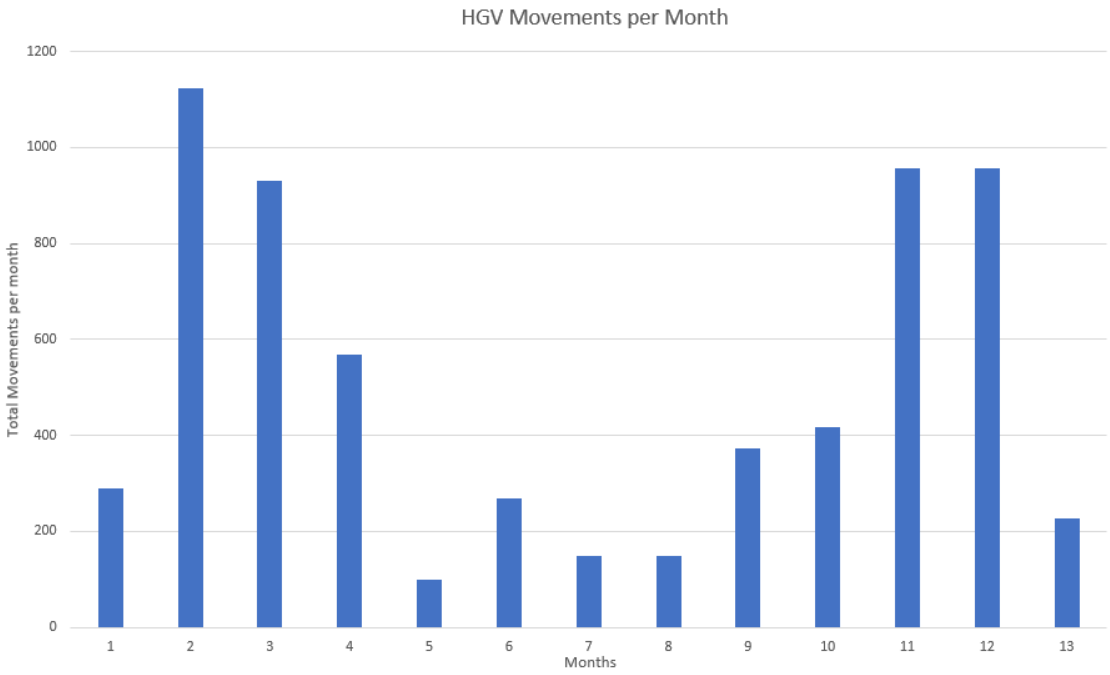
2.4.2 Option 2 HGV Movements

Table 2.6 and Figure 2.8 show the number HGV movements for each activity throughout the construction of option 2. Please note, the movements shown are two-way movements. The Haul Road has been shown for information as an estimate as this is outside the scope of this assessment and is excluded from total, maximum and average values provided.

Table 2.6: HGV movements For Option 2

			Months													
Phase	**Activity**	**Movements per month**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Total**
A120 - Bentley Road Bellmouth improvements	Junction Improvements + cycle track	73	73	73												146
Bentley Road Improvements	Bentley Road Widening + cycle track - Section 1	100	100													100
	Bentley Road Widening + cycle track - Section 2	484		484	484	484										1452
	Bentley Road Widening + cycle track - Section 3	118	118	118												236
	Bentley Road Widening + cycle track - Section 4	448		448	448											896
	Bentley Road/ Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)	84				84										84
	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	100					100									100
	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	119						119								119
Ardleigh Road Improvements	Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)	149						149	149	149						447
	Installation of Bellmouth and Diversion Route	373									373	373				746
	Ardleigh Road Junction Improvements	45										45				45
New Haul Road	Installation of new Haul Road (assumed to be completed via access from the cable haul road)	958											958	958	958	2874
	Installation of Bellmouth (Connection for Haul Road to Bentley Road)	226													226	226
		Movements per month (excl. Haul Road)	291	1123	932	568	100	268	149	149	373	418	958	958	226	
		Maximum monthly vehicles (excl. Haul Road)	1123													
		Average monthly vehicle (excl. Haul Road)	465													

Figure 2.8: HGV two way movements per Month Option 2



Source: MML

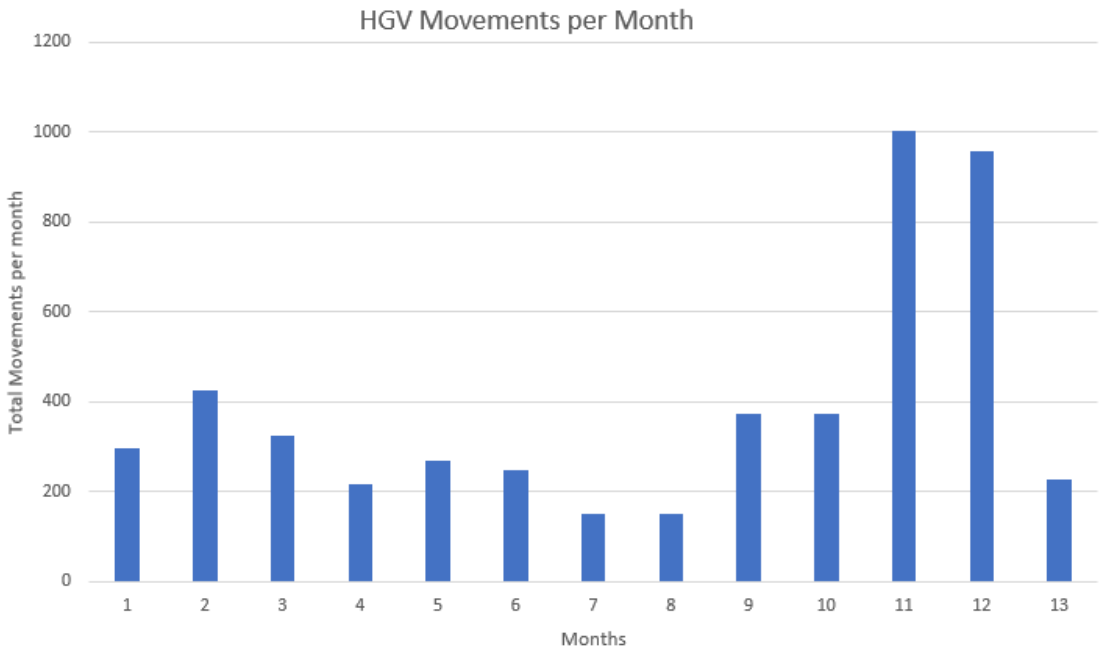
2.4.3 Option 3 HGV Movements

Table 2.7 and Figure 2.9 show the number HGV movements for each activity throughout the construction of option 3. Please note, the movements shown are two-way movements. The Haul Road has been shown for information as an estimate as this is outside the scope of this assessment and is excluded from total, maximum and average values provided.

Table 2.7 HGV Movements for Option 3

			Months													
Phase	**Activity**	**Movements per month**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Total**
A120 - Bentley Road Bellmouth and Bentley Road Improvements	Junction Improvements and Section 1 widening + cycle track	46	101	101												202
	Bentley Road Widening - Section 2 + cycle track	60		129	129	129	129									516
	Bentley Road Widening - Section 3 and 4+ cycle track	210	196	196	196											588
	Installation of Bellmouth (Southern Bellmouth, West side of Bentley Road)	86				86										86
	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	140					140									140
	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	100						100								100
Ardleigh Road Improvements	Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)	149						149	149	149						447
	Installation of Bellmouth and Diversion Route	373									373	373				746
	Ardleigh Road Junction Improvements	45											45			45
New Haul Road	Installation of new Haul Road (assumed to be completed via access from the cable haul road)	958											958	958	958	2874
	Installation of Bellmouth (Connection for Haul Road to Bentley Road)	226													226	226
		Movements per month (Excl. Haul Road)	297	426	325	215	269	249	149	149	373	373	1003	958	226	
		Maximum monthly vehicles (excl. Haul Road)	1003													
		Average monthly vehicle (excl. Haul Road)	358													

Figure 2.9: HGV two way movements per Month Option 3



Source: MML

Please note, all tables and figures within section 2 are based on the construction of the access works only. The vehicle movements for Option 1, Option 2 and Option 3 are shown as two-way movements. Refer to document 004885046 for further details.

The values for the cable corridor haul road HGV movements were not included in the average monthly vehicle movement value calculated in Table 2.5, Table 2.6 and Table 2.7. The cable corridor haul road construction is outside of the project scope therefore, HGV movements for that road were not calculated.

2.5 Working hours requirements

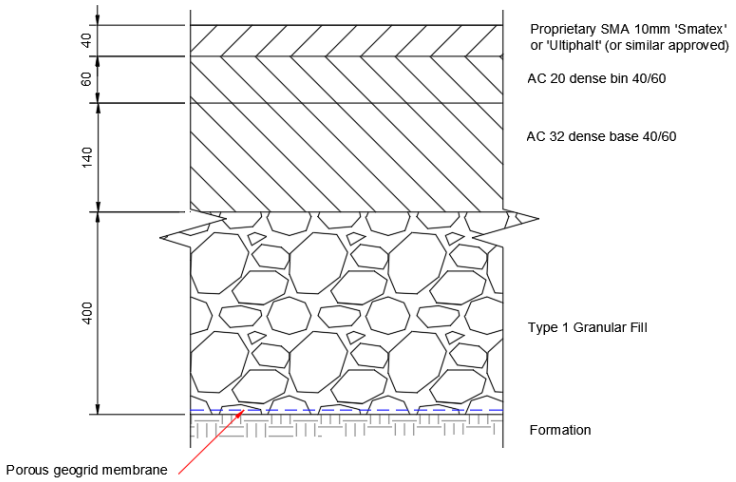
Construction working hours will have to be agreed with the Local Authority, with necessary permit/authorisations gained for the construction work to commence. Typically, construction activities will be daytime only 07:00 to 19:00 from Monday to Friday and 07:00 to 13:00 on Saturdays, with no work where noise is audible beyond the site boundary on Sundays, Bank Holidays or in the night-time. Certain “time critical activities” would occur outside these hours. Any requirement to work outside of these normal hours would occur with prior agreement with the Local Authorities.

3 Construction parameters

3.1 Road make-up

Figure 3.1 shows the road make up that has been assumed for all widening sections and the new AIL haul road. The AIL haul road has been assumed to be a permanent road to give the worst case for excavated materials, waste materials and vehicle movements.

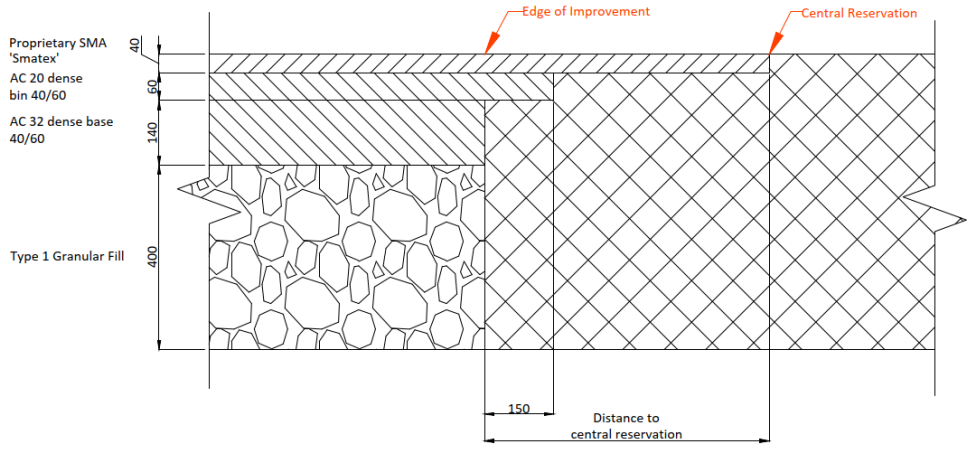
Figure 3.1: Road make-up section



Source: MML

Figure 3.2 shows the tie in detail for the widening sections for Option 1 and Option 3. The surface course will extend to the central reservation. The binder course will extend 150mm beyond the improvement area. The subbase and the base layer will only cover the area of widening.

Figure 3.2: Tie in details for road widening – Option 1 and Option 3



Source: MML

The tie-in specifications differ for road sections featuring cycle tracks, with variations dependent upon whether the road expansion for the cycle track occurs on the western or eastern side of the pre-existing road, as shown in drawing 004921122.

3.2 Imported equipment and materials

Assumptions:

- It was assumed that the proprietary SMA surface layer was installed to the central reservation of the existing roads as seen in Figure 3.2 and drawing 004921122.
- It was assumed that the AC 20 layer was installed 0.15m into the existing road for road widening sections as seen in Figure 3.2.
- A 15% contingency and a 30% compaction factor has been added to the imported engineered fill whilst all other quantities are subject to a contingency weighting of between 15% and 20%, with no compaction factor.
- It was assumed that 9m^3 tipper lorries carried the proprietary SMA, AC20, AC32 and waste. Whereas it was assumed that 20T tipper lorries carried the type 1 granular fill. It was also assumed that the lorries were carrying at full capacity for the vehicle movement calculations.
- It was assumed 25m of road was built per day for the New Haul Road between Bentley and Ardleigh Road as it was assumed it shall be a permanent road.
- It was assumed 50m of road was built per day for the new cable corridor haul road as it was assumed it shall be a temporary road.

Table 3.1 provides an indicative forecast for the material imports expected for the works of Option 1. Refer to document 004885046 for further details.

Table 3.1: Imported materials – Bentley Road – Option 1

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Civils Main Works				
A120- Bentley Road Junction improvements				
Proprietary SMA	29	m^3	9m^3 tipper lorries	7
AC 20	17	m^3	9m^3 tipper lorries	4
AC 32	35	m^3	9m^3 tipper lorries	8
Type 1 Granular fill	99	m^3	20t Rigid tipper lorry	30
Bentley Road Widening- Section 1				
Proprietary SMA	20	m^3	9m^3 tipper lorries	5
AC 20	13	m^3	9m^3 tipper lorries	3
AC 32	27	m^3	9m^3 tipper lorries	6
Type 1 Granular fill	78	m^3	20t Rigid tipper lorry	24
Bentley Road Widening- Section 2				
Proprietary SMA	113	m^3	9m^3 tipper lorries	26
AC 20	72	m^3	9m^3 tipper lorries	16
AC 32	154	m^3	9m^3 tipper lorries	35
Type 1 Granular fill	440	m^3	20t Rigid tipper lorry	132

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Bentley Road Widening- Section 3				
Proprietary SMA	35	m^3	$9m^3$ tipper lorries	8
AC 20	18	m^3	$9m^3$ tipper lorries	4
AC 32	36	m^3	$9m^3$ tipper lorries	8
Type 1 Granular fill	103	m^3	20t Rigid tipper lorry	31
Bentley Road Widening- Section 4				
Proprietary SMA	67	m^3	$9m^3$ tipper lorries	15
AC 20	42	m^3	$9m^3$ tipper lorries	10
AC 32	88	m^3	$9m^3$ tipper lorries	20
Type 1 Granular fill	250	m^3	20t Rigid tipper lorry	75
Cable Corridor Haul Road Bellmouth (Northwest side of Bentley Road)				
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 20	17	m^3	$9m^3$ tipper lorries	4
AC 32	38	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	107	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (Southwest side of Bentley Road)				
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 20	16	m^3	$9m^3$ tipper lorries	4
AC 32	37	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	104	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (East side of Bentley Road)				
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 20	16	m^3	$9m^3$ tipper lorries	4
AC 32	38	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	107	m^3	20t Rigid tipper lorry	32
Total Bentley Road Quantities				
Proprietary SMA	294	m^3	$9m^3$ tipper lorries	70
AC 20	208	m^3	$9m^3$ tipper lorries	49
AC 32	450	m^3	$9m^3$ tipper lorries	104
Type 1 Granular fill	1285	m^3	20t Rigid tipper lorry	388

**All quantities are subject to a contingency weighting of 15%. A 30% compaction factor has been added to the imported engineered fill.*

Table 3.2 provides an indicative forecast for the material imports expected for the works of Option 2, including the cycle track. Refer to document 004885046 for further details.

Table 3.2: Imported material Bentley Road - Option 2

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Civils Main Works				
A120- Bentley Road Junction improvements				
Proprietary SMA	29	m^3	$9m^3$ tipper lorries	7
AC 6	9	m^3	$9m^3$ tipper lorries	2
AC 20	39	m^3	$9m^3$ tipper lorries	9
AC 32	35	m^3	$9m^3$ tipper lorries	8
Type 1 Granular fill	179	m^3	20t Rigid tipper lorry	54
Bentley Road Widening- Section 1 and cycle track				
Proprietary SMA	16	m^3	$9m^3$ tipper lorries	4
AC 6	8	m^3	$9m^3$ tipper lorries	2
AC 20	25	m^3	$9m^3$ tipper lorries	6
AC 32	17	m^3	$9m^3$ tipper lorries	4
Type 1 Granular fill	131	m^3	20t Rigid tipper lorry	40
Bentley Road Widening- Section 2 and cycle track				
Proprietary SMA	223	m^3	$9m^3$ tipper lorries	50
AC 20	328	m^3	$9m^3$ tipper lorries	73
AC 32	751	m^3	$9m^3$ tipper lorries	167
Type 1 Granular fill	1622	m^3	20t Rigid tipper lorry	485
Bentley Road Widening- Section 3 and cycle track				
Proprietary SMA	12	m^3	$9m^3$ tipper lorries	3
AC 6	17	m^3	$9m^3$ tipper lorries	4
AC 20	60	m^3	$9m^3$ tipper lorries	14
AC 32	41	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	312	m^3	20t Rigid tipper lorry	94
Bentley Road Widening- Section 4 and cycle track				
Proprietary SMA	138	m^3	$9m^3$ tipper lorries	31
AC 20	203	m^3	$9m^3$ tipper lorries	45
AC 32	464	m^3	$9m^3$ tipper lorries	103
Type 1 Granular fill	1001	m^3	20t Rigid tipper lorry	300
Cable Corridor Haul Road Bellmouth (Northwest side of Bentley Road)				
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 20	17	m^3	$9m^3$ tipper lorries	4
AC 32	38	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	107	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (Southwest side of Bentley Road)				

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 20	16	m^3	$9m^3$ tipper lorries	4
AC 32	37	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	104	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (East side of Bentley Road) +cycle track				
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 6	8	m^3	$9m^3$ tipper lorries	2
AC 20	35	m^3	$9m^3$ tipper lorries	4
AC 32	38	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	185	m^3	20t Rigid tipper lorry	56
Total Bentley Road Quantities				
Proprietary SMA	437	m^3	$9m^3$ tipper lorries	102
AC 6	41	m^3	$9m^3$ tipper lorries	10
AC 20	720	m^3	$9m^3$ tipper lorries	163
AC 32	1417	m^3	$9m^3$ tipper lorries	318
Type 1 Granular fill	3641	m^3	20t Rigid tipper lorry	1093

**All quantities are subject to a contingency weighting of 15%. A 30% compaction factor has been added to the imported engineered fill.*

Table 3.3 provides an indicative forecast for the material imports expected for the works of Option 3, including the cycle track. Refer to document 004885046 for further details.

Table 3.3: Imported material Bentley Road - Option 3

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Civils Main Works				
A120 - Bentley road widening + Section 1 Bentley Road widening and cycle track				
Proprietary SMA	41	m^3	$9m^3$ tipper lorries	11
AC 6	14	m^3	$9m^3$ tipper lorries	4
AC 20	56	m^3	$9m^3$ tipper lorries	15
AC 32	46	m^3	$9m^3$ tipper lorries	12
Type 1 Granular fill	237	m^3	20t Rigid tipper lorry	63
Bentley Road Widening- Section 2 and cycle track				
Proprietary SMA	96	m^3	$9m^3$ tipper lorries	25
AC 6	36	m^3	$9m^3$ tipper lorries	10
AC 20	142	m^3	$9m^3$ tipper lorries	37
AC 32	113	m^3	$9m^3$ tipper lorries	29
Type 1 Granular fill	606	m^3	20t Rigid tipper lorry	161
Bentley Road Widening- Section 3 & 4 and cycle track				

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Proprietary SMA	88	m^3	9m^3 tipper lorries	23
AC 6	58	m^3	9m^3 tipper lorries	15
AC 20	187	m^3	9m^3 tipper lorries	48
AC 32	91	m^3	9m^3 tipper lorries	24
Type 1 Granular fill	717	m^3	20t Rigid tipper lorry	190
Cable Corridor Haul Road Bellmouth (Northwest side of Bentley Road)				
Proprietary SMA	11	m^3	9m^3 tipper lorries	3
AC 20	17	m^3	9m^3 tipper lorries	4
AC 32	38	m^3	9m^3 tipper lorries	9
Type 1 Granular fill	107	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (Southwest side of Bentley Road)				
Proprietary SMA	11	m^3	9m^3 tipper lorries	3
AC 20	16	m^3	9m^3 tipper lorries	4
AC 32	37	m^3	9m^3 tipper lorries	9
Type 1 Granular fill	104	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (East side of Bentley Road)				
Proprietary SMA	11	m^3	9m^3 tipper lorries	3
AC 20	16	m^3	9m^3 tipper lorries	4
AC 32	38	m^3	9m^3 tipper lorries	9
Type 1 Granular fill	107	m^3	20t Rigid tipper lorry	32
Total Bentley Road Quantities				
Proprietary SMA	258	m^3	9m^3 tipper lorries	68
AC6	108	m^3	9m^3 tipper lorries	29
AC 20	434	m^3	9m^3 tipper lorries	112
AC 32	363	m^3	9m^3 tipper lorries	92
Type 1 Granular fill	1878	m^3	20t Rigid tipper lorry	510

**All quantities are subject to a contingency weighting of 15%. A 30% compaction factor has been added to the imported engineered fill.*

Table 3.4 provides an indicative estimate for the equipment and materials expected for the Ardleigh Road and AIL Haul Road works. These quantities guided the HGV traffic movements shown in Table 2.5, Table 2.6 and Table 2.7. Refer to document 004885046 for further details.

Table 3.4: Imported materials – Ardleigh & New Haul Road - Option 1, 2 and 3

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Civils Main Works				
Installation of Bellmouth (South of Ardleigh Road Connecting to Cable Corridor Haul Road				
Proprietary SMA	13	m^3	9m^3 tipper lorries	3

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
AC 20	19	m^3	$9m^3$ tipper lorries	5
AC 32	44	m^3	$9m^3$ tipper lorries	10
Type 1 Granular fill	125	m^3	20t Rigid tipper lorry	38
Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road				
Proprietary SMA	13	m^3	$9m^3$ tipper lorries	3
AC 20	19	m^3	$9m^3$ tipper lorries	5
AC 32	44	m^3	$9m^3$ tipper lorries	10
Type 1 Granular fill	125	m^3	20t Rigid tipper lorry	38
Ardleigh Road widening section 5 (Between Bellmouth and Ardleigh Road Diversion)				
Proprietary SMA	84	m^3	$9m^3$ tipper lorries	19
AC 20	85	m^3	$9m^3$ tipper lorries	19
AC 32	188	m^3	$9m^3$ tipper lorries	42
Type 1 Granular fill	536	m^3	20t Rigid tipper lorry	161
Ardleigh Road Installation of Bellmouth and Diversion Route				
Proprietary SMA	93	m^3	$9m^3$ tipper lorries	21
AC 20	140	m^3	$9m^3$ tipper lorries	31
AC 32	325	m^3	$9m^3$ tipper lorries	73
Type 1 Granular fill	929	m^3	20t Rigid tipper lorry	278
Ardleigh Road Junction Improvement				
Proprietary SMA	10	m^3	$9m^3$ tipper lorries	3
AC 20	9	m^3	$9m^3$ tipper lorries	2
AC 32	19	m^3	$9m^3$ tipper lorries	5
Type 1 Granular fill	52	m^3	20t Rigid tipper lorry	16
Installation of New Haul Road				
Proprietary SMA	358	m^3	$9m^3$ tipper lorries	80
AC 20	537	m^3	$9m^3$ tipper lorries	120
AC 32	1251	m^3	$9m^3$ tipper lorries	278
Type 1 Granular fill	3575	m^3	20t Rigid tipper lorry	1069
Installation of Bellmouth (Connection for Haul Road to Bentley Road)				
Proprietary SMA	28	m^3	$9m^3$ tipper lorries	7
AC 20	42	m^3	$9m^3$ tipper lorries	10
AC 32	99	m^3	$9m^3$ tipper lorries	22
Type 1 Granular fill	281	m^3	20t Rigid tipper lorry	84
Total of Ardleigh & New Haul Road				
Proprietary SMA	600	m^3	$9m^3$ tipper lorries	137
AC 20	851	m^3	$9m^3$ tipper lorries	192
AC 32	1975	m^3	$9m^3$ tipper lorries	442

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Type 1 Granular fill	5643	m^3	20t Rigid tipper lorry	1691

**All quantities are subject to a contingency weighting of 15%. A 30% compaction factor has been added to the imported engineered fill.*

3.3 Noise Levels during Construction

The utilisation of noise-emitting construction plant items and the corresponding noise emission levels are shown in Table 3.5. The information presented below is preliminary and will be confirmed and developed at a later stage once the Construction Environmental Management Plan (CEMP) is produced.

Table 3.5: Construction plant used for noise assessment

Construction Phase	Plant Description	Sound Power Level dB(A) (1)	No. of Plant (3)	Utilisation % on-time
Access road and car parking works road works	Excavator	102	2	100
	Dump truck	105	4	70
	Asphalt spreader with support lorry	106	1	100
	Vibratory roller	106	2	70
	Grader	112	1	100
	Lorry	103	3	25
	MEWP	78	2	75
	Generator(2)	100	2	100
	Crusher	116	2	80

Source: BS 5228-1:2009, Appendix D: Historic sound level data on site equipment and site activities.

Notes: (1) Guide to the sound power levels for stationary and quasi-stationary site equipment.
(2) General use plant to be used during different construction phases.
(3) Each no of plant assumed per phase of work.

3.4 Site Waste

Site waste shall be managed in a structured and auditable manner and in accordance with agreed site and waste management plan (SWMP) from the commencement of the project during the detailed design stage and through construction. This ensures that the aim of waste minimisation is emphasised from the outset. In addition, it will ensure that the waste produced during the construction phase is dealt with in accordance with the relevant requirements of UK legislation, as well as any other requirements specified by the relevant regulatory authorities.

The following main activities that will lead to waste being generated have been identified:

- Wastes arising from excavation.
- Wastes arising from existing road tie in as drawing 004921122.
- Wastes arising from vegetation clearance.

A waste management storage area is designated as part of the compound to facilitate the segregation of waste. This area will be delineated and separated from where new material is stored with recycling and waste bins kept clean and clearly marked in order to avoid cross-contamination of materials.

Waste carriers and the disposal sites will need to be identified.

3.4.1 Waste quantities

Table 3.6, Table 3.7, Table 3.7 and Table 3.9 sets out the predicted waste arisings and management of options. This will be updated as the project progresses. Ardleigh & New Haul Waste Quantities are the same for all options, 1, 2 and 3.

Table 3.6: Predicted waste arisings and management options – Bentley Road option 1

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Excavation		
A120- Bentley Road Junction improvements	22 Existing Road waste 166 Topsoil/ Subsoil	42
Bentley Road Widening - Section 1	14 Existing Road waste 129 Topsoil/ Subsoil	32
Bentley Road Widening - Section 2	78 Existing Road waste 734 Topsoil/ Subsoil	181
Bentley Road Widening - Section 3	28 Existing Road waste 171 Topsoil/ Subsoil	45
Bentley Road Widening - Section 4	47 Existing Road waste 418Topsoil/Subsoil	104
Bentley Road - Cable Corridor Haul Road Bellmouth (Northern Bellmouth, West side of Bentley Road)	179 Topsoil/ Subsoil	40
Bentley Road - Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)	174 Topsoil/ Subsoil	39
Bentley Road - Cable Corridor Haul Road Bellmouth East side of Bentley Road)	178 Topsoil/ Subsoil	40
TOTAL	188 Existing Road waste 2146 Topsoil/ Subsoil	523

Table 3.7: Predicted waste arisings and management options – Bentley Road option 2

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Excavation		
A120- Bentley Road Junction improvements + cycle track	22 Existing Road waste 234 Topsoil/ Subsoil	68
Bentley Road Widening - Section 1 with cycle track	193 Topsoil/ Subsoil	43
Bentley Road Widening - Section 2 with cycle track	587 Existing Road waste 2463 Topsoil/ Subsoil	678
Bentley Road Widening - Section 3 with cycle track	459 Topsoil/ Subsoil	102
Bentley Road Widening - Section 4 with cycle track	362 Existing Road waste 1520Topsoil/Subsoil	419
Bentley Road - Cable Corridor Haul Road Bellmouth (Northern Bellmouth, West side of Bentley Road)	179 Topsoil/ Subsoil	40

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Bentley Road - Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)	174 Topsoil/ Subsoil	39
Bentley Road - Cable Corridor Haul Road Bellmouth East side of Bentley Road) + Cycle Track	287 Topsoil/ Subsoil	64
TOTAL	971 Existing Road waste 5509 Topsoil/ Subsoil	1453

Table 3.8: Predicted waste arisings and management options – Bentley Road option 3

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Excavation		
A120- Bentley Road Junction improvements + Section Bentley Road Widening with cycle track	36 Existing Road waste 403 Topsoil/ Subsoil	100
Bentley Road Widening - Section 2 with cycle track	84 Existing Road waste 1026 Topsoil/ Subsoil	254
Bentley Road Widening - Section 3 with cycle track	80 Existing Road waste 1155 Topsoil/ Subsoil	291
Bentley Road - Cable Corridor Haul Road Bellmouth (Northern Bellmouth, West side of Bentley Road)	179 Topsoil/ Subsoil	40
Bentley Road - Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)	174 Topsoil/ Subsoil	39
Bentley Road - Cable Corridor Haul Road Bellmouth East side of Bentley Road)	178 Topsoil/ Subsoil	40
TOTAL	200 Existing Road waste 3115 Topsoil/ Subsoil	764

Table 3.9: Predicted waste arisings and management options – Ardleigh & New Haul Road Option 1, Option 2 and Option 3

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Excavation		
Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	208 Topsoil/ Subsoil	47
Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	247 Topsoil/ Subsoil	55
Ardleigh Road Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)	36 Existing Road waste 895Topsoil/ Subsoil	207

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Installation of Bellmouth and Diversion Route	1551 Topsoil/ Subsoil	345
Ardleigh Road Junction Improvements	6 Existing Road waste 87 Topsoil/ Subsoil	21
Installation of new AIL Haul Road	5968 Topsoil/ Subsoil	1327
Installation of Bellmouth (Connection for Haul Road to Bentley Road)	469 Topsoil/ Subsoil	105
TOTAL	41 Existing Road waste 9421 Topsoil/ Subsoil	2107

Predicted waste volumes based on currently available projections.

4 Operational parameters

4.1 Site setting

The proposed road works comprise of:

- The A120-Bentley Road Junction area of proposed widening is 215m^2 for option 1 and 3. For option 2, the buffer zone has an area of 76m^{2,} and the cycle track has an area of 297m^2.
- The total area of road widening for Bentley Road is equal to 1889m^2 for option 1. For option 2, the total area for the safety buffer and cycle track along Bentley Road is 4930m^2.
- For option 3, the total area of improvements to the A120 junction and Bentley Road is 1595m^2. The total area of cycle track in 5261m^2.
- There are 3 bellmouths connecting Bentley Road to the Cable Corridor Haul Road with their area totalling 689m^2. For Option 2, the safety buffer and cycle track at the bellmouth on the east side of Bentley Road have an area of 326m^2.
- The bellmouth connecting the New Haul Road to Bentley Road has a total area of 609.6m^2
- The New Haul Road has a total area of 7769.9m^2.
- The installation of the bellmouth and diversion route on Ardleigh road has an area of 2018.5m^2
- The bellmouths connecting to Ardleigh road from the cable corridor haul road and the substation access road have a total area of 590m^2.
- Ardleigh road junction improvements have a proposed area of 113.2m^2.
- The total area of the Ardleigh Road widening section between the bellmouths and Ardleigh Road diversion is equal to 1164.5m^2.

Annex 27.1. Derivation of HGV and LV Trips for North Falls / Five Estuaries Scenario 1

Vendor Coversheet

Project Name:	**Five Estuaries Offshore Wind Farm Project**	**Package No:**	WP01 008, WP2 009

Document Title:	VE_NF Joint Onshore Cable Routing – Combined Five Estuaries and North Falls - Construction Metrics
Classification:	Confidential

Vendor Doc. No:	VE_NF Joint Onshore Cable Routing – Combined Five Estuaries and North Falls - Construction Metrics	**Vendor Revision:**	03
Date:	20 July 2023	**Pages:**	

Employers Doc. No:	004842667-03	**Employer Revision:**	3
Document Status:	For Review and Approval		

Registered office:
Awel y Môr Offshore Wind Farm Ltd
RWE Renewables UK Ltd
Windmill Hill Business Park
Whitehill Way, Swindon, SN5 6PB

Client	**RWE**
Projects	**Five Estuaries and North Falls Offshore Windfarms**
Document Title	**Landfall and Onshore Cable Route Construction Metrics - Combined Project With Shared Cable Route Hall Road**
RWE Ecodoc Reference	**004842667-03**
Version	**3.0**
Date	**20/07/2023**
Prepared By	**Alastair Macfarlane** **Renewable Energy Engineer**
Reviewed By	**Peter Macfarlane** **Principal Engineering Geologist**
Approved By	**Aidan Harber** **Technical Director**

Notes:

1. Construction Metrics based on western project of Wardell Armstrong VE-NF - Draft Combined Cable Corridor Rev 02 - dated 31.05.2023, Wardell Armstrong VE-NF - Draft TCC Locations Rev 5 - dated 15.06.2023 and Wardell Armstrong VE-NF- Draft Combined Off Route Access Rev 4 - dated 15.06.2023. Any changes in these shapefiles may result in updates of these construction metrics.

2. Tabs in red are working and only used to populate other sections of the metrics and not for reference within main construction metrics output
3. No bulking or compaction ratios have been considered within the calculation of soils generated or materials required.
4. Section 1 = Landfall to Railway (Assumed Access point off Clacton Road)
Section 2 = Railway to B1033 Thorpe Road (Assumed Access point off B1033 Thorpe Road)
Section 3 = B1033 Thorpe Road to B1035 Tendering Road (Assumed Access point off B1035 Tendering Road)
Section 4A = B1035 to Tendering Brook (Assumed Access point off Swan Road)
Section 4B = Tendering Brook to A120 (Assumed Access point off B1035 immediately south of Horsley Cross Roundabout)
Section 5 = A120 to Bentley Road (Assumed Access point off B1035 Clacton Road)
Section 6 and 7 = Bentley Road to Ardleigh Road (Section 6) and Ardleigh Road to Project Substation (Section 6) (Assumed Access off Bentley Road)
5. Short HDD of minor obstacles has not been considered separate to trenching within construction metrics as direct trenching considered to be worst case assessment in terms of materials volumes and traffic movements associated with these crossings.

6. These construction metrics assumes the following:
-construction of both Five Estuaries and North Falls Projects together
-Lengths used within assessment of metrics measured by taking an average of measurement of centreline of Project 1 (22.5m offset from western boundary of combined projects cable route alignment) and Project 2(22.5m offset from eastern boundary of combined projects cable route alignment) assuming Landfall at Holland Brook and crossing of Ardleigh Road at eastern crossing point.
-Input metrics for TJB permanent footprint size of 20L x 5W x 1.5H used within assessment, these differ from North Falls Inputs which are smaller and therefore metrics slightly conservative.
-Beach access allowed for the Five Estuaries Project but not for North Falls Project
- Construction of two haul roads for Section 6 & 7 of the onshore cable route to service the onshore cable route and project substations.
- Values used for 400kV section of route provided by I. MacLean 27th June 2023 via email including
    - 2 circuits per project
    - similar arrangement and assumption to be maintained as remainder of cable route
    - single haul road for each project
    - 400kV route to be accessed via the substation and therefore no access to be considered
    - Western Project (Project 1) - 500m Section Length
    - Eastern Project (Project 2) - 750m Section Length
    - No additional haul road length to be included for either project
    - TCC to be located within the substation area, no TCC to be assumed for 400kV route
    - One HDD of 100m length to be assumed for each project.

Contents

Appendix D. Programme and Average Monthly Vehicle Movements

Beach Access and TCC

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC	22	70					3.2													
Mobilisation of Welfare and Operation Plant to TCC	22	6					0.3													
Site preparation including fencing, temporary drainage and haul road construction.	22	278						12.6												
Works On Beach for HDD Exit / Pulling of Cables (nominal 5 HGV movements per month)	110	50							0.5	0.5	0.5		0.5	0.5						
Haul Road Removal (includes removal of fencing) and reinstatement	22	278													12.6					
Demobilisation of Welfare from TCC	22	6													0.3					
TCC Removal and Reinstatement	22	70													3.2					
Average Section Skip HGV Movements Per Day	176	9					0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1					
Total HGVs per day			0.0	0.0	0.0	0.0	3.5	12.7	0.5	0.5	0.5	0.0	0.5	0.5	16.1	0.0	0.0	0.0	0.0	0.0
Total two-way HGV movements per day			0.0	0.0	0.0	0.0	7.0	25.4	1.0	1.0	1.0	0.0	1.0	1.0	32.3	0.0	0.0	0.0	0.0	0.0

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer					1	1							3					
30T Excavator					2	2							3					
20T Dumper					3	3							4					
Smooth Drum vibrio road roller					1	1							2					
21T excavator					1	1	1	1	1		1	1	2					
5T Forward Tipping Dumper					1	1							2					
Loading shovel					1	1							3					
Trench Roller																		
Tractor & fencing kit					1	1							1					
Tractor & trailer					1	1							2					
Tractor & Fuel bowser (or self-propelled)					1	1							1					
Tractor & Water bowser (for dust suppression)					1	1							1					
Tractor & cable drum trailer																		
Tractor & soil tiller, roller, seeder													1					
Cement mixer																		
Mobile crane																		
Grader					1	1												
Cable laying tracked crane																		
Cable winch							1	1	1		1	1						
Pre-cast concrete truck																		
Mobile concrete pump																		
Telehandler					1	1												
Mobile self-contained welfare unit					1	1							1					
Crawler Crane																		
Mobile generator deliveries (corrected for 2 per delivery)					1	1							2					
Temporary lighting deliveries (corrected for 8 per delivery)					1	2	1	1	1		1	1	2					
Road surface paver & roller					1													
Pump deliveries (corrected for 4 per delivery)							1	1	1		1	1						
Total Plant Onsite In Section Per Month	0	0	0	0	20	20	4	4	4	0	4	4	30	0	0	0	0	0
Total Deliveries / Removals	0	0	0	0	20	2	20	0	4	0	4	0	4	0	0	0	0	0
Average Deliveries / Removals Per Day	0.0	0.0	0.0	0.0	0.9	0.1	0.9	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Average Total two-way HGV movements (Deliveries / Removals) Per Day	0	0	0	0	2	1	2	0	1	0	1	0	1	0	0	0	0	0

Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC	22	44					2													
Site preparation including fencing, temporary drainage and haul road construction.	22	44						2												
Works On Beach for HDD Exit / Pulling of Cables	150	300							2	2	2		2	2						
TCC Removal and Reinstatement	22	44													2					
Haul Road Removal (includes removal of fencing) and reinstatement	22	44													2					
Plant Operators																				
Overall Plant Operators	176	1,694					17	18	3	3	3		3	3	27					
Landfall HDD Engineering Personnel (non HDD)																				
1 x engineer / surveyor, 1 x Foreman	176	352					2	2	2	2	2		2	2	2					
Average Total Employees per day			0	0	0	0	19	22	7	7	7	0	7	7	33	0	0	0	0	0
Maximum Total Employee Two-way Movements Per Day (car/small van)			0	0	0	0	38	44	14	14	14	0	14	14	66	0	0	0	0	0

Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	0	0	0	0	7	25	1	1	1	0	1	1	32	0	0	0	0	0
Increase to account for Miscellaneous allowances presented in Page 10 of Materials Vehicle Movements Tab where the percentage increase is presented	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	0	0	0	0	2	1	2	0	1	0	1	0	1	0	0	0	0	0
Average total two-way HGV Movements Per Day	0	0	0	0	2	1	2	0	1	0	1	0	1	0	0	0	0	0
Maximum Total Employee Two-way Movements Per Day (car/small van)	0	0	0	0	38	44	14	14	14	0	14	14	66	0	0	0	0	0
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	0	0	0	0	46	53	17	17	17	0	17	17	80	0	0	0	0	0
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	0	0	0	0	48	54	19	17	18	0	18	17	81	0	0	0	0	0

Section 1 (Including Landfall & Transition Bay Works)

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	66	897	13.6	13.6	13.6															
Mobilisation of Welfare and Operation Plant to TCC	22	71	3.2																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	110	1,448		13.2	13.2	13.2	13.2	13.2												
Cable Construction Works																				
Trench Excavation and duct installation	154	1,121					7.3	7.3	7.3	7.3	7.3	7.3	7.3							
Trench Backfill with CBS and protective covers	154	592					3.8	3.8	3.8	3.8	3.8	3.8	3.8							
Jointing Bay Excavation	198	230						1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2				
Jointing Bay Base Construction	198	156						0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8				
Pulling and connection of cables	198	324							1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6			
Backfill over Jointing Bays	198	145							0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7			
HDD At Landfall																				
Establish Landfall HDD construction compound / Topsoil Strip in Landfall Laydown Area	44	636					14.5	14.5												
Mobilisation of HDD Kit and Welfare to Landfall Compound	22	50						2.3												
HDD Drilling works & Ducting (assume working 24/7 7 days a week but 22 delivery days a month)	90	1,331							20.2	20.2	20.2									
Demobilisation of HDD kit and welfare	22	50										2.3								
Transition Bays at Landfall																				
Excavation of transition bays	44	64										1.5	1.5							
Construction of transition bay and link box base and walls	44	56										1.3	1.3							
Connection of Cables in Transition Bays	44	8											0.2	0.2						
Transition bay backfill and roof and backfill over transition bay	44	65											1.5	1.5						
Landfall Compound Removal and Reinstatement	44	636												14.5	14.5					
Long / Moderate HDD crossing of B1032 Clacton Road																				
Establish HDD Entry and Exit Pit Compounds	22	307				13.9														
Mobilisation of HDD Kit and Welfare to compounds	22	22				1.0														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	66	113					1.7	1.7	1.7											
Demobilisation of HDD Kit and welfare for exit pit to next major HDD	22	17								0.8										
Remove of onshore HDD Entry and Exit Compounds - exit pit materials reused at next major HDD	44	204								0.0		9.3								
Long / Moderate HDD crossing of Railway - Exit Pit Only																				
Establish HDD Exit Pit Compounds - material from previous minor HDD reused	22	0								0.0										
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous major HDD reused	22	0								0.0										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	66	48									0.7	0.7	0.7							
Demobilisation of HDD Kit and welfare	22	5												0.2						
Remove of onshore HDD Entry Compound	22	103												4.7						
Minor HDD crossing of EA Main River																				
Establish HDD Entry and Exit Pit Compounds	22	204				9.3														
Mobilisation of HDD Kit and Welfare to compounds	22	10					0.5													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38						1.7												
Demobilisation of HDD Kit and welfare to next minor HDD	22	0							0.0											
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	0							0.0											
Minor HDD crossing of Little Clacton Road																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	0							0.0											
Mobilisation of HDD Kit and Welfare to compounds - plant from previous minor HDD reused	22	0							0.0											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	38								0.9	0.9									
Demobilisation of HDD Kit and welfare to next minor HDD	22	0										0.0								
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	0										0.0								
Minor HDD crossing of Minor Watercourse																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	0										0.0								
Mobilisation of HDD Kit and Welfare to compounds - plant from previous minor HDD reused	22	0										0.0								
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38											1.7							
Demobilisation of HDD Kit and welfare to next minor HDD	22	10												0.5						
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	204												9.3						
Minor HDD crossing of Intermediate Pressure Gas Main																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	204							9.3											
Mobilisation of HDD Kit and Welfare to compounds - plant from previous minor HDD reused	22	10							0.5											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38								1.7										
Demobilisation of HDD Kit and welfare to next minor HDD	22	0									0.0									
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	0									0.0									
Minor HDD crossing of Minor Watercourse South of Railway Line																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - plant from previous minor HDD reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38										1.7								
Demobilisation of HDD Kit and welfare	22	10											0.5							
Remove of onshore HDD Entry and Exit Compounds	22	204											9.3							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	110	1,448														13.2	13.2	13.2	13.2	13.2
Demobilisation of Welfare from TCC	22	71																		3.2
TCC and access road Removal	66	897																13.6	13.6	13.6
Average Section Skip HGV Movements Per Day	396	345	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total HGVs per day			17.7	27.6	27.6	38.3	41.8	47.3	47.9	39.8	38.1	33.0	32.9	35.9	19.6	18.4	16.4	27.6	27.6	30.9
Total two-way HGV movements per day			35.4	55.3	55.3	76.5	83.6	94.5	95.9	79.7	76.1	66.1	65.8	71.9	39.3	36.7	32.8	55.3	55.3	61.7

Section 1 (Including Landfall & Transition Bay Works)

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	1	2	2	2	2	3	3	3	3	3	4	3	3	3	3	3	3
30T Excavator	2	2	3	3	4	5	3	3	3	5	6	4	3	3	3	3	3	3
20T Dumper	3	3	3	3	5	7	6	6	6	7	8	6	6	6	3	4	4	4
Smooth Drum vibrio road roller	1	1	2	1	2	2	2	1	1	2	2	2	1	1	1	2	2	2
21T excavator	1	1	1	2	3	4	3	4	4	4	5	3	2	3	1	2	2	2
5T Forward Tipping Dumper	1	1	2	2	3	4	3	4	4	4	5	3	2	3	1	2	2	2
Loading shovel	1	1	2	2	3	3	3	4	4	4	4	3	3	3	2	3	3	3
Trench Roller					2	2	2	3	3	3	3	2	1	1	1			
Tractor & fencing kit	1	1	1	1	2	2	1	1	1	1	1	2	1	1	1	1	1	1
Tractor & trailer	1	1	2	1	2	2	1	2	2	2	3	2	1	2	1	2	2	2
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & cable drum trailer							1	1	1	1	1	1	1	1	1			
Tractor & soil tiller, roller, seeder														1	1	1	1	1
Cement mixer											1	1						
Mobile crane											1	1						
Grader	1	1	2	1	1	1	2	1	1	1								
Cable laying tracked crane											1	1						
Cable winch							1	1	1	1	1	1	1	1	1			
Pre-cast concrete truck											1	1						
Mobile concrete pump						1	1	1	1	1	1	1	1	1				
Telehandler	1	1	2	1	2	2	2	2	2	2	3	1	1	1				
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Crawler Crane					1	1	1	1	1	1	2	1						
Mobile generator deliveries (corrected for 2 per delivery)	1	1	2	2	4	6	6	7	7	9	11	8	5	5	2	2	2	2
Temporary lighting deliveries (corrected for 8 per delivery)	1	1	2	2	4	5	3	5	5	6	6	4	3	3	2	2	2	2
Road surface paver & roller	1	1	1															
Pump deliveries (corrected for 4 per delivery)					1	2	3	3	3	4	5	3	2	2	1			
Total Plant Onsite In Section Per Month	20	43	30	26	44	54	50	56	56	64	77	58	40	44	28	30	30	30
Total Deliveries / Removals	20	0	10	6	18	10	14	10	0	8	15	23	18	4	16	10	0	30
Average Deliveries / Removals Per Day	0.9	0.0	0.5	0.3	0.8	0.5	0.6	0.5	0.0	0.4	0.7	1.0	0.8	0.2	0.7	0.5	0.0	1.4
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	0	1	1	2	1	2	1	0	1	2	3	2	1	2	1	0	3

Section 1 (Including Landfall & Transition Bay Works)

Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	66	198	3	3	3															
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	110	330		3	3	3	3	3												
Cable Construction Works																				
Trench Excavation and duct installation	154	308					2	2	2	2	2	2	2							
Trench Backfill with CBS and protective covers	154	308					2	2	2	2	2	2	2							
Jointing Bay Excavation	198	396						2	2	2	2	2	2	2	2	2				
Jointing Bay Base Construction	198	396						2	2	2	2	2	2	2	2	2				
Pulling and connection of cables	198	594							3	3	3	3	3	3	3	3	3			
Backfill over Jointing Bays	198	396							2	2	2	2	2	2	2	2	2			
HDD At Landfall																				
Establish Landfall HDD construction compound	44	132					3	3												
HDD Drilling works & Ducting (assume working 24/7 7 days a week) Includes Admin of HDD Compound	90	2,880							32	32	32									
Transition Bays at Landfall																				
Excavation of transition bays	44	88										2	2							
Construction of transition bay and link box base and walls	44	132										3	3							
Connection of Cables in Transition Bays	44	132											3	3						
Transition bay backfill and roof and backfill over transition bay	44	132											3	3						
Landfall Compound Removal and Reinstatement	44	132												3	3					
Long / Moderate HDD crossing of B1032 Clacton Road																				
Establish HDD Entry and Exit Pit Compounds	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	66	594					9	9	9											
Remove of onshore HDD Entry and Exit Compound	44	66								1		2								
Long / Moderate HDD crossing of Railway - Exit Pit Only																				
Establish HDD Entry Pit Compound	22	22								1										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	66	198									3	3	3							
Remove of onshore HDD Entry Compound	22	44												2						
Minor HDD crossing of EA Main River																				
Establish HDD Entry and Exit Pit Compound	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110						5												
Remove of onshore HDD Entry and Exit Compound	22	22							1											
Minor HDD crossing of Little Clacton Road																				
Establish HDD Entry and Exit Pit Compound	22	22							1											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220								5	5									
Remove of onshore HDD Entry and Exit Compound	22	22										1								
Minor HDD crossing of Minor Watercourse																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	22										1								
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	110											5							
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	44												2						
Minor HDD crossing of Intermediate Pressure Gas Main																				
Establish HDD Entry and Exit Pit Compounds	22	44							2											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110								5										
Remove of onshore HDD Entry and Exit Compounds	22	22									1									
Minor HDD crossing of Minor Watercourse South of Railway Line																				
Establish HDD Entry and Exit Pit Compounds - material from previous minor HDD reused	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22											5								
Remove of onshore HDD Entry and Exit Compounds	22												2							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	130	390														3	3	3	3	3
TCC and access road Removal	78	234																3	3	3
Plant Operators																				
Overall Plant Operators	468	14,768	17	17	25	21	34	40	37	40	40	44	53	41	29	33	22	25	25	25
Section 1 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average Total Employees per day			24	27	35	32	57	72	99	101	99	78	91	67	45	49	34	35	35	35
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	54	70	64	114	144	198	202	198	156	182	134	90	98	68	70	70	70

Section 1 (Including Landfall & Transition Bay Works)
Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	35	55	55	77	84	95	96	80	76	66	66	72	39	37	33	55	55	62
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	40	62	62	85	93	105	107	89	85	74	73	80	44	41	37	62	62	69
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	0	1	1	2	1	2	1	0	1	2	3	2	1	2	1	0	3
Average total two-way HGV Movements Per Day	**42**	**62**	**63**	**86**	**95**	**106**	**109**	**90**	**85**	**75**	**75**	**83**	**46**	**42**	**39**	**63**	**62**	**72**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	54	70	64	114	144	198	202	198	156	182	134	90	98	68	70	70	70
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**60**	**77**	**71**	**126**	**159**	**218**	**223**	**218**	**172**	**201**	**148**	**99**	**108**	**75**	**77**	**77**	**77**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**95**	**122**	**140**	**157**	**221**	**265**	**327**	**313**	**303**	**247**	**276**	**231**	**145**	**150**	**114**	**140**	**139**	**149**

Appendix D. Programme and Average Monthly Vehicle Movements

Section 2

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	44	548	12.5	12.5																
Mobilisation of Welfare and Operation Plant to TCC	22	23	1.0																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	0	386			8.8	8.8														
Cable Construction Works																				
Trench Excavation and duct installation	44	227						5.2	5.2											
Trench Backfill with CBS and protective covers	44	120						2.7	2.7											
Jointing Bay Excavation	66	77									1.2	1.2	1.2							
Jointing Bay Base Construction	66	52									0.8	0.8	0.8							
Pulling and connection of cables	66	108										1.6	1.6	1.6						
Backfill over Jointing Bays	66	49										0.7	0.7	0.7						
Long / Moderate HDD crossing of Railway - Entry Pit Only																				
Establish HDD Entry Pit Compound	22	204								9.3										
Mobilisation of HDD Kit and Welfare to compounds	22	17								0.8										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	66	91									1.4	1.4	1.4							
Demobilisation of HDD Kit and welfare	22	17												0.8						
Remove of onshore HDD Entry Compound	22	204												9.3						
Minor HDD crossing of Affinity Water 21" SI water main																				
Establish HDD Entry and Exit Pit Compounds	22	205					9.3													
Mobilisation of HDD Kit and Welfare to compounds	22	10					0.5													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38						1.7												
Demobilisation of HDD Kit and welfare to next minor HDD	22	0							0.0											
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD	22	0							0.0											
Minor HDD crossing of Porklane Grove Woodland																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at crossing of Affinity Water 21" SI water main reused	22	0							0.0											
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at crossing of Affinity Water 21" SI water main reused	22	0							0.0											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	38								1.7										
Demobilisation of HDD Kit and welfare to next minor HDD - entry pit equipment reused at next minor HDD	22	1									0.0									
Remove of onshore HDD Entry and Exit Compounds - entry pit materials reused at next minor HDD	22	103									4.7									
Minor HDD crossing of B1033 Thorpe Road - Entry Pit Only																				
Establish HDD Entry Pit Compound - materials from previous minor HDD at crossing of Porklane Grove Woodland reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at crossing of Porklane Grove Woodland reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	22										1.0								
Demobilisation of HDD Kit and welfare	22	9											0.4							
Remove of onshore HDD Entry Compound	22	102											4.7							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	44	386													8.8	8.8				
Demobilisation of Welfare from TCC	22	23																1.0		
TCC and access road Removal	44	548															12.5	12.5		
Average Section Skip HGV Movements Per Day	352	177	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
Total HGVs per day			14.0	13.0	9.3	9.3	10.3	10.1	8.4	12.3	8.5	7.2	11.3	12.9	9.3	9.3	13.0	14.0	0.0	0.0
Total two-way HGV movements per day			28.0	25.9	18.6	18.6	20.5	20.2	16.8	24.6	17.1	14.4	22.5	25.9	18.6	18.6	25.9	28.0	0.0	0.0

Section 2

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	1	1	1	1		2	1	2	2	3	3	2	2	2	2		
30T Excavator	2	2	2	2	2	3	3	2	3	3	3	3	2	2	2	2		
20T Dumper	3	3	3	3		4	4		2	4	6	3	2	2	2	2		
Smooth Drum vibrio road roller	1	1	1	1	1		1	1	1		1	1	1	1	1	1		
21T excavator	1	1	1	1	1	3	3	1	2	2	3	2	1	1	1	1		
5T Forward Tipping Dumper	1	1	1	1	1	3	3	1	2	2	3	2	1	1	1	1		
Loading shovel	1	1	1	1	1	3	3	1	2	1	3	2	2	2	2	2		
Trench Roller						2	2			1	1	1						
Tractor & fencing kit	1	1	1	1	1		1	1	1		1	1	1	1	1	1		
Tractor & trailer	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1		
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Tractor & cable drum trailer										1	1	1						
Tractor & soil tiller, roller, seeder													1	1	1	1		
Cement mixer																		
Mobile crane																		
Grader	1	1	1	1	1		1	1	1									
Cable laying tracked crane																		
Cable winch										1	1	1						
Pre-cast concrete truck																		
Mobile concrete pump									1	1	1							
Telehandler	1	1	1	1	1	2	2	1	2	1	1							
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Crawler Crane						1	1											
Mobile generator deliveries (corrected for 2 per delivery)	1	1	1	1	1	2	3	1	4	4	5	3	1	1	1	1		
Temporary lighting deliveries (corrected for 8 per delivery)	1	1	2	2	1	3	3	1	3	2	3	2	2	2	1	1		
Road surface paver & roller	1	1																
Pump deliveries (corrected for 4 per delivery)						1	1		1	2	2	1						
Total Plant Onsite In Section Per Month	20	20	20	20	16	32	37	16	32	31	42	30	20	20	19	19	0	0
Total Deliveries / Removals	20	0	2	0	4	24	7	21	16	13	11	12	12	0	1	19	0	0
Average Deliveries / Removals Per Day	0.9	0.0	0.1	0.0	0.2	1.1	0.3	1.0	0.7	0.6	0.5	0.5	0.5	0.0	0.0	0.9	0.0	0.0
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	0	1	0	1	3	1	2	2	2	1	2	2	0	1	2	0	0

Section 2
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	44	132	3	3																
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	44	132			3	3														
Cable Construction Works																				
Trench Excavation and duct installation	44	88						2	2											
Trench Backfill with CBS and protective covers	44	88						2	2											
Jointing Bay Excavation	66	132									2	2	2							
Jointing Bay Base Construction	66	132									2	2	2							
Pulling and connection of cables	66	198										3	3	3						
Backfill over Jointing Bays	66	132										2	2	2						
Long / Moderate HDD crossing of Railway - Entry Pit Only																				
Establish HDD Exit Pit Compound	22	44								2										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	66	396									6	6	6							
Remove of onshore HDD Exit Compound	22	44												2						
Minor HDD crossing of Affinity Water 21" SI water main																				
Establish HDD Entry and Exit Pit Compounds	22	44					2													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110						5												
Remove of onshore HDD Entry and Exit Compounds	22	22							1											
Minor HDD crossing of Porklane Grove Woodland																				
Establish HDD Entry and Exit Pit Compound	22	22							1											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	22	110								5										
Remove of onshore HDD Entry and Exit Compound	22	22									1									
Minor HDD crossing of B1033 Thorpe Road - Entry Pit Only																				
Establish HDD Entry Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	22	66										3								
Remove of onshore HDD Entry Compound	22	44											2							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	52	156												3	3					
TCC and access road Removal	52	156														3	3			
Plant Operators																				
Overall Plant Operators	416	8,034	17	17	16	16	13	25	29	13	23	22	31	23	16	16	16	16		
Section 2 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	416	1,664	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Average Total Employees per day			24	24	23	23	19	38	39	24	39	44	52	34	23	23	23	23	0	0
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	48	46	46	38	76	78	48	78	88	104	68	46	46	46	46	0	0

Section 2

Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	28	26	19	19	21	20	17	25	17	14	23	26	19	19	26	28	0	0
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	31	29	21	21	23	23	19	27	19	16	25	29	21	21	29	31	0	0
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	0	1	0	1	3	1	2	2	2	1	2	2	0	1	2	0	0
Average total two-way HGV Movements Per Day	**33**	**29**	**22**	**21**	**24**	**26**	**20**	**29**	**21**	**18**	**26**	**31**	**23**	**21**	**30**	**33**	**0**	**0**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	48	46	46	38	76	78	48	78	88	104	68	46	46	46	46	0	0
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**53**	**51**	**51**	**42**	**84**	**86**	**53**	**86**	**97**	**115**	**75**	**51**	**51**	**51**	**51**	**0**	**0**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**86**	**82**	**73**	**72**	**66**	**110**	**106**	**82**	**107**	**115**	**141**	**106**	**74**	**72**	**81**	**84**	**0**	**0**

Section 3
Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	66	1,227	18.6	18.6	18.6															
Mobilisation of Welfare and Operation Plant to TCC	22	48	2.2																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	132	1,613		12.2	12.2	12.2	12.2	12.2	12.2											
Cable Construction Works																				
Trench Excavation and duct installation	176	1,206				6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9							
Trench Backfill with CBS and protective covers	176	637				3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6							
Jointing Bay Excavation	220	254					1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2				
Jointing Bay Base Construction	220	173					0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8				
Pulling and connection of cables	220	388						1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8			
Backfill over Jointing Bays	220	162						0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7			
Long / Moderate HDD Crossing of B1035 Tendering Road and B1035 Thorpe Road , South-East of Junction with Swan Road/ Crossing of Swan Road, Woodland Block and Watercourse to the South - Entry Pit Only																				
Establish HDD Entry Pit Compound	44	204			4.6	4.6														
Mobilisation of HDD Kit and Welfare to compound	22	17				0.8														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	88	91					1.0	1.0	1.0	1.0										
Demobilisation of HDD Kit and welfare to HDD compound at Damants Farm Lane	22	0									0.0									
Remove of onshore HDD Entry Compound- entry pit materials reused at Damants Farm Lane HDD	22	0									0.0									
Long / Moderate HDD crossing of Affinity Water 21" SI water main and Damant's Farm Lane - Entry and Exit																				
Establish HDD Entry and Exit Pit Compounds- Materials from Swan Road crossing reused for Entry pit	22	103									4.7									
Mobilisation of HDD Kit and Welfare to compounds- Equipment from Swan Road crossing reused for Entry pit	22	5									0.2									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	88	165										1.9	1.9	1.9	1.9					
Demobilisation of HDD Kit and welfare	22	22														1.0				
Remove of onshore HDD Compounds	22	307														14.0				
Minor HDD crossing of Golden Lane																				
Establish HDD Entry and Exit Pit Compounds	22	204					9.3													
Mobilisation of HDD Kit and Welfare to compounds	22	10					0.5													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	54						1.2	1.2											
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Golden Lane	22	0								0.0										
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Golden Lane	22	0								0.0										
Minor HDD crossing of Woodland Block North East of Thorpe-le-Soken																				
Establish HDD Entry and Exit Pits Compound - materials from previous minor HDD of Horse Paddocks reused	22	0								0.0										
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD of Horse Paddocks reused	22	0								0.0										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	54									1.2	1.2								
Demobilisation of HDD Kit and welfare to next minor HDD at B1041 Landemere Road	22	0											0.0							
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at B1414 Landemere Road	22	0											0.0							
Minor HDD crossing of B1414 Landemere Road																				
Establish HDD Entry and Exit Pit Compounds- materials from previous minor HDD at Golden Lane reused	22	0											0.0							
Mobilisation of HDD Kit and Welfare to compounds- equipment from previous minor HDD at Golden Lane reused	22	0											0.0							
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	54												2.5						
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Woodland Block NE Thorpe-le-Soken	22	10													0.5					
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Woodland Block NE Thorpe-le-Soken	22	204													9.3					
Minor HDD Crossing of Horse Paddocks and Public Right of Way Footpath																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at B1041 Landemere Road reused	22	204				9.3														
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at B1041 Landemere Road reused	22	10				0.5														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	54					1.2	1.2												
Demobilisation of HDD Kit and welfare	22	0							0.0											
Remove of onshore HDD Entry and Exit Compounds	22	0							0.0											
Minor HDD crossing of B1034 Sneating Hall Lane																				
Establish HDD Entry and Exit Pit Compounds	22	0							0.0											
Mobilisation of HDD Kit and Welfare to compounds	22	0							0.0											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	54								2.5										
Demobilisation of HDD Kit and welfare- equipment for exit pit reused at next minor HDD at B1033 Thorpe Road	22	9									0.4									
Remove of onshore HDD Entry and Exit Compounds - materials for exit pit reused at next minor HDD at B1033 Thorpe Road	22	102									4.6									
Minor HDD crossing of B1033 Thorpe Road - Exit Pit Only																				
Establish HDD Exit Pit Compound- materials from previous minor HDD at B1034 Sneating Hall Lane reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - exit pit equipment from previous minor HDD at B1034 Sneating Hall Lane reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	24										1.1								
Demobilisation of HDD Kit and welfare	22	1											0.0							
Remove of onshore HDD Exit Compound	22	102											4.6							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	110	1,613													14.7	14.7	14.7	14.7	14.7	
Demobilisation of Welfare from TCC	22	71																		3.2
TCC and access road Removal	66	1,227																18.6	18.6	18.6
Average Section Skip HGV Movements Per Day	396	423	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Total HGVs per day			21.8	31.9	36.5	38.9	37.7	31.7	30.5	19.5	27.2	20.1	22.5	9.8	31.8	35.1	18.2	34.3	34.3	22.9
Total two-way HGV movements per day			43.7	63.8	73.0	77.8	75.4	63.4	60.9	38.9	54.3	40.3	45.1	19.7	63.6	70.3	36.5	68.6	68.6	45.8

Section 3

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	2	2	1	1	2	3	3	3	2	4	2	4	4	3	3	3	2
30T Excavator	2	3	3	3	4	4	5	3	3	3	4	3	4	4	3	3	3	2
20T Dumper	3	3	3	6	5	7	8	6	6	6	7	4	7	7	3	4	4	2
Smooth Drum vibrio road roller	1	2	2	1	1	1	2	2	1		1		1	1	1	2	2	1
21T excavator	1	1	1	3	3	3	3	3	4	3	4	2	3	3	1	2	2	1
5T Forward Tipping Dumper	1	2	2	3	3	3	3	3	4	3	4	2	3	3	1	2	2	1
Loading shovel	1	2	2	3	3	3	4	3	4	3	5	1	3	3	2	3	3	2
Trench Roller				2	2	2	2	2	3	2	3	1	1	1	1			
Tractor & fencing kit	1	1	1	1	1	1	1	1	1		1		1	1	1	1	1	1
Tractor & trailer	1	2	2	3	2	1	2	1	2	1	2	1	1	1	1	2	2	1
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & cable drum trailer						1	1	1	1	1	1	1	1	1	1			
Tractor & soil tiller, roller, seeder													1	1	1	1	1	1
Cement mixer																		
Mobile crane																		
Grader	1	2	2	1	2	1	2	2	1		1							
Cable laying tracked crane																		
Cable winch						1	1	1	1	1	1	1	1	1	1			
Pre-cast concrete truck																		
Mobile concrete pump					1	1	1	1	1	1	1	1	1	1				
Telehandler	1	2	2	3	3	1	2	2	2	2	2	1	1	1				
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Crawler Crane				1	1	1	1	1	1	1	1							
Mobile generator deliveries (corrected for 2 per delivery)	1	2	3	4	3	7	8	6	7	6	8	4	6	6	2	2	2	1
Temporary lighting deliveries (corrected for 8 per delivery)	1	2	3	3	5	6	7	3	5	3	6	2	4	4	2	2	2	1
Road surface paver & roller	1	1	1															
Pump deliveries (corrected for 4 per delivery)				1	2	3	3	3	3	3	3	2	2	2	1			
Total Plant Onsite In Section Per Month	20	30	32	42	45	52	62	60	56	44	62	31	48	48	28	30	30	19
Total Deliveries / Removals	20	10	2	18	9	15	10	12	10	12	18	31	17	0	20	10	0	30
Average Deliveries / Removals Per Day	0.9	0.5	0.1	0.8	0.4	0.7	0.5	0.5	0.5	0.5	0.8	1.4	0.8	0.0	0.9	0.5	0.0	1.4
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	1	1	2	1	2	1	2	1	2	2	3	2	0	2	1	0	3

Section 3
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	66	198	3	3	3															
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	132	396		3	3	3	3	3	3											
Cable Construction Works																				
Trench Excavation and duct installation	176	352				2	2	2	2	2	2	2	2							
Trench Backfill with CBS and protective covers	176	352				2	2	2	2	2	2	2	2							
Jointing Bay Excavation	220	440					2	2	2	2	2	2	2	2	2	2				
Jointing Bay Base Construction	220	440					2	2	2	2	2	2	2	2	2	2				
Pulling and connection of cables	220	660						3	3	3	3	3	3	3	3	3	3			
Backfill over Jointing Bays	220	440						2	2	2	2	2	2	2	2	2	2			
Long / Moderate HDD Crossing of B1035 Tendering Road and B1035 Thorpe Road , South-East of Junction with Swan Road - Entry Pit Only																				
Establish HDD Entry Pit Compound	44	88			2	2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	88	528					6	6	6	6										
Remove of onshore HDD Entry Compound	22	22									1									
Long / Moderate HDD crossing of Affinity Water 21" SI water main and Damant's Farm Lane - Entry and Exit																				
Establish HDD Entry and Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	88	792										9	9	9	9					
Remove of onshore HDD Entry and Exit Compound	22	44														2				
Minor HDD crossing of Golden Lane																				
Establish HDD Entry and Exit Pit Compound	22	44					2													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220						5	5											
Remove of onshore HDD Entry and Exit Compound	22	22								1										
Minor HDD crossing of Woodland Block North East of Thorpe-le-Soken																				
Establish HDD Entry and Exit Pit Compound	22	22								1										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220									5	5								
Remove of onshore HDD Entry and Exit Compound	22	22											1							
Minor HDD crossing of B1414 Landemere Road																				
Establish HDD Entry and Exit Pit Compound	22	22											1							
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110												5						
Remove of onshore HDD Entry and Exit Compound	22	44													2					
Minor HDD Crossing of Horse Paddocks and Public Right of Way Footpath																				
Establish HDD Entry and Exit Pit Compound	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220					5	5												
Remove of onshore HDD Entry and Exit Compound	22	22							1											
Minor HDD crossing of B1034 Sneating Hall Lane																				
Establish HDD Entry Pit Compound	22	22							1											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	22	110								5										
Remove of onshore HDD Entry Compound	22	22									1									
Minor HDD crossing of B1033 Thorpe Road - Exit Pit Only																				
Establish HDD Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	22	44										2								
Remove of onshore HDD Exit Compound	22	44											2							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	130	390													3	3	3	3	3	
TCC and access road Removal	78	234																3	3	3
Plant Operators																				
Overall Plant Operators	468	14,144	17	25	25	33	34	35	43	37	40	31	44	22	35	35	22	25	25	16
Section 3 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average Total Employees per day			24	35	37	48	62	71	76	67	66	64	74	49	62	53	34	35	35	23
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	70	74	96	124	142	152	134	132	128	148	98	124	106	68	70	70	46

Section 3

Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	44	64	73	78	75	63	61	39	54	40	45	20	64	70	36	69	69	46
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	48	70	80	85	83	70	67	43	60	44	50	22	70	77	40	75	75	50
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	1	1	2	1	2	1	2	1	2	2	3	2	0	2	1	0	3
Average total two-way HGV Movements Per Day	**50**	**71**	**81**	**87**	**84**	**72**	**68**	**45**	**61**	**46**	**52**	**25**	**72**	**77**	**42**	**76**	**75**	**53**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	70	74	96	124	142	152	134	132	128	148	98	124	106	68	70	70	46
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	53	77	82	106	137	157	168	148	146	141	163	108	137	117	75	77	77	51
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**103**	**148**	**163**	**193**	**221**	**229**	**236**	**193**	**207**	**187**	**215**	**133**	**209**	**194**	**117**	**153**	**152**	**104**

Appendix D. Programme and Average Monthly Vehicle Movements

Section 4A

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	44	548	12.5	12.5																
Mobilisation of Welfare and Operation Plant to TCC	22	23	1.0																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	44	513			11.7	11.7														
Cable Construction Works																				
Trench Excavation and duct installation	66	376								5.7	5.7	5.7								
Trench Backfill with CBS and protective covers	66	199								3.0	3.0	3.0								
Jointing Bay Excavation	66	77										1.2	1.2	1.2						
Jointing Bay Base Construction	66	52										0.8	0.8	0.8						
Pulling and connection of cables	66	108													1.6	1.6	1.6			
Backfill over Jointing Bays	66	49													0.7	0.7	0.7			
Long / Moderate HDD Crossing of B1035 Tendering Road and B1035 Thorpe Road , South-East of Junction with Swan Road/ Crossing of Swan Road, Woodland Block and Watercourse to the South - Exit Pit Only																				
Establish HDD Exit Pit Compounds	22	103				4.7														
Mobilisation of HDD Kit and Welfare to compounds	22	5				0.2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	88	73					0.8	0.8	0.8	0.8										
Demobilisation of HDD Kit and welfare to HDD exit pit compound at Tendering Brook	22	0									0.0									
Remove of onshore HDD Entry Compound - materials reused at next Long / moderate HDD at crossing of Tendering Brook.	22	0									0.0									
Long / Moderate HDD crossing of Tendering Brook and Lodge Lane - Exit Pit Only																				
Establish HDD Exit Pit Compound - materials from previous long / moderate HDD at crossing of Swan Road reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous long / moderate HDD at Swan Road reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	88	73										0.8	0.8	0.8	0.8					
Demobilisation of HDD Kit and welfare	22	5														0.2				
Remove of onshore HDD Exit Compound	22	103														4.7				
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	44	513															11.7	11.7		
Demobilisation of Welfare from TCC	0	23																		1.0
TCC and access road Removal	0	548																	12.5	12.5
Average Section Skip HGV Movements Per Day	396	180	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total HGVs per day			14.0	12.9	12.1	17.0	1.3	1.3	1.3	10.0	9.2	11.9	3.2	3.2	3.7	7.7	14.5	12.1	12.9	14.0
Total two-way HGV movements per day			27.9	25.8	24.2	34.0	2.6	2.6	2.6	20.0	18.3	23.9	6.5	6.5	7.3	15.4	29.0	24.2	25.8	27.9

Appendix D. Programme and Average Monthly Vehicle Movements

Section 4A

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	1	1	2					2				2	3	3	2	2	2
30T Excavator	2	2	2	3				3	3	3	2	2	2	3	3	2	2	2
20T Dumper	3	3	3	3				4	4	4	2	2	2	3	3	2	2	2
Smooth Drum vibrio road roller	1	1	1	1					1					1	1	1	1	1
21T excavator	1	1	1	2				3	3	3	1	1	1	2	1	1	1	1
5T Forward Tipping Dumper	1	1	1	2				3	3	3	1	1	1	2	1	1	1	1
Loading shovel	1	1	1	2				3	3	3			1	2	2	2	2	2
Trench Roller								2	2	2			1	1	1			
Tractor & fencing kit	1	1	1	1					1					1	1	1	1	1
Tractor & trailer	1	1	1	1				2	1	1	1	1		1	1	1	1	1
Tractor & Fuel bowser (or self-propelled)	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1
Tractor & Water bowser (for dust suppression)	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1
Tractor & cable drum trailer													1	1	1			
Tractor & soil tiller, roller, seeder															1	1	1	1
Cement mixer																		
Mobile crane																		
Grader	1	1	1	1					1									
Cable laying tracked crane																		
Cable winch													1	1	1			
Pre-cast concrete truck																		
Mobile concrete pump										1	1	1						
Telehandler	1	1	1	1				2	2	2	1	1						
Mobile self-contained welfare unit	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1
Crawler Crane								1	1	1								
Mobile generator deliveries (corrected for 2 per delivery)	1	1	1	2				2	3	4	2	2	2	3	2	1	1	1
Temporary lighting deliveries (corrected for 8 per delivery)	1	1	2	2				3	3	3	1	1	1	2	2	2	1	1
Road surface paver & roller	1	1																
Pump deliveries (corrected for 4 per delivery)								1	1	2	1	1	1	1	1			
Total Plant Onsite In Section Per Month	20	20	20	26	0	0	0	32	37	35	16	16	19	30	28	20	19	19
Total Deliveries / Removals	20	0	2	6	26	0	0	32	7	8	19	0	9	11	30	0	1	19
Average Deliveries / Removals Per Day	0.9	0.0	0.1	0.3	1.2	0.0	0.0	1.5	0.3	0.4	0.9	0.0	0.4	0.5	1.4	0.0	0.0	0.9
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	0	1	1	3	0	0	3	1	1	2	0	1	1	3	0	1	2

Appendix D. Programme and Average Monthly Vehicle Movements

Section 4A
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	44	132	3	3																
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	44	132			3	3														
Cable Construction Works																				
Trench Excavation and duct installation	66	132								2	2	2								
Trench Backfill with CBS and protective covers	66	132								2	2	2								
Jointing Bay Excavation	66	132										2	2	2						
Jointing Bay Base Construction	66	132										2	2	2						
Pulling and connection of cables	66	198													3	3	3			
Backfill over Jointing Bays	66	132													2	2	2			
Long / Moderate HDD Crossing of B1035 Tendering Road and B1035 Thorpe Road , South-East of Junction with Swan Road - Exit Pit Only																				
Establish HDD Exit Pit Compounds	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	88	264					3	3	3	3										
Remove of onshore HDD Exit Compound	22	22									1									
Long / Moderate HDD crossing of Tendering Brook and Lodge Lane - Exit Pit Only																				
Establish HDD Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	88	264										3	3	3	3					
Remove of onshore HDD Exit Compound	22	44														2				
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	52	156															3	3		
TCC and access road Removal	52	156																	3	3
Plant Operators																				
Overall Plant Operators	468	7,254	17	17	16	21	0	0	0	25	29	25	11	11	14	23	22	16	16	16
Section 4 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Project Engineering Personnel Based at TCC South of A120																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average Total Employees per day			24	24	23	30	7	7	7	36	39	40	22	22	26	34	34	23	23	23
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	48	46	60	14	14	14	72	78	80	44	44	52	68	68	46	46	46

Appendix D. Programme and Average Monthly Vehicle Movements

Section 4A
Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	28	26	24	34	3	3	3	20	18	24	6	6	7	15	29	24	26	28
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	31	29	27	38	3	3	3	22	21	27	8	8	8	17	32	27	29	31
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	0	1	1	3	0	0	3	1	1	2	0	1	1	3	0	1	2
Average total two-way HGV Movements Per Day	**33**	**29**	**28**	**39**	**6**	**3**	**3**	**25**	**22**	**28**	**10**	**8**	**9**	**18**	**35**	**27**	**30**	**33**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	48	46	60	14	14	14	72	78	80	44	44	52	68	68	46	46	46
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**53**	**51**	**66**	**16**	**16**	**16**	**80**	**86**	**88**	**49**	**49**	**58**	**75**	**75**	**51**	**51**	**51**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**86**	**82**	**79**	**105**	**22**	**19**	**19**	**105**	**108**	**116**	**59**	**57**	**67**	**93**	**110**	**78**	**81**	**84**

Section 4B

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	88	1,227	13.9	13.9	13.9	13.9														
Mobilisation of Welfare and Operation Plant to TCC	22	71	3.2																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	110	1,288		11.7	11.7	11.7	11.7	11.7												
Cable Construction Works																				
Trench Excavation and duct installation	132	988						7.5	7.5	7.5	7.5	7.5	7.5							
Trench Backfill with CBS and protective covers	132	521						3.9	3.9	3.9	3.9	3.9	3.9							
Jointing Bay Excavation	176	204							1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2				
Jointing Bay Base Construction	176	138							0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8				
Pulling and connection of cables	176	288								1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6			
Backfill over Jointing Bays	176	130								0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7			
Long / Moderate HDD crossing of A120 - Entry Pit Only																				
Establish HDD Entry Pit Compounds	44	204					4.6	4.6												
Mobilisation of HDD Kit and Welfare to compounds	22	17						0.8												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	67							1.5	1.5										
Demobilisation of HDD Kit and welfare to HDD compound at Tendering Brook	22	0									0.0									
Remove of onshore HDD Entry Compound - materials reused at next Long / moderate HDD at crossing of Tendering Brook.	22	0									0.0									
Long / Moderate HDD crossing of Tendering Brook and Lodge Lane - Entry Pit Only																				
Establish HDD Entry and Exit Pit Compounds - materials from previous long / moderate HDD at crossing of A120	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous long / moderate HDD at A120 crossing reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	88	67										0.8	0.8	0.8	0.8					
Demobilisation of HDD Kit and welfare	22	17														0.8				
Remove of onshore HDD Entry Compound	22	204														9.3				
Minor HDD crossing of Stones Green Road																				
Establish HDD Exit Pit Compounds	22	205					9.3													
Mobilisation of HDD Kit and Welfare to compounds	22	10					0.5													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	40						1.8												
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Wolves Hall Lane	22	0							0.0											
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Wolves Hall Lane	22	0							0.0											
Minor HDD crossing of Wolves Hall Lane																				
Establish HDD Exit Pit Compounds - materials from previous minor HDD at Stones Green Road reused	22	0							0.0											
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at Stones Green Road reused	22	0							0.0											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	40								1.8										
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Affinity Water 21" SI water main	22	0									0.0									
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Affinity Water 21" SI water main	22	0									0.0									
Minor HDD crossing of Affinity Water 21" SI Water Main																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at Wolves Hall Lane reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at Wolves Hall Lane reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	40										1.8								
Demobilisation of HDD Kit and welfare	22	10											0.5							
Remove of onshore HDD Entry and Exit Compounds	22	205											9.3							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	88	1,288													14.6	14.6	14.6	14.6		
Demobilisation of Welfare from TCC	22	71																		3.2
TCC and access road Removal	88	1,227															13.9	13.9	13.9	13.9
Average Section Skip HGV Movements Per Day	396	364	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total HGVs per day			18.1	26.6	26.6	26.6	27.0	31.3	15.8	20.0	16.7	19.3	27.2	6.0	20.6	29.9	31.9	29.5	14.9	18.1
Total two-way HGV movements per day			36.2	53.1	53.1	53.1	54.0	62.6	31.6	40.0	33.3	38.5	54.4	12.0	41.3	59.8	63.7	59.0	29.7	36.2

Section 4B

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	2	2	2	2	1	2	2	3	2	3	2	3	4	4	3	2	2
30T Excavator	2	3	3	3	3	3	3	3	3	3	4	3	3	4	4	3	2	2
20T Dumper	3	3	3	3	3	6	6	6	6	6	7	4	6	7	4	4	2	2
Smooth Drum vibrio road roller	1	2	2	2	1	1	1		1		1		1	1	1	2	1	1
21T excavator	1	1	1	1	2	3	3	3	3	3	3	2	3	3	1	2	1	1
5T Forward Tipping Dumper	1	2	2	2	2	3	3	3	3	3	3	2	3	3	1	2	1	1
Loading shovel	1	2	2	2	2	3	3	3	3	3	4	1	3	3	3	3	2	2
Trench Roller						2	2	2	2	2	2	1	1	1	1			
Tractor & fencing kit	1	1	1	1	1	1	1		1		1		1	1	1	1	1	1
Tractor & trailer	1	2	2	2	1	3	2	1	2	1	1	1	2	1	1	2	1	1
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & cable drum trailer								1	1	1	1	1	1	1	1			
Tractor & soil tiller, roller, seeder													1	1	1	1	1	1
Cement mixer																		
Mobile crane																		
Grader	1	2	2	2	1	1	1		1									
Cable laying tracked crane																		
Cable winch								1	1	1	1	1	1	1	1			
Pre-cast concrete truck																		
Mobile concrete pump							1	1	1	1	1	1	1	1				
Telehandler	1	2	2	2	1	3	2	2	2	2	2	1	1	1				
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Crawler Crane						1	1	1	1	1	1							
Mobile generator deliveries (corrected for 2 per delivery)	1	2	2	2	2	4	5	6	6	6	7	4	5	6	4	2	1	1
Temporary lighting deliveries (corrected for 8 per delivery)	1	2	2	2	2	3	3	3	3	3	5	2	3	4	3	2	1	1
Road surface paver & roller	1	1	1	1														
Pump deliveries (corrected for 4 per delivery)						1	2	3	3	3	3	2	2	2	1			
Total Plant Onsite In Section Per Month	20	30	30	30	26	42	44	44	49	44	53	31	44	48	35	30	19	19
Total Deliveries / Removals	20	10	0	0	6	18	6	8	5	5	9	22	13	6	13	13	11	19
Average Deliveries / Removals Per Day	0.9	0.5	0.0	0.0	0.3	0.8	0.3	0.4	0.2	0.2	0.4	1.0	0.6	0.3	0.6	0.6	0.5	0.9
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	1	0	0	1	2	1	1	1	1	1	2	2	1	2	2	1	2

Section 4B
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	88	264	3	3	3	3														
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	110	330		3	3	3	3	3												
Cable Construction Works																				
Trench Excavation and duct installation	132	264						2	2	2	2	2	2							
Trench Backfill with CBS and protective covers	132	264						2	2	2	2	2	2							
Jointing Bay Excavation	176	352							2	2	2	2	2	2	2	2				
Jointing Bay Base Construction	176	352							2	2	2	2	2	2	2	2				
Pulling and connection of cables	176	528								3	3	3	3	3	3	3	3			
Backfill over Jointing Bays	176	352								2	2	2	2	2	2	2	2			
Long / Moderate HDD crossing of A120 - Entry Pit Only																				
Establish HDD Entry Compound	44	88					2	2												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	264							6	6										
Remove of onshore HDD Entry Compound	22	22									1									
Long / Moderate HDD crossing of Tendering Brook and Lodge Lane - Entry Pit Only																				
Establish HDD Entry and Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	88	528										6	6	6	6					
Remove of onshore HDD Entry Compound	22	44														2				
Minor HDD crossing of Stones Green Road																				
Establish HDD Exit Pit Compound	22	22					1													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110						5												
Remove of onshore HDD Exit Compound	22	22							1											
Minor HDD crossing of Wolves Hall Lane																				
Establish HDD Exit Pit Compound	22	22							1											
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110								5										
Remove of onshore HDD Entry and Exit Compound	22	22									1									
Minor HDD crossing of Affinity Water 21" SI Water Main																				
Establish HDD Entry and Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	22	110										5								
Remove of onshore HDD Entry and Exit Compounds	22	44											2							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	104	312													3	3	3	3		
TCC and access road Removal	104	312															3	3	3	3
Plant Operators																				
Overall Plant Operators	468	12,662	17	25	25	25	21	33	33	31	36	31	37	22	33	35	26	25	16	16
Section 4 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Project Engineering Personnel Based at TCC South of A120																				
Head Engineer, 2 x Admin Staff, QS, Assistant QS, Overall Site Foreman, H&S Supervisor, H&S Assistant, Environmental Clerk, Assistant Environmental Clerk, Lead Surveyor, 2 x catering staff, 2 x client representative, 2 x owners engineers, 3 x additional allowance and additional 5 for second project	468	11,700	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Average Total Employees per day			24	35	35	35	31	51	53	59	57	59	62	41	55	53	41	35	23	23
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	70	70	70	62	102	106	118	114	118	124	82	110	106	82	70	46	46

Section 4B
Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	36	53	53	53	54	63	32	40	33	39	54	12	41	60	64	59	30	36
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	40	59	59	59	60	69	35	44	37	43	60	14	46	66	70	65	33	40
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	1	0	0	1	2	1	1	1	1	1	2	2	1	2	2	1	2
Average total two-way HGV Movements Per Day	**42**	**60**	**59**	**59**	**61**	**71**	**36**	**45**	**38**	**44**	**61**	**16**	**48**	**67**	**72**	**67**	**34**	**42**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	70	70	70	62	102	106	118	114	118	124	82	110	106	82	70	46	46
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**77**	**77**	**77**	**69**	**113**	**117**	**130**	**126**	**130**	**137**	**91**	**121**	**117**	**91**	**77**	**51**	**51**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van	**95**	**137**	**136**	**136**	**130**	**184**	**153**	**175**	**164**	**174**	**198**	**107**	**169**	**184**	**163**	**144**	**85**	**93**

Section 5

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	66	897	13.6	13.6	13.6															
Mobilisation of Welfare and Operation Plant to TCC	22	71	3.2																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	66	754			11.4	11.4	11.4													
Cable Construction Works																				
Trench Excavation and duct installation	110	749						6.8	6.8	6.8	6.8	6.8								
Trench Backfill with CBS and protective covers	110	396						3.6	3.6	3.6	3.6	3.6								
Jointing Bay Excavation	132	153							1.2	1.2	1.2	1.2	1.2	1.2						
Jointing Bay Base Construction	132	104							0.8	0.8	0.8	0.8	0.8	0.8						
Pulling and connection of cables	132	216								1.6	1.6	1.6	1.6	1.6	1.6					
Backfill over Jointing Bays	132	98								0.7	0.7	0.7	0.7	0.7	0.7					
Long / Moderate HDD crossing of A120 - Exit Pit Only																				
Establish HDD Exit Pit Compound	22	103					4.7													
Mobilisation of HDD Kit and Welfare to compound	22	5						0.2												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	36							0.8	0.8										
Demobilisation of HDD Kit and welfare	22	5									0.2									
Remove of onshore HDD Exit Compound	22	103										4.7								
Minor HDD crossing of Bentley Road - Entry Only																				
Establish HDD Entry Pit Compound	22	102				4.6														
Mobilisation of HDD Kit and Welfare to compound	22	9				0.4														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	32					1.5													
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of B1035 and 21" SI Water Main	22	0						0.0												
Remove of onshore HDD Entry Compound -materials reused at next minor HDD at crossing of B1035 and 21" SI Water Main	22	0						0.0												
Minor HDD crossing of B1035 and 21" SI Water Main																				
Establish HDD Entry and Exit Pit Compounds -materials for entry pit reused from previous minor HDD of Bentley Road	22	102						4.7												
Mobilisation of HDD Kit and Welfare to compounds - equipment for entry pit reused from previous minor HDD of Bentley Road	22	1						0.0												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	61							1.4	1.4										
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of the water main East of B1035	22	10									0.5									
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of the water main East of the B1035	22	205											9.3							
Minor HDD crossing of Water Main East of B1035																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at crossing of B1035 and 21" SI Water Main reused	44	205					4.6	4.6												
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at crossing of B1035 and 21" SI Water Main reused	22	10						0.5												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	61							1.4	1.4										
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of watercourse to west of B1035	22	0									0.0									
Remove of onshore HDD Entry and Exit Compounds - Materials reused at next minor HDD at crossing of watercourse to west of B1035	22	0									0.0									
Minor HDD crossing of Watercourse West of B1035																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at crossing of water main east of B1035 reused	22	0									0.0									
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at crossing of watermain east of B1035 reused	22	0									0.0									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	61										1.4	1.4							
Demobilisation of HDD Kit and welfare	22	10												0.5						
Remove of onshore HDD Entry and Exit Compounds	22	205												9.3						
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	66	754													11.4	11.4	11.4			
Demobilisation of Welfare from TCC	0	71																		3.2
TCC and access road Removal	0	897																13.6	13.6	13.6
Average Section Skip HGV Movements Per Day	396	308	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
		Total HGVs per day	17.6	14.4	25.8	17.3	23.0	21.2	16.7	19.1	16.2	21.6	15.8	14.9	14.6	12.2	12.2	14.4	14.4	17.6
		Total two-way HGV movements per day	35.2	28.7	51.6	34.5	46.0	42.4	33.4	38.2	32.4	43.2	31.6	29.7	29.2	24.4	24.4	28.7	28.7	35.2

Section 5

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	1	2	2	2	2		2	3	3	3	4	3	2	2			
30T Excavator	2	2	3	3	3	4	3	3	3	4	3	4	3	2	2			
20T Dumper	3	3	3	3	3	4	4	6	6	7	6	7	3	2	2			
Smooth Drum vibrio road roller	1	1	2	1	1	1			1	1	1	1	1	1	1			
21T excavator	1	1	1	2	2	3	3	3	3	3	3	3	1	1	1			
5T Forward Tipping Dumper	1	1	2	2	2	3	3	3	3	3	3	3	1	1	1			
Loading shovel	1	1	2	2	2	3	3	3	3	4	3	3	2	2	2			
Trench Roller						2	2	2	2	2	1	1	1					
Tractor & fencing kit	1	1	1	1	1	1			1	1	1	1	1	1	1			
Tractor & trailer	1	1	2	1	1	1	1	1	2	1	1	1	1	1	1			
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Tractor & cable drum trailer								1	1	1	1	1	1					
Tractor & soil tiller, roller, seeder												1	1	1	1			
Cement mixer																		
Mobile crane																		
Grader	1	1	2	1	1	1			1									
Cable laying tracked crane																		
Cable winch								1	1	1	1	1	1					
Pre-cast concrete truck																		
Mobile concrete pump							1	1	1	1	1	1						
Telehandler	1	1	2	1	1	2	2	2	2	2	1	1						
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Crawler Crane						1	1	1	1	1								
Mobile generator deliveries (corrected for 2 per delivery)	1	1	2	2	2	4	4	6	6	7	5	6	2	1	1			
Temporary lighting deliveries (corrected for 8 per delivery)	1	1	2	2	2	4	3	3	3	5	3	4	2	2	2			
Road surface paver & roller	1	1	1															
Pump deliveries (corrected for 4 per delivery)						1	2	3	3	3	2	2	1					
Total Plant Onsite In Section Per Month	20	20	30	26	26	40	35	44	49	53	42	48	28	20	20	19	19	19
Total Deliveries / Removals	20	0	10	6	0	14	9	9	5	8	11	6	20	8	20	0	0	19
Average Deliveries / Removals Per Day	0.9	0.0	0.5	0.3	0.0	0.6	0.4	0.4	0.2	0.4	0.5	0.3	0.9	0.4	0.9	0.0	0.0	0.9
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	0	1	1	0	2	1	1	1	1	1	1	2	1	2	0	0	2

Section 5
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	66	198	3	3	3															
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	22	66	3																	
Installation of Auxiliary Supply Trench	44	132			3	3	3													
Cable Construction Works																				
Trench Excavation and duct installation	110	220						2	2	2	2	2								
Trench Backfill with CBS and protective covers	110	220						2	2	2	2	2								
Jointing Bay Excavation	132	264							2	2	2	2	2	2						
Jointing Bay Base Construction	132	264							2	2	2	2	2	2						
Pulling and connection of cables	132	396								3	3	3	3	3	3					
Backfill over Jointing Bays	132	264								2	2	2	2	2	2					
Long / Moderate HDD crossing of A120 - Exit Pit Only																				
Establish HDD Exit Pit Compound	22	44					2													
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	132							3	3										
Remove of onshore HDD Exit Compound	22	44										2								
Minor HDD crossing of Bentley Road - Entry Only																				
Establish HDD Entry Pit Compound	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	66					3													
Remove of onshore HDD Entry Compound	22	22						1												
Minor HDD crossing of B1035 and 21" SI Water Main																				
Establish HDD Entry and Exit Pit Compound	22	22						1												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220							5	5										
Remove of onshore HDD Entry and Exit Compound	22	44											2							
Minor HDD crossing of Water Main East of B1035																				
Establish HDD Entry and Exit Pit Compound	44	88					2	2												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220							5	5										
Remove of onshore HDD Entry and Exit Compound	22	22									1									
Minor HDD crossing of Watercourse West of B1035																				
Establish HDD Entry and Exit Pit Compound	22	22									1									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220										5	5							
Remove of onshore HDD Entry and Exit Compound	22	44												2						
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	78	234													3	3	3			
TCC and access road Removal	0	#DIV/0!																3	3	3
Plant Operators																				
Overall Plant Operators	468	9,880	17	17	25	21	21	30	25	31	36	37	31	35	22	16	16	0	0	0
Section 5 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average Total Employees per day			27	24	35	30	35	42	50	61	55	61	51	50	34	23	23	7	7	7
Maximum Total Employee Two-way Movements Per Day (car/small van)			54	48	70	60	70	84	100	122	110	122	102	100	68	46	46	14	14	14

Section 5
Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	35	29	52	35	46	42	33	38	32	43	32	30	29	24	24	29	29	35
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	39	32	56	38	50	46	37	42	35	47	35	33	32	27	27	32	32	39
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	0	1	1	0	2	1	1	1	1	1	1	2	1	2	0	0	2
Average total two-way HGV Movements Per Day	**41**	**32**	**57**	**39**	**50**	**48**	**38**	**43**	**36**	**48**	**36**	**34**	**34**	**28**	**29**	**32**	**32**	**41**
Maximum Total Employee Two-way Movements Per Day (car/small van)	54	48	70	60	70	84	100	122	110	122	102	100	68	46	46	14	14	14
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**60**	**53**	**77**	**66**	**77**	**93**	**110**	**135**	**121**	**135**	**113**	**110**	**75**	**51**	**51**	**16**	**16**	**16**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**101**	**85**	**134**	**105**	**127**	**141**	**148**	**178**	**157**	**183**	**149**	**144**	**109**	**79**	**80**	**48**	**48**	**57**

Section 6 & 7

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	66	1,170	17.7	17.7	17.7															
Mobilisation of Welfare and Operation Plant to TCC	22	71	3.2																	
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	88	1,696				19.3	19.3	19.3	19.3											
Cable Construction Works																				
Trench Excavation and duct installation	132	899							6.8	6.8	6.8	6.8	6.8	6.8						
Trench Backfill with CBS and protective covers	132	475							3.6	3.6	3.6	3.6	3.6	3.6						
Jointing Bay Excavation	154	179								1.2	1.2	1.2	1.2	1.2	1.2	1.2				
Jointing Bay Base Construction	154	122								0.8	0.8	0.8	0.8	0.8	0.8	0.8				
Pulling and connection of cables	154	252									1.6	1.6	1.6	1.6	1.6	1.6	1.6			
Backfill over Jointing Bays	154	113									0.7	0.7	0.7	0.7	0.7	0.7	0.7			
Minor HDD crossing of Bentley Road - Exit Only																				
Establish HDD Exit Pit Compound	22	102				4.6														
Mobilisation of HDD Kit and Welfare to compound	22	1				0.0														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	20					0.9													
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Payne's Lane	22	0						0.0												
Remove of onshore HDD Entry Compound -materials reused at next minor HDD at crossing of Payne's Lane	22	0						0.0												
Minor HDD crossing of Payne's Lane																				
Establish HDD Entry and Exit Pit Compounds -materials for exit pit reused from previous minor HDD of Bentley Road	22	102						4.6												
Mobilisation of HDD Kit and Welfare to compounds - equipment for exit pit reused from previous minor HDD of Bentley Road	22	9						0.4												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	46							2.1											
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Sprat's Lane	22	0								0.0										
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Sprat's Lane	22	0								0.0										
Minor HDD crossing of Sprat's Lane																				
Establish HDD Entry and Exit Pit Compounds -materials from previous minor HDD of Payne's Lane reused	22	0								0.0										
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD of Payne's Lane reused	22	0								0.0										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	46									2.1									
Demobilisation of HDD Kit and welfare to next minor HDD at crossing of Barlon Lane	22	0										0.0								
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Barlon Lane	22	0										0.0								
Minor HDD crossing of Barlon Lane																				
Establish HDD Entry and Exit Pit Compounds - materials from previous minor HDD at crossing of Sprat's Lane reused	22	0										0.0								
Mobilisation of HDD Kit and Welfare to compounds - equipment from previous minor HDD at crossing of Sprat's Lane reused	22	0										0.0								
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	46											2.1							
Demobilisation of HDD Kit and welfare - equipment for entry pit reused at next minor HDD at crossing of Ardleigh Road	22	0												0.0						
Remove of onshore HDD Entry and Exit Compounds - materials reused at next minor HDD at crossing of Ardleigh Road	22	0												0.0						
Minor HDD crossing of Ardleigh Road																				
Establish HDD Entry and Exit Pit Compound - materials from previous minor HDD at crossing of Barlon Lane reused	22	0												0.0						
Mobilisation of HDD Kit and Welfare to compound - equipment from previous minor HDD at crossing of Barlon Lane reused	22	0												0.0						
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	44	46													1.1	1.1				
Demobilisation of HDD Kit and welfare	22	9															0.4			
Remove of onshore HDD Entry Compound	44	204															4.6	4.6		
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	88	1,696														19.3	19.3	19.3	19.3	
Demobilisation of Welfare from TCC	22	71																		3.2
TCC and access road Removal	88	1,170															13.3	13.3	13.3	13.3
Average Section Skip HGV Movements Per Day	396	364	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total HGVs per day			21.9	18.6	18.6	24.9	21.1	25.2	32.7	13.3	17.8	15.7	17.8	15.7	6.3	25.6	40.9	38.1	33.5	17.4
Total two-way HGV movements per day			43.7	37.3	37.3	49.8	42.2	50.5	65.4	26.6	35.5	31.3	35.5	31.3	12.6	51.1	81.8	76.3	67.0	34.9

Section 6&7

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer	1	1	1	2	1	3	1	2	2	3	2	3	2	3	5	4	3	2
30T Excavator	2	2	2	3	2	3	3	3	3	3	3	3	3	3	5	4	3	2
20T Dumper	3	3	3	3	3	5	4	6	6	6	6	6	4	6	5	4	4	2
Smooth Drum vibrio road roller	1	1	1	1	1	2	1	1		1		1		1	1	2	2	1
21T excavator	1	1	1	2	1	2	3	3	3	3	3	3	2	3	1	2	2	1
5T Forward Tipping Dumper	1	1	1	2	1	2	3	3	3	3	3	3	2	3	1	2	2	1
Loading shovel	1	1	1	2	1	3	3	3	3	3	3	3	1	3	4	4	3	2
Trench Roller							2	2	2	2	2	2	1	1	1			
Tractor & fencing kit	1	1	1	1	1	1	1	1		1		1		1	1	1	1	1
Tractor & trailer	1	1	1	1	1	2	3	2	1	2	1	2	1	2	1	2	2	1
Tractor & Fuel bowser (or self-propelled)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & Water bowser (for dust suppression)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tractor & cable drum trailer									1	1	1	1	1	1	1			
Tractor & soil tiller, roller, seeder														1	1	1	1	1
Cement mixer																		
Mobile crane																		
Grader	1	1	1	1	1	2	1	1		1		1						
Cable laying tracked crane																		
Cable winch									1	1	1	1	1	1	1			
Pre-cast concrete truck																		
Mobile concrete pump								1	1	1	1	1	1	1				
Telehandler	1	1	1	1	1	2	3	2	2	2	2	2	1	1				
Mobile self-contained welfare unit	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Crawler Crane							1	1	1	1	1	1						
Mobile generator deliveries (corrected for 2 per delivery)	1	1	1	2	1	2	3	5	6	6	6	6	4	5	5	3	2	1
Temporary lighting deliveries (corrected for 8 per delivery)	1	1	1	2	2	3	3	3	3	3	3	3	2	3	4	3	2	1
Road surface paver & roller	1	1	1															
Pump deliveries (corrected for 4 per delivery)							1	2	3	3	3	3	2	2	1			
Total Plant Onsite In Section Per Month	20	20	20	26	20	35	39	44	44	49	44	49	31	44	41	35	30	19
Total Deliveries / Removals	20	0	0	8	6	15	14	9	8	5	5	5	18	13	15	14	5	30
Average Deliveries / Removals Per Day	0.9	0.0	0.0	0.4	0.3	0.7	0.6	0.4	0.4	0.2	0.2	0.2	0.8	0.6	0.7	0.6	0.2	1.4
Average Total two-way HGV movements (Deliveries / Removals) Per Day	2	0	0	1	1	2	2	1	1	1	1	1	2	2	2	2	1	3

Section 6&7
Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	66	198	3	3	3															
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	88	286				3	3	3	4											
Cable Construction Works																				
Trench Excavation and duct installation	132	264							2	2	2	2	2	2						
Trench Backfill with CBS and protective covers	132	264							2	2	2	2	2	2						
Jointing Bay Excavation	154	308								2	2	2	2	2	2	2				
Jointing Bay Base Construction	154	308								2	2	2	2	2	2	2				
Pulling and connection of cables	154	462									3	3	3	3	3	3	3			
Backfill over Jointing Bays	154	308									2	2	2	2	2	2	2			
Minor HDD crossing of Bentley Road - Exit Only																				
Establish HDD Exit Pit Compound	22	44				2														
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	44					2													
Remove of onshore HDD Entry Compound	22	22						1												
Minor HDD crossing of Payne's Lane																				
Establish HDD Entry and Exit Pit Compound	22	22						1												
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110							5											
Remove of onshore HDD Entry and Exit Compound	22	22								1										
Minor HDD crossing of Sprat's Lane																				
Establish HDD Entry and Exit Pit Compound	22	22								1										
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110									5									
Remove of onshore HDD Entry and Exit Compound	22	22										1								
Minor HDD crossing of Barlon Lane																				
Establish HDD Entry and Exit Pit Compound	22	22										1								
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	22	110											5							
Remove of onshore HDD Entry and Exit Compound	22	22												1						
Minor HDD crossing of Ardleigh Road																				
Establish HDD Entry and Exit Pit Compound	22	22												1						
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of HDD compound	44	220													5	5				
Remove of onshore HDD Entry Compound	44	88															2	2		
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	104	312														3	3	3	3	
TCC and access road Removal	104	312															3	3	3	3
Plant Operators																				
Overall Plant Operators	468	12,194	17	17	17	21	16	29	31	33	31	36	31	36	22	33	30	28	25	16
Section 5 Engineering Personnel																				
Lead Engineer, 1 x Assistant Engineers, 1 x surveyors, 1 x Foreman	468	1,872	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average Total Employees per day			24	24	24	30	25	38	48	47	53	55	53	55	40	54	47	40	35	23
Maximum Total Employee Two-way Movements Per Day (car/small van)			48	48	48	60	50	76	96	94	106	110	106	110	80	108	94	80	70	46

Section 6&7
Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements Per Day	44	37	37	50	42	50	65	27	36	31	36	31	13	51	82	76	67	35
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle Movements Tab where the percentage increase is presented	48	41	41	54	46	55	71	29	39	34	39	34	14	56	89	83	73	38
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	2	0	0	1	1	2	2	1	1	1	1	1	2	2	2	2	1	3
Average total two-way HGV Movements Per Day	**50**	**41**	**41**	**55**	**47**	**57**	**73**	**30**	**40**	**35**	**40**	**35**	**16**	**58**	**91**	**85**	**74**	**41**
Maximum Total Employee Two-way Movements Per Day (car/small van)	48	48	48	60	50	76	96	94	106	110	106	110	80	108	94	80	70	46
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**53**	**53**	**53**	**66**	**55**	**84**	**106**	**104**	**117**	**121**	**117**	**121**	**88**	**119**	**104**	**88**	**77**	**51**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**103**	**94**	**94**	**121**	**102**	**141**	**179**	**134**	**157**	**156**	**157**	**156**	**104**	**177**	**195**	**173**	**151**	**92**

Appendix D. Programme and Average Monthly Vehicle Movements

400kV Route

Indicative Average Materials and Welfare and Operation Plant Daily HGV Movements

Activity	Total Working Days	Total HGVs	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCCs and site accesses	0	0																		
Mobilisation of Welfare and Operation Plant to TCC	0	0																		
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip.	44	339								7.7	7.7									
Cable Construction Works																				
Trench Excavation and duct installation	22	171										7.8								
Trench Backfill with CBS and protective covers	22	57										2.6								
Jointing Bay Excavation	22	26											1.2							
Jointing Bay Base Construction	22	19											0.9							
Pulling and connection of cables	22	64												2.9						
Backfill over Jointing Bays	22	17												0.8						
Minor HDD crossing of Grange Road																				
Establish HDD Entry and Exit Pit Compounds	22	206									9.4									
Mobilisation of HDD Kit and Welfare to compounds	22	10									0.5									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month	22	49										2.2								
Demobilisation of HDD Kit and welfare	22	10											0.5							
Remove of onshore HDD Entry and Exit Compounds	22	206											9.4							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	22	339													15.4					
Demobilisation of Welfare from TCC	0	0																		
TCC and access road Removal	0	0																		
Average Section Skip HGV Movements Per Day	66	14									0.2	0.2	0.2							
Total HGVs per day			0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	17.7	12.8	12.1	3.7	15.4	0.0	0.0	0.0	0.0	0.0
Total two-way HGV movements per day			0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	35.5	25.6	24.2	7.4	30.8	0.0	0.0	0.0	0.0	0.0

Appendix D. Programme and Average Monthly Vehicle Movements

Indicative Construction Plant Requirements

Plant	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D6 Dozer																		
30T Excavator								1	2		2	2	2					
20T Dumper								2	3	3	3	2	2					
Smooth Drum vibrio road roller								3	3	4	4	2	2					
21T excavator								1	1		1		1					
5T Forward Tipping Dumper								1	2	3	2	1	1					
Loading shovel								1	2	3	2	1	1					
Trench Roller								1	2	3	2	1	2					
Tractor & fencing kit										2		1						
Tractor & trailer								1	1		1		1					
Tractor & Fuel bowser (or self-propelled)								1	1	2	2		1					
Tractor & Water bowser (for dust suppression)								1	1	1	1	1	1					
Tractor & cable drum trailer								1	1	1	1	1	1					
Tractor & soil tiller, roller, seeder												1						
Cement mixer													1					
Mobile crane																		
Grader																		
Cable laying tracked crane								1	1		1							
Cable winch																		
Pre-cast concrete truck												1						
Mobile concrete pump																		
Telehandler											1							
Mobile self-contained welfare unit								1	1	2	1							
Crawler Crane								1	1	1	1	1	1					
Mobile generator deliveries (corrected for 2 per delivery)										1								
Temporary lighting deliveries (corrected for 8 per delivery)								1	2	2	3	2	1					
Road surface paver & roller								2	2	3	2	1	2					
Pump deliveries (corrected for 4 per delivery)																		
Total Plant Onsite in Section Per Month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Deliveries / Removals	0	0	0	0	0	0	0	20	26	32	31	19	20	0	0	0	0	0
Average Deliveries / Removals Per Day	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.2	1.5	1.4	0.9	0.9	0.0	0.0	0.0	0.0	0.0
Average Total two-way HGV movements (Deliveries / Removals) Per Day	0	0	0	0	0	0	0	2	3	3	3	2	2	0	0	0	0	0

Appendix D. Programme and Average Monthly Vehicle Movements

400kV Route

Indicative Average Daily Personnel Requirements

Number of Additional Site Personnel Per Activity (general labourers, drillers, drilling foremen, electricians, joiners, bricklayers etc)	Total Working Days	Total Person Days	Month																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Establish TCC and site accesses	0	0																		
Site preparation including fencing, temporary drainage, haul road construction and topsoil strip	44	132								3	3									
Cable Construction Works																				
Trench Excavation and duct installation	22	44										2								
Trench Backfill with CBS and protective covers	22	44										2								
Jointing Bay Excavation	22	44											2							
Jointing Bay Base Construction	22	44											2							
Pulling and connection of cables	22	44												2						
Backfill over Jointing Bays	22	44												2						
Minor HDD crossing of Payne's Lane																				
Establish HDD Entry and Exit Pit Compound	22	44									2									
HDD drilling works and ducting (assume working 12 hrs, 6 days a week, average 22 days a month. Includes admin of	22	110										5								
Remove of onshore HDD Entry and Exit Compound	22	44											2							
Haul Road Removal (includes removal of fencing) and reinstatement of cable route	26	78													3					
TCC and access road Removal	0	0																		
Plant Operators																				
Overall Plant Operators	156	3,302								18	23	26	26	16	18					
400kV Route Engineering Personnel																				
1 x Engineer/Surveyor, 1 x Foreman	156	312								2	2	2	2	2	2					
Average Total Employees per day			0	0	0	0	0	0	0	23	30	37	34	22	23	0	0	0	0	0
Maximum Total Employee Two-way Movements Per Day (car/small van)			0	0	0	0	0	0	0	46	60	74	68	44	46	0	0	0	0	0

Appendix D. Programme and Average Monthly Vehicle Movements

Indicative Total Vehicle Movement Requirements

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Materials and Welfare and Operation Plant Daily HGV Movements Total Two-way HGV Movements	0	0	0	0	0	0	0	15	35	26	24	7	31	0	0	0	0	0
Increase to account for Miscellaneous allowances presented in Page 11 of Materials Vehicle	0	0	0	0	0	0	0	17	39	28	27	8	34	0	0	0	0	0
Construction Plant Average Total two-way HGV Movements (deliveries / Removals) Per Day	0	0	0	0	0	0	0	2	3	3	3	2	2	0	0	0	0	0
Average total two-way HGV Movements Per Day	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**42**	**31**	**30**	**10**	**36**	**0**	**0**	**0**	**0**	**0**
Maximum Total Employee Two-way Movements Per Day (car/small van)	0	0	0	0	0	0	0	46	60	74	68	44	46	0	0	0	0	0
Employee Two-Way Movements Plus additional 10% for Miscellaneous Movements	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**51**	**66**	**82**	**75**	**49**	**51**	**0**	**0**	**0**	**0**	**0**
Maximum Total HGV and Car/small van Two-way Movements Per Day (car/small van)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**70**	**108**	**113**	**105**	**59**	**87**	**0**	**0**	**0**	**0**	**0**

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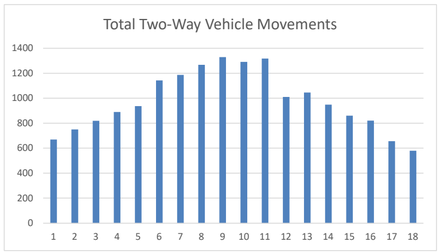
Average Total Two-Way Vehicle Movements Per Day

Including miscellaneous allowances

	Months																	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Section 1	95	122	140	157	221	265	327	313	303	247	276	231	145	150	114	140	139	149
Section 2	86	82	73	72	66	110	106	82	107	115	141	106	74	72	81	84	0	0
Section 3	103	148	163	193	221	229	236	193	207	187	215	133	209	194	117	153	152	104
Section 4A	86	82	79	105	22	19	19	105	108	116	59	57	67	93	110	78	81	84
Section 4B	95	137	136	136	130	184	153	175	164	174	198	107	169	184	163	144	85	93
Section 5	101	85	134	105	127	141	148	178	157	183	149	144	109	79	80	48	48	57
Section 6&7	103	94	94	121	102	141	179	134	157	156	157	156	104	177	195	173	151	92
400kV Works	0	0	0	0	0	0	0	70	108	113	105	59	87	0	0	0	0	0
Beach Access	0	0	0	0	48	54	19	17	18	0	18	17	81	0	0	0	0	0
Total	669	750	819	889	937	1143	1187	1267	1329	1291	1318	1010	1045	949	860	820	656	579

Overall	Minimum	Maximum	Average
Section 1	95	327	196
Section 2	0	141	81
Section 3	103	236	175
Section 4A	19	116	76
Section 4B	85	198	146
Section 5	48	183	115
Section 6&7	92	195	138
400kV Works	0	113	30
Beach Access	0	0	15
Total	579	1329	973

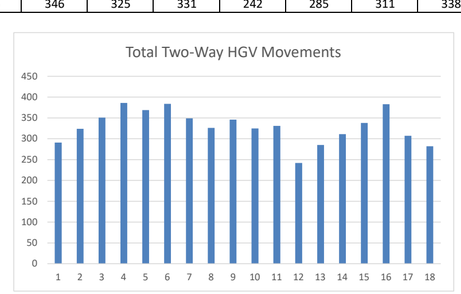


Average Total Two-Way HGV Movements Per Day

Including miscellaneous allowances

	Months																	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Section 1	42	62	63	86	95	106	109	90	85	75	75	83	46	42	39	63	62	72
Section 2	33	29	22	21	24	26	20	29	21	18	26	31	23	21	30	33	0	0
Section 3	50	71	81	87	84	72	68	45	61	46	52	25	72	77	42	76	75	53
Section 4A	33	29	28	39	6	3	3	25	22	28	10	8	9	18	35	27	30	33
Section 4B	42	60	59	59	61	71	36	45	38	44	61	16	48	67	72	67	34	42
Section 5	41	32	57	39	50	48	38	43	36	48	36	34	34	28	29	32	32	41
Section 6&7	50	41	41	55	47	57	73	30	40	35	40	35	16	58	91	85	74	41
400kV Works	0	0	0	0	0	0	0	19	42	31	30	10	36	0	0	0	0	0
Beach Access	0	0	0	0	2	1	2	0	1	0	1	0	1	0	0	0	0	0
Total	291	324	351	386	369	384	349	326	346	325	331	242	285	311	338	383	307	282

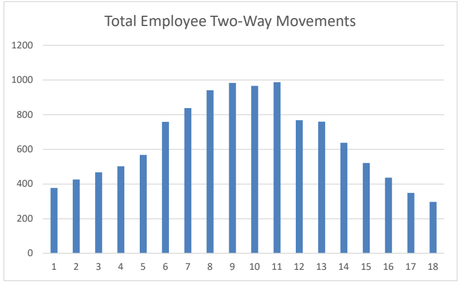
Overall	Minimum	Maximum	Average
Section 1	39	109	72
Section 2	0	33	23
Section 3	25	87	63
Section 4A	3	39	21
Section 4B	16	72	51
Section 5	28	57	39
Section 6&7	16	91	51
400kV Works	0	42	9
Beach Access	0	2	0
Total	242	386	329



Average Total Employees Two Way Movements per day

	Months																	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Section 1	53	60	77	71	126	159	218	223	218	172	201	148	99	108	75	77	77	77
Section 2	53	53	51	51	42	84	86	53	86	97	115	75	51	51	51	51	0	0
Section 3	53	77	82	106	137	157	168	148	146	141	163	108	137	117	75	77	77	51
Section 4A	53	53	51	66	16	16	16	80	86	88	49	49	58	75	75	51	51	51
Section 4B	53	77	77	77	69	113	117	130	126	130	137	91	121	117	91	77	51	51
Section 5	60	53	77	66	77	93	110	135	121	135	113	110	75	51	51	16	16	16
Section 6&7	53	53	53	66	55	84	106	104	117	121	117	121	88	119	104	88	77	51
400kV Works	0	0	0	0	0	0	0	51	66	82	75	49	51	0	0	0	0	0
Beach Access	0	0	0	0	46	53	17	17	17	0	17	17	80	0	0	0	0	0
Total	378	426	468	503	568	759	838	941	983	966	987	768	760	638	522	437	349	297

Overall	Minimum	Maximum	Average
Section 1	53	223	124
Section 2	0	115	58
Section 3	51	168	112
Section 4A	16	88	55
Section 4B	51	137	95
Section 5	16	135	76
Section 6&7	51	121	88
400kV Works	0	82	21
Beach Access	0	80	15
Total	297	987	644



Contractor Coversheet

Project Name:	FE_NF_Mott Macdonald Co-Located Substation Studies	**Package No:**	PROJECTCODE 12 - Electrical Systems

Document Title:	Co-located AIS Substations Early Design - Bentley Road, Ardleigh Road and New Link Road Construction Methodologies and Parameters Technical Note
Classification:	Confidential

Contractor Doc. No:	104560-MMD-00-XX-TN-CE-1051	**Contractor Revision:**	04
Date:	01/11/2023	**Pages:**	37

Employer Doc. No:	004885045-04	**Employer Revision:**	NA
Document Status:	Preliminary		
Reason for Issue	Review		

MOTT MACDONALD

Co-Located Substation Early Design

Bentley Road, Ardleigh Road and New Link Road Construction Methodologies and Parameters

September 2023

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Co-Located Substation Early Design

Bentley Road, Ardleigh Road and New Link Road Construction Methodologies and Parameters

September 2023

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
Rev01	18/09/23	O. Jeffcock/ Matthew Stedman	J. Weeks	A. F. Crespo	First Issue
Rev02	27/09/23	O. Jeffcock/ Matthew Stedman	J. Weeks	A. F. Crespo	Cycle track added
Rev03	20/10/23	O. Jeffcock	J. Weeks	A. F. Crespo	Option 3 added
Rev04	01/11/23	O. Jeffcock	J. Weeks	A. F. Crespo	Option 3 revised

Document reference: 104560-MMD-00-XX-TN-CE-1051 | 004885045-04 |

Information class: Secure

Contents

Tables

Figures

1 Introduction

RWE Renewables have procured Mott MacDonald to review the potential for a Co-Located substation site to accommodate the onshore substations for the Five Estuaries and North Falls Windfarms. This document presents an overview of the relevant impact metrics during the road improvements works and road construction required to facilitate the construction of the two substations.

1.1 Site location

The proposed substation site is located near Little Bromley, a village within the Tendring District of Essex. The centre of the proposed development is at approximate grid reference TM 08105 28880, nearest postcode is CO11 2ND and Colchester city is located approximately 5km southwest. The location of the site boundary is indicated in Figure 1.1.The site is constrained by Grange Road along its west and north border and Ardleigh Road along the south border. The eastern border is a field boundary.

Figure 1.1: Site location

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To facilitate the construction of the two substations, it is proposed that road improvements are made to Ardleigh Road and Bentley Road and two new haul roads are constructed linking the two roads. The first haul road follows the cable corridor from Bentley Road to the substation site. This will be referred to as the cable corridor haul road. The second haul road will be used for Abnormal Invisible Loads (AILs) so will be referred to as the AIL haul road.

It is assumed that the transformers and cable drums will be delivered to Harwich International Port approximately 16.5km northeast of the site. The transformer movements are seen as the worst case in terms of geometry requirements and have been modelled using a AL50 Girder 24 axial transporter. The vehicles will travel south from the port on the A120 before heading

northwest on Bentley Road. The vehicles will then make a lefthand turn and head west on the new AIL haul road which connects to Ardleigh road and leads to the substation site. The majority of other construction traffic will reach the A120 – Bentley Road junction from the south. After travelling north on Bentley Road, the construction traffic will make a left hand turn onto the cable corridor haul road to the substation site. The construction metrics associated with the cable corridor haul road will not be included in this technical note. The road will be included in the programme as it must be constructed before the Ardleigh Road improvements and the AIL haul road can be constructed.

When leaving the site, construction traffic will follow the same route back to the A120 – Bentley Road junction. There will be no right turn for vehicles at the junction. Therefore, all construction traffic will make a left turn and travel north on the A120, using the first roundabout to turn around if required.

This technical note presents the construction parameters for three options for the road improvements. Option 1 is the standard widening of Ardleigh Road and Bentley Road, and the installation of the new haul road. Option 2 and 3 include all tasks in option 1 with the addition of a cycle track along Bentley Road up to the cable haul road section.

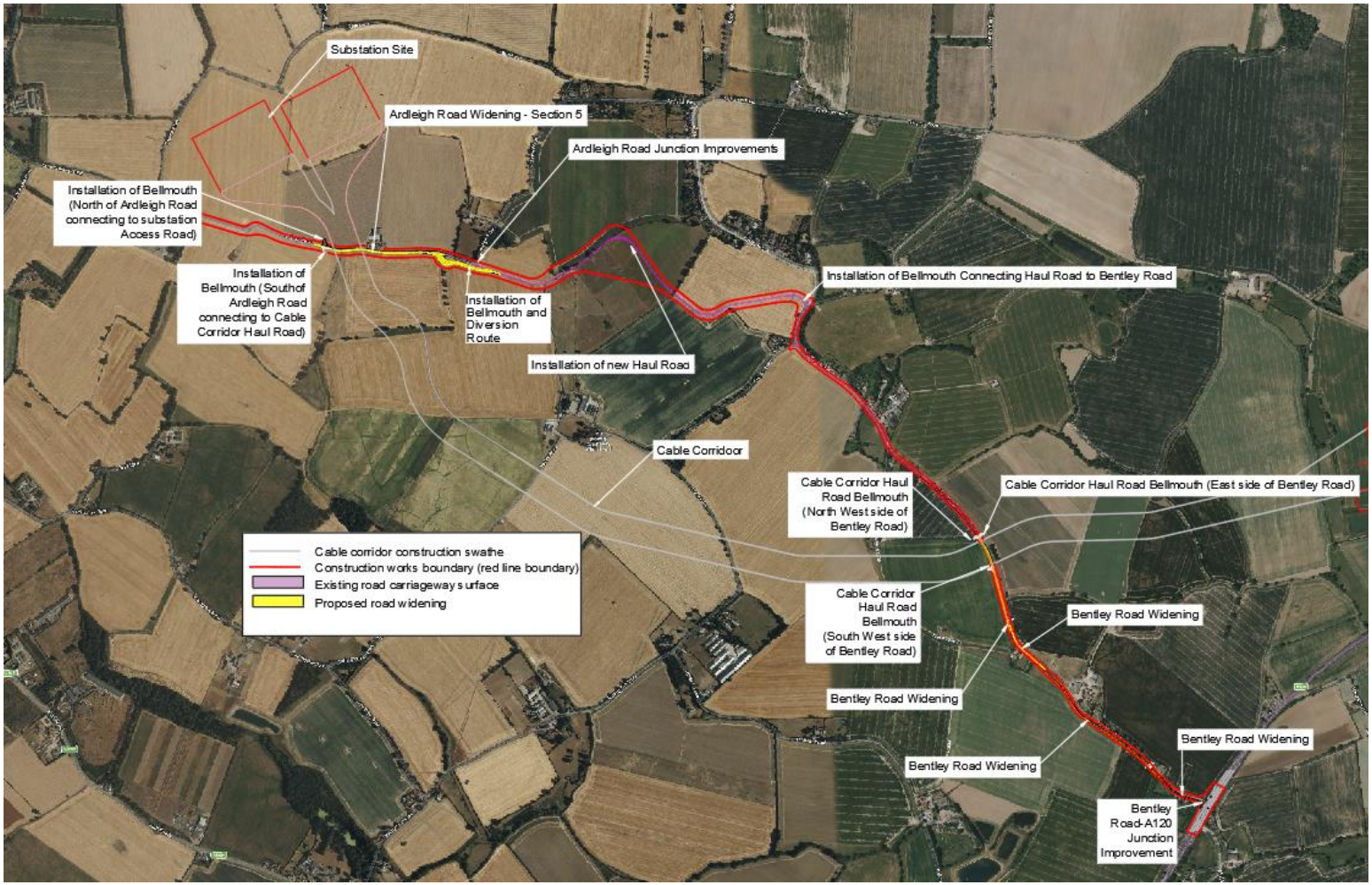
For option 1 and 2, the works on Bentley Road include widening of the A120 – Bentley Road bellmouth, 4 sections of widening to Bentley Road, diversions of OHLs, the relocation of utility poles and the removal or cutting back of hedgerows and trees. Refer to drawing 004781329 for the A120 – Bentley Road junction improvements. Refer to drawings 004786178, 004786179, 004786180, 004786181 and 004786182 for the Bentley Road improvements.

For option 3, the works include the widening of the A120 – Bentley Road bellmouth with 3 sections of widening to Bentley Road. The widening works are similar to option 1 but the widened road width is 6.5m with a separate cycle track as per drawing 107850-MMD-04-XX-DWG-D-1896.

The new AIL haul road is approximately 1.1km long and spans between Bentley Road and Ardleigh Road. The works to facilitate the construction on the road include the construction of a new bellmouth connecting the new road to Bentley Road, the construction of swales, a culvert for the road crossing and swale crossings. Refer to drawing 004786173 for details of the new haul road.

The works on Ardleigh Road include widening of the existing road, improvements to the Ardleigh Road Junction, a road diversion to the south of Ardleigh Road, construction of swales, swale crossings, the demolition of existing culvert, construction of new culvert, removal of trees and the cycle track. Refer to drawings 004786174, 004786175, 004786176, 004786177 00480102 and 004921122 for details.

Figure 1.2: Site layout plan



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2 Construction methodologies

2.1 Construction Methodologies

An overview of the construction works is outlined in Table 2.1. The table shows the programme for all the works at both Ardleigh Road, Bentley Road and the new haul road.

Table 2.1: Construction Activities

Step	Construction Activity
	Cable haul road access work assumed undertaken by others
1	Bentley Road - Cable Corridor Haul Road Bellmouth East side of Bentley Road)
2	Bentley Road - Cable Corridor Haul Road Bellmouth (Northern Bellmouth, West side of Bentley Road)
	A120 - Bentley Road Bellmouth improvements
3	Relocation of UKPN Electricity Post
4	A120 – Bentley Road Junction Improvements
	Bentley Road Improvements
5	Bentley Road Widening - Section 1
6	Bentley Road Widening - Section 2
7	Bentley Road Widening - Section 3
8	Bentley Road Widening - Section 4
9	Bentley Road - Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)
10	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)
11	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)
	Ardleigh Road Improvements
12	Ardleigh Road Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)
13	Installation of Bellmouth and Diversion Route
14	Ardleigh Road Junction Improvements
	New Haul Road
15	Installation of new AIL Haul Road
16	Installation of Bellmouth (Connection for Haul Road to Bentley Road)
17	Vegetation clearance, Utility diversions Between Cable route Hall Road bellmouths and AIL Haul Road

Within Option 2 and 3 the cycle track works are completed within the Bentley Road Widening works, either as part of the road widening (Option 2) or as a separate concurrent activity (Option 3).

Table 2.2 shows the construction activities that will be implemented for each of the road widening sections and the new haul road.

Table 2.2: Construction activities

Step	Construction Activity
1	Installation of Traffic Management
2	Utility Diversions
3	Vegetation clearance
4	Topsoil Strip
5	Realignment/Creation of Drainage features
6	Excavate to Formation
7	Installation of subbase/ Capping
8	Installation of Pavement Material
9	White Lining
10	Removal of Traffic Management

2.2 Construction Programme

2.2.1 Assumptions

The below assumptions have been used for the development of the programme and estimation of the overall programme duration:

- Access for the construction of the cable construction haul road between Bentley Road and Ardleigh Road and the associated bellmouths off Bentley Road, would be from the east, utilising the continuing cable construction haul road. This enables the haul road to be constructed whilst the Bentley Road improvements are made. The activates have arbitrarily been shown to occur at the same time however the cable works designer will need to confirm their programme for these works.
- Widening of sections 1 and 3 and subsequently sections 2 and 4 of Bentley Road will occur simultaneously these works would require a significant length of traffic management which will need to be agreed with the Local Highways Authority.
- Under Option 3 it has been assumed that the cycle track can be constructed with additional resource within the same time frame as Option 1, due to the separation between the carriageway and the cycle track.

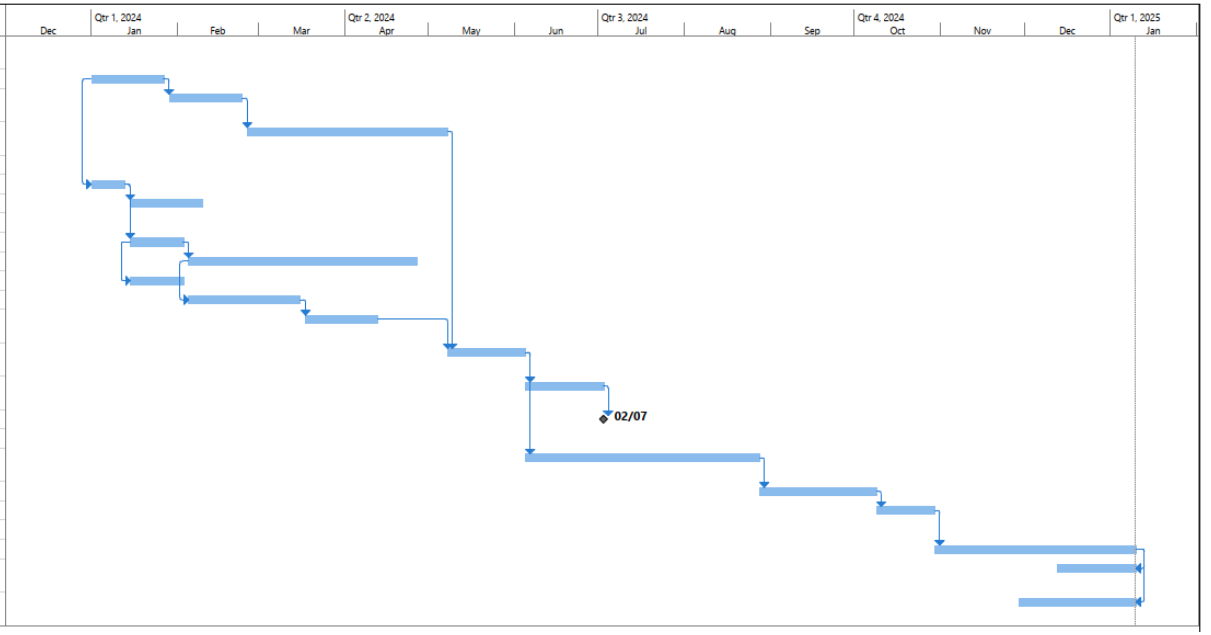
2.2.2 Option 1 and 3 Construction Programme

Figure 2.1 presents construction overview of key activities and durations (working days) for option 1 and 3.

Note the dates are only for reference and only durations are relevant.

Figure 2.1: Programme for Option 1 and Option 3

ID	Task Mode	Task Name	Duration	Start	Finish
1		Cable Haul Road Access works assumed undertaken by others	1 day?	Tue 08/08/23	Tue 08/08/23
2		Installation of Bellmouth (East side of Bentley Road)	4 wks	Mon 01/01/24	Fri 26/01/24
3		Installation of Bellmouth (Northern Bellmouth, West side of Bentley Road)	4 wks	Mon 29/01/24	Fri 23/02/24
4		Installation of Haul Road (Assumed 50m per day, to be confirmed by others)	52 days	Mon 26/02/24	Tue 07/05/24
5		A120 - Bentley Road Bellmouth improvements	1 day	Tue 08/08/23	Tue 08/08/23
6		Relocation of UKPN Electricity Post	2 wks	Mon 01/01/24	Fri 12/01/24
7		Junction Improvements	4 wks	Mon 15/01/24	Fri 09/02/24
8		Bentley Road Improvements	1 day	Tue 08/08/23	Tue 08/08/23
9		Widening - Section 1	3 wks	Mon 15/01/24	Fri 02/02/24
10		Widening - Section 2	12 wks	Mon 05/02/24	Fri 26/04/24
11		Widening - Section 3	3 wks	Mon 15/01/24	Fri 02/02/24
12		Widening - Section 4	6 wks	Mon 05/02/24	Fri 15/03/24
13		Installation of Bellmouth (Southern Bellmouth, West side of Bentley Road)	4 wks	Mon 18/03/24	Fri 12/04/24
14		Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	4 wks	Wed 08/05/24	Tue 04/06/24
15		Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	4 wks	Wed 05/06/24	Tue 02/07/24
16		FIRST ACCESS TO SUBSTATION SITE	0 days	Tue 02/07/24	Tue 02/07/24
17		Ardleigh Road Improvements	1 day	Tue 08/08/23	Tue 08/08/23
18		Widening - Section 5 (Between Bellmouth and Ardielgh Road Diversion)	12 wks	Wed 05/06/24	Tue 27/08/24
19		Installation of Bellmouth and Diversion Route	6 wks	Wed 28/08/24	Tue 08/10/24
20		Ardliegh Road Junction Improvements	3 wks	Wed 09/10/24	Tue 29/10/24
21		New Haul Road	1 day	Tue 08/08/23	Tue 08/08/23
22		Installation of new Haul Road (Assumed 25m per day)	52 days	Wed 30/10/24	Thu 09/01/25
23		Installation of Bellmouth (Connection for Haul road to Bentley Road)	4 wks	Fri 13/12/24	Thu 09/01/25
24		Vegetation clearence, Utility diversions Bewteen Cable route Hall road bellmouths and New Haul Road	6 wks	Fri 29/11/24	Thu 09/01/25



Source: MML.

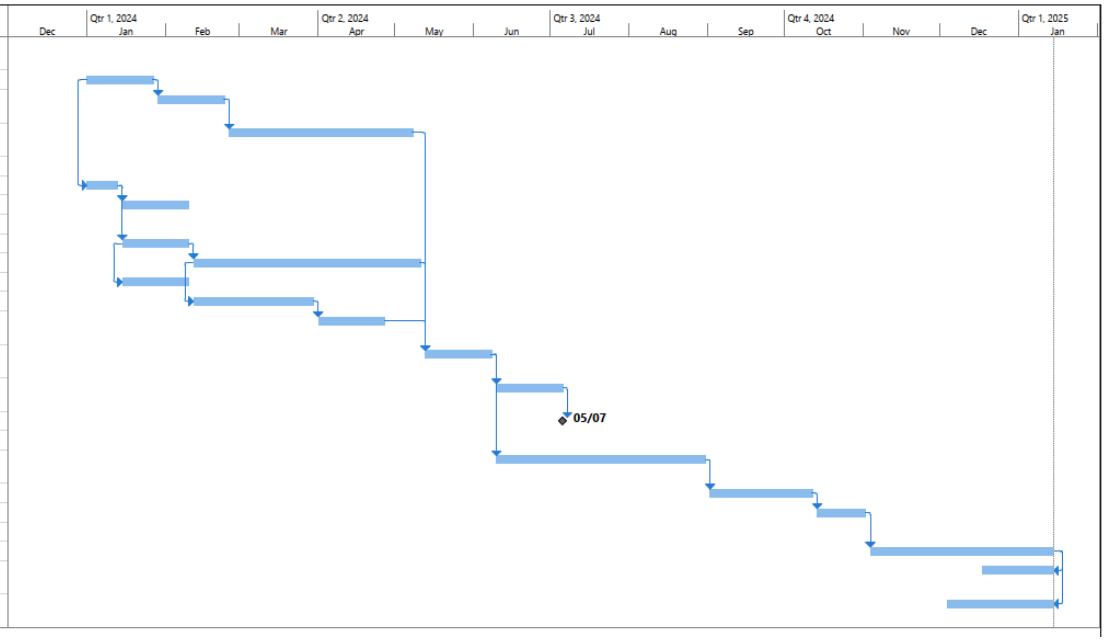
2.2.3 Option 2 Construction programme

Figure 2.2 presents construction overview of key activities and durations (working days) for option 2.

Note the dates are only for reference and only durations are relevant.

Figure 2.2: Programme for Option 2

ID	Task Mode	Task Name	Duration	Start	Predecessors	Finish
1		Cable Haul Road Access works assumed undertaken by others	1 day?	Tue 08/08/23		Tue 08/08/23
2		Installation of Bellmouth (East side of Bentley Road)	4 wks	Mon 01/01/24		Fri 26/01/24
3		Installation of Bellmouth (Northern Bellmouth, West side of Bentley Road)	4 wks	Mon 29/01/24	2	Fri 23/02/24
4		Installation of Haul Road (Assumed 50m per day, to be confirmed by others)	52 days	Mon 26/02/24	3	Tue 07/05/24
5		A120 - Bentley Road Bellmouth improvements	1 day	Tue 08/08/23		Tue 08/08/23
6		Relocation of UKPN Electricity Post	2 wks	Mon 01/01/24	2SS	Fri 12/01/24
7		Junction Improvements	4 wks	Mon 15/01/24	6	Fri 09/02/24
8		Bentley Road Improvements	1 day	Tue 08/08/23		Tue 08/08/23
9		Widening - Section 1 + Cycle track	4 wks	Mon 15/01/24	6	Fri 09/02/24
10		Widening - Section 2 + Cycle track	13 wks	Mon 12/02/24	9	Fri 10/05/24
11		Widening - Section 3 + Cycle track	4 wks	Mon 15/01/24	9SS	Fri 09/02/24
12		Widening - Section 4 + Cycle track	7 wks	Mon 12/02/24	10SS	Fri 29/03/24
13		Installation of Bellmouth (Southern Bellmouth, West side of Bentley Road)	4 wks	Mon 01/04/24	12	Fri 26/04/24
14		Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	4 wks	Mon 13/05/24	13,4,10	Fri 07/06/24
15		Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	4 wks	Mon 10/06/24	14	Fri 05/07/24
16		FIRST ACCESS TO SUBSTATION SITE	0 days	Fri 05/07/24	15	Fri 05/07/24
17		Ardleigh Road Improvements	1 day	Tue 08/08/23		Tue 08/08/23
18		Widening - Section 5 (Between Bellmouth and Ardielgh Road Diversion)	12 wks	Mon 10/06/24	14	Fri 30/08/24
19		Installation of Bellmouth and Diversion Route	6 wks	Mon 02/09/24	18	Fri 11/10/24
20		Ardliegh Road Junction Improvements	3 wks	Mon 14/10/24	19	Fri 01/11/24
21		New Haul Road	1 day	Tue 08/08/23		Tue 08/08/23
22		Installation of new Haul Road (Assumed 25m per day)	52 days	Mon 04/11/24	20	Tue 14/01/25
23		Installation of Bellmouth (Connection for Haul road to Bentley Road)	4 wks	Wed 18/12/24	22FF	Tue 14/01/25
24		Vegetation clearence, Utility diversions Bewteen Cable route Hall road bellmouths and New Haul Road	6 wks	Wed 04/12/24	22FF	Tue 14/01/25



Source: MML.

2.3 Employment Levels

2.3.1 Option 1 employment levels

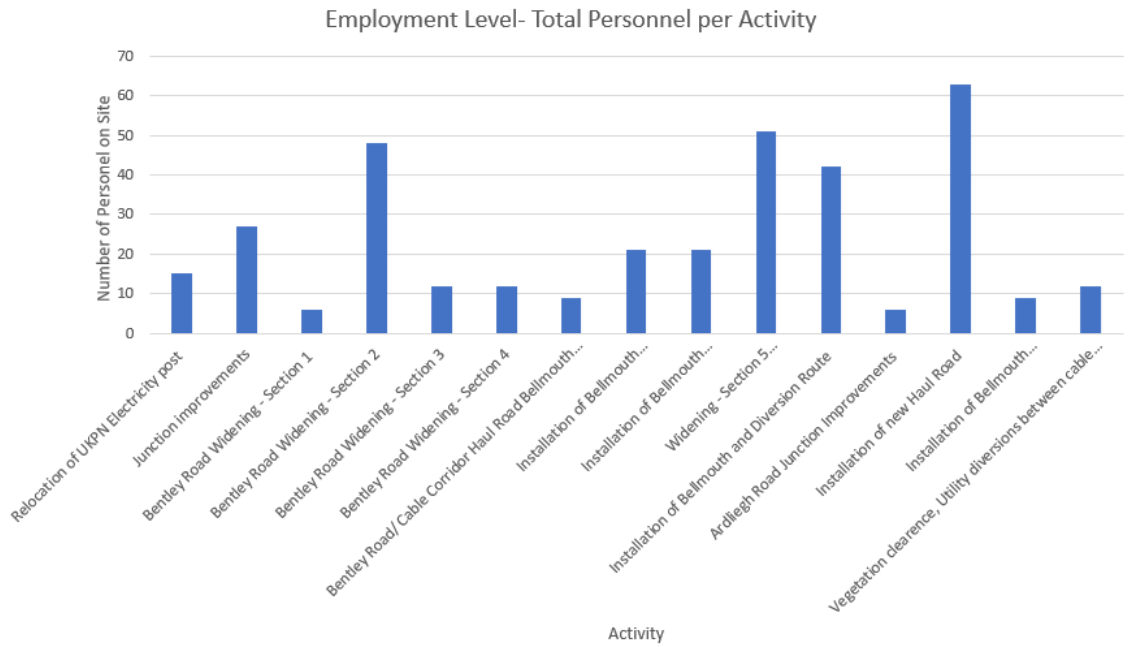
Table 2.3 shows the number of personnel on site for each activity throughout the access construction for option 1, note that administrative, supervisory and management staff have been added to one activity only within each month to avoid duplication.

Table 2.3: Option 1 Employment levels

		Months													
Phase	**Activity**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Total**
Relocation of UKPN Electricity post	Relocation of UKPN Electricity post	15													15
A120 - Bentley Road Bellmouth improvements	Junction improvements	6	21												27
Bentley Road Improvements	Bentley Road Widening - Section 1	6													6
	Bentley Road Widening - Section 2		6	21	21										48
	Bentley Road Widening - Section 3	6	6												12
	Bentley Road Widening - Section 4		6	6											12
	Bentley Road/ Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)				9										9
	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)					21									21
	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)						21								21
Ardleigh Road Improvements	Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)						9	21	21						51
	Installation of Bellmouth and Diversion Route									21	21				42
	Ardleigh Road Junction Improvements										6				6
New Haul Road	Installation of new Haul Road											21	21	21	63
	Installation of Bellmouth (Connection for Haul road to Bentley Road)													9	9
Vegetation clearance, Utility diversions between cable route hall road bellmouths and new haul road	Vegetation clearance, Utility diversions between cable route hall road bellmouths and new haul road												6	6	12
	Total average persons on site	33	39	27	30	21	30	21	21	21	27	21	21	30	
	Total labour days per month (Assuming 24 working days per Month)	792	936	648	720	504	720	504	504	504	648	504	504	720	

Figure 2.3 presents an estimated overview of the employment levels expected during each phase of the access construction.

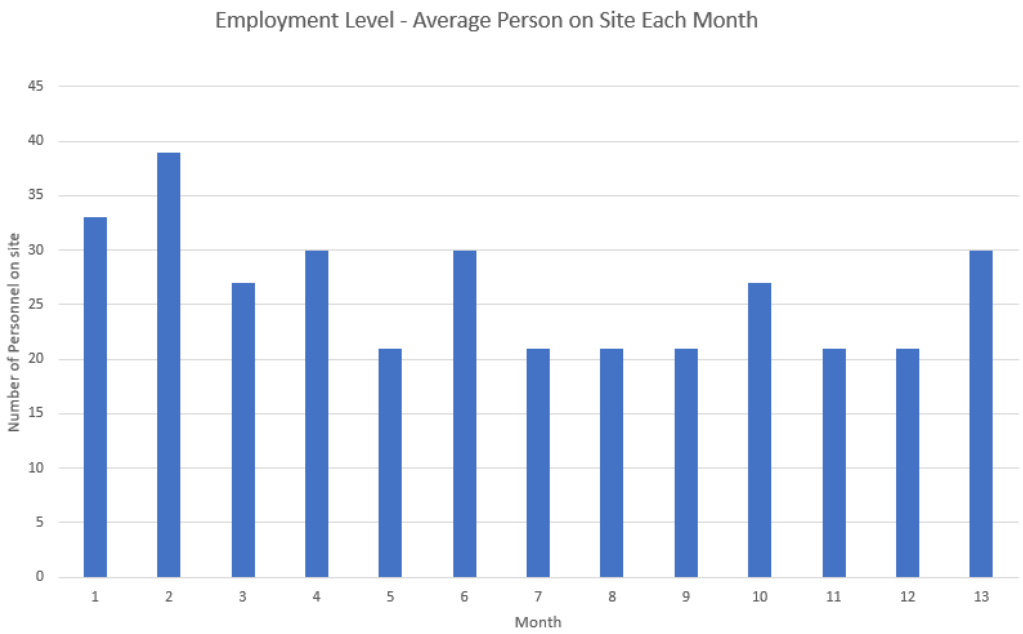
Figure 2.3: Employment levels per activity Option 1



Source: MML

Figure 2.4 presents an estimated overview of the employment levels each month through the duration of the access construction.

Figure 2.4: Employment levels per month Option 1



Source: MML

2.3.2 Option 2 and 3 employment levels

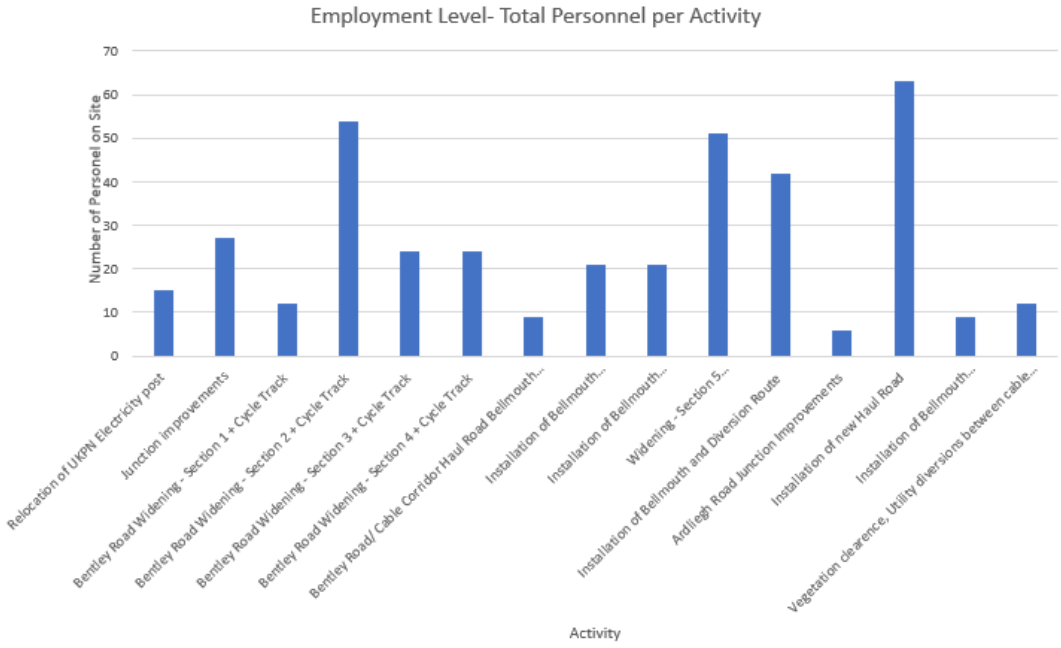
Table 2.4 shows the number of personnel on site for each activity throughout the access construction for option 2 and 3, note that administrative, supervisory and management staff have been added to one activity only within each month to avoid duplication.

Table 2.4: Option 2 and Option 3 Employment Levels

		Months													
Phase	**Activity**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Total**
Relocation of UKPN Electricity post	Relocation of UKPN Electricity post	15													15
A120 - Bentley Road Bellmouth improvements	Junction improvements	6	21												21
Bentley Road Improvements	Bentley Road Widening - Section 1 + Cycle Track	12													12
	Bentley Road Widening - Section 2 + Cycle Track		12	21	21										54
	Bentley Road Widening - Section 3 + Cycle Track	12	12												24
	Bentley Road Widening - Section 4 + Cycle Track		12	12											24
	Bentley Road/ Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)				9										9
	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)					21									21
	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)						21								21
Ardleigh Road Improvements	Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)						9	21	21						51
	Installation of Bellmouth and Diversion Route									21	21				42
	Ardleigh Road Junction Improvements										6				6
New Haul Road	Installation of new Haul Road											21	21	21	63
	Installation of Bellmouth (Connection for Haul road to Bentley Road)													9	9
Vegetation clearance, Utility diversions between cable route hall road bellmouths and new haul road	Vegetation clearance, Utility diversions between cable route hall road bellmouths and new haul road												6	6	12
	Total average persons on site	45	57	33	30	21	30	21	21	21	27	21	21	30	
	Total labour days per month (Assuming 24 working days per Month)	1080	1368	792	720	504	720	504	504	504	648	504	504	720	

Figure 2.5 presents an estimated overview of the employment levels expected during each phase of the access construction.

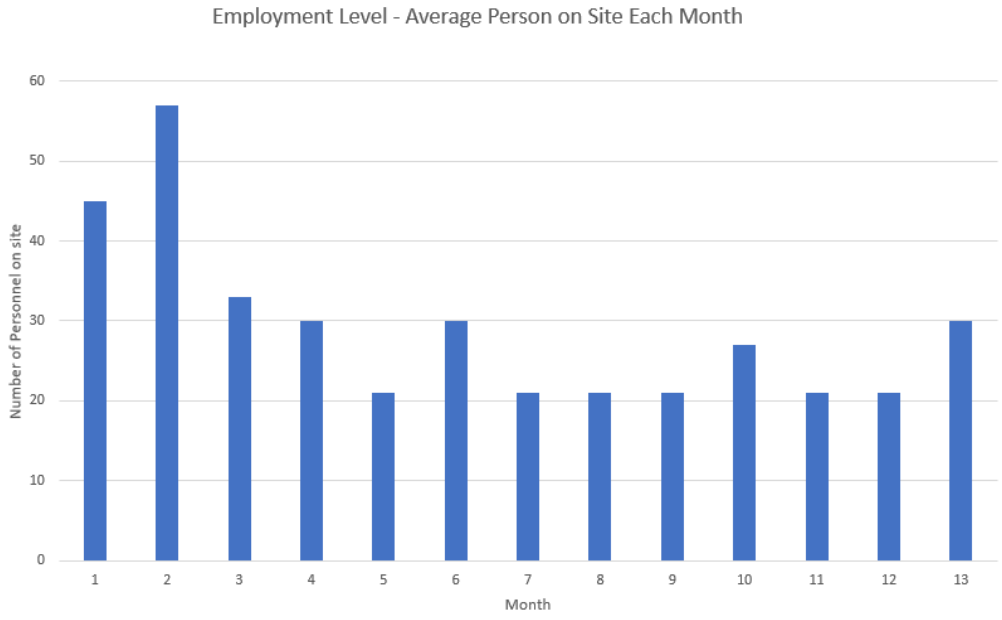
Figure 2.5: Employment levels per activity Option 2 and Option 3



Source: MML

Figure 2.6 presents an estimated overview of the employment levels each month through the duration of the access construction.

Figure 2.6: Employment levels per month Option 2 and Option 3



Source: MML

2.4 HGV Movements

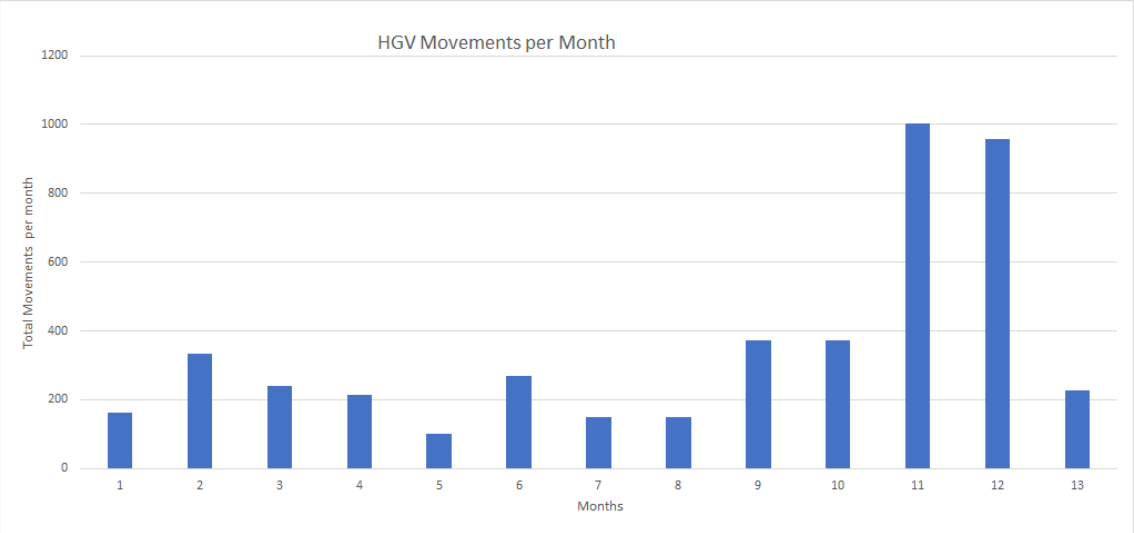
2.4.1 Option 1 HGV movements

Table 2.5 and Figure 2.7 show the number HGV movements for each activity throughout the construction of Option 1. Please note, the movements shown are two-way movements.

Table 2.5: HGV movements For Option 1

			Months													
Phase	**Activity**	**Movements per month**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Total**
A120 - Bentley Road Bellmouth improvements	Junction improvements	45	45	45												90
Bentley Road Improvements	Bentley Road Widening - Section 1	68	68													68
	Bentley Road Widening - Section 2	130		130	130	130										390
	Bentley Road Widening - Section 3	48	48	48												144
	Bentley Road Widening - Section 4	111		111	111											111
	Bentley Road/ Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)	84				84										84
	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	100					100									100
	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	119						119								119
Ardleigh Road Improvements	Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)	149						149	149	149						447
	Installation of Bellmouth and Diversion Route	373									373	373				746
	Ardleigh Road Junction Improvements	45											45			46
New Haul Road	Installation of new Haul Road (assumed to be completed via access from the cable haul road)	958											958	958	958	2874
	Installation of Bellmouth (Connection for Haul Road to Bentley Road)	226													226	226
		Movements per month (excl. Haul Road)	161	334	241	214	100	268	149	149	373	373	1003	958	226	
		Maximum monthly vehicles (excl. Haul Road)	373													
		Average monthly vehicle (excl. Haul Road)	325													

Figure 2.7: HGV two way movements per month Option 1



Source: MML

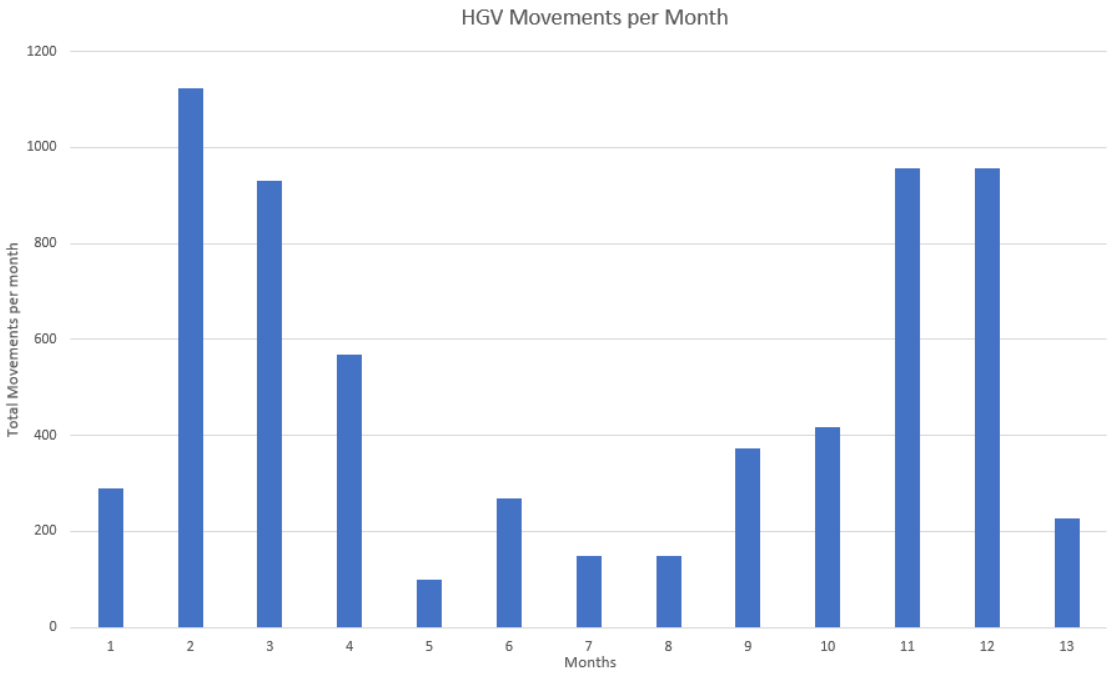
2.4.2 Option 2 HGV Movements

Table 2.6 and Figure 2.8 show the number HGV movements for each activity throughout the construction of option 2. Please note, the movements shown are two-way movements. The Haul Road has been shown for information as an estimate as this is outside the scope of this assessment and is excluded from total, maximum and average values provided.

Table 2.6: HGV movements For Option 2

			Months													
Phase	**Activity**	**Movements per month**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Total**
A120 - Bentley Road Bellmouth improvements	Junction Improvements + cycle track	73	73	73												146
Bentley Road Improvements	Bentley Road Widening + cycle track - Section 1	100	100													100
	Bentley Road Widening + cycle track - Section 2	484		484	484	484										1452
	Bentley Road Widening + cycle track - Section 3	118	118	118												236
	Bentley Road Widening + cycle track - Section 4	448		448	448											896
	Bentley Road/ Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)	84				84										84
	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	100					100									100
	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	119						119								119
Ardleigh Road Improvements	Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)	149						149	149	149						447
	Installation of Bellmouth and Diversion Route	373									373	373				746
	Ardleigh Road Junction Improvements	45										45				45
New Haul Road	Installation of new Haul Road (assumed to be completed via access from the cable haul road)	958											958	958	958	2874
	Installation of Bellmouth (Connection for Haul Road to Bentley Road)	226													226	226
		Movements per month (excl. Haul Road)	291	1123	932	568	100	268	149	149	373	418	958	958	226	
		Maximum monthly vehicles (excl. Haul Road)	1123													
		Average monthly vehicle (excl. Haul Road)	465													

Figure 2.8: HGV two way movements per Month Option 2



Source: MML

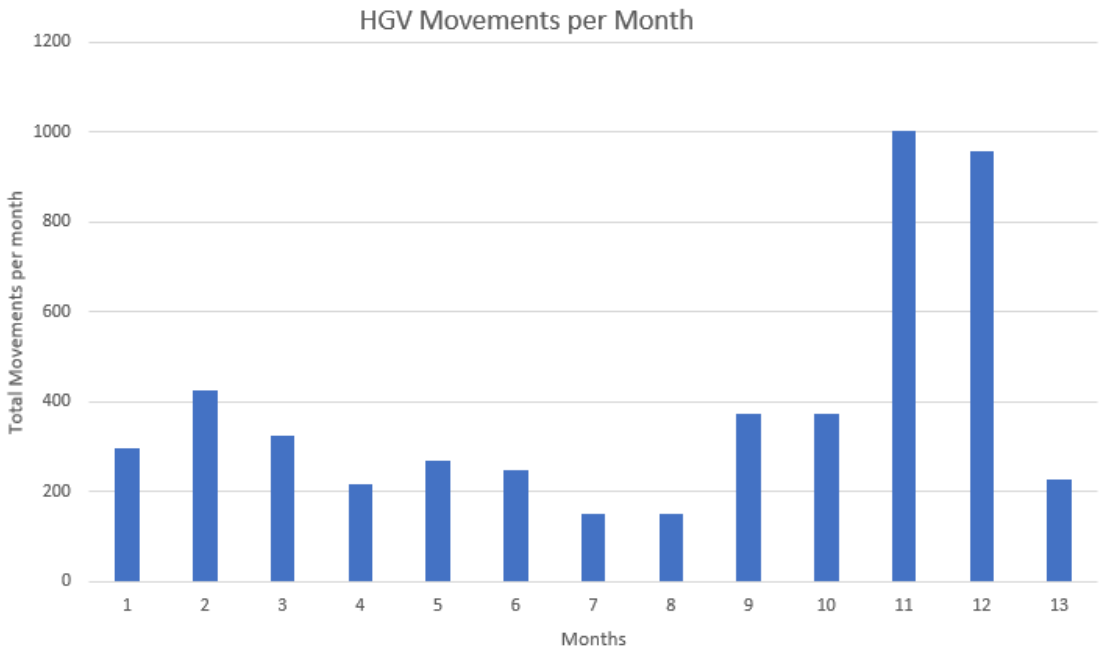
2.4.3 Option 3 HGV Movements

Table 2.7 and Figure 2.9 show the number HGV movements for each activity throughout the construction of option 3. Please note, the movements shown are two-way movements. The Haul Road has been shown for information as an estimate as this is outside the scope of this assessment and is excluded from total, maximum and average values provided.

Table 2.7 HGV Movements for Option 3

			Months													
Phase	**Activity**	**Movements per month**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**Total**
A120 - Bentley Road Bellmouth and Bentley Road Improvements	Junction Improvements and Section 1 widening + cycle track	46	101	101												202
	Bentley Road Widening - Section 2 + cycle track	60		129	129	129	129									516
	Bentley Road Widening - Section 3 and 4+ cycle track	210	196	196	196											588
	Installation of Bellmouth (Southern Bellmouth, West side of Bentley Road)	86				86										86
	Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	140					140									140
	Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	100						100								100
Ardleigh Road Improvements	Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)	149						149	149	149						447
	Installation of Bellmouth and Diversion Route	373									373	373				746
	Ardleigh Road Junction Improvements	45											45			45
New Haul Road	Installation of new Haul Road (assumed to be completed via access from the cable haul road)	958											958	958	958	2874
	Installation of Bellmouth (Connection for Haul Road to Bentley Road)	226													226	226
		Movements per month (Excl. Haul Road)	297	426	325	215	269	249	149	149	373	373	1003	958	226	
		Maximum monthly vehicles (excl. Haul Road)	1003													
		Average monthly vehicle (excl. Haul Road)	358													

Figure 2.9: HGV two way movements per Month Option 3



Source: MML

Please note, all tables and figures within section 2 are based on the construction of the access works only. The vehicle movements for Option 1, Option 2 and Option 3 are shown as two-way movements. Refer to document 004885046 for further details.

The values for the cable corridor haul road HGV movements were not included in the average monthly vehicle movement value calculated in Table 2.5, Table 2.6 and Table 2.7. The cable corridor haul road construction is outside of the project scope therefore, HGV movements for that road were not calculated.

2.5 Working hours requirements

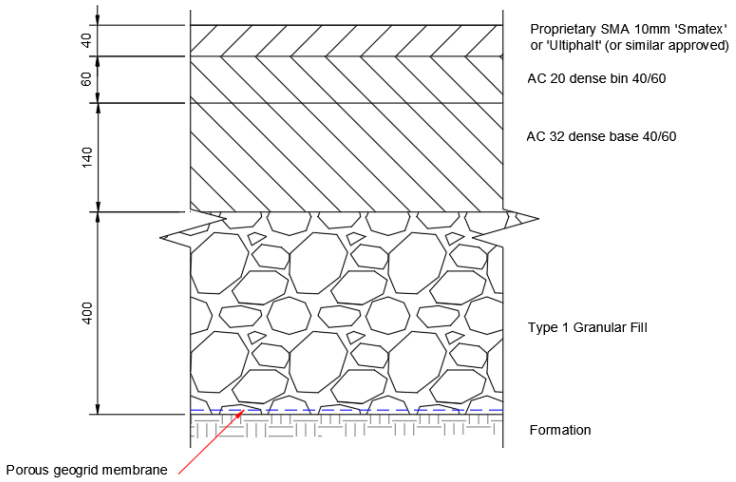
Construction working hours will have to be agreed with the Local Authority, with necessary permit/authorisations gained for the construction work to commence. Typically, construction activities will be daytime only 07:00 to 19:00 from Monday to Friday and 07:00 to 13:00 on Saturdays, with no work where noise is audible beyond the site boundary on Sundays, Bank Holidays or in the night-time. Certain “time critical activities” would occur outside these hours. Any requirement to work outside of these normal hours would occur with prior agreement with the Local Authorities.

3 Construction parameters

3.1 Road make-up

Figure 3.1 shows the road make up that has been assumed for all widening sections and the new AIL haul road. The AIL haul road has been assumed to be a permanent road to give the worst case for excavated materials, waste materials and vehicle movements.

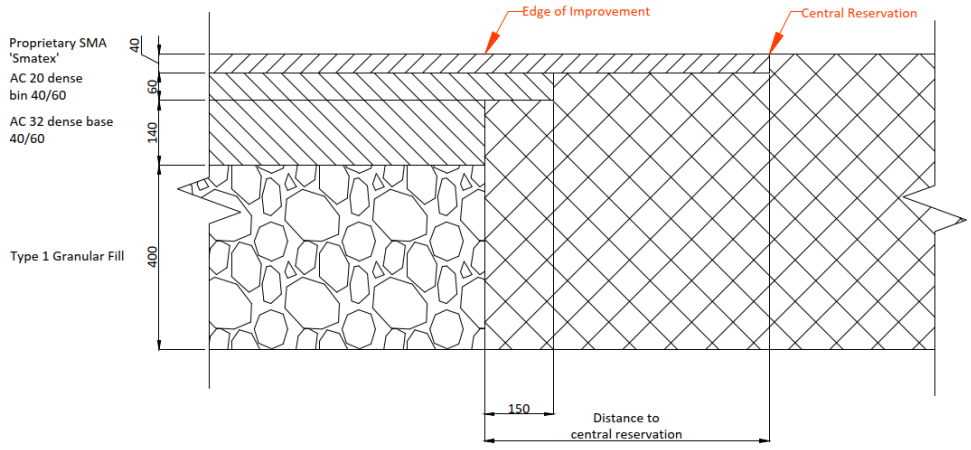
Figure 3.1: Road make-up section



Source: MML

Figure 3.2 shows the tie in detail for the widening sections for Option 1 and Option 3. The surface course will extend to the central reservation. The binder course will extend 150mm beyond the improvement area. The subbase and the base layer will only cover the area of widening.

Figure 3.2: Tie in details for road widening – Option 1 and Option 3



Source: MML

The tie-in specifications differ for road sections featuring cycle tracks, with variations dependent upon whether the road expansion for the cycle track occurs on the western or eastern side of the pre-existing road, as shown in drawing 004921122.

3.2 Imported equipment and materials

Assumptions:

- It was assumed that the proprietary SMA surface layer was installed to the central reservation of the existing roads as seen in Figure 3.2 and drawing 004921122.
- It was assumed that the AC 20 layer was installed 0.15m into the existing road for road widening sections as seen in Figure 3.2.
- A 15% contingency and a 30% compaction factor has been added to the imported engineered fill whilst all other quantities are subject to a contingency weighting of between 15% and 20%, with no compaction factor.
- It was assumed that 9m^3 tipper lorries carried the proprietary SMA, AC20, AC32 and waste. Whereas it was assumed that 20T tipper lorries carried the type 1 granular fill. It was also assumed that the lorries were carrying at full capacity for the vehicle movement calculations.
- It was assumed 25m of road was built per day for the New Haul Road between Bentley and Ardleigh Road as it was assumed it shall be a permanent road.
- It was assumed 50m of road was built per day for the new cable corridor haul road as it was assumed it shall be a temporary road.

Table 3.1 provides an indicative forecast for the material imports expected for the works of Option 1. Refer to document 004885046 for further details.

Table 3.1: Imported materials – Bentley Road – Option 1

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Civils Main Works				
A120- Bentley Road Junction improvements				
Proprietary SMA	29	m^3	9m^3 tipper lorries	7
AC 20	17	m^3	9m^3 tipper lorries	4
AC 32	35	m^3	9m^3 tipper lorries	8
Type 1 Granular fill	99	m^3	20t Rigid tipper lorry	30
Bentley Road Widening- Section 1				
Proprietary SMA	20	m^3	9m^3 tipper lorries	5
AC 20	13	m^3	9m^3 tipper lorries	3
AC 32	27	m^3	9m^3 tipper lorries	6
Type 1 Granular fill	78	m^3	20t Rigid tipper lorry	24
Bentley Road Widening- Section 2				
Proprietary SMA	113	m^3	9m^3 tipper lorries	26
AC 20	72	m^3	9m^3 tipper lorries	16
AC 32	154	m^3	9m^3 tipper lorries	35
Type 1 Granular fill	440	m^3	20t Rigid tipper lorry	132

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Bentley Road Widening- Section 3				
Proprietary SMA	35	m^3	$9m^3$ tipper lorries	8
AC 20	18	m^3	$9m^3$ tipper lorries	4
AC 32	36	m^3	$9m^3$ tipper lorries	8
Type 1 Granular fill	103	m^3	20t Rigid tipper lorry	31
Bentley Road Widening- Section 4				
Proprietary SMA	67	m^3	$9m^3$ tipper lorries	15
AC 20	42	m^3	$9m^3$ tipper lorries	10
AC 32	88	m^3	$9m^3$ tipper lorries	20
Type 1 Granular fill	250	m^3	20t Rigid tipper lorry	75
Cable Corridor Haul Road Bellmouth (Northwest side of Bentley Road)				
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 20	17	m^3	$9m^3$ tipper lorries	4
AC 32	38	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	107	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (Southwest side of Bentley Road)				
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 20	16	m^3	$9m^3$ tipper lorries	4
AC 32	37	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	104	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (East side of Bentley Road)				
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 20	16	m^3	$9m^3$ tipper lorries	4
AC 32	38	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	107	m^3	20t Rigid tipper lorry	32
Total Bentley Road Quantities				
Proprietary SMA	294	m^3	$9m^3$ tipper lorries	70
AC 20	208	m^3	$9m^3$ tipper lorries	49
AC 32	450	m^3	$9m^3$ tipper lorries	104
Type 1 Granular fill	1285	m^3	20t Rigid tipper lorry	388

**All quantities are subject to a contingency weighting of 15%. A 30% compaction factor has been added to the imported engineered fill.*

Table 3.2 provides an indicative forecast for the material imports expected for the works of Option 2, including the cycle track. Refer to document 004885046 for further details.

Table 3.2: Imported material Bentley Road - Option 2

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Civils Main Works				
A120- Bentley Road Junction improvements				
Proprietary SMA	29	m^3	$9m^3$ tipper lorries	7
AC 6	9	m^3	$9m^3$ tipper lorries	2
AC 20	39	m^3	$9m^3$ tipper lorries	9
AC 32	35	m^3	$9m^3$ tipper lorries	8
Type 1 Granular fill	179	m^3	20t Rigid tipper lorry	54
Bentley Road Widening- Section 1 and cycle track				
Proprietary SMA	16	m^3	$9m^3$ tipper lorries	4
AC 6	8	m^3	$9m^3$ tipper lorries	2
AC 20	25	m^3	$9m^3$ tipper lorries	6
AC 32	17	m^3	$9m^3$ tipper lorries	4
Type 1 Granular fill	131	m^3	20t Rigid tipper lorry	40
Bentley Road Widening- Section 2 and cycle track				
Proprietary SMA	223	m^3	$9m^3$ tipper lorries	50
AC 20	328	m^3	$9m^3$ tipper lorries	73
AC 32	751	m^3	$9m^3$ tipper lorries	167
Type 1 Granular fill	1622	m^3	20t Rigid tipper lorry	485
Bentley Road Widening- Section 3 and cycle track				
Proprietary SMA	12	m^3	$9m^3$ tipper lorries	3
AC 6	17	m^3	$9m^3$ tipper lorries	4
AC 20	60	m^3	$9m^3$ tipper lorries	14
AC 32	41	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	312	m^3	20t Rigid tipper lorry	94
Bentley Road Widening- Section 4 and cycle track				
Proprietary SMA	138	m^3	$9m^3$ tipper lorries	31
AC 20	203	m^3	$9m^3$ tipper lorries	45
AC 32	464	m^3	$9m^3$ tipper lorries	103
Type 1 Granular fill	1001	m^3	20t Rigid tipper lorry	300
Cable Corridor Haul Road Bellmouth (Northwest side of Bentley Road)				
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 20	17	m^3	$9m^3$ tipper lorries	4
AC 32	38	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	107	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (Southwest side of Bentley Road)				

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 20	16	m^3	$9m^3$ tipper lorries	4
AC 32	37	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	104	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (East side of Bentley Road) +cycle track				
Proprietary SMA	11	m^3	$9m^3$ tipper lorries	3
AC 6	8	m^3	$9m^3$ tipper lorries	2
AC 20	35	m^3	$9m^3$ tipper lorries	4
AC 32	38	m^3	$9m^3$ tipper lorries	9
Type 1 Granular fill	185	m^3	20t Rigid tipper lorry	56
Total Bentley Road Quantities				
Proprietary SMA	437	m^3	$9m^3$ tipper lorries	102
AC 6	41	m^3	$9m^3$ tipper lorries	10
AC 20	720	m^3	$9m^3$ tipper lorries	163
AC 32	1417	m^3	$9m^3$ tipper lorries	318
Type 1 Granular fill	3641	m^3	20t Rigid tipper lorry	1093

**All quantities are subject to a contingency weighting of 15%. A 30% compaction factor has been added to the imported engineered fill.*

Table 3.3 provides an indicative forecast for the material imports expected for the works of Option 3, including the cycle track. Refer to document 004885046 for further details.

Table 3.3: Imported material Bentley Road - Option 3

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Civils Main Works				
A120 - Bentley road widening + Section 1 Bentley Road widening and cycle track				
Proprietary SMA	41	m^3	$9m^3$ tipper lorries	11
AC 6	14	m^3	$9m^3$ tipper lorries	4
AC 20	56	m^3	$9m^3$ tipper lorries	15
AC 32	46	m^3	$9m^3$ tipper lorries	12
Type 1 Granular fill	237	m^3	20t Rigid tipper lorry	63
Bentley Road Widening- Section 2 and cycle track				
Proprietary SMA	96	m^3	$9m^3$ tipper lorries	25
AC 6	36	m^3	$9m^3$ tipper lorries	10
AC 20	142	m^3	$9m^3$ tipper lorries	37
AC 32	113	m^3	$9m^3$ tipper lorries	29
Type 1 Granular fill	606	m^3	20t Rigid tipper lorry	161
Bentley Road Widening- Section 3 & 4 and cycle track				

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Proprietary SMA	88	m^3	9m^3 tipper lorries	23
AC 6	58	m^3	9m^3 tipper lorries	15
AC 20	187	m^3	9m^3 tipper lorries	48
AC 32	91	m^3	9m^3 tipper lorries	24
Type 1 Granular fill	717	m^3	20t Rigid tipper lorry	190
Cable Corridor Haul Road Bellmouth (Northwest side of Bentley Road)				
Proprietary SMA	11	m^3	9m^3 tipper lorries	3
AC 20	17	m^3	9m^3 tipper lorries	4
AC 32	38	m^3	9m^3 tipper lorries	9
Type 1 Granular fill	107	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (Southwest side of Bentley Road)				
Proprietary SMA	11	m^3	9m^3 tipper lorries	3
AC 20	16	m^3	9m^3 tipper lorries	4
AC 32	37	m^3	9m^3 tipper lorries	9
Type 1 Granular fill	104	m^3	20t Rigid tipper lorry	32
Cable Corridor Haul Road Bellmouth (East side of Bentley Road)				
Proprietary SMA	11	m^3	9m^3 tipper lorries	3
AC 20	16	m^3	9m^3 tipper lorries	4
AC 32	38	m^3	9m^3 tipper lorries	9
Type 1 Granular fill	107	m^3	20t Rigid tipper lorry	32
Total Bentley Road Quantities				
Proprietary SMA	258	m^3	9m^3 tipper lorries	68
AC6	108	m^3	9m^3 tipper lorries	29
AC 20	434	m^3	9m^3 tipper lorries	112
AC 32	363	m^3	9m^3 tipper lorries	92
Type 1 Granular fill	1878	m^3	20t Rigid tipper lorry	510

**All quantities are subject to a contingency weighting of 15%. A 30% compaction factor has been added to the imported engineered fill.*

Table 3.4 provides an indicative estimate for the equipment and materials expected for the Ardleigh Road and AIL Haul Road works. These quantities guided the HGV traffic movements shown in Table 2.5, Table 2.6 and Table 2.7. Refer to document 004885046 for further details.

Table 3.4: Imported materials – Ardleigh & New Haul Road - Option 1, 2 and 3

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Civils Main Works				
Installation of Bellmouth (South of Ardleigh Road Connecting to Cable Corridor Haul Road				
Proprietary SMA	13	m^3	9m^3 tipper lorries	3

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
AC 20	19	m^3	$9m^3$ tipper lorries	5
AC 32	44	m^3	$9m^3$ tipper lorries	10
Type 1 Granular fill	125	m^3	20t Rigid tipper lorry	38
Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road				
Proprietary SMA	13	m^3	$9m^3$ tipper lorries	3
AC 20	19	m^3	$9m^3$ tipper lorries	5
AC 32	44	m^3	$9m^3$ tipper lorries	10
Type 1 Granular fill	125	m^3	20t Rigid tipper lorry	38
Ardleigh Road widening section 5 (Between Bellmouth and Ardleigh Road Diversion)				
Proprietary SMA	84	m^3	$9m^3$ tipper lorries	19
AC 20	85	m^3	$9m^3$ tipper lorries	19
AC 32	188	m^3	$9m^3$ tipper lorries	42
Type 1 Granular fill	536	m^3	20t Rigid tipper lorry	161
Ardleigh Road Installation of Bellmouth and Diversion Route				
Proprietary SMA	93	m^3	$9m^3$ tipper lorries	21
AC 20	140	m^3	$9m^3$ tipper lorries	31
AC 32	325	m^3	$9m^3$ tipper lorries	73
Type 1 Granular fill	929	m^3	20t Rigid tipper lorry	278
Ardleigh Road Junction Improvement				
Proprietary SMA	10	m^3	$9m^3$ tipper lorries	3
AC 20	9	m^3	$9m^3$ tipper lorries	2
AC 32	19	m^3	$9m^3$ tipper lorries	5
Type 1 Granular fill	52	m^3	20t Rigid tipper lorry	16
Installation of New Haul Road				
Proprietary SMA	358	m^3	$9m^3$ tipper lorries	80
AC 20	537	m^3	$9m^3$ tipper lorries	120
AC 32	1251	m^3	$9m^3$ tipper lorries	278
Type 1 Granular fill	3575	m^3	20t Rigid tipper lorry	1069
Installation of Bellmouth (Connection for Haul Road to Bentley Road)				
Proprietary SMA	28	m^3	$9m^3$ tipper lorries	7
AC 20	42	m^3	$9m^3$ tipper lorries	10
AC 32	99	m^3	$9m^3$ tipper lorries	22
Type 1 Granular fill	281	m^3	20t Rigid tipper lorry	84
Total of Ardleigh & New Haul Road				
Proprietary SMA	600	m^3	$9m^3$ tipper lorries	137
AC 20	851	m^3	$9m^3$ tipper lorries	192
AC 32	1975	m^3	$9m^3$ tipper lorries	442

Activity	Approximate Quantity*		Vehicle Type	2 Way Vehicle Movements
Type 1 Granular fill	5643	m^3	20t Rigid tipper lorry	1691

**All quantities are subject to a contingency weighting of 15%. A 30% compaction factor has been added to the imported engineered fill.*

3.3 Noise Levels during Construction

The utilisation of noise-emitting construction plant items and the corresponding noise emission levels are shown in Table 3.5. The information presented below is preliminary and will be confirmed and developed at a later stage once the Construction Environmental Management Plan (CEMP) is produced.

Table 3.5: Construction plant used for noise assessment

Construction Phase	Plant Description	Sound Power Level dB(A) (1)	No. of Plant (3)	Utilisation % on-time
Access road and car parking works road works	Excavator	102	2	100
	Dump truck	105	4	70
	Asphalt spreader with support lorry	106	1	100
	Vibratory roller	106	2	70
	Grader	112	1	100
	Lorry	103	3	25
	MEWP	78	2	75
	Generator(2)	100	2	100
	Crusher	116	2	80

Source: BS 5228-1:2009, Appendix D: Historic sound level data on site equipment and site activities.

Notes: (1) Guide to the sound power levels for stationary and quasi-stationary site equipment.
(2) General use plant to be used during different construction phases.
(3) Each no of plant assumed per phase of work.

3.4 Site Waste

Site waste shall be managed in a structured and auditable manner and in accordance with agreed site and waste management plan (SWMP) from the commencement of the project during the detailed design stage and through construction. This ensures that the aim of waste minimisation is emphasised from the outset. In addition, it will ensure that the waste produced during the construction phase is dealt with in accordance with the relevant requirements of UK legislation, as well as any other requirements specified by the relevant regulatory authorities.

The following main activities that will lead to waste being generated have been identified:

- Wastes arising from excavation.
- Wastes arising from existing road tie in as drawing 004921122.
- Wastes arising from vegetation clearance.

A waste management storage area is designated as part of the compound to facilitate the segregation of waste. This area will be delineated and separated from where new material is stored with recycling and waste bins kept clean and clearly marked in order to avoid cross-contamination of materials.

Waste carriers and the disposal sites will need to be identified.

3.4.1 Waste quantities

Table 3.6, Table 3.7, Table 3.7 and Table 3.9 sets out the predicted waste arisings and management of options. This will be updated as the project progresses. Ardleigh & New Haul Waste Quantities are the same for all options, 1, 2 and 3.

Table 3.6: Predicted waste arisings and management options – Bentley Road option 1

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Excavation		
A120- Bentley Road Junction improvements	22 Existing Road waste 166 Topsoil/ Subsoil	42
Bentley Road Widening - Section 1	14 Existing Road waste 129 Topsoil/ Subsoil	32
Bentley Road Widening - Section 2	78 Existing Road waste 734 Topsoil/ Subsoil	181
Bentley Road Widening - Section 3	28 Existing Road waste 171 Topsoil/ Subsoil	45
Bentley Road Widening - Section 4	47 Existing Road waste 418Topsoil/Subsoil	104
Bentley Road - Cable Corridor Haul Road Bellmouth (Northern Bellmouth, West side of Bentley Road)	179 Topsoil/ Subsoil	40
Bentley Road - Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)	174 Topsoil/ Subsoil	39
Bentley Road - Cable Corridor Haul Road Bellmouth East side of Bentley Road)	178 Topsoil/ Subsoil	40
TOTAL	188 Existing Road waste 2146 Topsoil/ Subsoil	523

Table 3.7: Predicted waste arisings and management options – Bentley Road option 2

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Excavation		
A120- Bentley Road Junction improvements + cycle track	22 Existing Road waste 234 Topsoil/ Subsoil	68
Bentley Road Widening - Section 1 with cycle track	193 Topsoil/ Subsoil	43
Bentley Road Widening - Section 2 with cycle track	587 Existing Road waste 2463 Topsoil/ Subsoil	678
Bentley Road Widening - Section 3 with cycle track	459 Topsoil/ Subsoil	102
Bentley Road Widening - Section 4 with cycle track	362 Existing Road waste 1520Topsoil/Subsoil	419
Bentley Road - Cable Corridor Haul Road Bellmouth (Northern Bellmouth, West side of Bentley Road)	179 Topsoil/ Subsoil	40

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Bentley Road - Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)	174 Topsoil/ Subsoil	39
Bentley Road - Cable Corridor Haul Road Bellmouth East side of Bentley Road) + Cycle Track	287 Topsoil/ Subsoil	64
TOTAL	971 Existing Road waste 5509 Topsoil/ Subsoil	1453

Table 3.8: Predicted waste arisings and management options – Bentley Road option 3

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Excavation		
A120- Bentley Road Junction improvements + Section Bentley Road Widening with cycle track	36 Existing Road waste 403 Topsoil/ Subsoil	100
Bentley Road Widening - Section 2 with cycle track	84 Existing Road waste 1026 Topsoil/ Subsoil	254
Bentley Road Widening - Section 3 with cycle track	80 Existing Road waste 1155 Topsoil/ Subsoil	291
Bentley Road - Cable Corridor Haul Road Bellmouth (Northern Bellmouth, West side of Bentley Road)	179 Topsoil/ Subsoil	40
Bentley Road - Cable Corridor Haul Road Bellmouth (Southern Bellmouth, West side of Bentley Road)	174 Topsoil/ Subsoil	39
Bentley Road - Cable Corridor Haul Road Bellmouth East side of Bentley Road)	178 Topsoil/ Subsoil	40
TOTAL	200 Existing Road waste 3115 Topsoil/ Subsoil	764

Table 3.9: Predicted waste arisings and management options – Ardleigh & New Haul Road Option 1, Option 2 and Option 3

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Excavation		
Installation of Bellmouth (South of Ardleigh Road connecting to new Haul Road)	208 Topsoil/ Subsoil	47
Installation of Bellmouth (North of Ardleigh Road connecting to substation Access Road)	247 Topsoil/ Subsoil	55
Ardleigh Road Widening - Section 5 (Between Bellmouth and Ardleigh Road Diversion)	36 Existing Road waste 895Topsoil/ Subsoil	207

Waste Material	Predicted Volume (m^3)	2 Way Vehicle Movement
Installation of Bellmouth and Diversion Route	1551 Topsoil/ Subsoil	345
Ardleigh Road Junction Improvements	6 Existing Road waste 87 Topsoil/ Subsoil	21
Installation of new AIL Haul Road	5968 Topsoil/ Subsoil	1327
Installation of Bellmouth (Connection for Haul Road to Bentley Road)	469 Topsoil/ Subsoil	105
TOTAL	41 Existing Road waste 9421 Topsoil/ Subsoil	2107

Predicted waste volumes based on currently available projections.

4 Operational parameters

4.1 Site setting

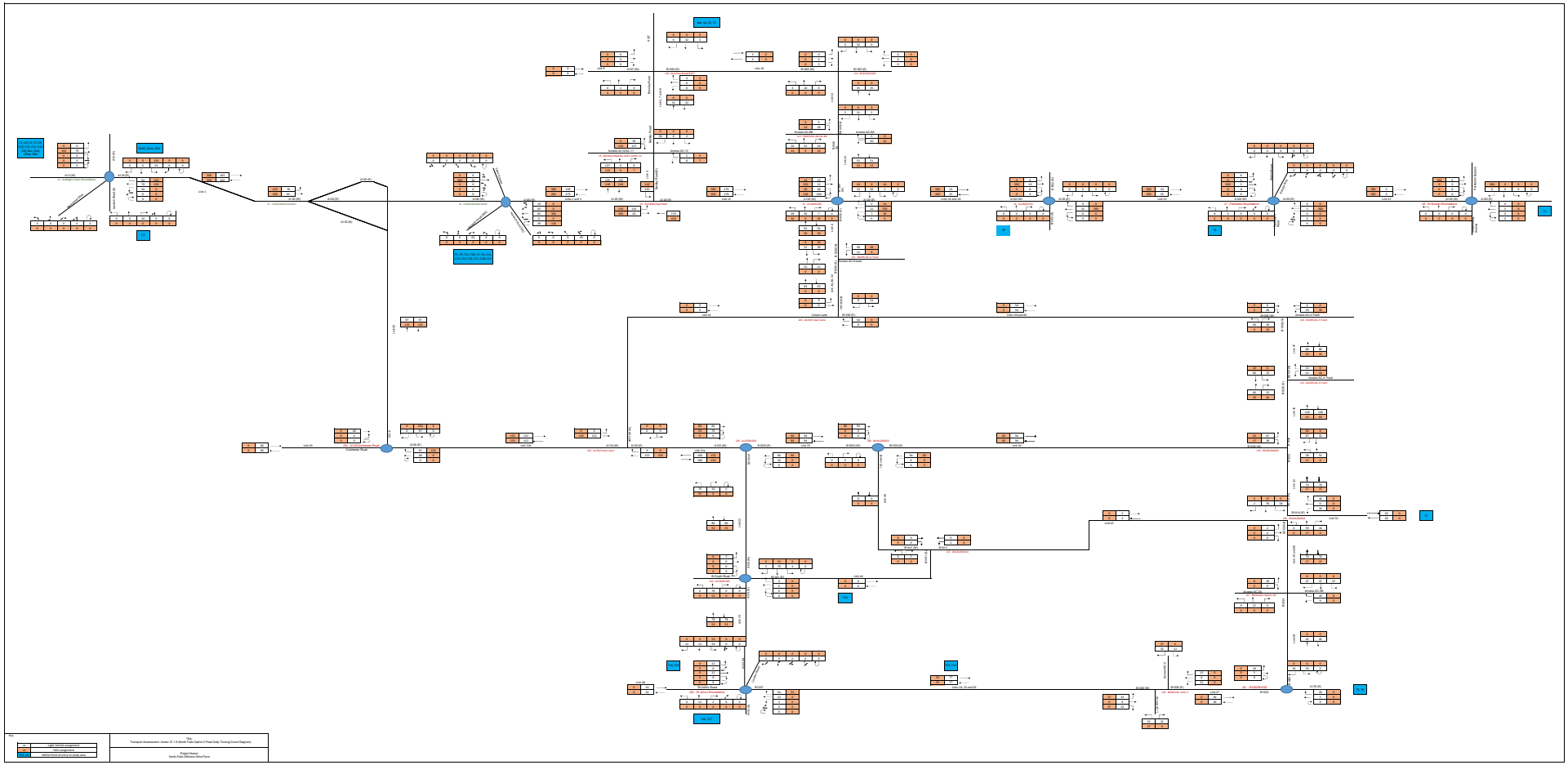
The proposed road works comprise of:

- The A120-Bentley Road Junction area of proposed widening is 215m^2 for option 1 and 3. For option 2, the buffer zone has an area of 76m^{2,} and the cycle track has an area of 297m^2.
- The total area of road widening for Bentley Road is equal to 1889m^2 for option 1. For option 2, the total area for the safety buffer and cycle track along Bentley Road is 4930m^2.
- For option 3, the total area of improvements to the A120 junction and Bentley Road is 1595m^2. The total area of cycle track in 5261m^2.
- There are 3 bellmouths connecting Bentley Road to the Cable Corridor Haul Road with their area totalling 689m^2. For Option 2, the safety buffer and cycle track at the bellmouth on the east side of Bentley Road have an area of 326m^2.
- The bellmouth connecting the New Haul Road to Bentley Road has a total area of 609.6m^2
- The New Haul Road has a total area of 7769.9m^2.
- The installation of the bellmouth and diversion route on Ardleigh road has an area of 2018.5m^2
- The bellmouths connecting to Ardleigh road from the cable corridor haul road and the substation access road have a total area of 590m^2.
- Ardleigh road junction improvements have a proposed area of 113.2m^2.
- The total area of the Ardleigh Road widening section between the bellmouths and Ardleigh Road diversion is equal to 1164.5m^2.

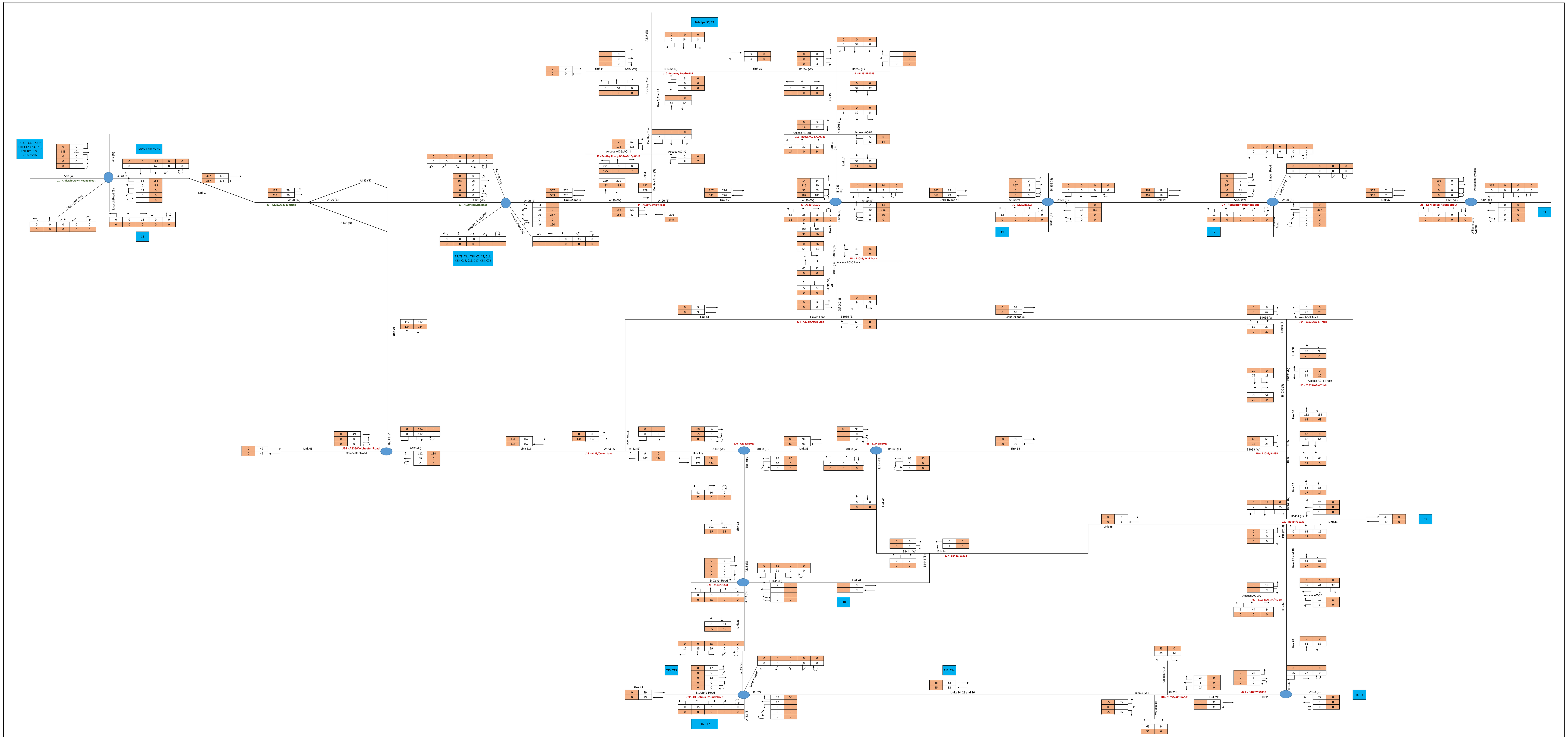
Annex 27.1.8 LV Census Data Distribution

ID	MSOA	MSOA 003	MSOA 005	MSOA 007
T1	**Tendring 001**	2.6%	0.6%	1.9%
T2	**Tendring 002**	5.0%	1.3%	2.0%
T3	**Tendring 003**	23.9%	6.6%	3.0%
T4	**Tendring 004**	5.9%	1.8%	3.7%
T5	**Tendring 005**	2.6%	8.3%	1.4%
T6	**Tendring 006**	1.0%	1.1%	5.5%
T7	**Tendring 007**	3.0%	1.7%	12.8%
T8	**Tendring 008**	2.8%	1.0%	8.5%
T9	**Tendring 009**	2.2%	5.9%	3.2%
T10	**Tendring 010**	1.0%	1.1%	4.5%
T11	**Tendring 011**	1.9%	3.5%	2.9%
T12	**Tendring 012**	0.8%	0.4%	3.1%
T13	**Tendring 013**	1.2%	1.5%	5.1%
T14	**Tendring 014**	1.2%	1.1%	5.3%
T15	**Tendring 015**	1.5%	1.1%	3.8%
T16	**Tendring 016**	0.5%	0.7%	2.5%
T17	**Tendring 017**	0.8%	1.0%	3.3%
T18	**Tendring 018**	0.9%	0.7%	3.7%
C1	**Colchester 001**	0.1%	2.1%	0.5%
C2	**Colchester 002**	0.0%	2.5%	1.2%
C3	**Colchester 003**	0.0%	1.1%	0.5%
C4	**Colchester 004**	0.0%	1.9%	1.3%
C7	**Colchester 007**	0.1%	1.5%	0.6%
C8	**Colchester 008**	0.0%	3.1%	0.7%
C9	**Colchester 009**	0.0%	0.7%	0.6%
C10	**Colchester 010**	0.0%	0.8%	0.5%
C11	**Colchester 011**	0.0%	2.4%	0.8%
C12	**Colchester 012**	0.0%	1.1%	0.5%
C13	**Colchester 013**	0.0%	1.5%	0.7%
C14	**Colchester 014**	0.0%	1.8%	0.5%
C15	**Colchester 015**	0.0%	1.1%	0.5%
C16	**Colchester 016**	0.0%	2.2%	1.0%
C17	**Colchester 017**	0.0%	3.7%	0.7%
C18	**Colchester 018**	0.0%	2.7%	0.5%
C19	**Colchester 019**	0.0%	1.1%	0.2%
C20	**Colchester 020**	0.0%	0.3%	0.1%
C21	**Colchester 021**	0.0%	1.5%	0.5%
Bab	**Babergh**	10.8%	5.9%	1.4%
Ips	**Ipswich**	4.4%	2.4%	1.5%
Bra	**Braintree**	1.8%	4.5%	1.0%
MidS	**Mid Suffolk**	1.1%	1.2%	0.6%
Chel	**Chelmsford**	0.8%	1.1%	0.5%
SC	**Suffolk Coastal**	2.0%	1.3%	0.9%
Other	**Other (all A12/A120)**	20.2%	10.9%	5.8%

Annex 27.1.9 Peak Daily Turning Count Diagram for North Falls Option 2


Key
HGV Vehicle assignment
HGV assignment
Arrows Point of entry to the study area
Title:
Transport Assessment: Annex 27.1.5 Scunthorpe Flow Outputs 2 Peak Daily Turning Count Diagrams
Project Name:
North Fully Offshore Wind Farm

Annex 27.1.10 Peak Daily Turning Count Diagram for North Fall / Five Estuaries Scenario 1



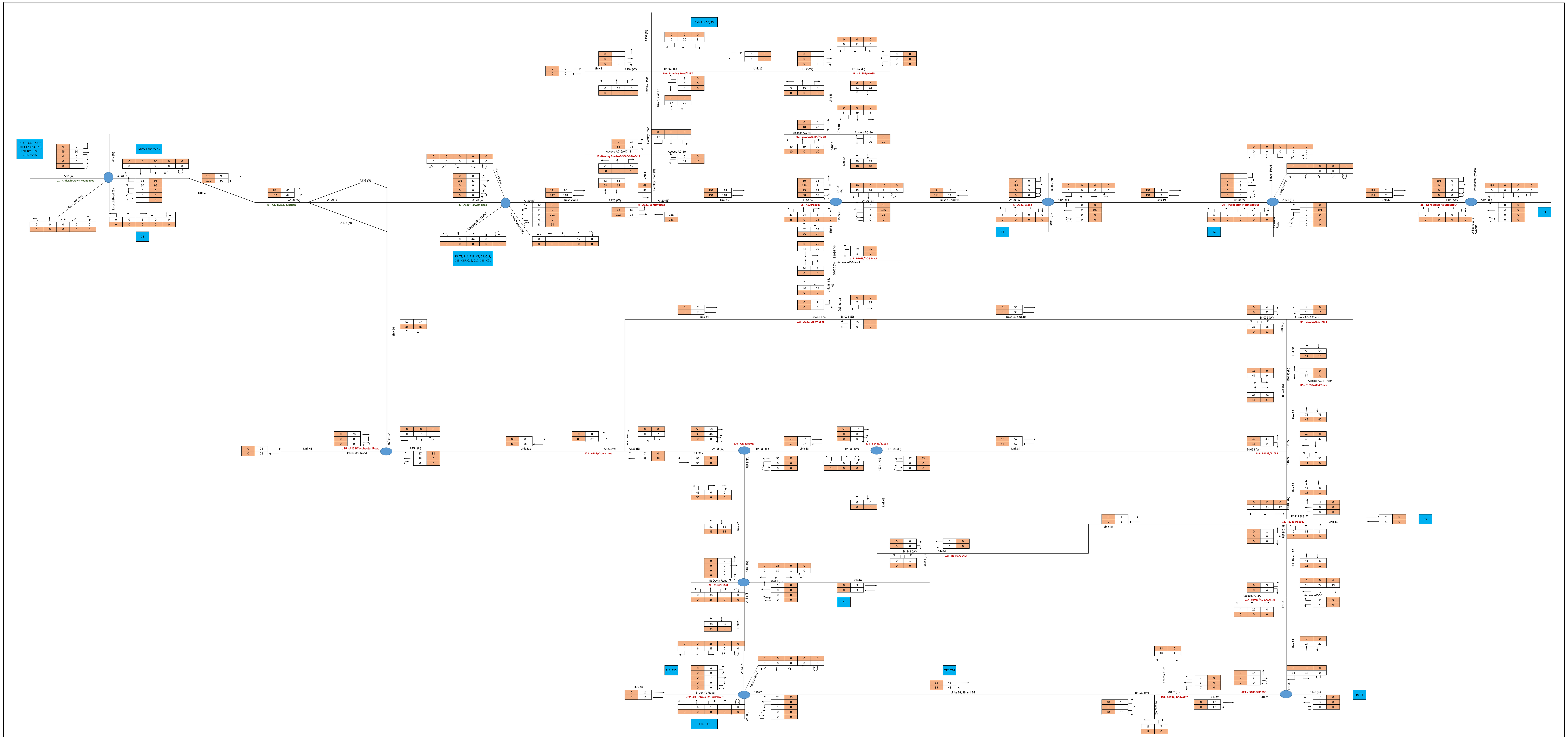
Key

xx	Light Vehicle assignment
xx	HGV assignment
T01, etc	MSOA Point of entry to study area

Title:
Transport Assessment: Annex 27.7.10 (North Falls / Five Estuaries Scenario 1 Peak Daily Turning Count Diagram)

Project Name:
North Falls Offshore Wind Farm

Annex 27.1.11 Average Daily Turning Count Diagrams for North Falls Option 2



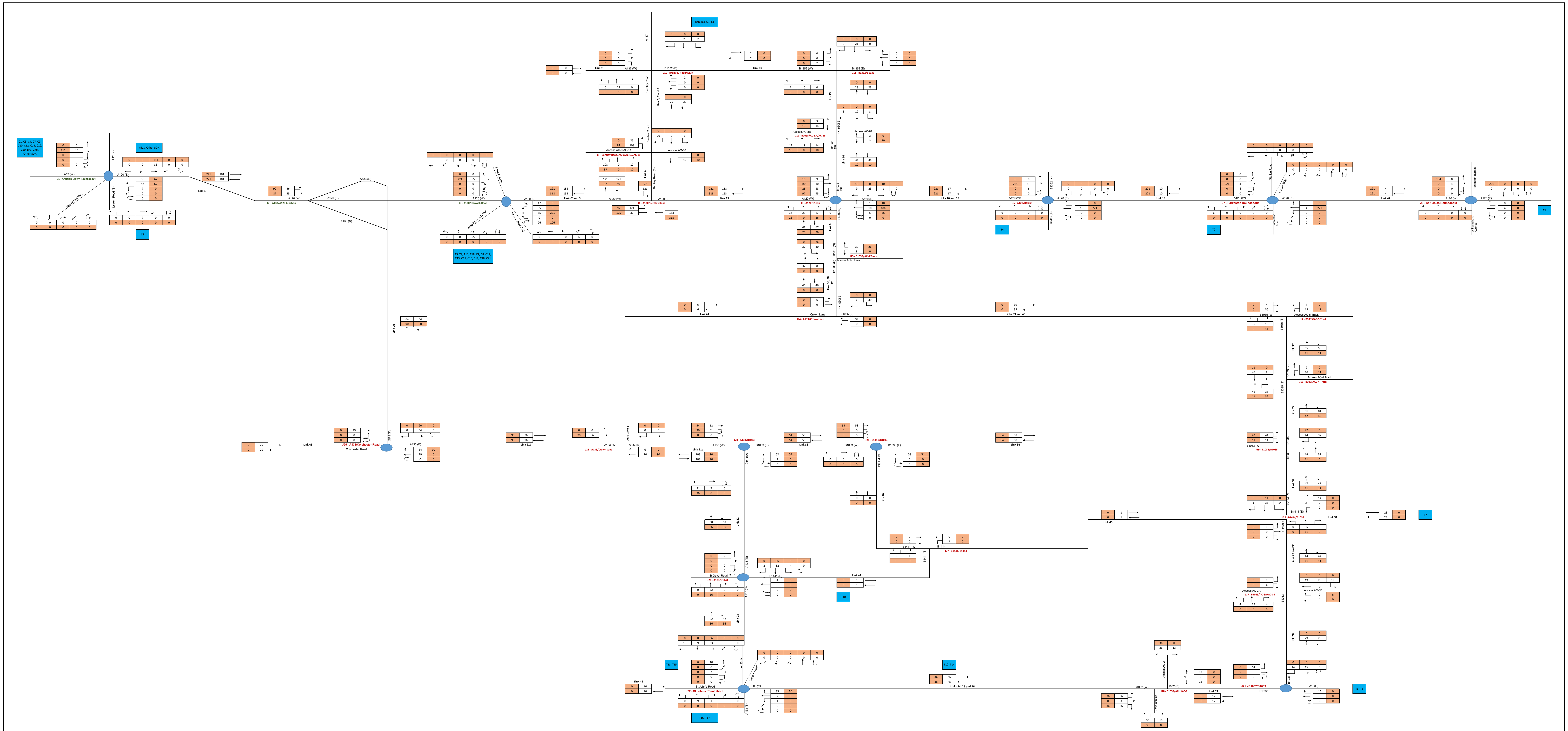
Key

xx	Light Vehicle assignment
xx	HGV assignment
T01, etc	MSOA Point of entry to study area

Title:
Transport Assessment: Annex 27.1.11 (North Falls Option 2 Average Daily Turning Count Diagram)

Project Name:
North Falls Offshore Wind Farm

Annex 27.1.12 Average Daily Turning Count Diagrams for North Falls / Five Estuaries Scenario 1



Key

xx	Light Vehicle distributuion
xx	HGV distribution
T01, etc	MSOA Point of entry to study area

Title:
Transport Assessment: Annex 27.1.12 (North Falls / Five Estuaries Scenario 1 Average Daily Turning Count Diagram)

Project Name:
North Falls Offshore Wind Farm

Annex 27.1.13 AM Peak Turning Count Diagram for North Falls Option 2

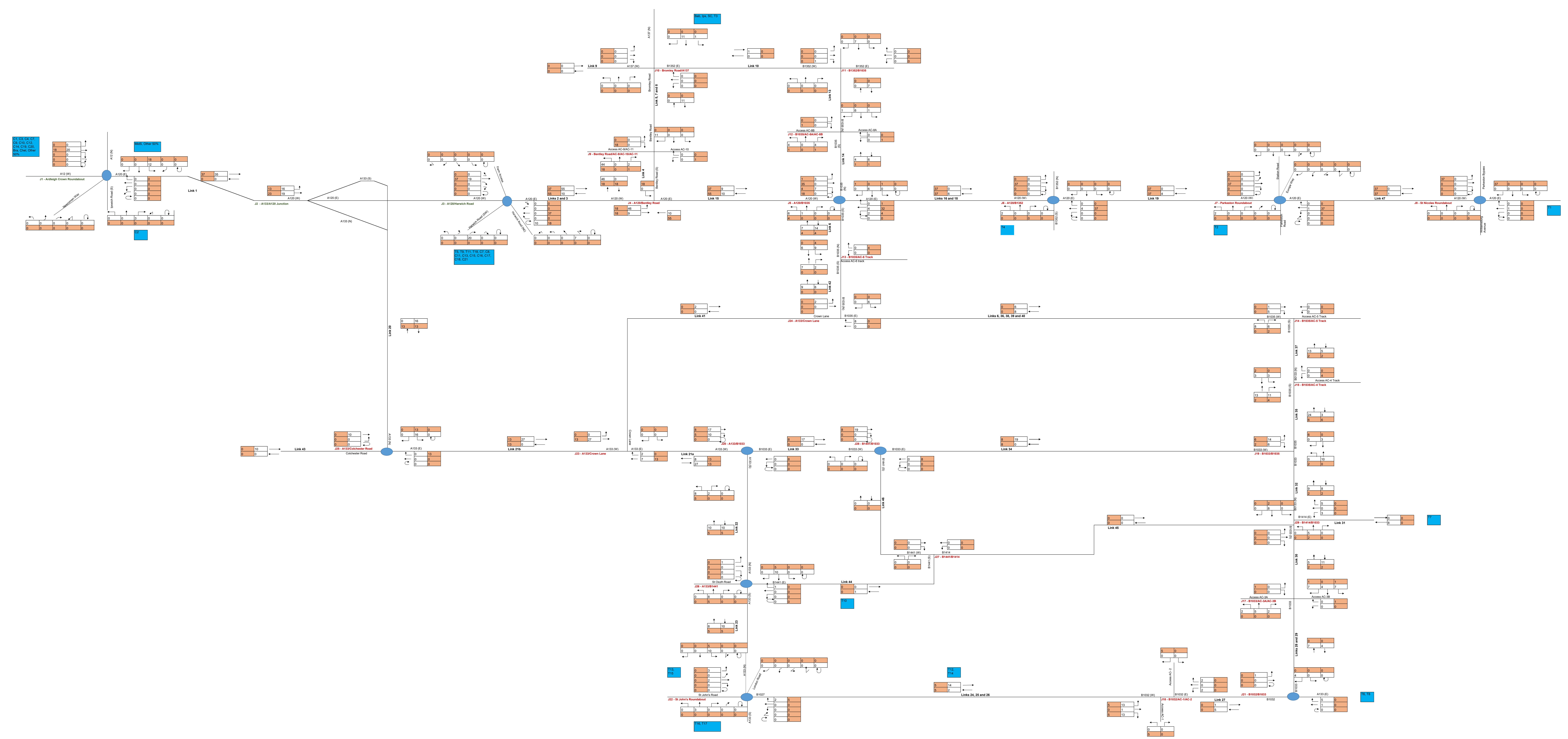
Key

xx	Light Vehicle assignment
xx	HGV assignment
C21, etc	MSOA Point of entry to study area

Title:
Transport Assessment: Annex 27.1.13 **(North Falls Option 2 AM Peak Turning Count Diagram)**

Project Name:
North Falls Offshore Wind Farm

Annex 27.1.14 AM Peak Turning Count Diagram for North Falls / Five Estuaries Scenario 1



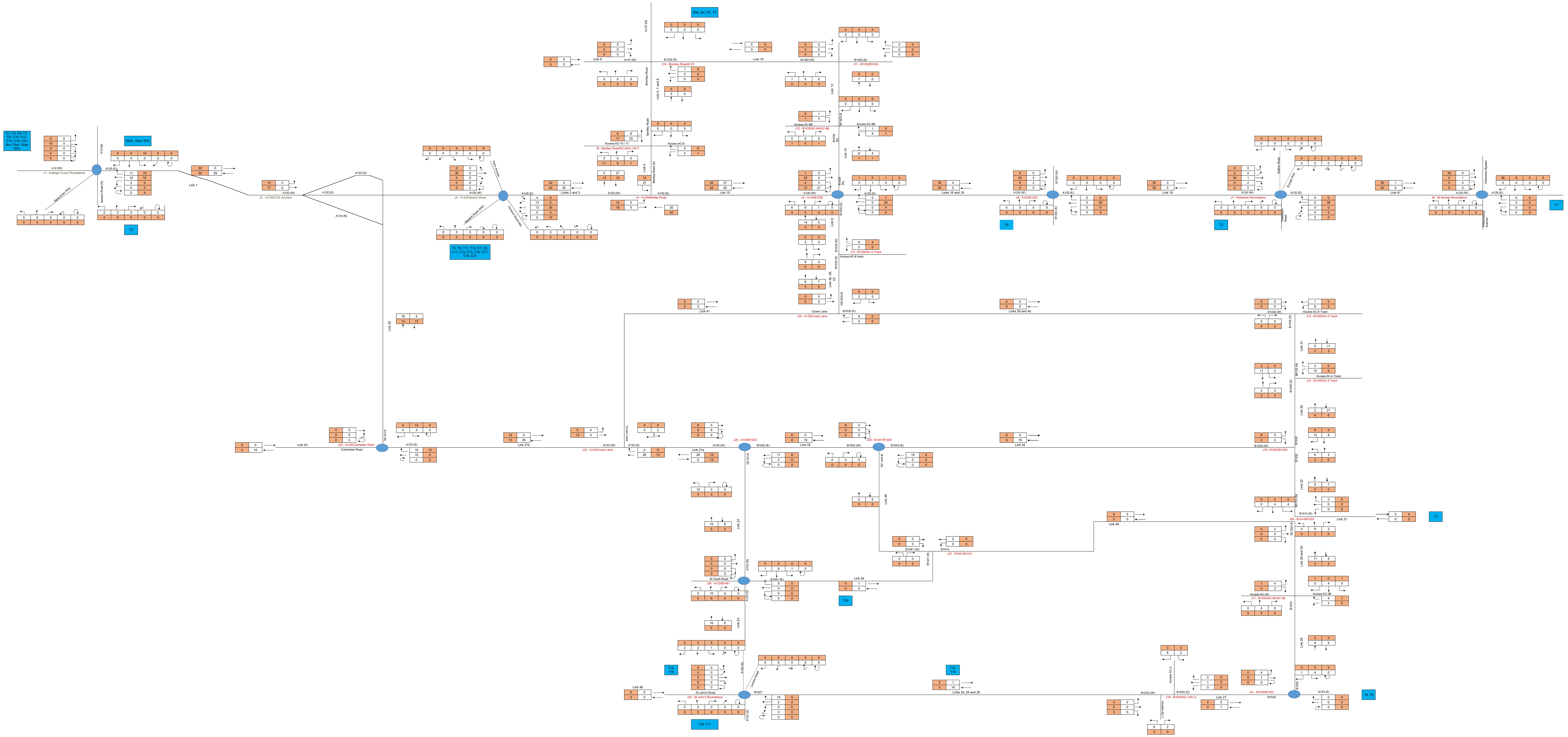
Key

xx	Light Vehicle assignment
xx	HGV assignment
T01, etc	MSOA Point of entry to study area

Title:
Transport Assessment: Annex 27.1.14 (North Falls / Five Estuaries Scenario 1 AM Peak Period Flows)

Project Name:
North Falls Offshore Wind Farm

Annex 27.1.15 PM Peak Turning Count Diagram for North Falls Option 2



Key

xx	Light Vehicle assignment
xx	HGV assignment
T01, etc	MSOA Point of entry to study area

Title:
Transport Assessment: Annex 27.1.15 (North Falls Option 2 PM Peak Turning Count Diagram)

Project Name:
North Falls Offshore Wind Farm

Annex 27.1.16 PM Peak Turning Count Diagram for North Falls / Five Estuaries Scenario 1

Key

xx	Light Vehicle assignment
xx	HGV assignment
C01, etc	MSOA Point of entry to study area

Title:
Transport Assessment: Annex 27.7.16 (North Falls / Five Estuaries Scenario 1 PM Peak Turning Count Diagram)

Project Name:
North Falls Offshore Wind Farm

Annex 27.1.17 Summary of forecast worst case construction traffic flows for North Falls Option 2

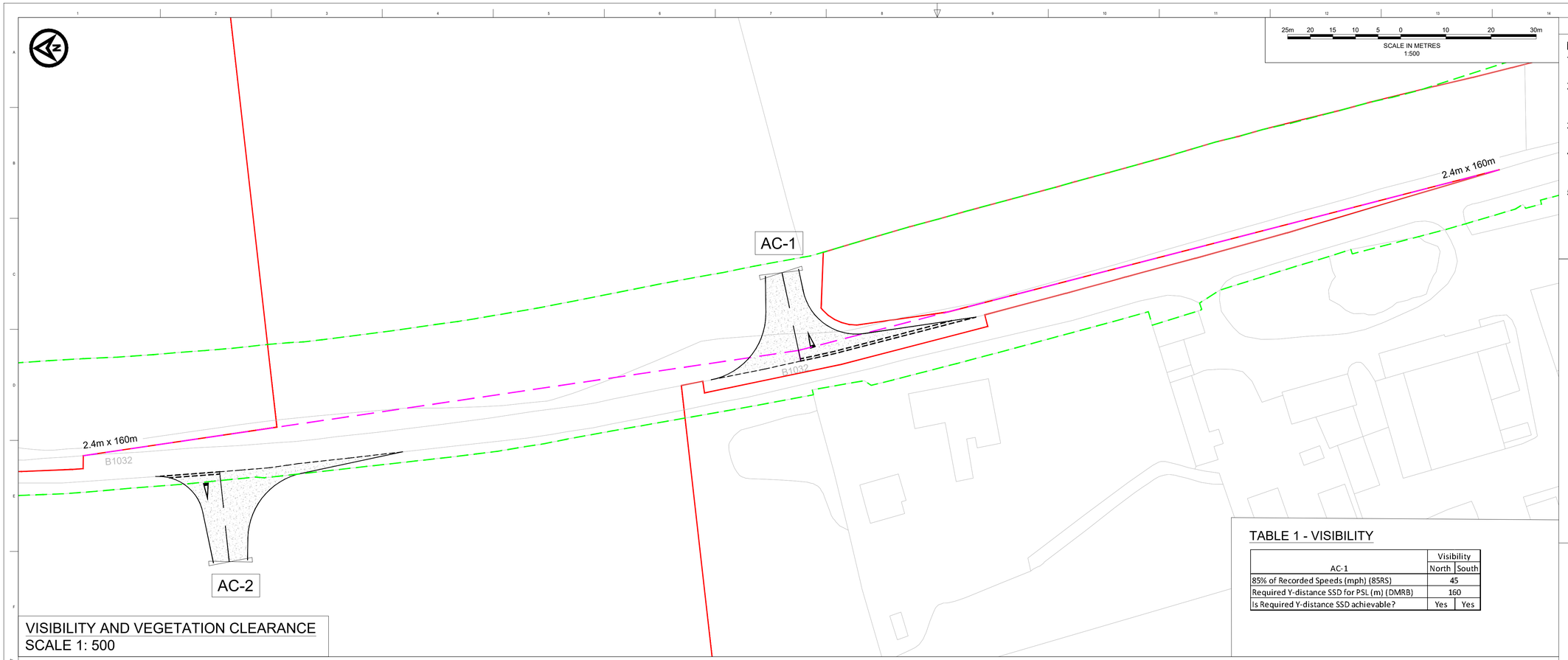
Link Details						
Link	Survey Type	Survey Year	Traffic Count Reference	Link Description	Link Sensitivity T&T	Average Speed (Miles per Hour)
1	DfT - AADT	2022	DfT 38246	A120 from the A12 to the A133	Negligible	Posted Speed
2	DfT - AADT	2022	DfT 38246	A120 from the A133 to Harwich Road	Negligible	Posted Speed
3	DfT - AADT	2022	DFT 7938	A120 from Harwich Road to Bentley Road	Negligible	Posted Speed
4	NF ATC	2022	NF ATC 17	Bentley Road from the A120 to Little Bromley	Low	43
5	NF ATC	2022	NF ATC 17	Bentley Road through Little Bromley	High	43
6	NF ATC	2022	NF ATC 23	B1035 south of the A120 to Tendring Green	Low	42
7	NF ATC	2022	NF ATC 19	Bromley Road north of Little Bromley	Low	42
8	NF ATC	2022	NF ATC 19	Bromley Road south of the A137	High	42
9	DfT - AADT	2022	DfT 73502	A137 east-west through Lawford	Medium	Posted Speed
10	DfT - AADT	2022	DfT 73502	A137 north-south through Lawford	Low	Posted Speed
~~11~~	~~NF ATC~~	~~2022~~	~~NF ATC 13~~	~~Parsonage Lane and Wolves Hall Lane east of the B1035~~ - No Longer Used	Medium	
~~12~~	~~NF ATC~~	~~2022~~	~~NF ATC 14~~	~~Stones Green Road~~ - No Longer Used	High	
13	NF ATC	2022	NF ATC 16	B1035 south of the B1352	Medium	30
14	NF ATC	2022	NF ATC 16	B1035 north of the A120	Low	30
15	DfT - AADT	2022	DFT 7938	A120 from Bentley Road to the B1035	Negligible	Posted Speed
16	DfT - AADT	2022	DFT 7938	A120 from the B1035 to Colchester Road	Negligible	Posted Speed
~~17~~	~~NF ATC~~	~~2022~~	~~NF ATC 15~~	~~Colchester Road south of the A120~~ - No Longer Used	~~Low~~	
18	DfT - AADT	2022	DfT 47951	A120 from Colchester Road to the B1352	Negligible	Posted Speed
19	DfT - AADT	2022	DfT 47951	A120 from the B1352 to Parkeston Road	Negligible	Posted Speed
20	DfT - AADT	2022	DfT 86073	A133 south of the A120	Negligible	Posted Speed
21a	DfT - AADT	2022	DfT 48012	A133 to Crown Lane	Low	Posted Speed
21b	DfT - AADT	2022	DfT 48012	A133 from Crown Lane to the B1034	Low	Posted Speed
22	DfT - AADT	2022	DfT 99327	A133 south of the B1033 to Progress Way	Negligible	Posted Speed
23	DfT - AADT	2022	DfT 99327	A133 south of Progress Way to the B1032	Negligible	Posted Speed
24	DfT - AADT	2019	DfT 951531	B1032 east of the A133 to Holland Road	High	Posted Speed
25	DfT - AADT	2022	DfT 800222	B1032 from Holland Road to Kings Parade	High	Posted Speed
26	NF ATC	2022	NF ATC 1	B1032 from Kings Parade to the south of Great Holland	Low	36
27	NF ATC	2022	NF ATC 1	B1032 through Great Holland	High	36
28	NF ATC	2022	NF ATC 3	B1033 north of the B1032 through Kirby Cross to Pork Lane	High	44
29	NF ATC	2022	NF ATC 3	B1033 from Pork Lane to the south of Thorpe-le-Soken	Low	44
30	NF ATC	2022	NF ATC 3	B1033 south of the B1414 through Thorpe-le-Soken	High	44
31	NF ATC	2022	NF ATC 6	B1414 east of the B1033	High	36
32	NF ATC	2022	NF ATC 3	B1033 north of the B1414 through Thorpe-le-Soken	High	44
33	NF ATC	2022	NF ATC 21	B1033 from the B1441 to the B1035 through Weeley	Medium	47
34	NF ATC	2022	NF ATC 21	B1033 from the A133 to the B1441	Low	47
35	NF ATC	2022	NF ATC 8	B1035 north of B1033 to Whitehall Lane	Low	34
36	NF ATC	2022	NF ATC 23	B1035 through Tendring Green from Parsonage Lane to Stones Green Road	Low	42
37	NF ATC	2022	NF ATC 8	B1035 north of Whitehall Lane to Swan Road	Low	34
38	NF ATC	2022	NF ATC 23	B1035 through Goose Green	High	42
39	NF ATC	2022	NF ATC 11	B1035 north of Swan Road to the south of Tendring	Low	39
40	NF ATC	2022	NF ATC 11	B1035 through Tendring to Crown Lane	High	39
41	NF ATC	2022	NF ATC 22	Crown Lane	Low	35
42	NF ATC	2022	NF ATC 11	B1035 from Crown Lane to Lodge Lane	High	39
43	DfT - AADT	2022	DfT 36706	A133/Colchester Road from A133/Colchester Road roundabout to end of TTSA	Low	Posted Speed
44	VE ATC	2022	VE ATC 12	B1441 (Progress Way) from A133/St Osyth Road/Progress Way Roundabout to B1414	High	Posted Speed
45	VE ATC	2022	VE ATC 13	B1414 east of B1441 to B1033 in Thorpe-le-Soken	High	Posted Speed
46	VE ATC	2022	VE ATC 12	B1441 from B1414 to B1033 in Weeley	High	Posted Speed
47	DfT - AADT	2022	DfT 92006	A120 from Parkeston Roundabout to St Nicholas Roundabout	Low	Posted Speed
48	DfT - AADT	2019	DfT 941083	St John's Road from St Osyth Roundabout to end of TTSA	High	Posted Speed

North Falls Option 2 Construction Flows (peak)						
Base 24HR AADT				Base 18Hr AAWT		
Total Vehicles	LVs	HGVs		Total Vehicles	LVs	HGVs
669	245	423		780	286	494
696	272	423		812	318	494
696	272	423		812	318	494
434	232	202		506	271	235
55	55	0		64	64	0
218	157	62		255	183	72
55	55	0		64	64	0
55	55	0		64	64	0
0	0	0		0	0	0
5	5	0		6	6	0
	0	0				
	0	0				
61	61	0		71	71	0
111	87	24		130	101	29
730	306	423		851	357	494
459	35	423		535	41	494
	0	0				
459	35	423		535	41	494
445	22	423		520	26	494
394	166	227		459	194	265
487	260	227		568	303	265
502	275	227		585	320	265
238	147	91		278	172	106
225	134	91		263	157	106
222	131	91		259	153	106
222	131	91		259	153	106
222	131	91		259	153	106
52	52	0		61	61	0
78	78	0		91	91	0
155	127	28		181	148	33
155	127	28		181	148	33
45	45	0		53	53	0
154	126	28		180	147	33
298	162	136		348	189	159
298	162	136		348	189	159
310	202	108		362	236	126
108	108	0		126	126	0
170	137	33		199	160	39
108	108	0		126	126	0
93	93	0		109	109	0
93	93	0		109	109	0
15	15	0		17	17	0
108	108	0		126	126	0
82	82	0		96	96	0
11	11	0		13	13	0
3	3	0		4	4	0
0	0	0		0	0	0
428	5	423		499	5	494
41	41	0		48	48	0

Annex 27.1.18 Summary of forecast worst case construction traffic flows for North Falls / Five Estuaries Scenario 1

Link Details						North Falls / Five Estuaries Scenario 1 Construction Flows (peak)					
						Base 24HR AADT				Base 18Hr AAWT	
Link	Survey Type	Survey Year	Traffic Count Reference	Link Description	Link Sensitivity T&T	Average Speed (Miles per Hour)	Total Vehicles	LVs	HGVs	Total Vehicles	LVs	HGVs
1	DfT - AADT	2022	DfT 38246	A120 from the A12 to the A133	Negligible	Posted Speed	819	301	519	956	351	605
2	DfT - AADT	2022	DfT 38246	A120 from the A133 to Harwich Road	Negligible	Posted Speed	992	473	519	1,157	552	605
3	DfT - AADT	2022	DFT 7938	A120 from Harwich Road to Bentley Road	Negligible	Posted Speed	992	473	519	1,157	552	605
4	NF ATC	2022	NF ATC 17	Bentley Road from the A120 to Little Bromley	Low	43	705	392	313	823	458	365
5	NF ATC	2022	NF ATC 17	Bentley Road through Little Bromley	High	43	93	93	0	109	109	0
6	NF ATC	2022	NF ATC 23	B1035 south of the A120 to Tendring Green	Low	42	246	185	62	288	216	72
7	NF ATC	2022	NF ATC 19	Bromley Road north of Little Bromley	Low	42	93	93	0	109	109	0
8	NF ATC	2022	NF ATC 19	Bromley Road south of the A137	High	42	93	93	0	109	109	0
9	DfT - AADT	2022	DfT 73502	A137 east-west through Lawford	Medium	Posted Speed	0	0	0	0	0	0
10	DfT - AADT	2022	DfT 73502	A137 north-south through Lawford	Low	Posted Speed	6	6	0	7	7	0
~~11~~	~~NF ATC~~	~~2022~~	~~NF ATC 13~~	~~Parsonage Lane and Wolves Hall Lane east of the B1035~~ - No Longer Used	Medium							
~~12~~	~~NF ATC~~	~~2022~~	~~NF ATC 14~~	~~Stones Green Road~~ - No Longer Used	High							
13	NF ATC	2022	NF ATC 16	B1035 south of the B1352	Medium	30	63	63	0	74	74	0
14	NF ATC	2022	NF ATC 16	B1035 north of the A120	Low	30	116	92	24	135	107	29
15	DfT - AADT	2022	DFT 7938	A120 from Bentley Road to the B1035	Negligible	Posted Speed	992	473	519	1,157	552	605
16	DfT - AADT	2022	DFT 7938	A120 from the B1035 to Colchester Road	Negligible	Posted Speed	568	50	519	663	58	605
~~17~~	~~NF ATC~~	~~2022~~	~~NF ATC 15~~	~~Colchester Road south of the A120~~ - No Longer Used	~~Low~~							
18	DfT - AADT	2022	DfT 47951	A120 from Colchester Road to the B1352	Negligible	Posted Speed	568	50	519	663	58	605
19	DfT - AADT	2022	DfT 47951	A120 from the B1352 to Parkeston Road	Negligible	Posted Speed	549	30	519	640	35	605
20	DfT - AADT	2022	DfT 86073	A133 south of the A120	Negligible	Posted Speed	421	192	230	492	224	268
21a	DfT - AADT	2022	DfT 48012	A133 to Crown Lane	Low	Posted Speed	532	303	230	621	353	268
21b	DfT - AADT	2022	DfT 48013	A133 from Crown Lane to the B1034	Low	Posted Speed	516	287	230	602	334	268
22	DfT - AADT	2022	DfT 99327	A133 south of the B1033 to Progress Way	Negligible	Posted Speed	267	174	93	311	202	109
23	DfT - AADT	2022	DfT 99327	A133 south of Progress Way to the B1032	Negligible	Posted Speed	250	156	93	292	183	109
24	DfT - AADT	2019	DfT 951531	B1032 east of the A133 to Holland Road	High	Posted Speed	234	141	93	273	164	109
25	DfT - AADT	2022	DfT 800222	B1032 from Holland Road to Kings Parade	High	Posted Speed	234	141	93	273	164	109
26	NF ATC	2022	NF ATC 1	B1032 from Kings Parade to the south of Great Holland	Low	36	234	141	93	273	164	109
27	NF ATC	2022	NF ATC 1	B1032 through Great Holland	High	36	53	53	0	62	62	0
28	NF ATC	2022	NF ATC 3	B1033 north of the B1032 through Kirby Cross to Pork Lane	High	44	90	90	0	105	105	0
29	NF ATC	2022	NF ATC 3	B1033 from Pork Lane to the south of Thorpe-le-Soken	Low	44	168	140	28	196	163	33
30	NF ATC	2022	NF ATC 3	B1033 south of the B1414 through Thorpe-le-Soken	High	44	168	140	28	196	163	33
31	NF ATC	2022	NF ATC 6	B1414 east of the B1033	High	36	69	69	0	81	81	0
32	NF ATC	2022	NF ATC 3	B1033 north of the B1414 through Thorpe-le-Soken	High	44	176	148	28	205	172	33
33	NF ATC	2022	NF ATC 21	B1033 from the B1441 to the B1035 through Weeley	Medium	47	300	164	136	351	192	159
34	NF ATC	2022	NF ATC 21	B1033 from the A133 to the B1441	Low	47	300	164	136	351	192	159
35	NF ATC	2022	NF ATC 8	B1035 north of B1033 to Whitehall Lane	Low	34	335	227	108	391	265	126
36	NF ATC	2022	NF ATC 23	B1035 through Tendring Green from Parsonage Lane to Stones Green Road	Low	42	132	132	0	154	154	0
37	NF ATC	2022	NF ATC 8	B1035 north of Whitehall Lane to Swan Road	Low	34	193	160	33	225	186	39
38	NF ATC	2022	NF ATC 23	B1035 through Goose Green	High	42	132	132	0	154	154	0
39	NF ATC	2022	NF ATC 11	B1035 north of Swan Road to the south of Tendring	Low	39	116	116	0	135	135	0
40	NF ATC	2022	NF ATC 11	B1035 through Tendring to Crown Lane	High	39	116	116	0	135	135	0
41	NF ATC	2022	NF ATC 22	Crown Lane	Low	35	16	16	0	19	19	0
42	NF ATC	2022	NF ATC 11	B1035 from Crown Lane to Lodge Lane	High	39	132	132	0	154	154	0
43	DfT - AADT	2022	DfT 36706	A133/Colchester Road from A133/Colchester Road roundabout to end of TTSA	Low	Posted Speed	83	83	0	97	97	0
44	VE ATC	2022	VE ATC 12	B1441 (Progress Way) from A133/St Osyth Road/Progress Way Roundabout to B1414	High	Posted Speed	15	15	0	17	17	0
45	VE ATC	2022	VE ATC 13	B1414 east of B1441 to B1033 in Thorpe-le-Soken	High	Posted Speed	3	3	0	4	4	0
46	VE ATC	2022	VE ATC 12	B1441 from B1414 to B1033 in Weeley	High	Posted Speed	0	0	0	0	0	0
47	DfT - AADT	2022	DfT 92006	A120 from Parkeston Roundabout to St Nicholas Roundabout	Low	Posted Speed	530	11	519	618	13	605
48	DfT - AADT	2019	DfT 941083	St John's Road from St Osyth Roundabout to end of TTSA	High	Posted Speed	50	50	0	58	58	0

Annex 27.1.19 Outline Access Designs



VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

DO NOT SCALE FROM THIS DRAWING

NOTES
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2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

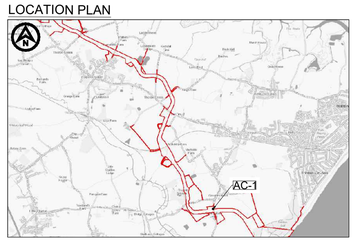
KEY

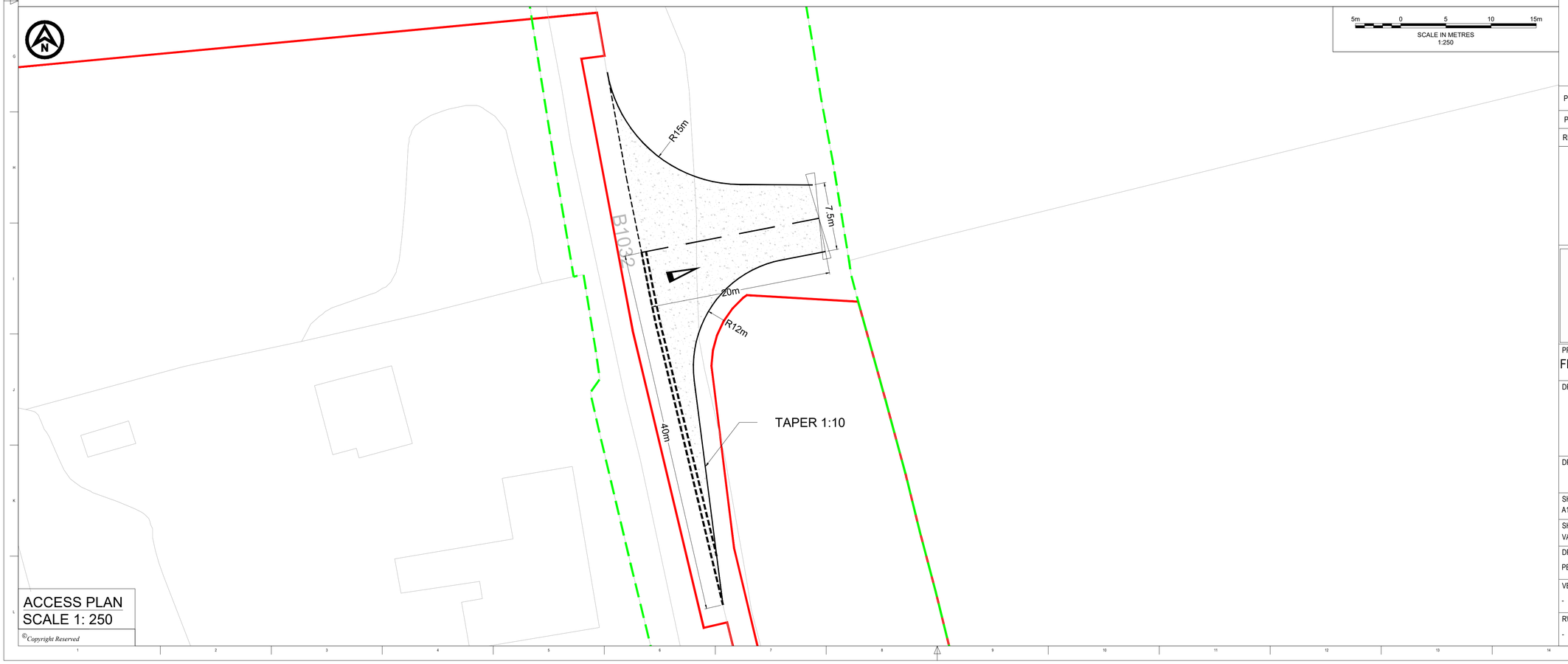
- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

AC-1	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	45	
Required Y-distance SSD for PSL (m) (DMRB)	160	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN





5m 0 5 10 15m
SCALE IN METRES
1:250

ACCESS PLAN
SCALE 1: 500

REV	DATE	DESCRIPTION	BY	CHK	APP
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm

Royal HaskoningDHV
Enhancing Society Together
Westpoint, Peterborough Business Park, Lynch Wood, Peterborough PE2 6FZ
Tel +44(0)1932 569566
www.royalhaskoningdhv.com

PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC-1 - B1032
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0001	P02
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
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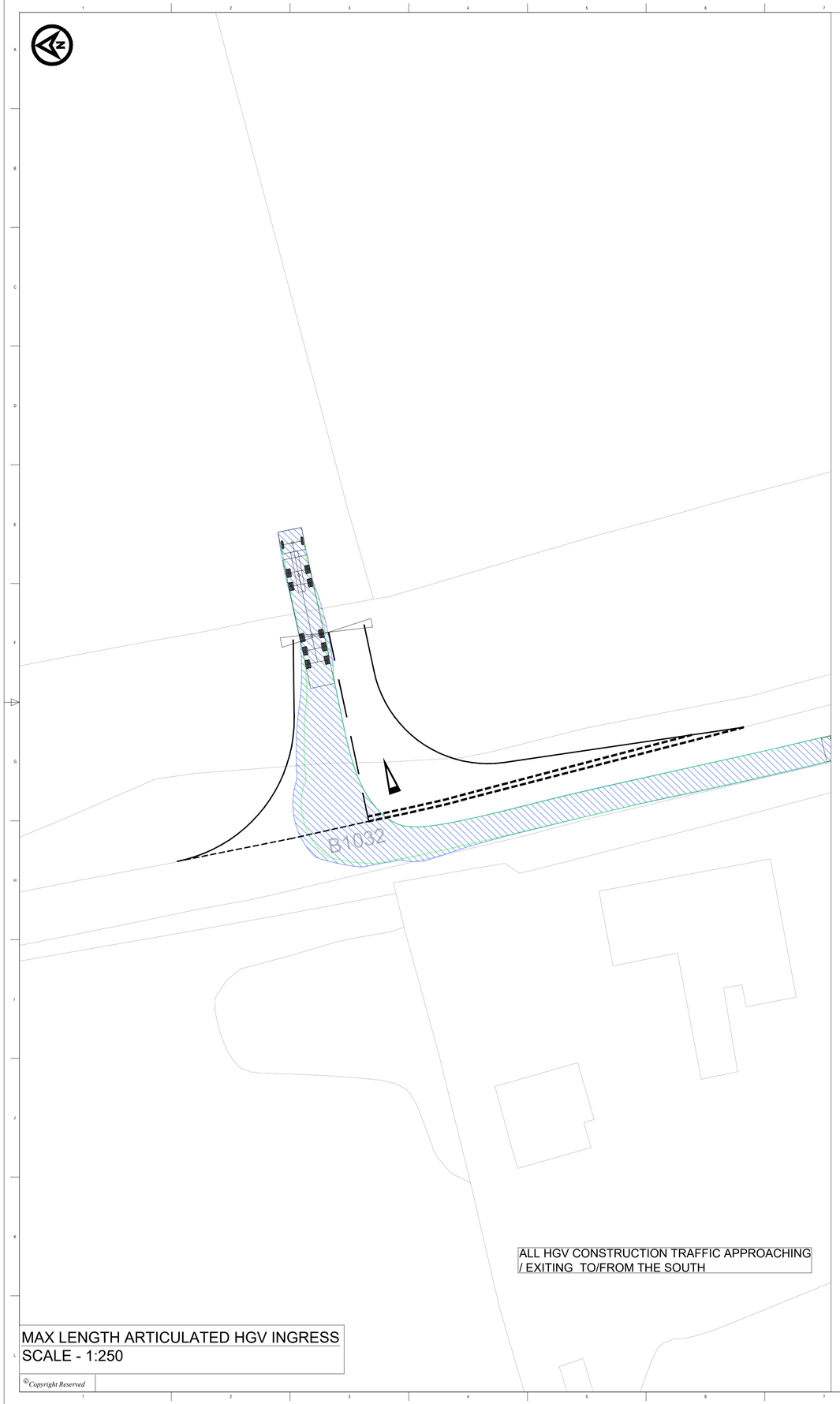
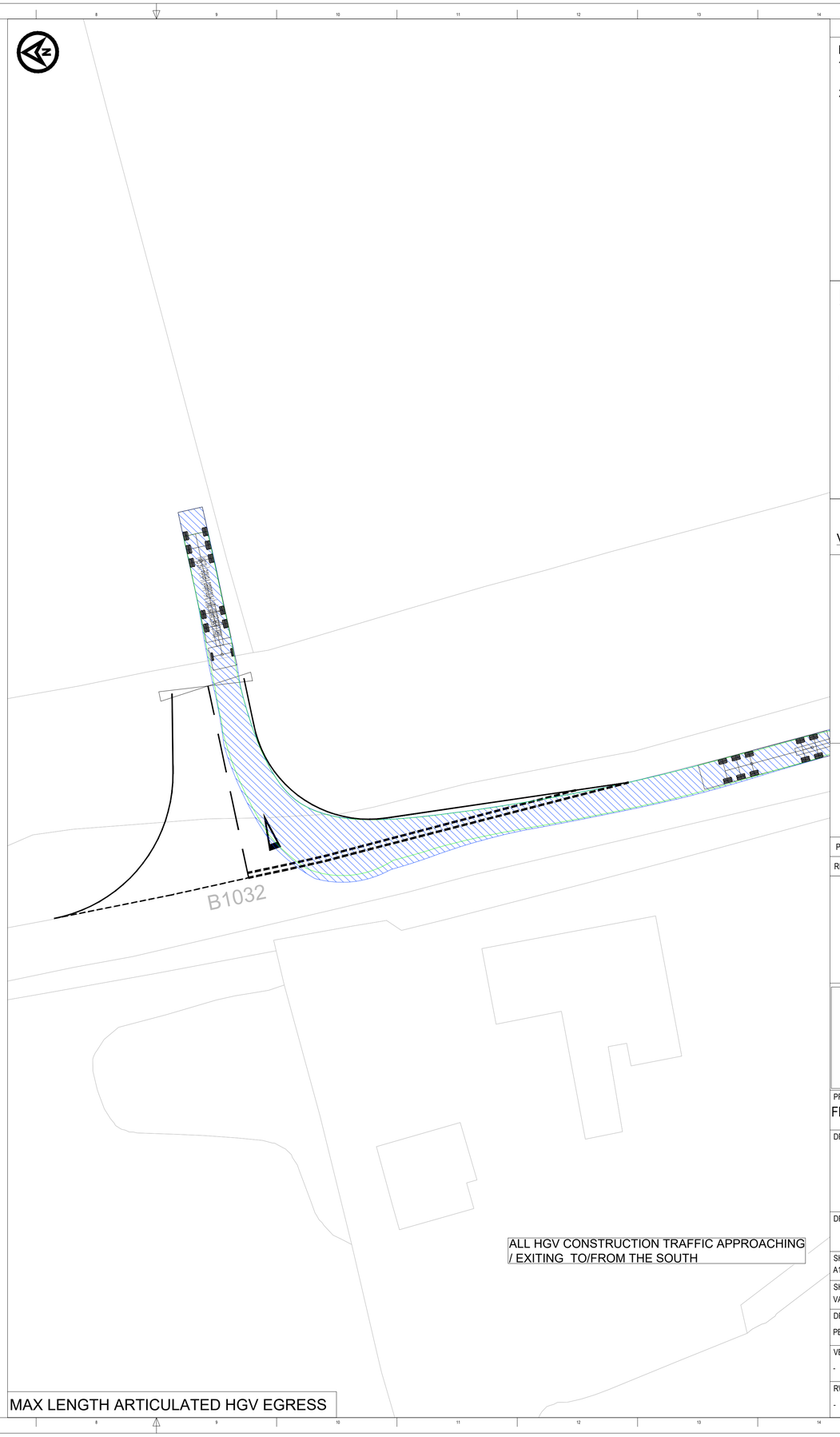


ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH

MAX LENGTH ARTICULATED HGV INGRESS
SCALE - 1:250



ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH

MAX LENGTH ARTICULATED HGV EGRESS

DO NOT SCALE FROM THIS DRAWING

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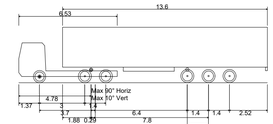
KEY

- EXISTING ARRANGEMENT
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- PROPOSED GATE

VEHICLE TRACKING



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

VEHICLE BODY SWEPT PATH (FORWARD GEAR)
VEHICLE CHASIS SWEPT PATH

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	31/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm

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Enhancing Society Together
Westpoint, Peterborough Business Park, Lynch Wood, Peterborough PE2 6FZ
Tel +44(0)1932 569566
www.royalhaskoningdhv.com

PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC1 - B1032
SWEPT PATH ANALYSIS

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	31/08/2023	31/08/2023	31/08/2023	31/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0021	P01
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
-	1_OF_1 / -

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5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

KEY

- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

AC-1

AC-2

B1032

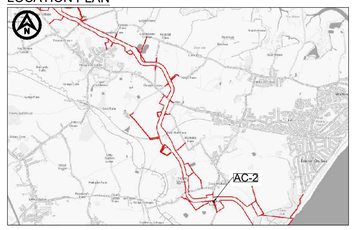
2.4m x 160m

2.4m x 160m

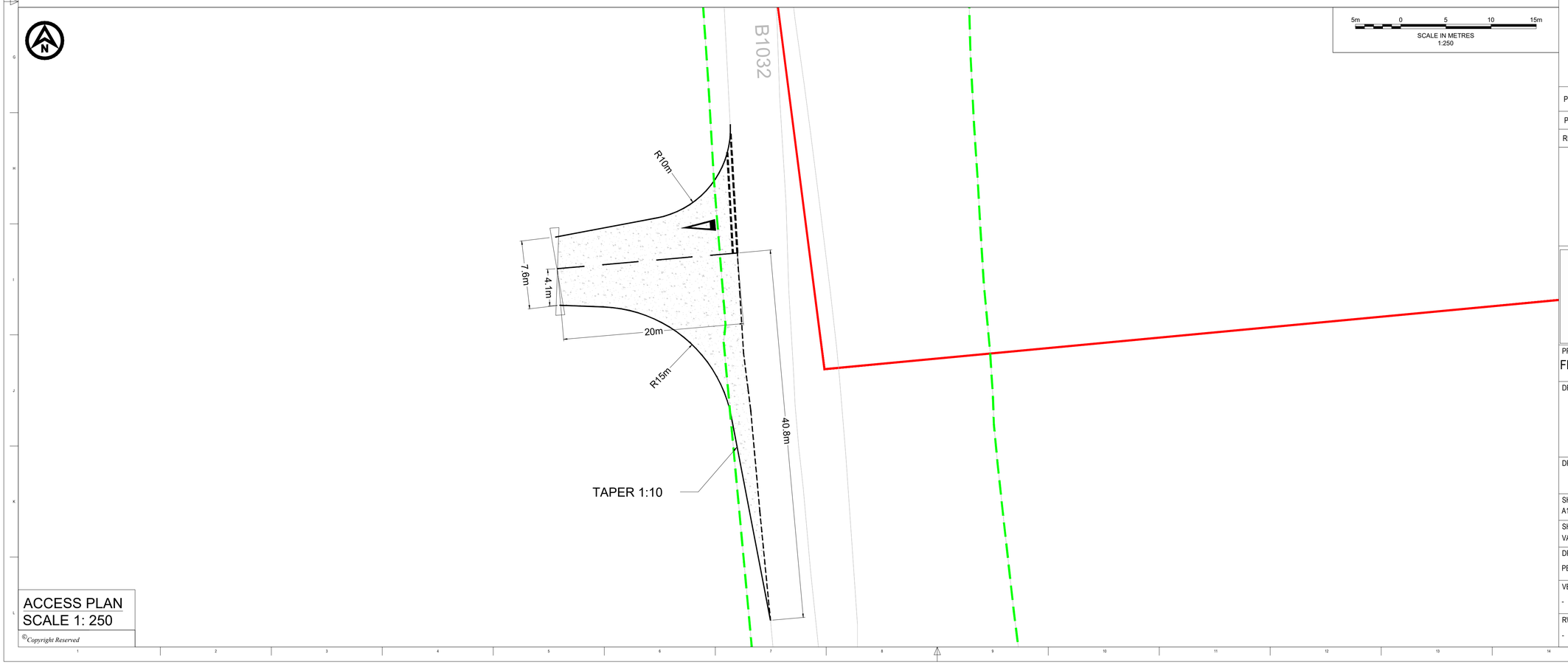
TABLE 1 - VISIBILITY

AC-2	Visibility North	Visibility South
85% of Recorded Speeds (mph) (85RS)	45	
Required Y-distance SSD for PSL (m) (DMRB)	160	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN



VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500



5m 0 5 10 15m
SCALE IN METRES
1:250

ACCESS PLAN
SCALE 1: 250

REV	DATE	DESCRIPTION	BY	CHK	APP
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
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www.royalhaskoningdhv.com

Royal HaskoningDHV
Enhancing Society Together

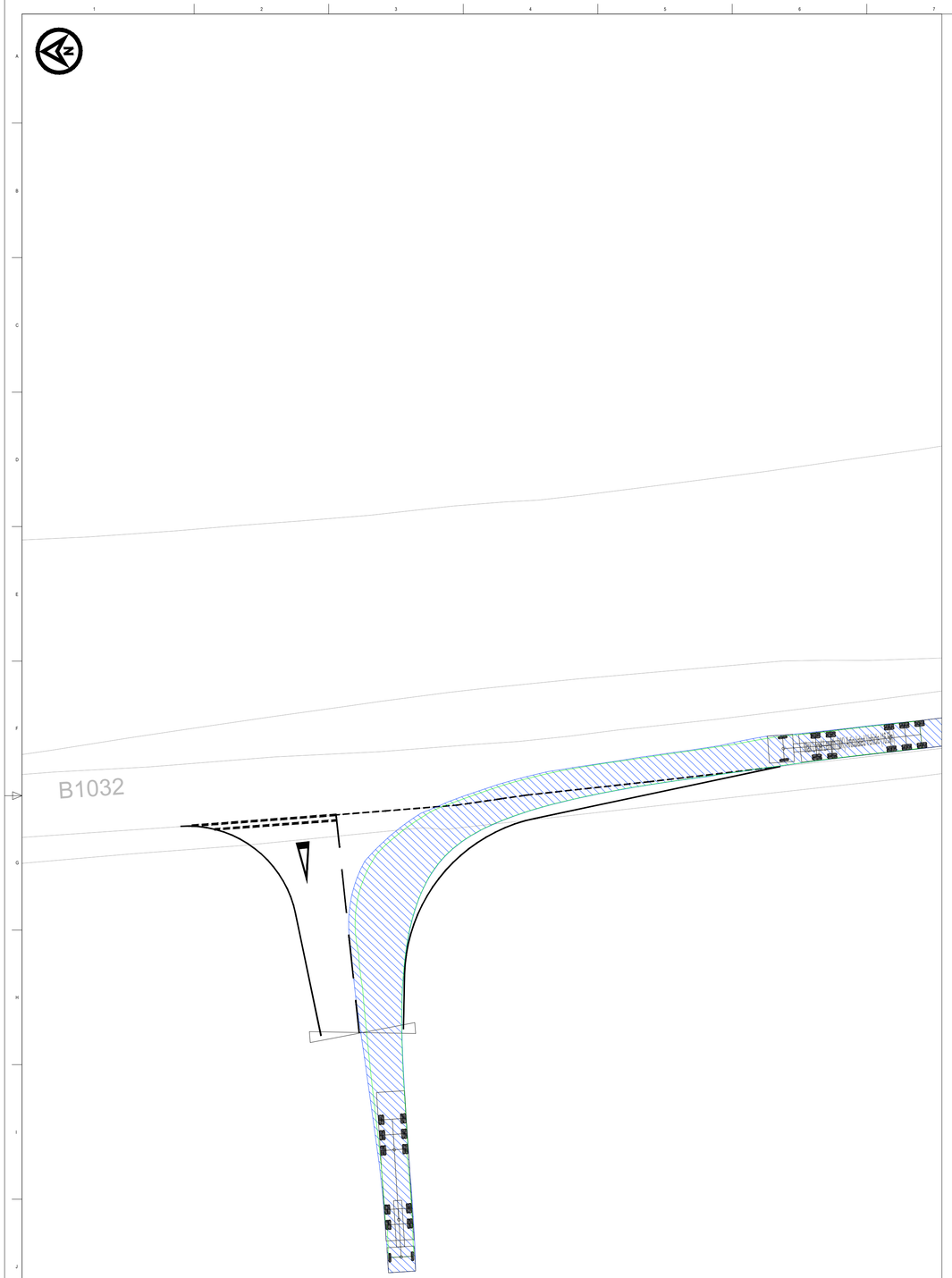
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC-2 - B1032
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

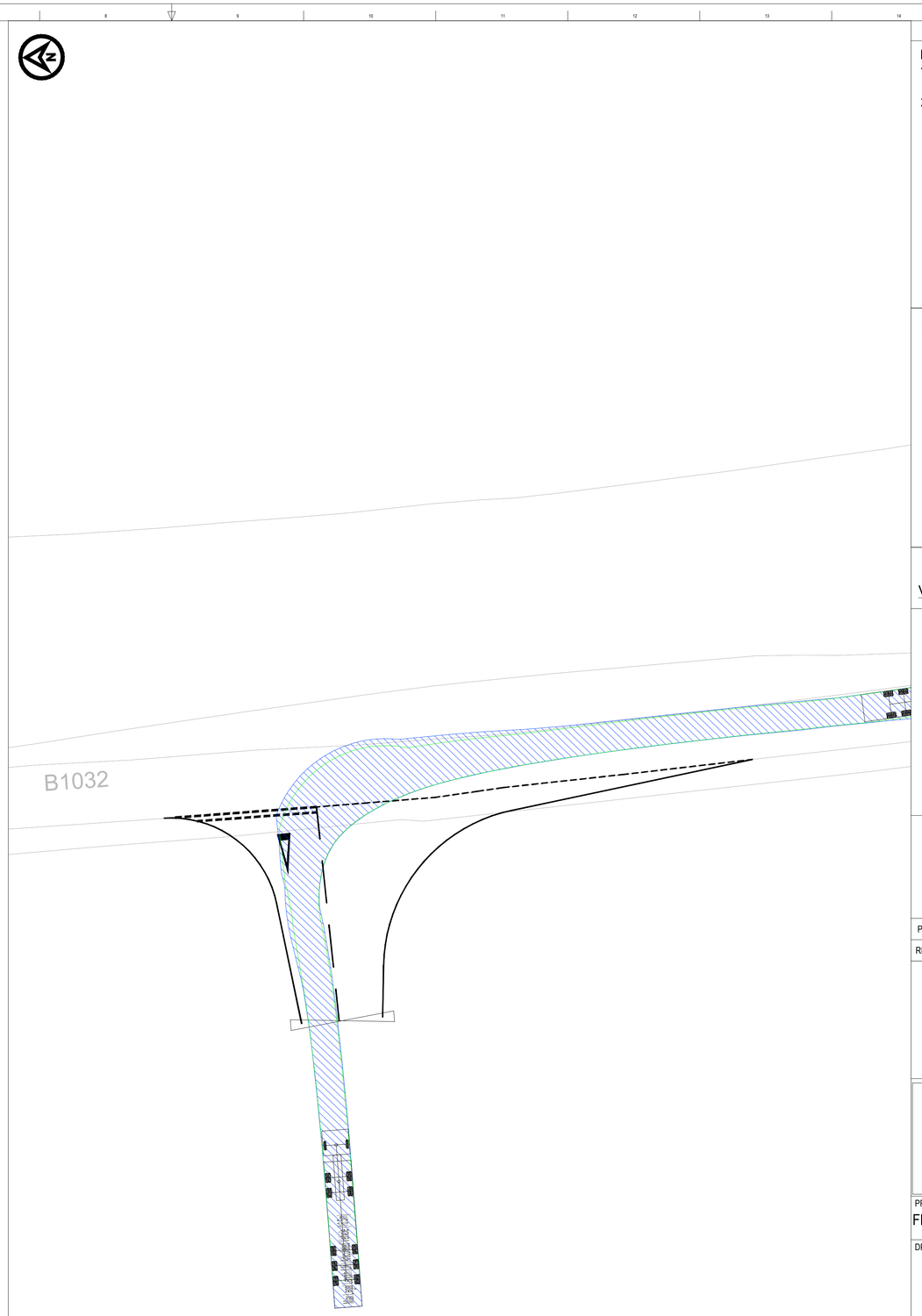
SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0002	P02
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
-	1_OF_1 / -



ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH

MAX LENGTH ARTICULATED HGV INGRESS



ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH

MAX LENGTH ARTICULATED HGV EGRESS

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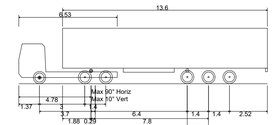
KEY

EXISTING ARRANGEMENT

PROPOSED ACCESS BOUNDARY/ROAD MARKINGS

PROPOSED GATE

VEHICLE TRACKING



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Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

VEHICLE BODY SWEPT PATH (FORWARD GEAR)

VEHICLE CHASIS SWEPT PATH

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	31/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM

NORTH FALLS Offshore Wind Farm

Royal HaskoningDHV
Enhancing Society Together

Westpoint, Peterborough Business Park,
Lynch Wood,
Peterborough PE2 6FZ
Tel +44(0)1932 569566
www.royalhaskoningdhv.com

PROJECT TITLE

FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE

AC-2 - B1032
SWEPT PATH ANALYSIS

DRAWING STATUS

PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	31/08/2023	31/08/2023	31/08/2023	31/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0022	P01
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
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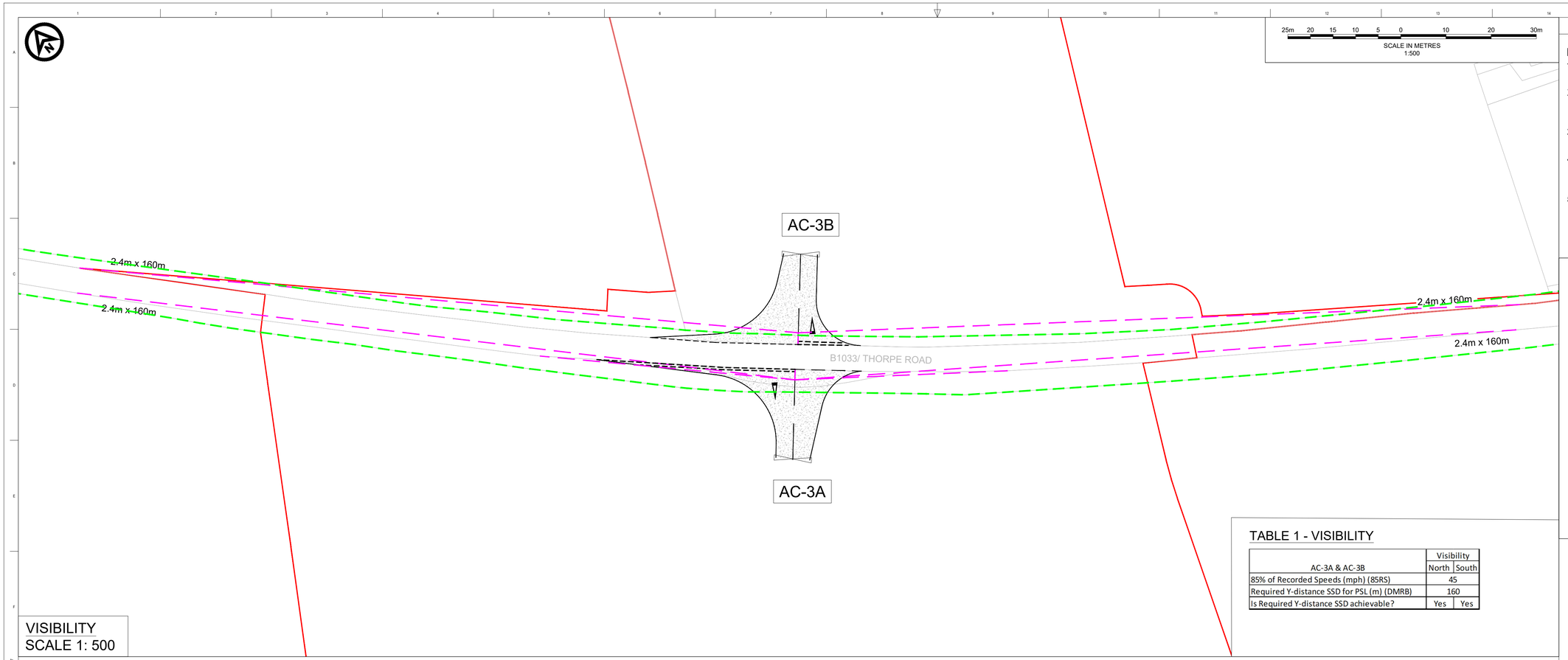
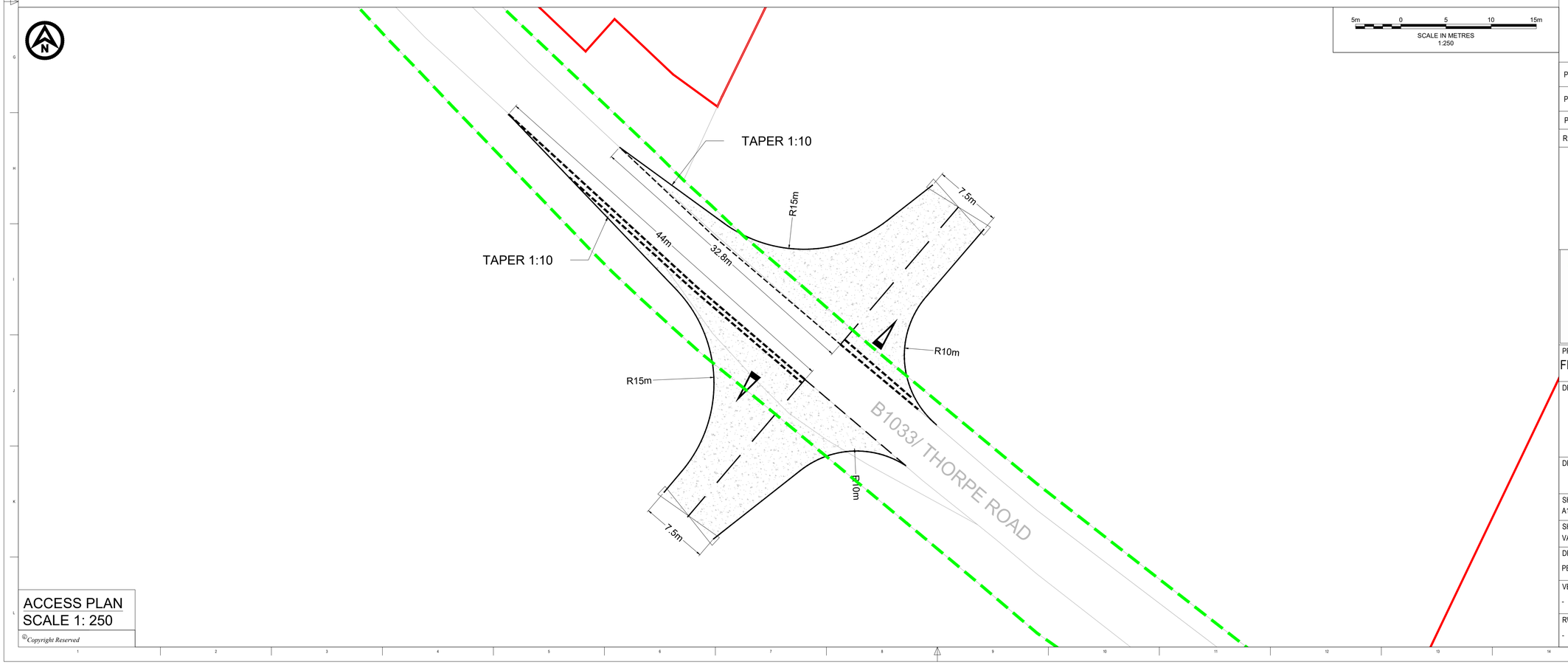


VISIBILITY
SCALE 1: 500



ACCESS PLAN
SCALE 1: 250

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

5m 0 5 10 15m
SCALE IN METRES
1:250

DO NOT SCALE FROM THIS DRAWING

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5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

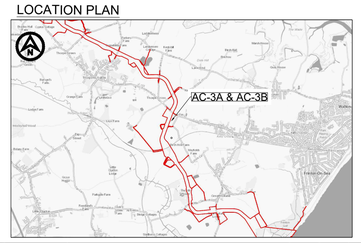
KEY

- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

AC-3A & AC-3B	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	45	
Required Y-distance SSD for PSL (m) (DMRB)	160	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN



REV	DATE	DESCRIPTION	BY	CHK	APP
P03	18/06/2024	UPDATE TO ACCESS NUMBERING	CB	SKT	SKT
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

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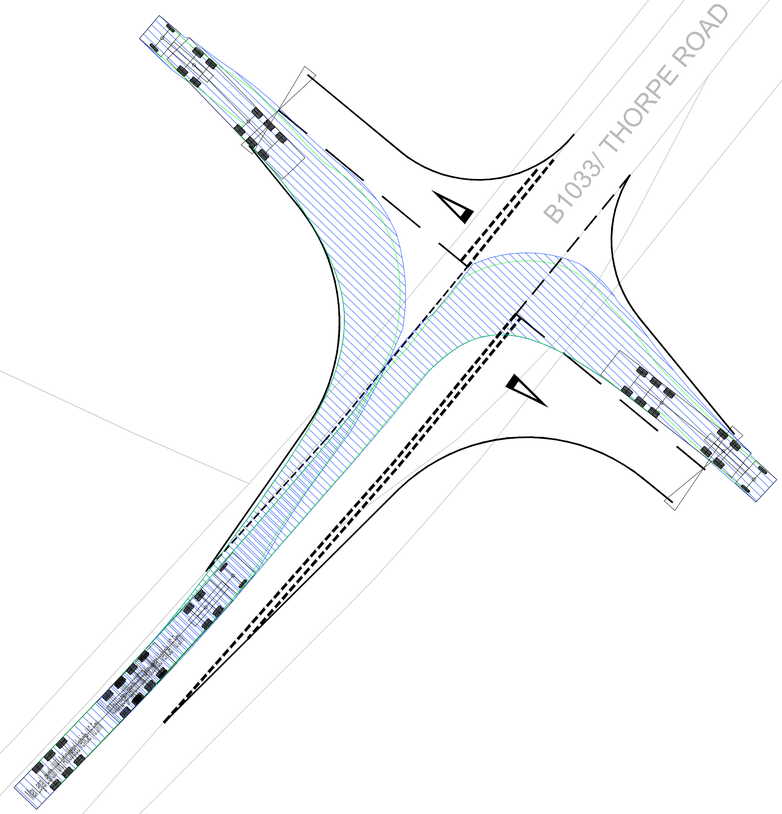
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC-3A & AC-3B - B1033/THORPE ROAD
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

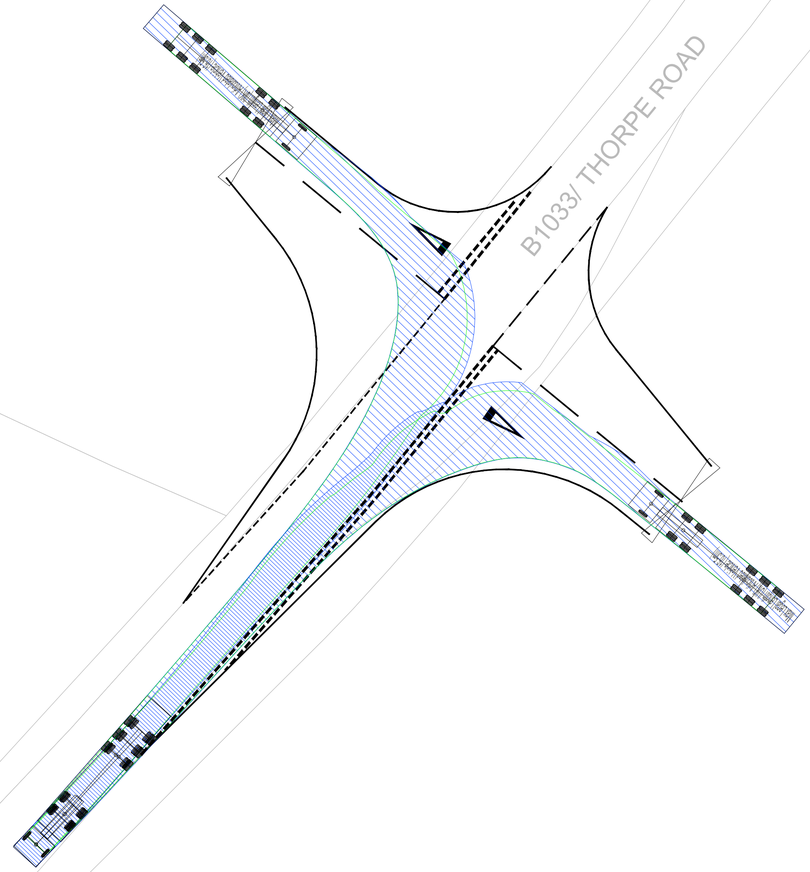
SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0003	P03
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER / SHEET No	REVISION
- / 1_OF_1	-



ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE WEST

MAX LENGTH ARTICULATED HGV INGRESS



ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE WEST

MAX LENGTH ARTICULATED HGV EGRESS

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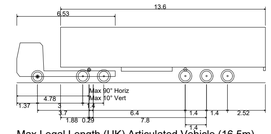
KEY

EXISTING ARRANGEMENT

PROPOSED ACCESS BOUNDARY/ROAD MARKINGS

PROPOSED GATE

VEHICLE TRACKING



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

VEHICLE BODY SWEPT PATH (FORWARD GEAR)

VEHICLE CHASIS SWEPT PATH

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	31/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM

NORTH FALLS Offshore Wind Farm

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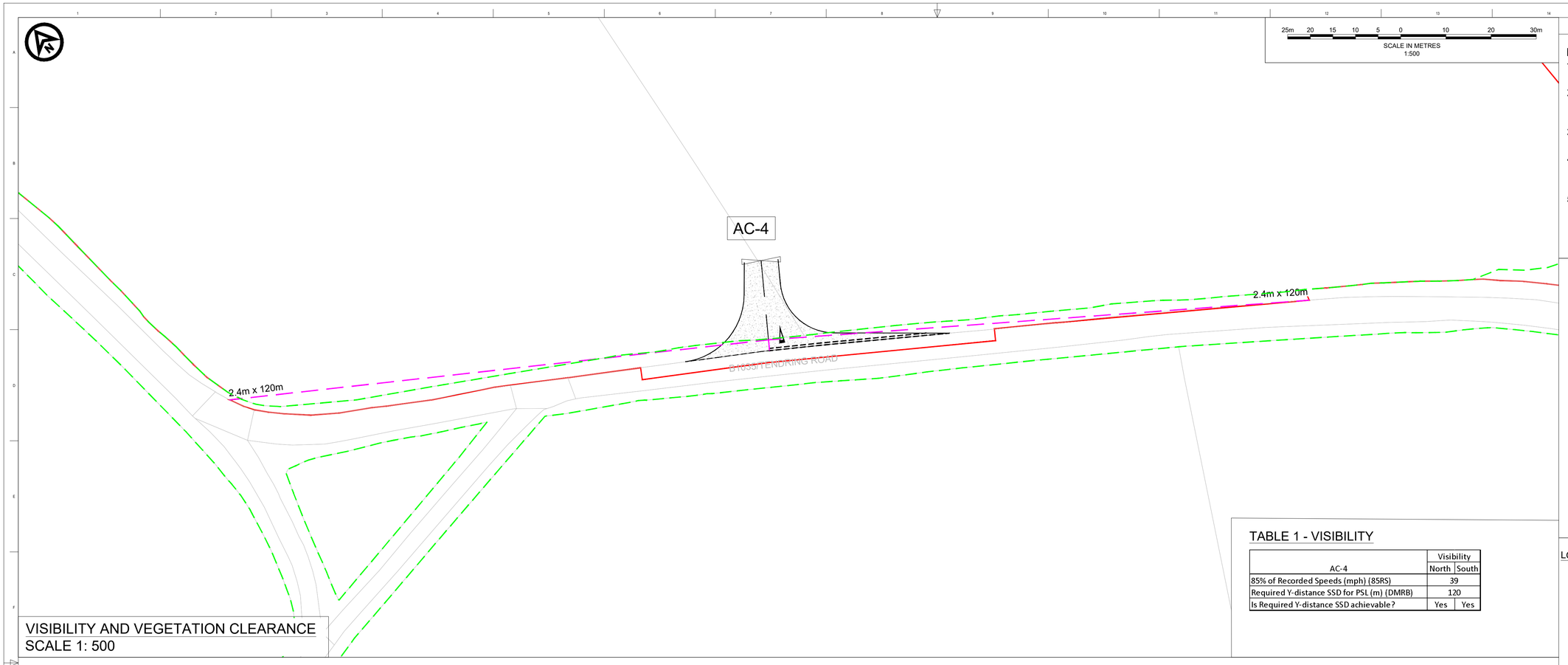
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC-3A & AC-3B - B1033/THORPE ROAD
SWEPT PATH ANALYSIS

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	31/08/2023	31/08/2023	31/08/2023	31/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0023	P01
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
-	1_OF_1 / -



VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

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NOTES
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4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

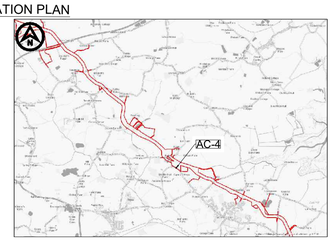
KEY

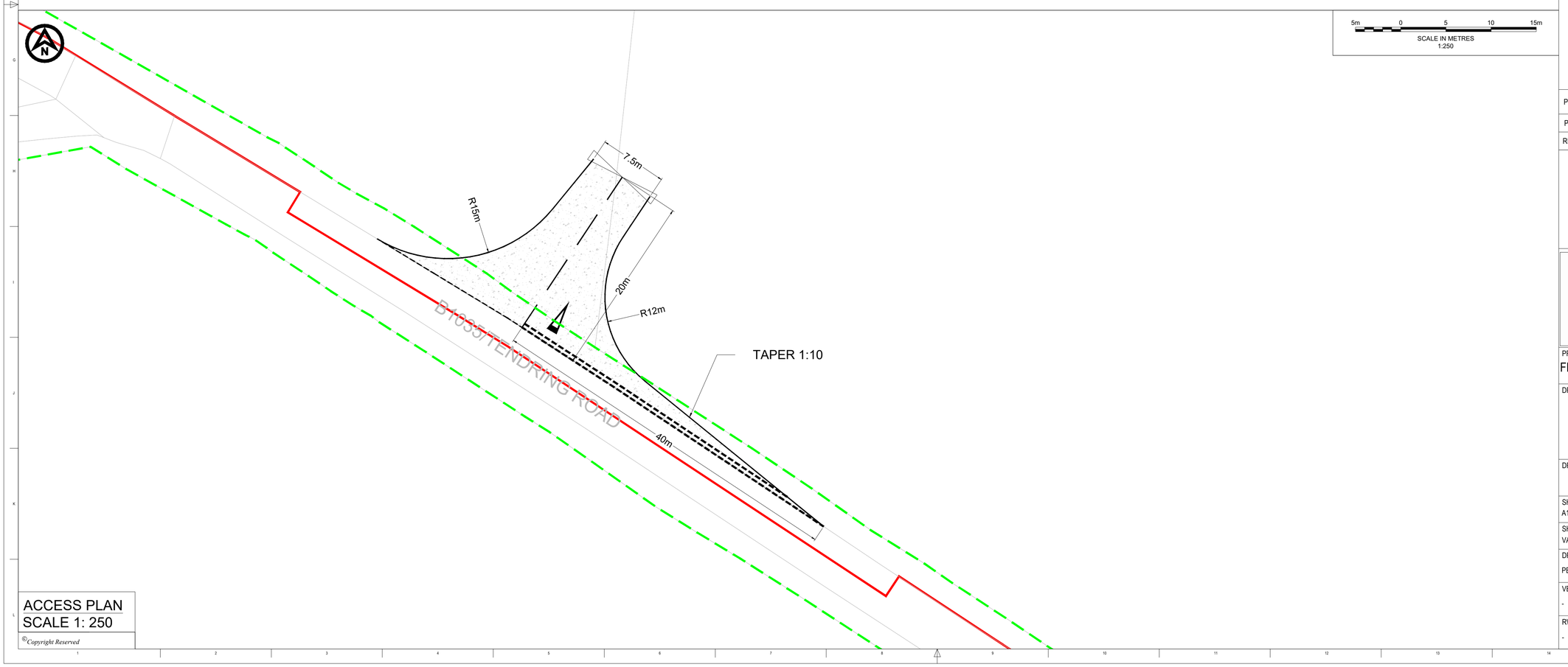
- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

AC-4	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	39	
Required Y-distance SSD for PSL (m) (DMRB)	120	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN





ACCESS PLAN
SCALE 1: 250

5m 0 5 10 15m
SCALE IN METRES
1:250

REV	DATE	DESCRIPTION	BY	CHK	APP
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
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PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC-4 - B1035/TENDRING ROAD
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0004	P02
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
-	1_OF_1 / -

MAX LENGTH ARTICULATED HGV INGRESS

ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE EAST

MAX LENGTH ARTICULATED HGV EGRESS

ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE EAST

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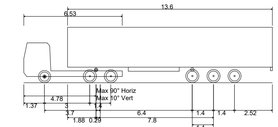
KEY

EXISTING ARRANGEMENT

PROPOSED ACCESS BOUNDARY/ROAD MARKINGS

PROPOSED GATE

VEHICLE TRACKING



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

VEHICLE BODY SWEPT PATH (FORWARD GEAR)

VEHICLE CHASIS SWEPT PATH

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	06/09/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM

NORTH FALLS Offshore Wind Farm

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PROJECT TITLE

FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE

AC-4 - B1035/TENDRING ROAD
SWEPT PATH ANALYSIS

DRAWING STATUS

PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	06/09/2023	06/09/2023	06/09/2023	06/09/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0024	P01
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
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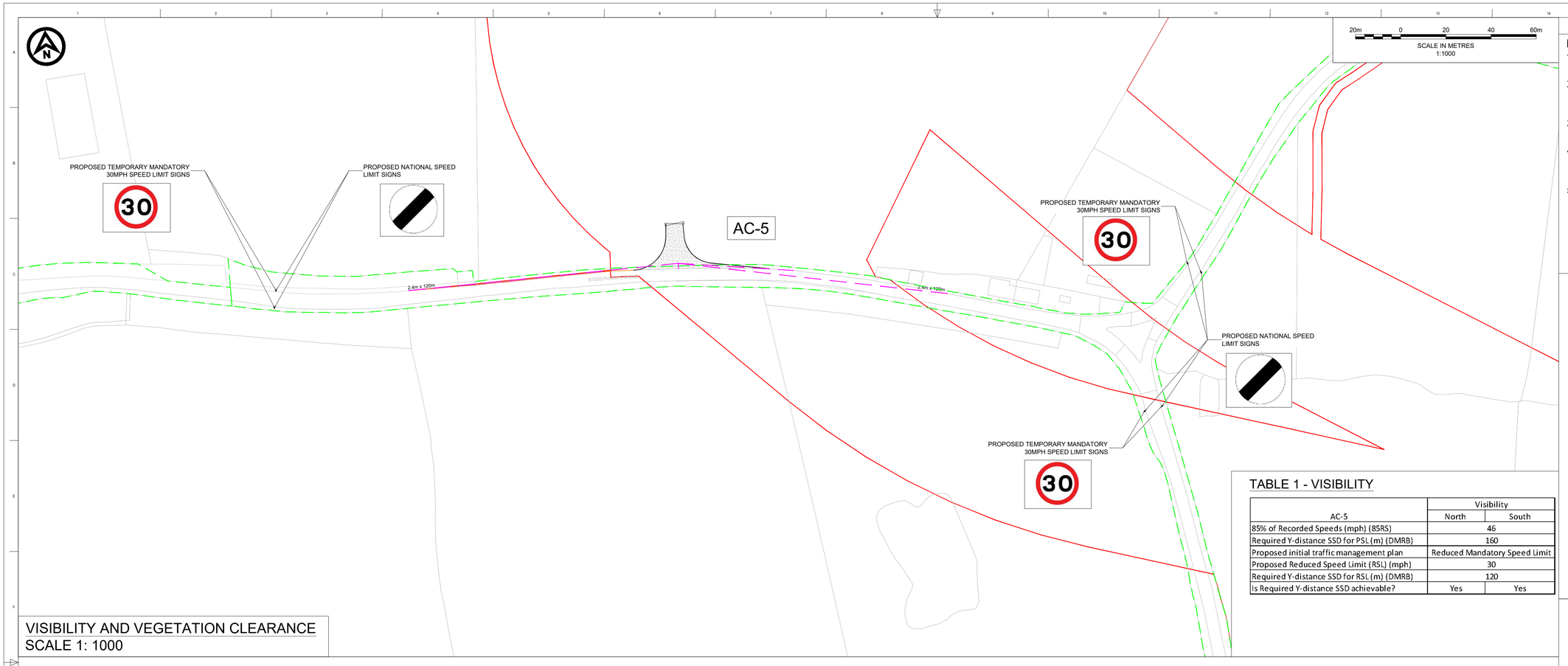
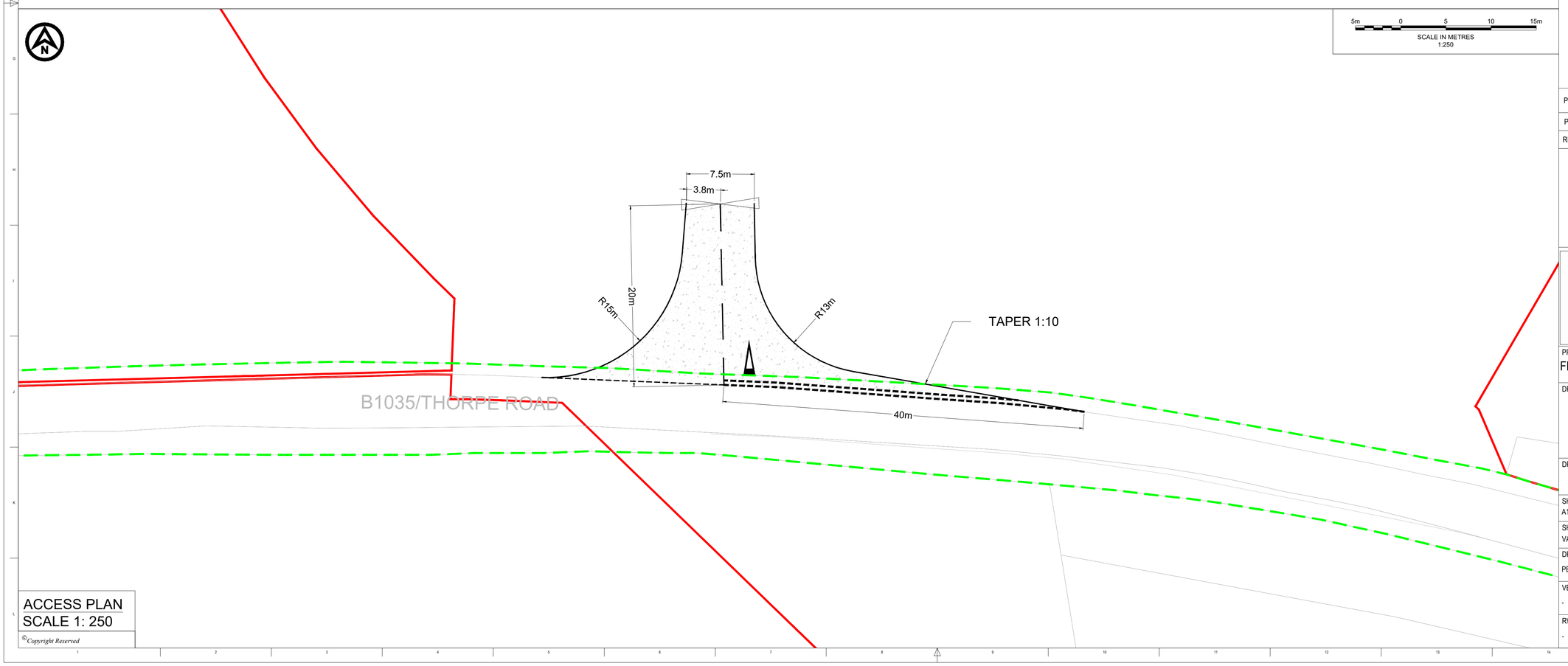


VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 1000

20m 0 20 40 60m
SCALE IN METRES
1:1000



ACCESS PLAN
SCALE 1: 250

5m 0 5 10 15m
SCALE IN METRES
1:250

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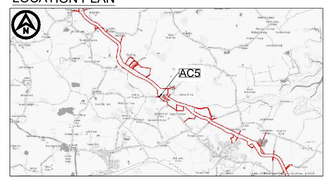
TABLE 1 - VISIBILITY

AC-5	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	46	
Required Y-distance SSD for PSL (m) (DMRB)	160	
Proposed initial traffic management plan	Reduced Mandatory Speed Limit	
Proposed Reduced Speed Limit (RSL) (mph)	30	
Required Y-distance SSD for RSL (m) (DMRB)	120	
Is Required Y-distance SSD achievable?	Yes	Yes

KEY

- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY
- PROPOSED TEMPORARY ROAD SIGN

LOCATION PLAN



REV	DATE	DESCRIPTION	BY	CHK	APP
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
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PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC-5 - B1035/THORPE ROAD
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0005	P02
VE DOCUMENT NUMBER	REVISION
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RWE ECODOC NUMBER	SHEET No	REVISION
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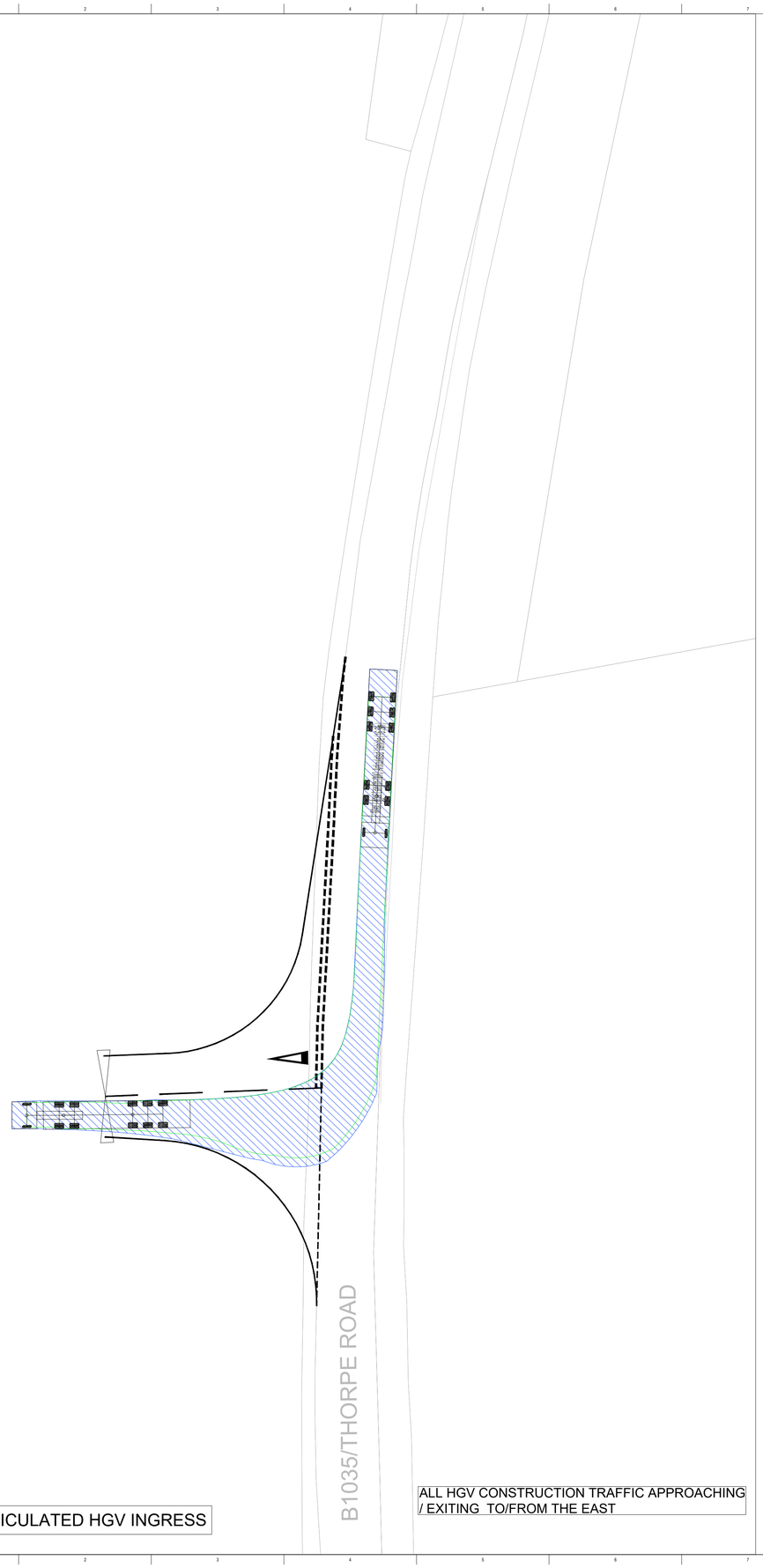
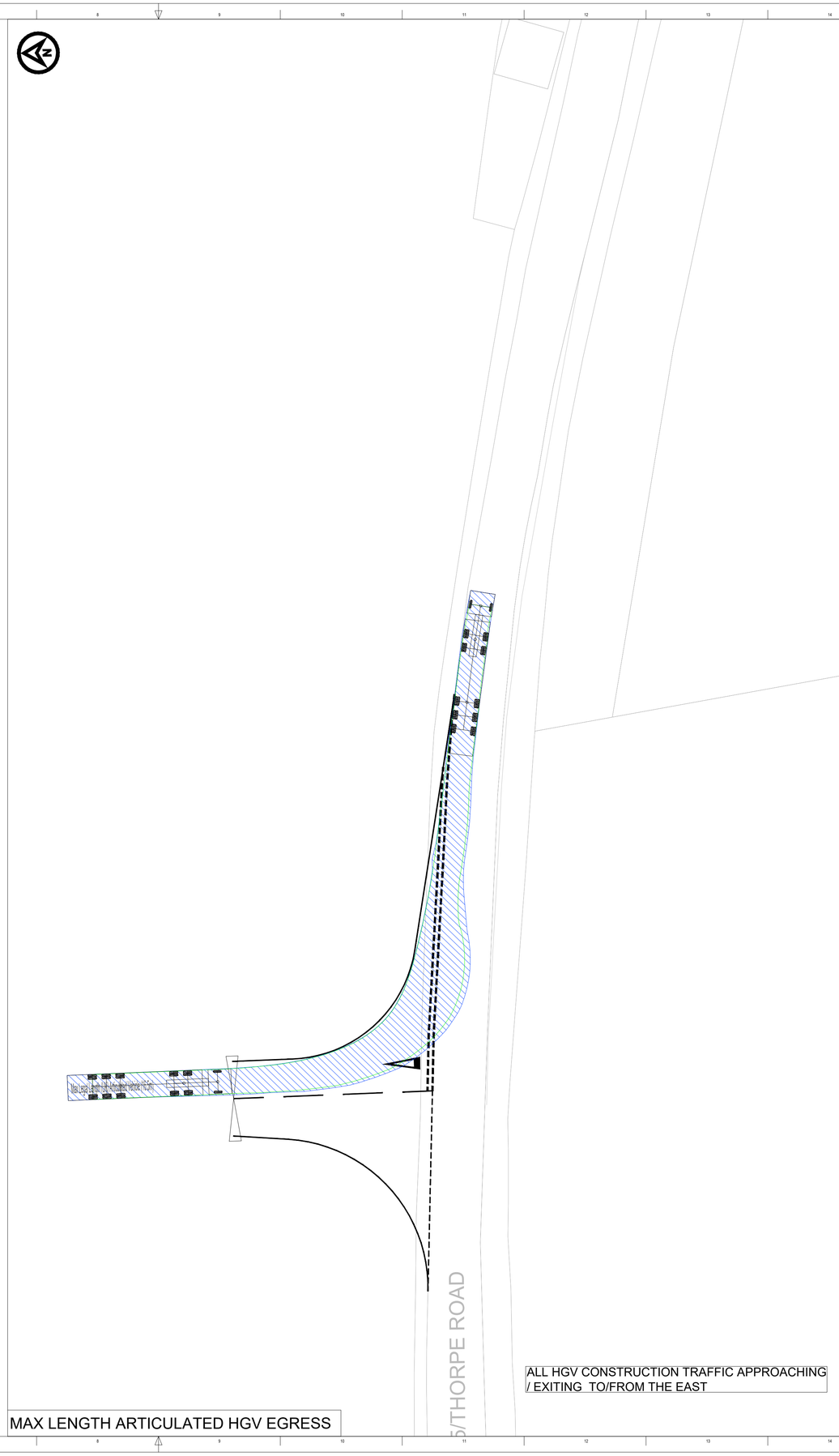


MAX LENGTH ARTICULATED HGV INGRESS

ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE EAST



MAX LENGTH ARTICULATED HGV EGRESS

ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE EAST

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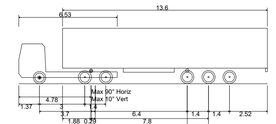
KEY

EXISTING ARRANGEMENT

PROPOSED ACCESS BOUNDARY/ROAD MARKINGS

PROPOSED GATE

VEHICLE TRACKING



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Overall Body Height	3.681m
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Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

VEHICLE BODY SWEPT PATH (FORWARD GEAR)

VEHICLE CHASIS SWEPT PATH

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	06/09/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM

NORTH FALLS Offshore Wind Farm

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PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC-5 - B1035/THORPE ROAD
SWEPT PATH ANALYSIS

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	06/09/2023	06/09/2023	06/09/2023	06/09/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0025	P01
VE DOCUMENT NUMBER	REVISION
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RWE ECODOC NUMBER	SHEET No / REVISION
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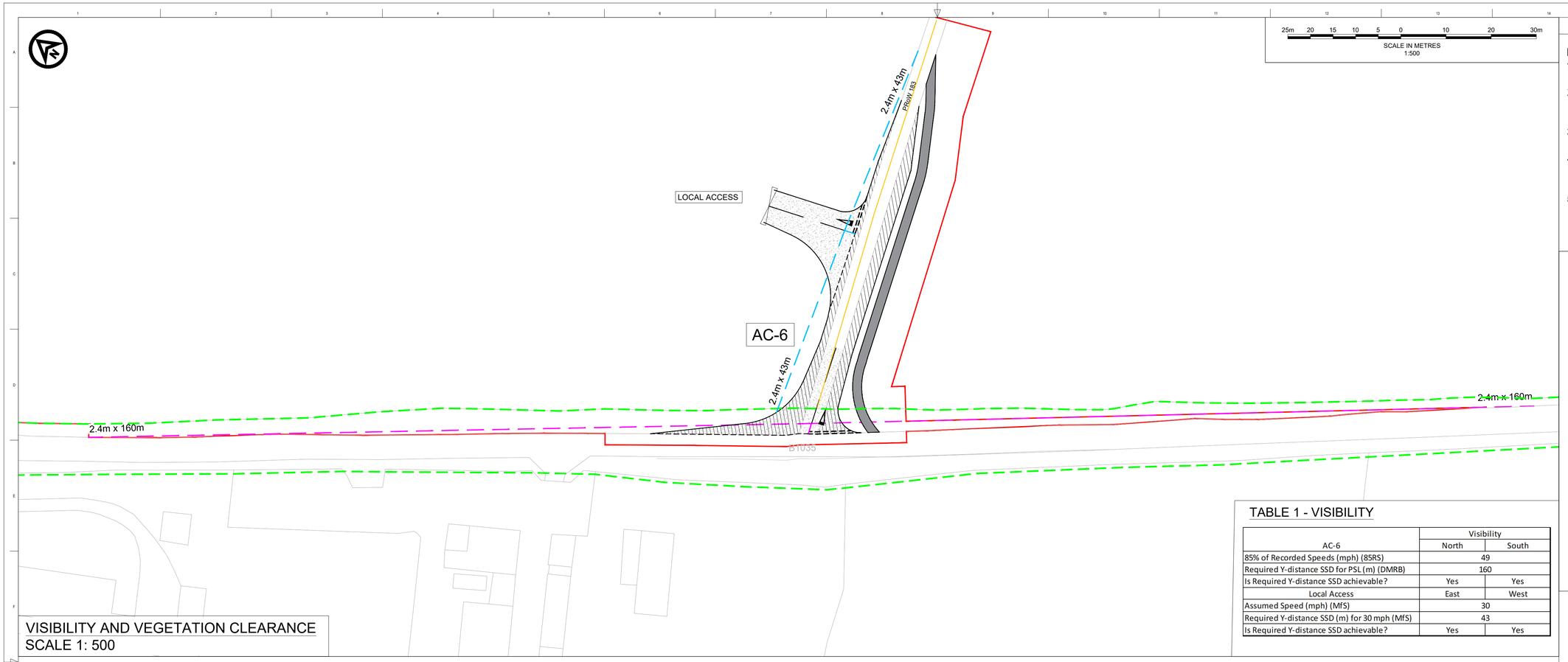

VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

DO NOT SCALE FROM THIS DRAWING

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5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

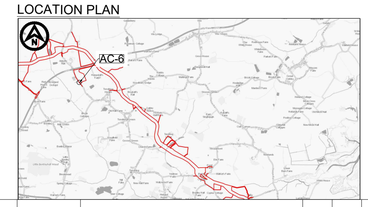
KEY

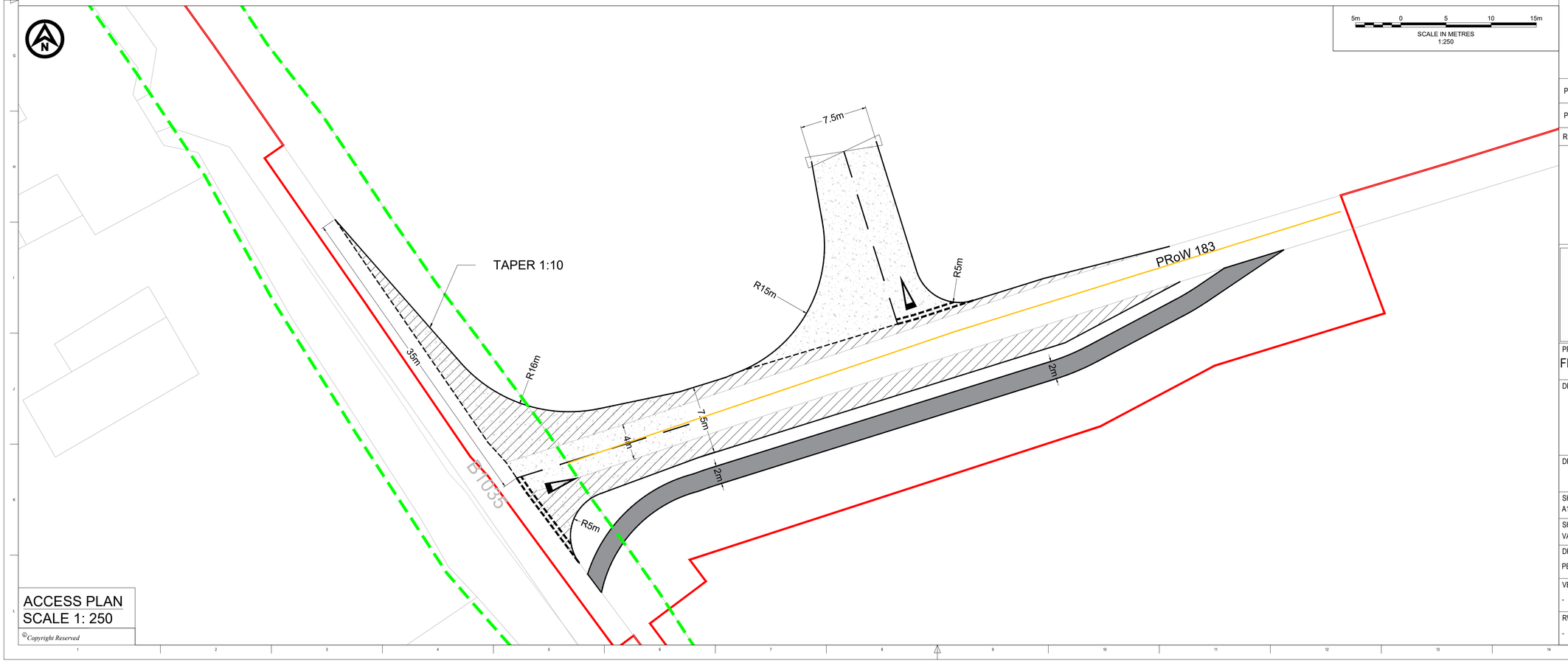
- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- HIGHWAY BOUNDARY
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- DMRB - VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- MfS - VISIBILITY SPLAY FOR ASSUMED LOCAL ACCESS (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- CARRIAGEWAY WIDENING - FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- EXISTING PUBLIC RIGHTS OF WAY
- PROPOSED TEMPORARY OFFROAD PUBLIC RIGHTS OF WAY ROUTE
- PROPOSED GATE

TABLE 1 - VISIBILITY

AC-6	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	49	
Required Y-distance SSD for PSL (m) (DMRB)	160	
Is Required Y-distance SSD achievable?	Yes	Yes
Local Access	East	West
Assumed Speed (mph) (MfS)	30	
Required Y-distance SSD (m) for 30 mph (MfS)	43	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN





5m 0 5 10 15m
SCALE IN METRES
1:250

ACCESS PLAN
SCALE 1: 250

REV	DATE	DESCRIPTION	BY	CHK	APP
P04	18/06/2024	UPDATED ACCESS NUMBERING	CB	SKT	SKT
P03	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT

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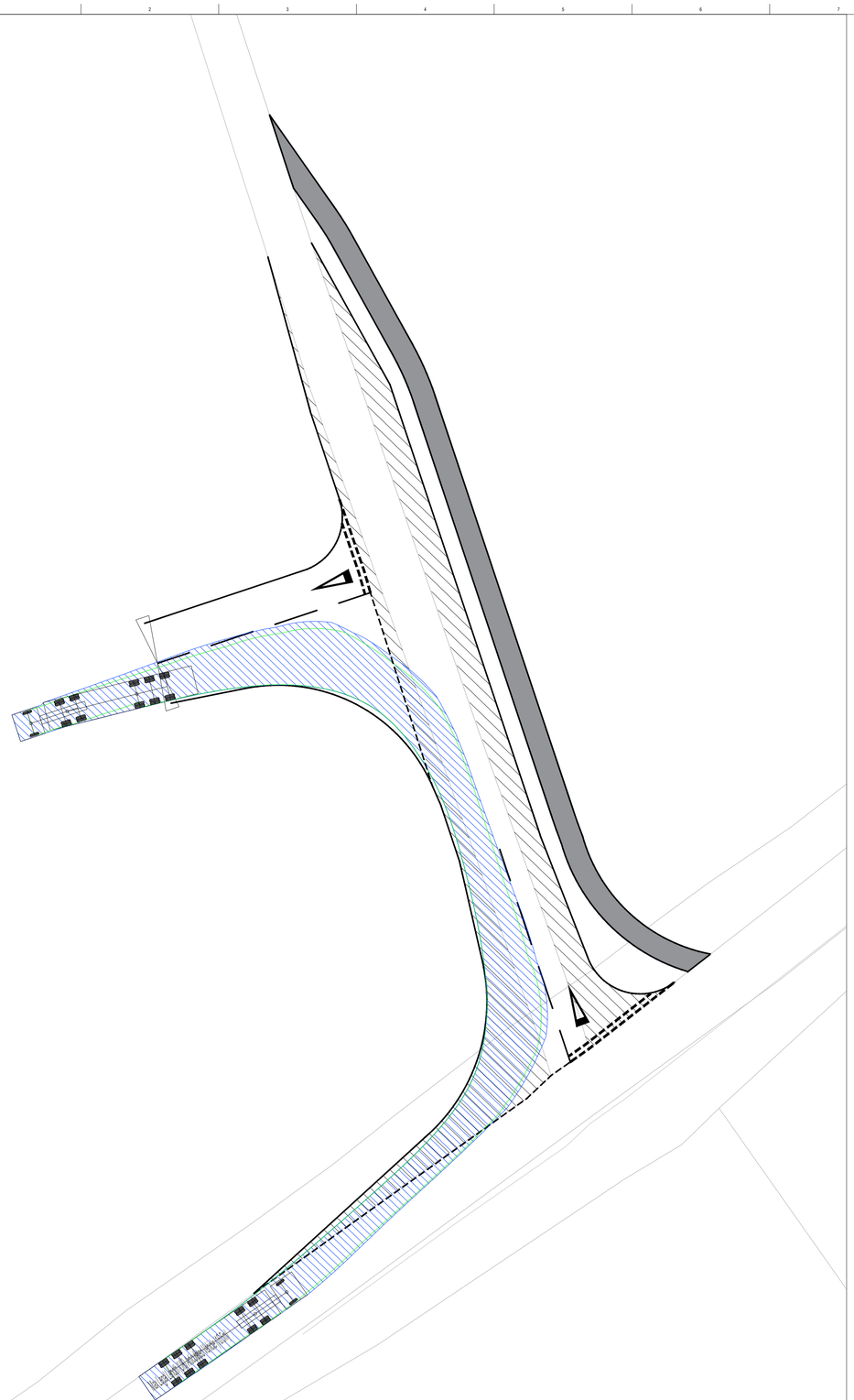
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC-6 - B1035
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

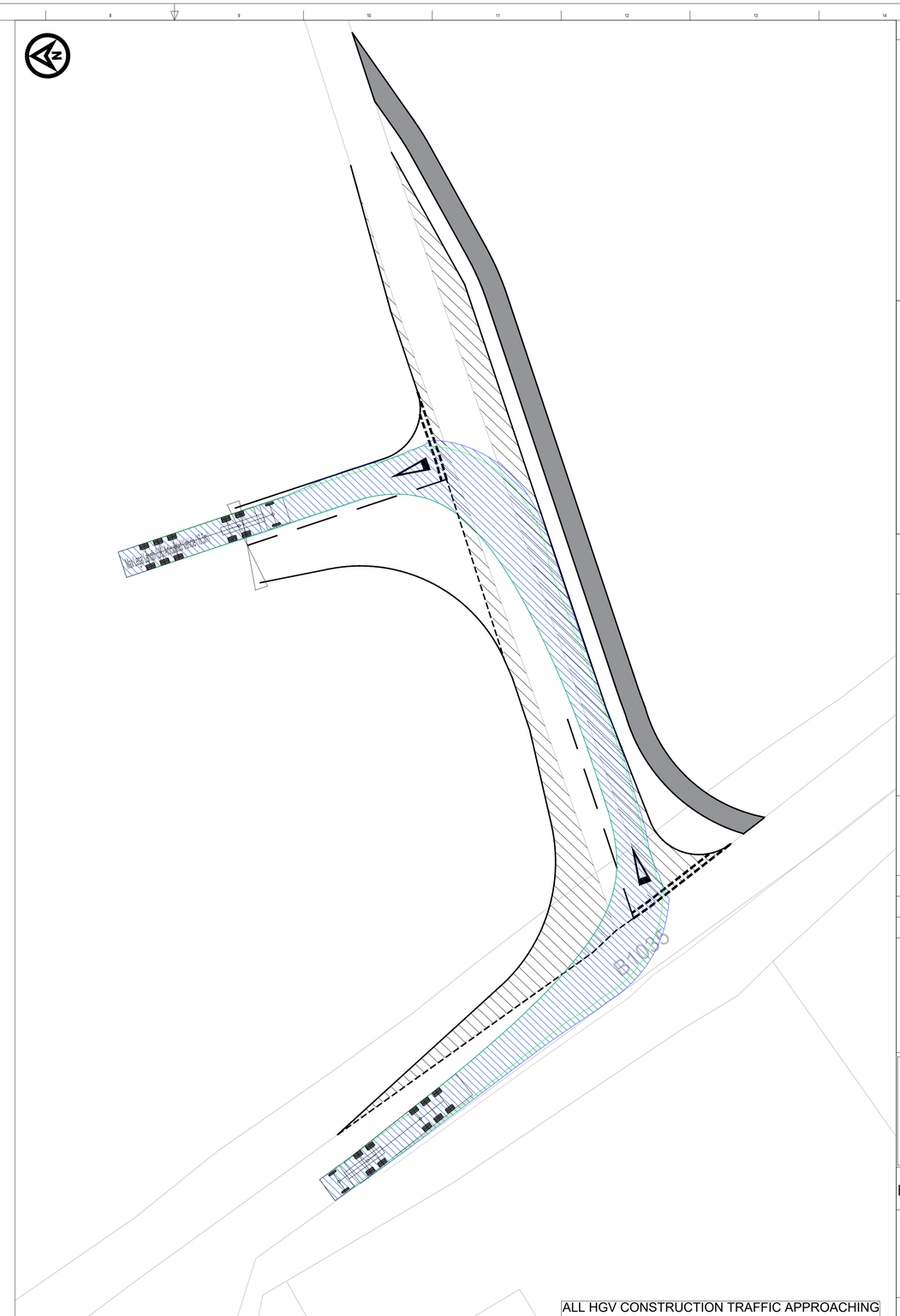
SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0007	P04
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER / SHEET No	REVISION
- / 1_OF_1	-



ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE NORTH

MAX LENGTH ARTICULATED HGV INGRESS



ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE NORTH

MAX LENGTH ARTICULATED HGV EGRESS

DO NOT SCALE FROM THIS DRAWING

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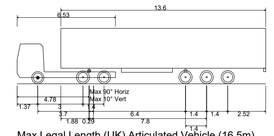
KEY

EXISTING ARRANGEMENT

PROPOSED ACCESS BOUNDARY/ROAD MARKINGS

PROPOSED GATE

VEHICLE TRACKING



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

VEHICLE BODY SWEPT PATH (FORWARD GEAR)

VEHICLE CHASIS SWEPT PATH

REV	DATE	DESCRIPTION	BY	CHK	APP
P02	18/06/2024	UPDATE TO ACCESS NUMBERING	CB	SKT	SKT
P01	06/09/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM

NORTH FALLS Offshore Wind Farm

Royal HaskoningDHV
Enhancing Society Together

Westpoint, Peterborough Business Park,
Lynch Wood,
Peterborough PE2 6FZ
Tel +44(0)1932 569568
www.royalhaskoningdhv.com

PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC-6 - B1035
SWEPT PATH ANALYSIS

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	06/09/2023	06/09/2023	06/09/2023	06/09/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0026	P02
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
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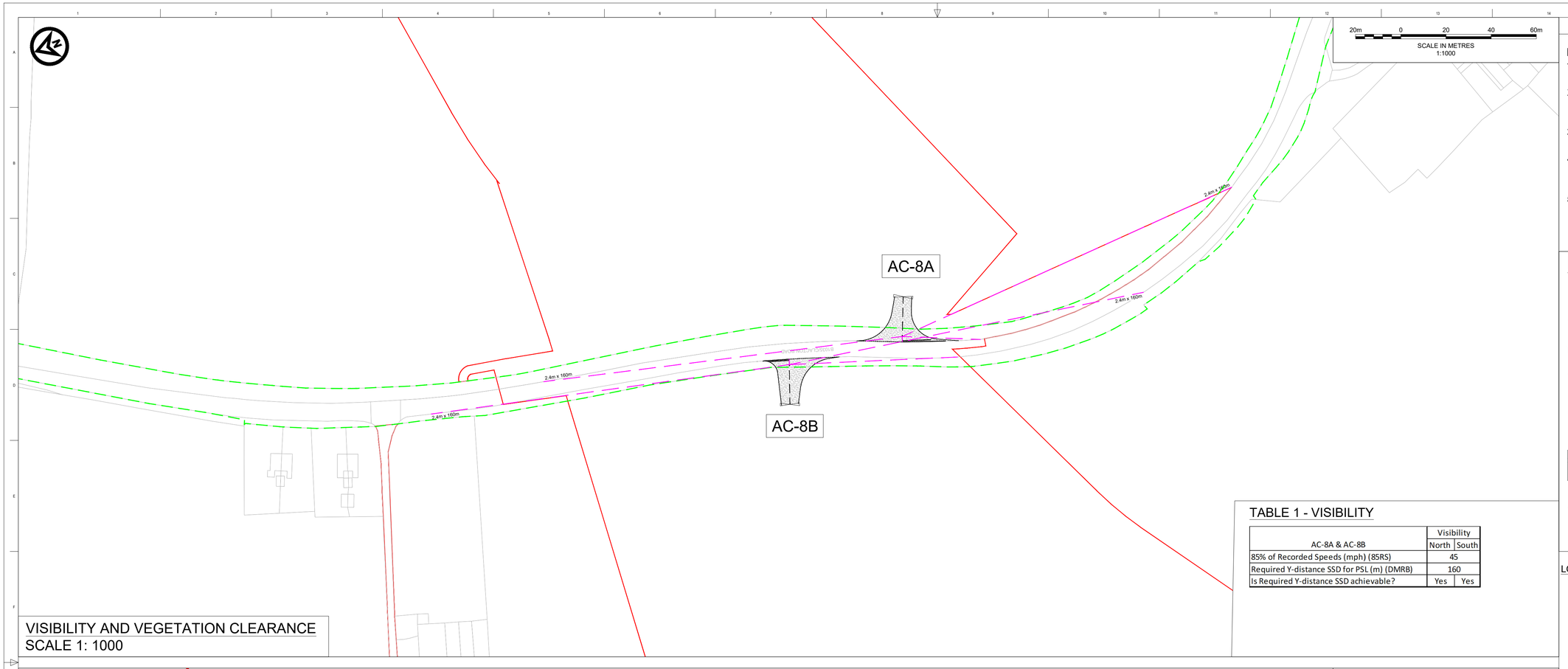
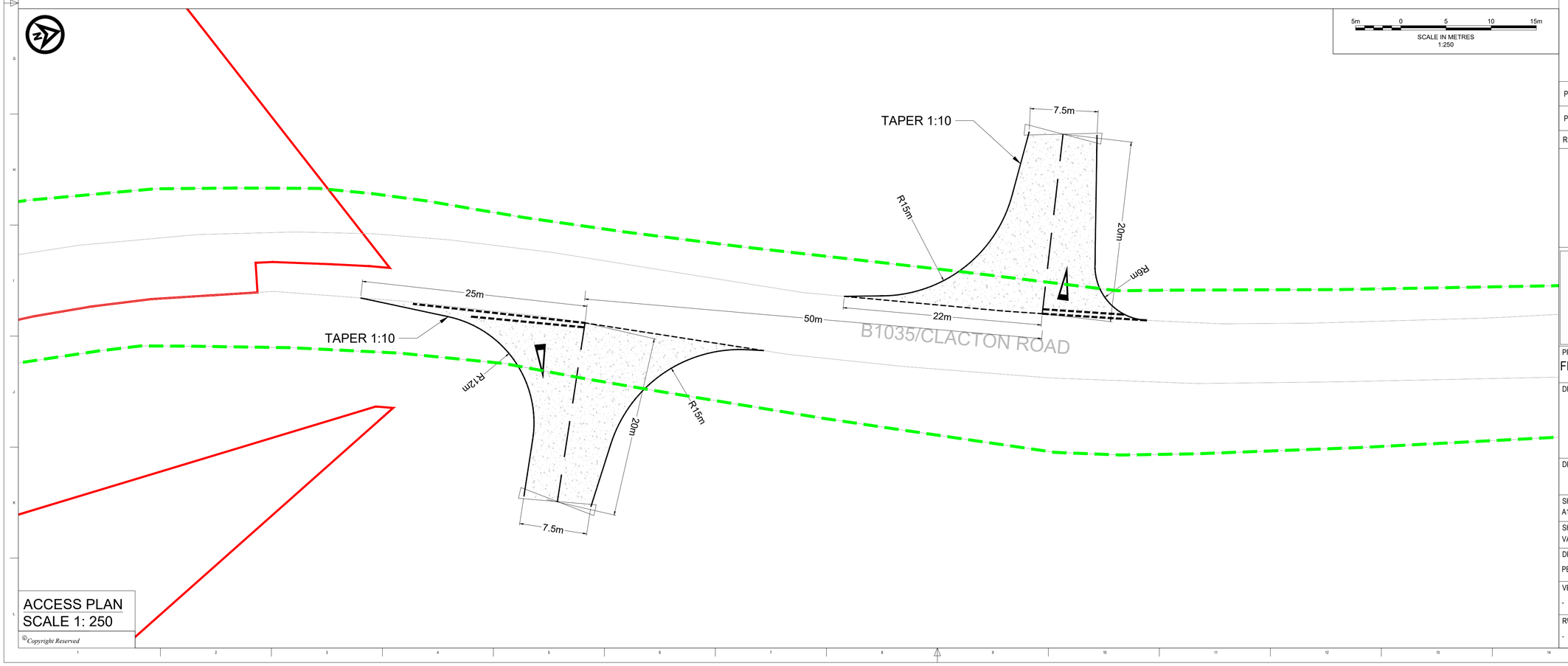


VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 1000



ACCESS PLAN
SCALE 1: 250

DO NOT SCALE FROM THIS DRAWING

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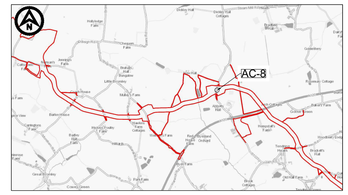
KEY

- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

AC-8A & AC-8B	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	45	
Required Y-distance SSD for PSL (m) (DMRB)	160	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN



REV	DATE	DESCRIPTION	BY	CHK	APP
P03	18/06/2024	UPDATE TO ACCESS NUMBERING	CB	SKT	SKT
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
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www.royalhaskoningdhv.com

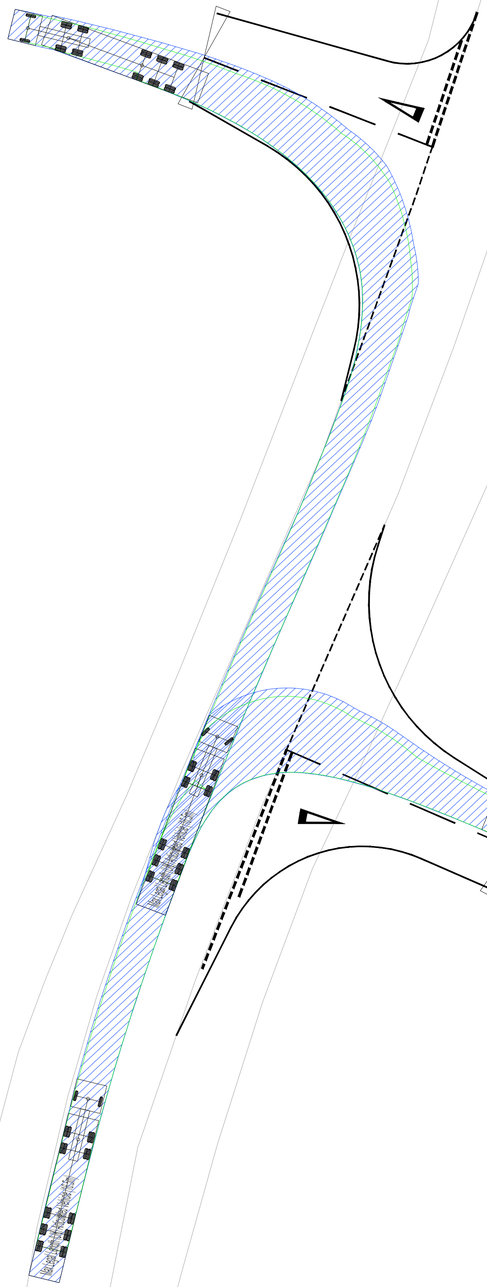
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
AC-8A & AC-8B - B1035/CLACTON ROAD
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0008	P02
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
-	1_OF_1 / -



ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH

MAX LENGTH ARTICULATED HGV INGRESS

ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH

MAX LENGTH ARTICULATED HGV EGRESS

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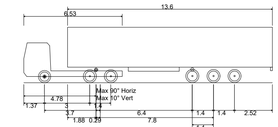
KEY

EXISTING ARRANGEMENT

PROPOSED ACCESS BOUNDARY/ROAD MARKINGS

PROPOSED GATE

VEHICLE TRACKING



Max Legal Length (UK) Articulated Vehicle (16.5m)

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Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

VEHICLE BODY SWEPT PATH (FORWARD GEAR)

VEHICLE CHASIS SWEPT PATH

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	06/09/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM

NORTH FALLS Offshore Wind Farm

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Enhancing Society Together

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PROJECT TITLE

FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE

AC-8A & AC-8B - B1035/CLACTON ROAD SWEPT PATH ANALYSIS

DRAWING STATUS

PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	06/09/2023	06/09/2023	06/09/2023	06/09/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0027	P01
VE DOCUMENT NUMBER	REVISION
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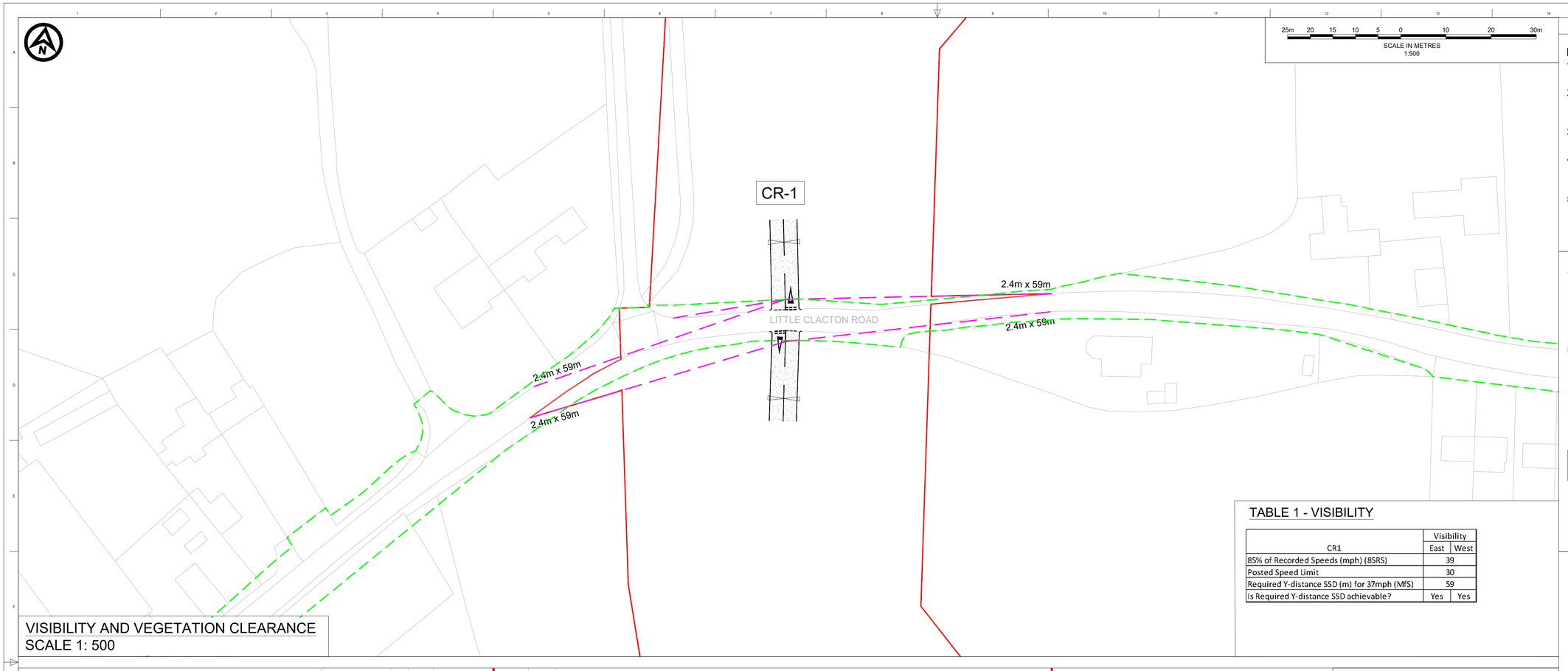
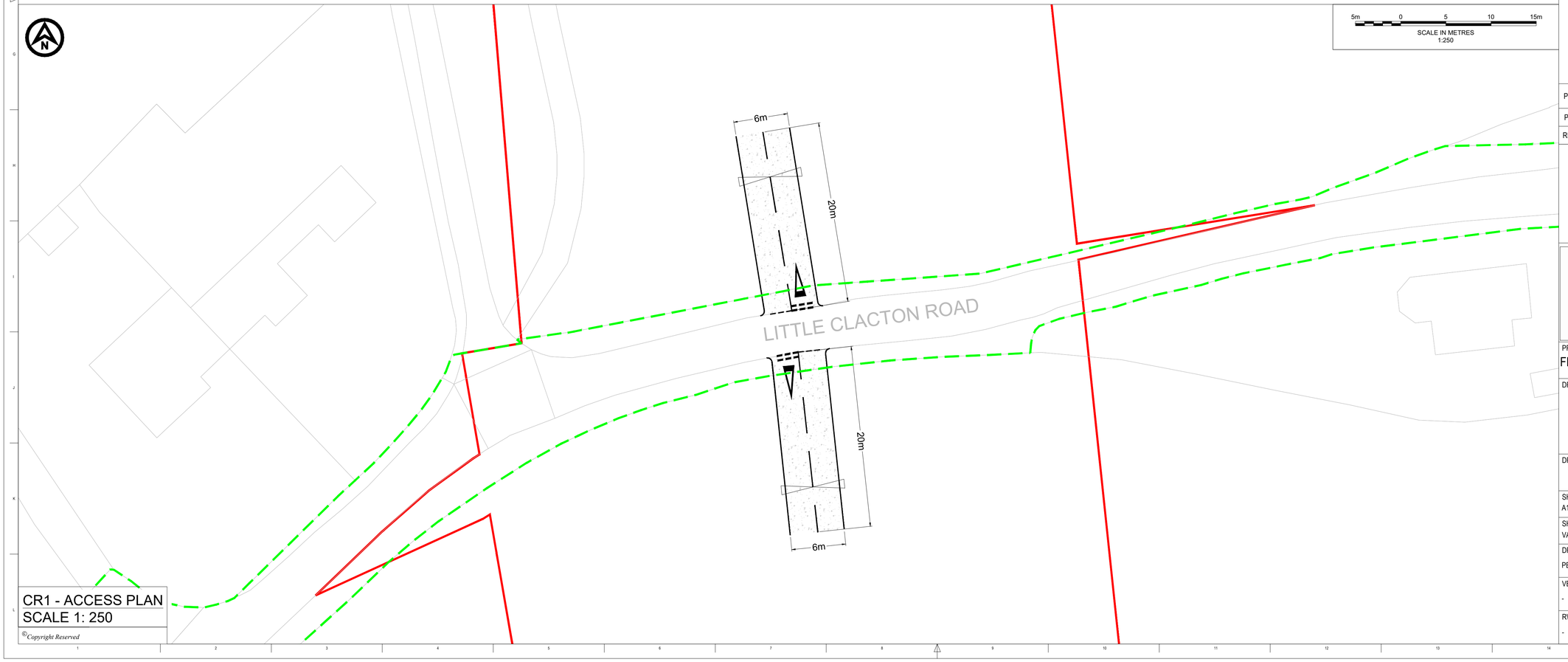
RWE ECODOC NUMBER	SHEET No / REVISION
-	1_OF_1 / -



25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500



5m 0 5 10 15m
SCALE IN METRES
1:250

CR1 - ACCESS PLAN
SCALE 1: 250

DO NOT SCALE FROM THIS DRAWING

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4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

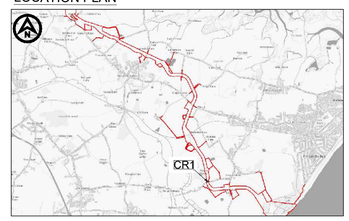
KEY

- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

CR1	Visibility East	Visibility West
85% of Recorded Speeds (mph) (85RS)	39	
Posted Speed Limit	30	
Required Y-distance SSD (m) for 37mph (MfS)	59	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN



REV	DATE	DESCRIPTION	BY	CHK	APP
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm

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Enhancing Society Together
Westpoint, Peterborough Business Park, Lynch Wood, Peterborough PE2 6FZ
Tel +44(0)1932 569566
www.royalhaskoningdhv.com

PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR-1 - LITTLE CLACTON ROAD
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0016	P02
VE DOCUMENT NUMBER	REVISION
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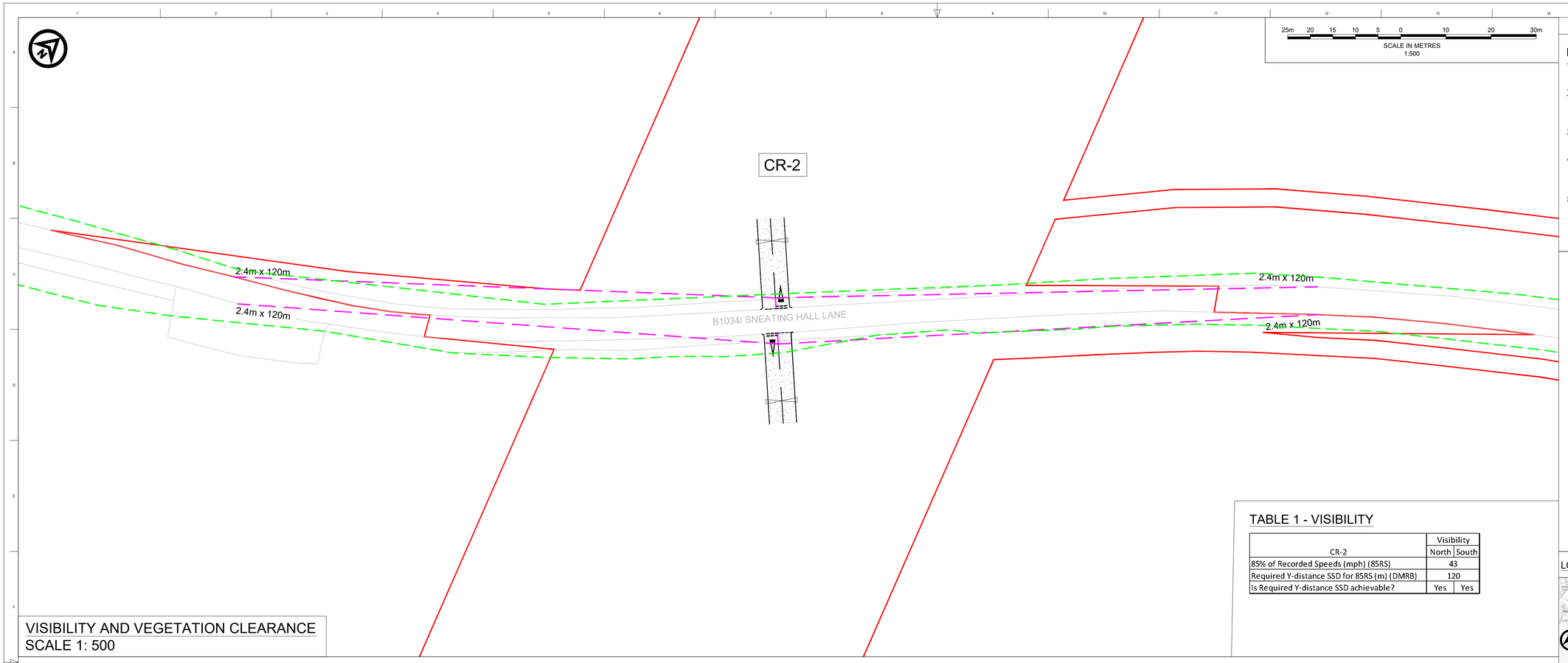
RWE ECODOC NUMBER	SHEET No / REVISION
-	1_OF_1 / -



VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

DO NOT SCALE FROM THIS DRAWING

NOTES
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5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

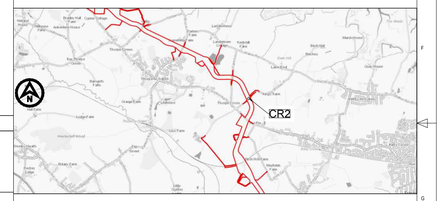
KEY

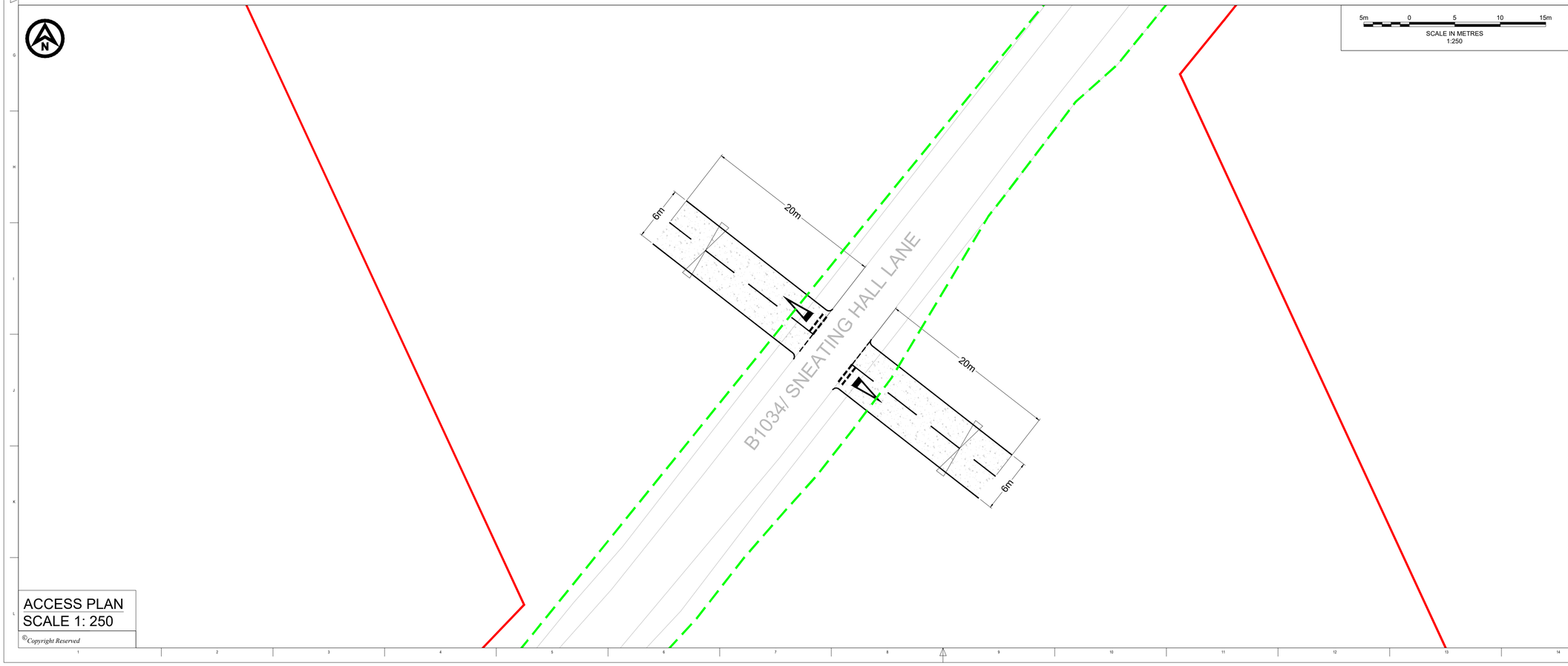
- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

CR-2	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	43	
Required Y-distance SSD for 85RS (m) (DMRB)	120	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN





ACCESS PLAN
SCALE 1: 250

5m 0 5 10 15m
SCALE IN METRES
1:250

REV	DATE	DESCRIPTION	BY	CHK	APP
P03	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P02	09/01/2024	UPDATE TO CROSSING NUMBERING	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm

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PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR2 - B1034/ SNEATING HALL LANE
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0009	P03
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER / SHEET No	REVISION
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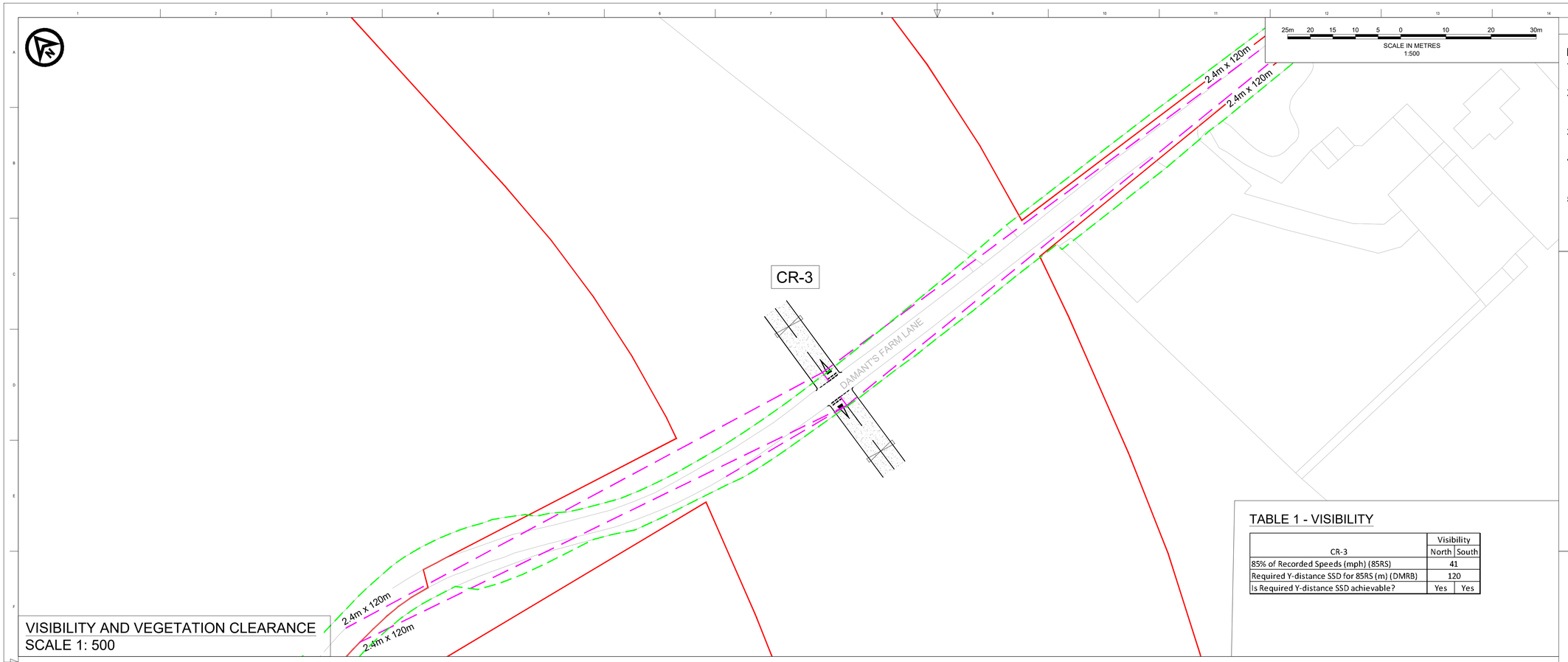
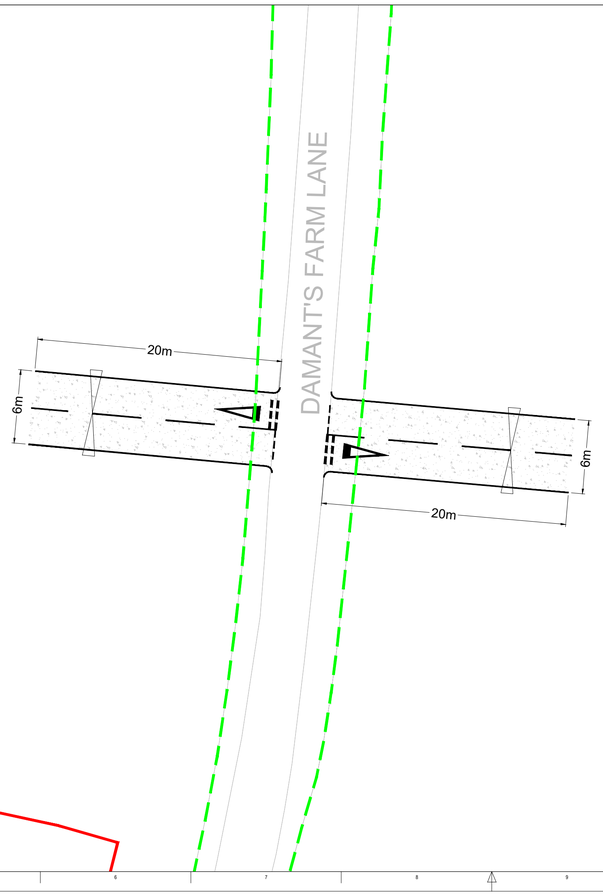


VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500



ACCESS PLAN
SCALE 1: 250

5m 0 5 10 15m
SCALE IN METRES
1:250

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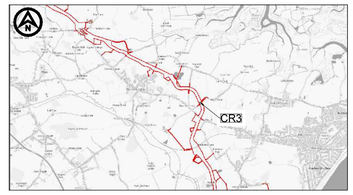
KEY

- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

CR-3	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	41	
Required Y-distance SSD for 85RS (m) (DMRB)	120	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN



REV	DATE	DESCRIPTION	BY	CHK	APP
P03	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P02	09/01/2024	UPDATE TO CROSSING NUMBERING	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
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PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR-3 - DAMANT'S FARM LANE
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0010	P03
VE DOCUMENT NUMBER	REVISION
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RWE ECODOC NUMBER / SHEET No	REVISION
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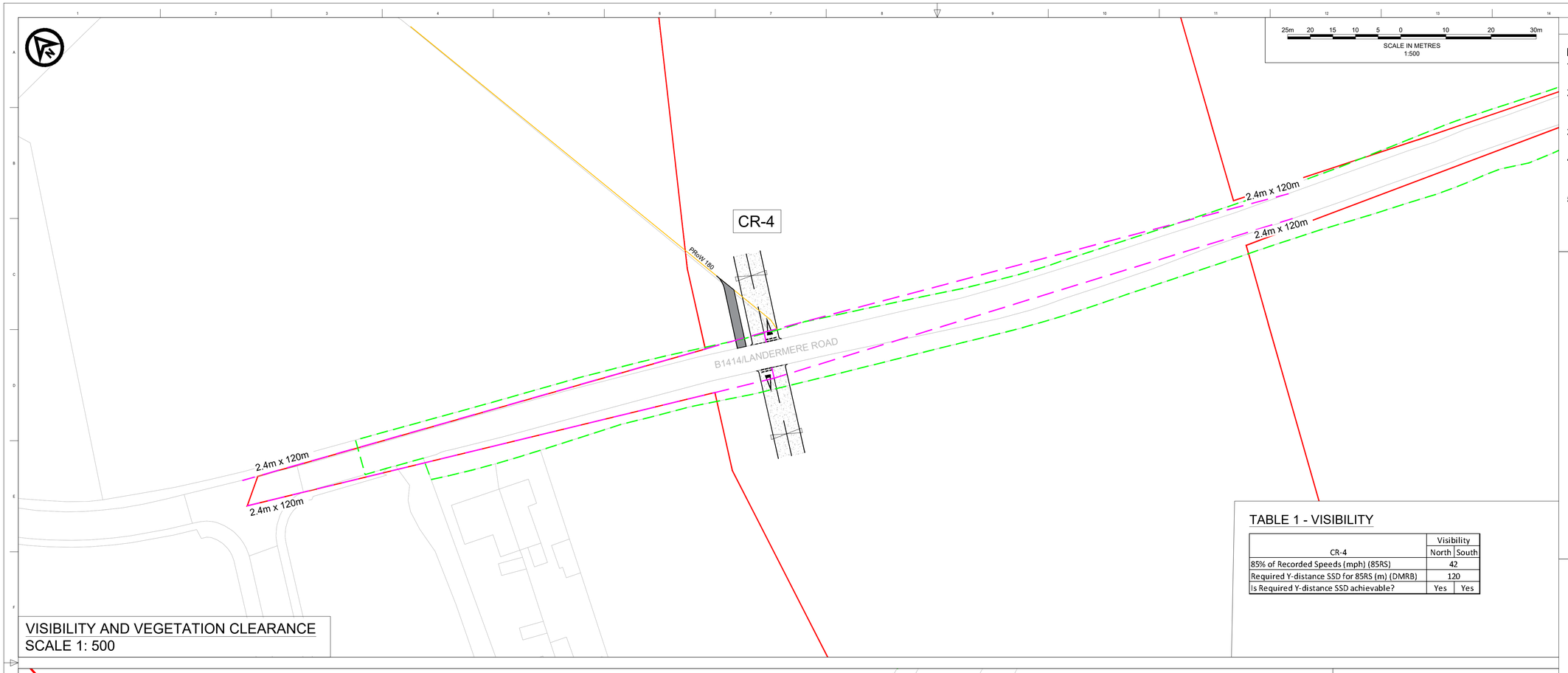

VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

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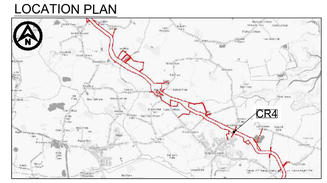
KEY

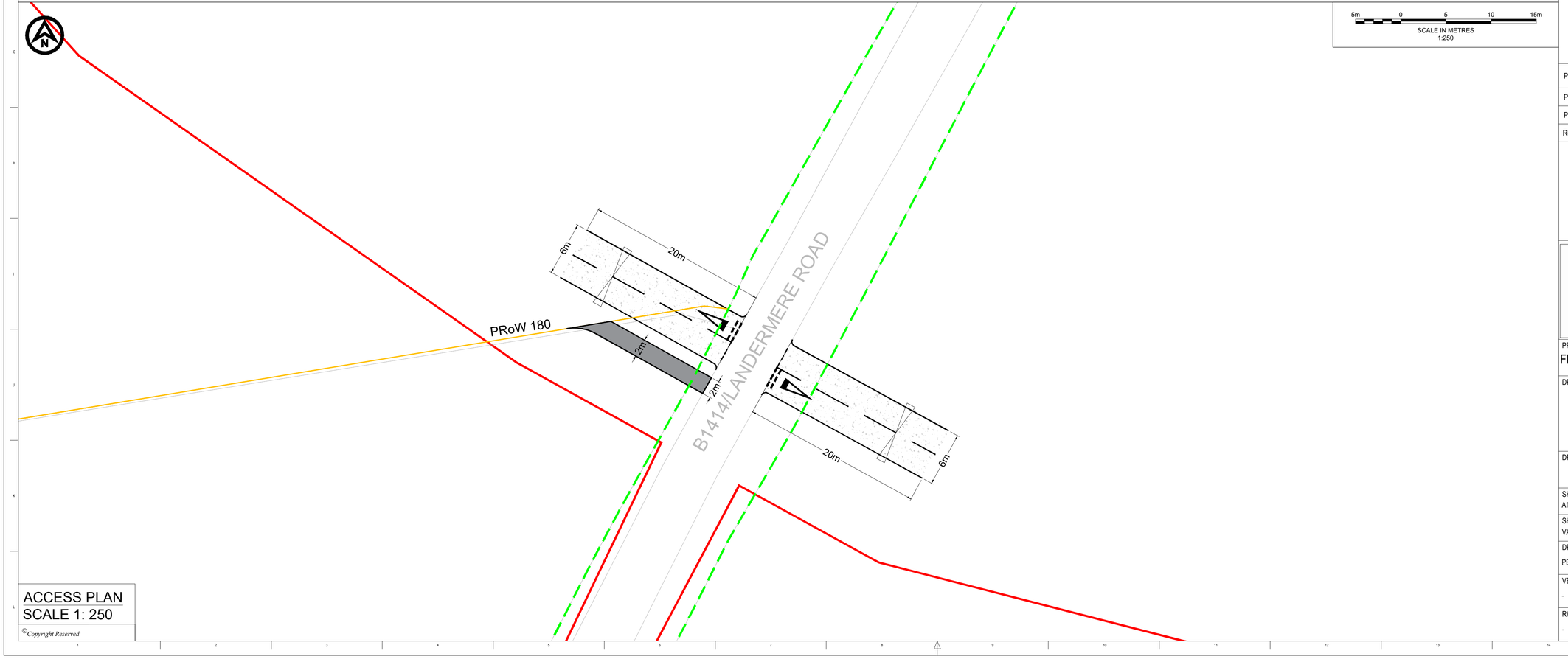
- EXISTING ARRANGEMENT
- ONSHORE CABLE CORRIDOR
- HIGHWAY BOUNDARY
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- EXISTING PUBLIC RIGHTS OF WAY
- PROPOSED TEMPORARY OFFROAD PUBLIC RIGHTS OF WAY ROUTE
- PROPOSED GATE

TABLE 1 - VISIBILITY

CR-4	Visibility North	Visibility South
85% of Recorded Speeds (mph) (85RS)	42	
Required Y-distance SSD for 85RS (m) (DMRB)	120	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN





ACCESS PLAN
SCALE 1: 250

5m 0 5 10 15m
SCALE IN METRES
1:250

REV	DATE	DESCRIPTION	BY	CHK	APP
P04	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P03	09/01/2024	UPDATE TO CROSSING NUMBERING	CB	SKT	SKT
P02	15/11/2023	PUBLIC RIGHTS OF WAY AMENDMENTS	AA	SKT	SKT

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PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

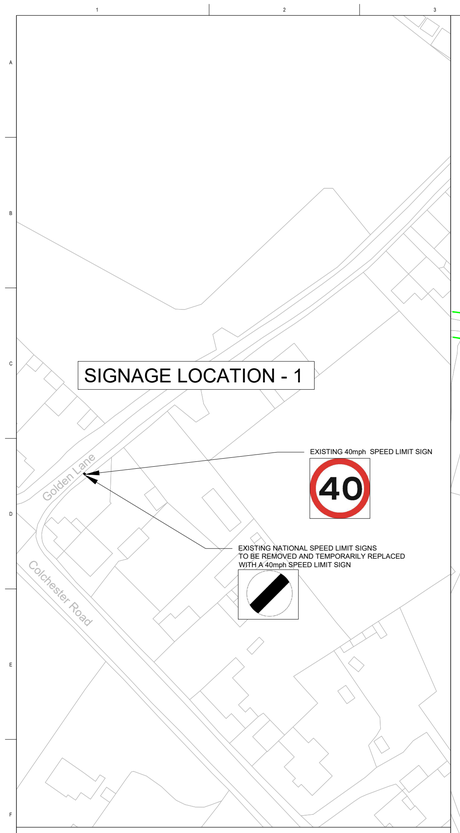
DRAWING TITLE
CR-4 - B1414/LANDERMERE ROAD GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

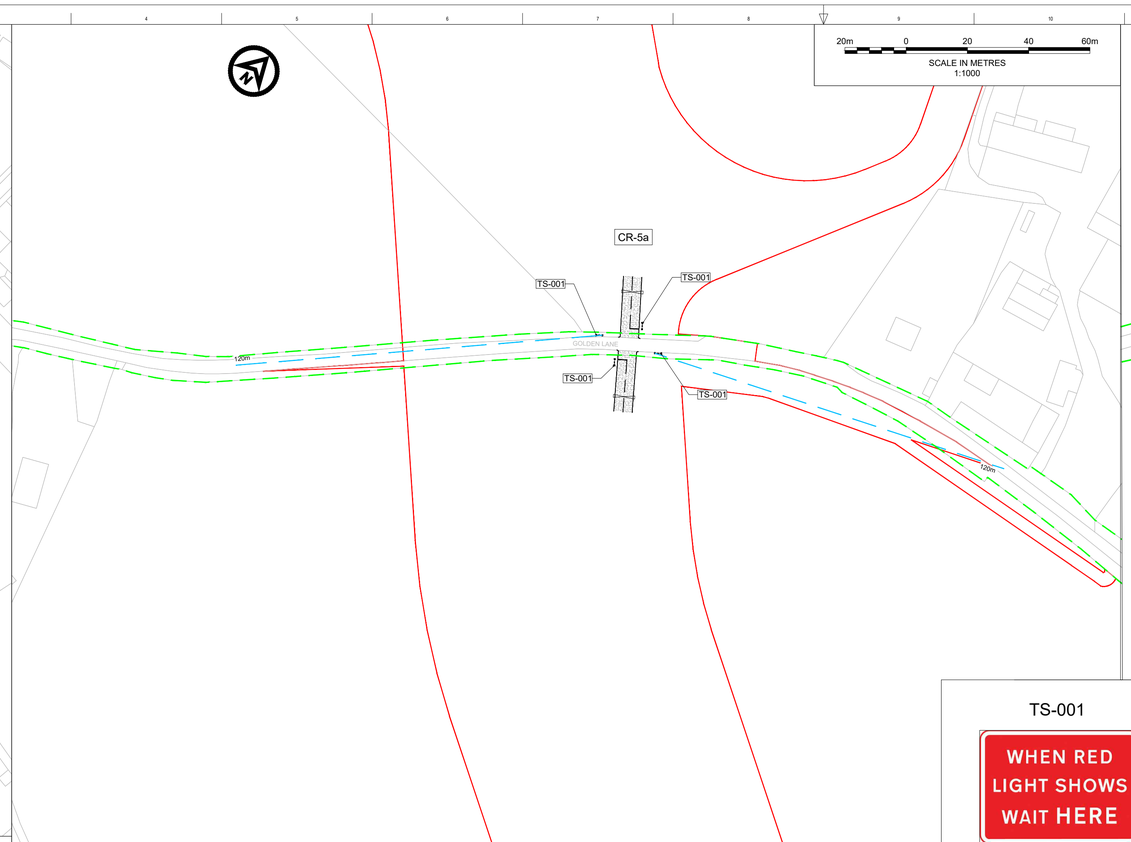
SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

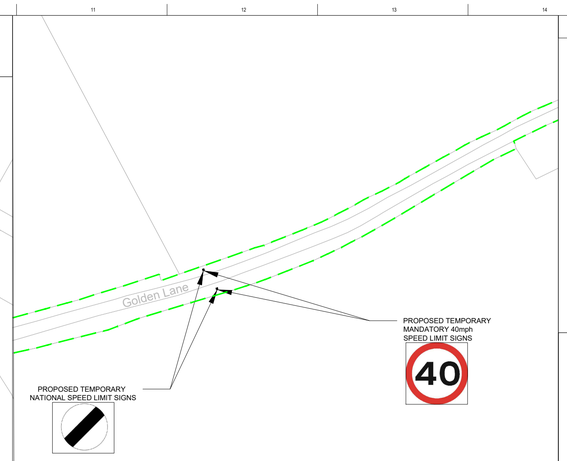
DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0011	P04
VE DOCUMENT NUMBER	REVISION
-	-

RWE ECODOC NUMBER	SHEET No	REVISION
-	1_OF_1	-



VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 1000





SIGNAGE LOCATION - 2

TS-001

TABLE 1 - VISIBILITY

CR-5a	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	45	
Required Y-distance SSD for 85RS (m) (DMRB)	160	
Proposed initial traffic management plan	Traffic signal control and reduced mandatory speed limit	
Proposed Reduced Speed Limit (RSL) (mph)	40	
Required Y-distance SSD for RSL (m) (DMRB)	120	
Is Required Y-distance SSD achievable?	Yes	Yes

DO NOT SCALE FROM THIS DRAWING

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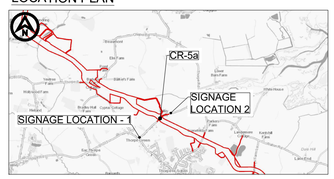
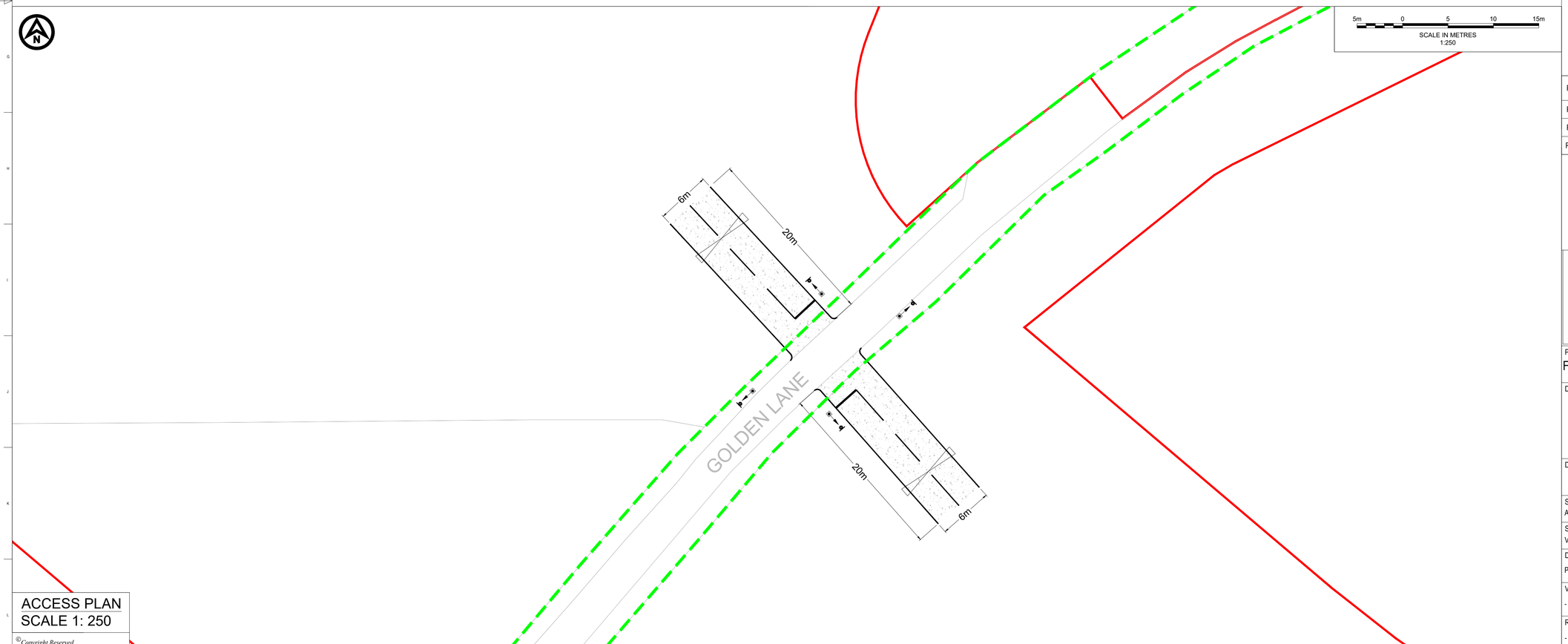
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

KEY

- EXISTING ARRANGEMENT
- ONSHORE CABLE CORRIDOR
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- FORWARD STOPPING DISTANCE
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY
- PROPOSED TEMPORARY PORTABLE TRAFFIC LIGHTS
- PROPOSED TEMPORARY ROAD SIGN

LOCATION PLAN





ACCESS PLAN
SCALE 1: 250

REV	DATE	DESCRIPTION	BY	CHK	APP
P04	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P03	09/01/2024	UPDATE TO CROSSING NUMBERING	CB	SKT	SKT
P02	28/09/2023	UPDATE TO ACCESS LOCATION	CB	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm

Royal HaskoningDHV
Enhancing Society Together
Westpoint, Peterborough Business Park, Lynch Wood, Peterborough PE2 6FZ
Tel +44(0)1932 569566
www.royalhaskoningdhv.com

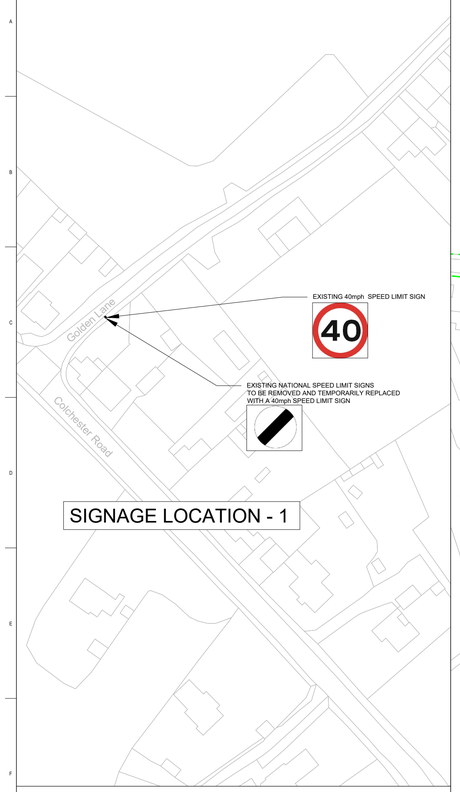
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR-5a - GOLDEN LANE
GENERAL ARRANGEMENT
TRAFFIC SIGNAL OPTION

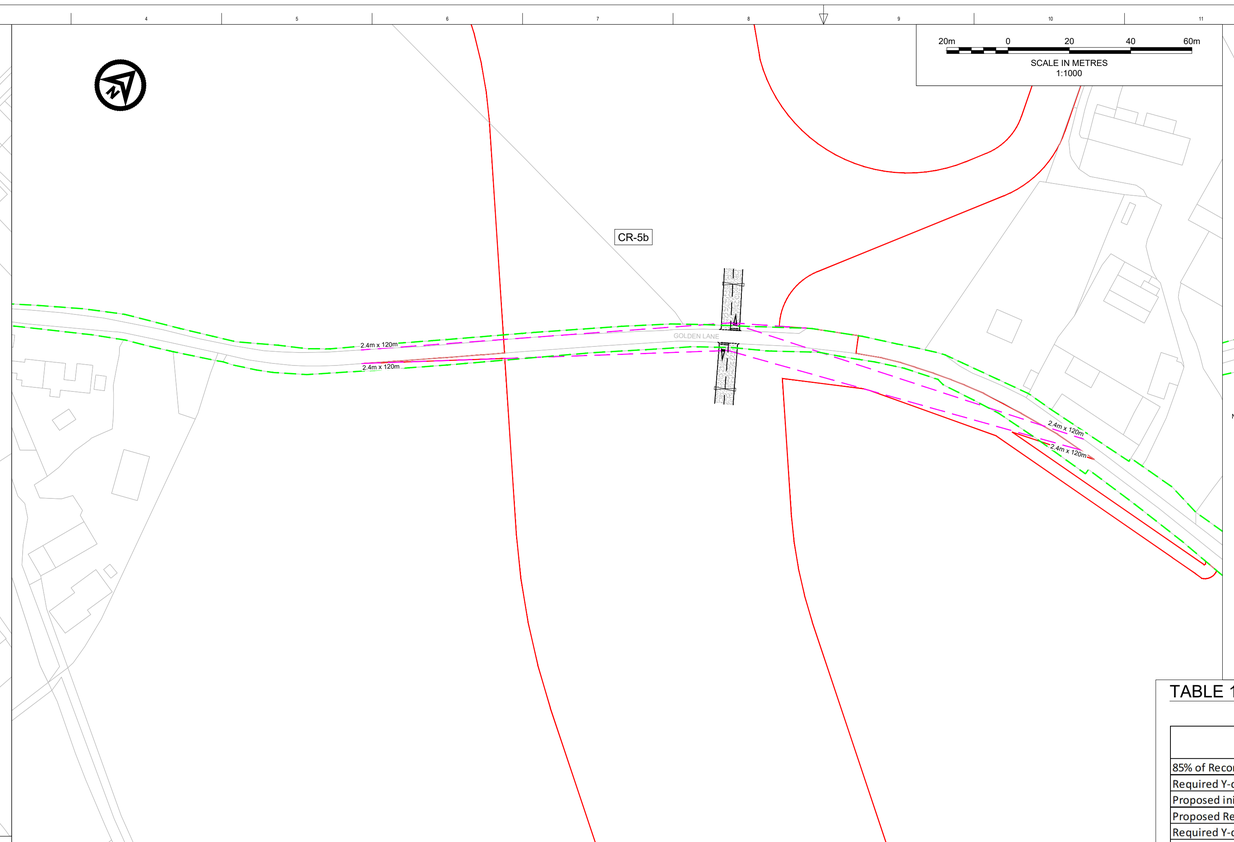
DRAWING STATUS
PLANNING

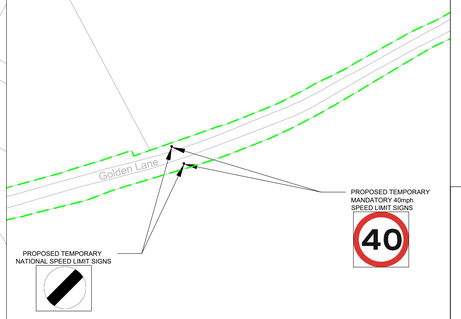
SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0012	P04
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
-	1_OF_1 / -



SIGNAGE LOCATION - 1





SIGNAGE LOCATION - 2

VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 1000

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4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

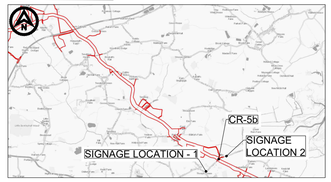
KEY

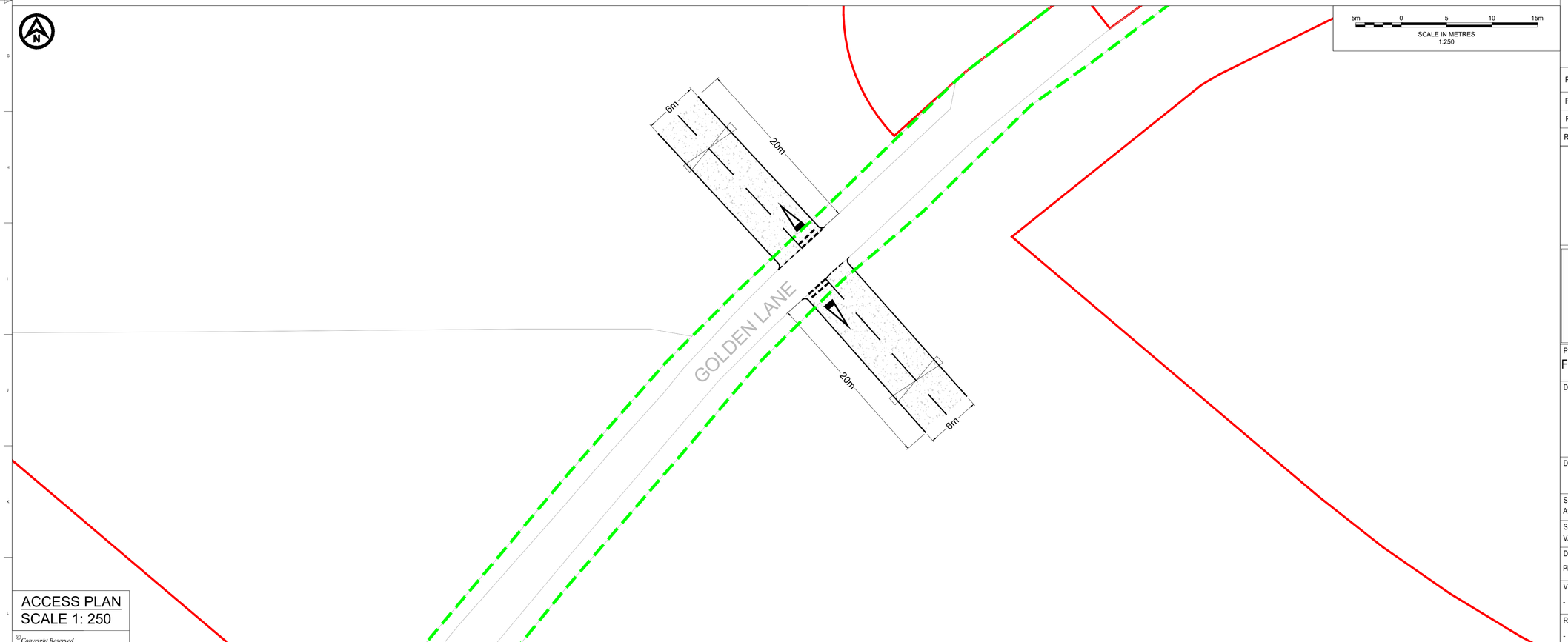
- EXISTING ARRANGEMENT
- ONSHORE CABLE CORRIDOR
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FORWARD STOPPING DISTANCE
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY
- PROPOSED TEMPORARY ROAD SIGN

TABLE 1 - VISIBILITY

CR-5b	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	45	
Required Y-distance SSD for 85RS (m) (DMRB)	160	
Proposed initial traffic management plan	Reduced mandatory speed limit	
Proposed Reduced Speed Limit (RSL) (mph)	40	
Required Y-distance SSD for RSL (m) (DMRB)	120	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN





ACCESS PLAN
SCALE 1: 250

REV	DATE	DESCRIPTION	BY	CHK	APP
P03	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P02	09/01/2024	UPDATE TO CROSSING NUMBERS	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm

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www.royalhaskoningdhv.com

PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR-5b - GOLDEN LANE
GENERAL ARRANGEMENT
PRIORITY OPTION

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0021	P03
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
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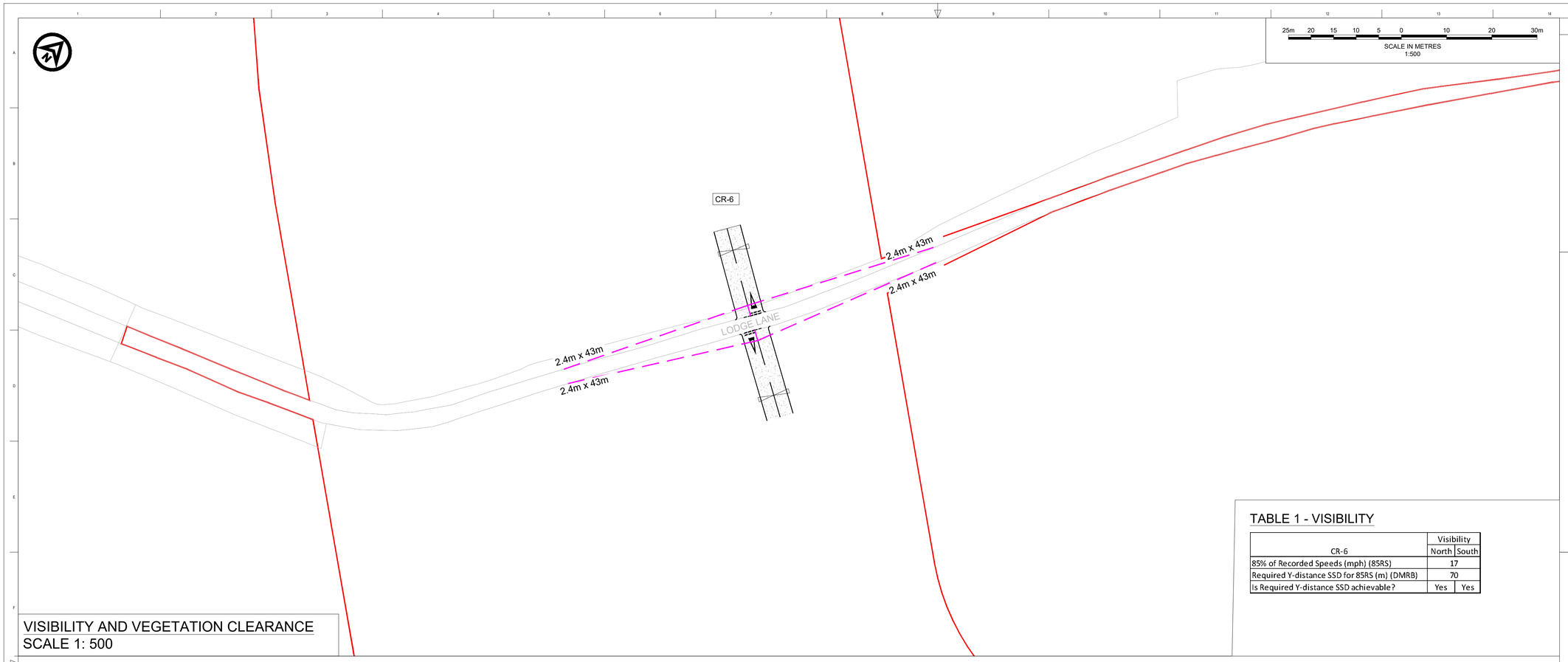

VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

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5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

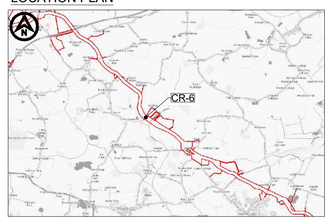
KEY

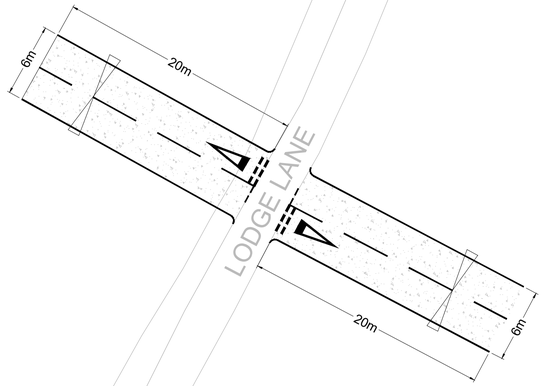
- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE

TABLE 1 - VISIBILITY

CR-6	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	17	
Required Y-distance SSD for 85RS (m) (DMRB)	70	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN





ACCESS PLAN
SCALE 1: 250

5m 0 5 10 15m
SCALE IN METRES
1:250

REV	DATE	DESCRIPTION	BY	CHK	APP
P03	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P02	09/01/2024	UPDATE TO CROSSING NUMBERING	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
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PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR-6 - LODGE LANE
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SRT	SRT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0013	P03
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
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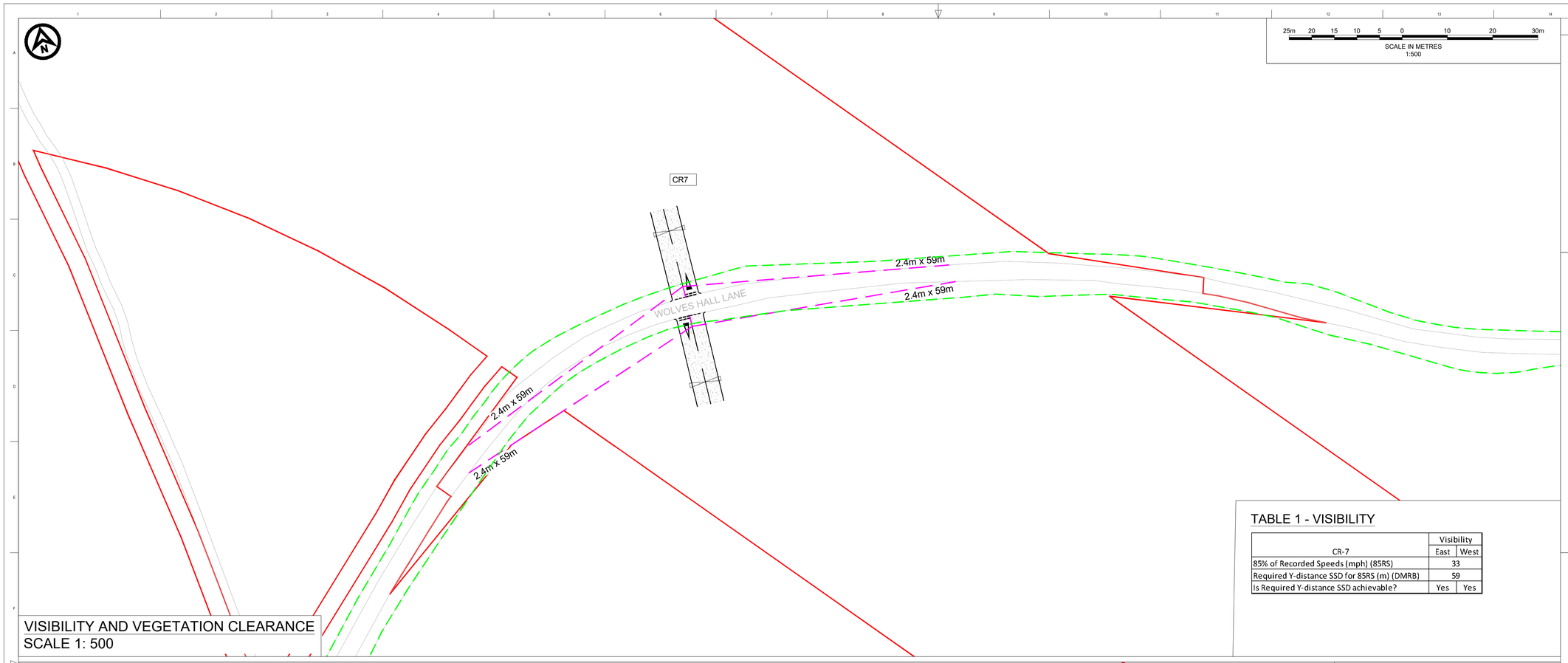
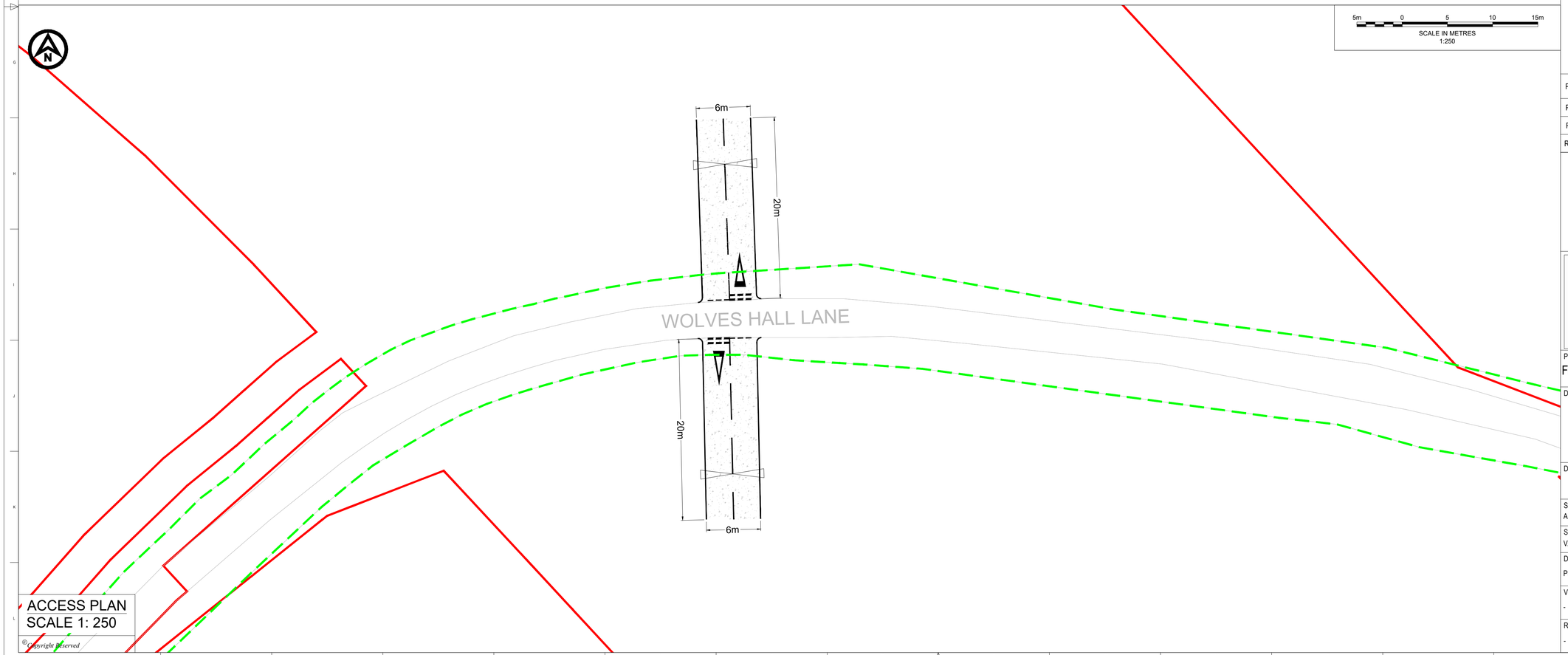


VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500



ACCESS PLAN
SCALE 1: 250

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5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

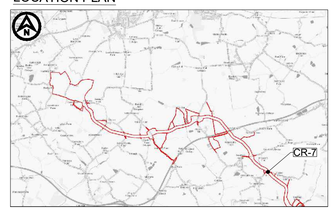
KEY

- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

CR-7	Visibility East	Visibility West
85% of Recorded Speeds (mph) (85RS)	33	
Required Y-distance SSD for 85RS (m) (DMRB)	59	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN



REV	DATE	DESCRIPTION	BY	CHK	APP
P03	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P02	09/01/2024	UPDATE TO CROSSING NUMBERING	CB	SKT	SKT
P01	07/08/2023	FIRST ISSUE	AA	SKT	SKT

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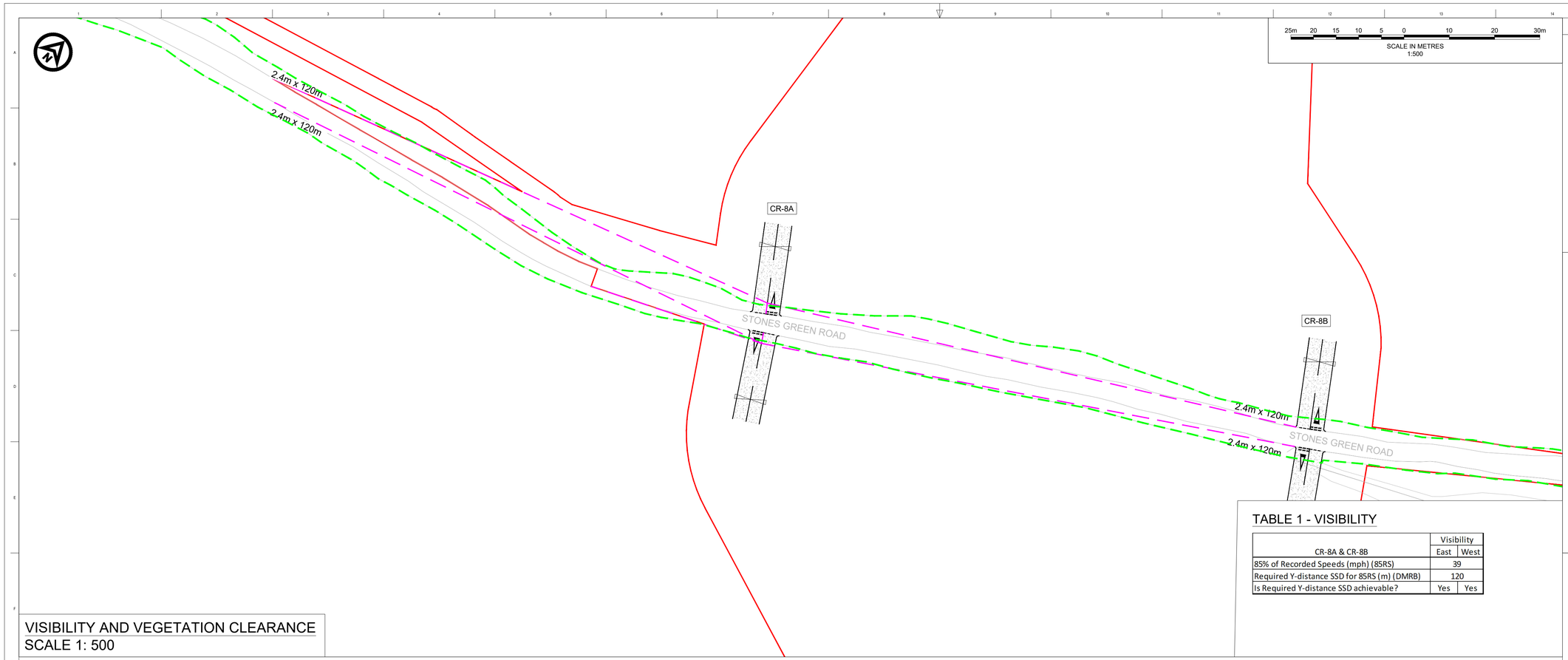
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR-7 - WOLVES HALL LANE
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0019	P03
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
-	1_OF_1 / -



VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

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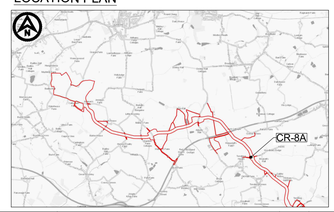
KEY

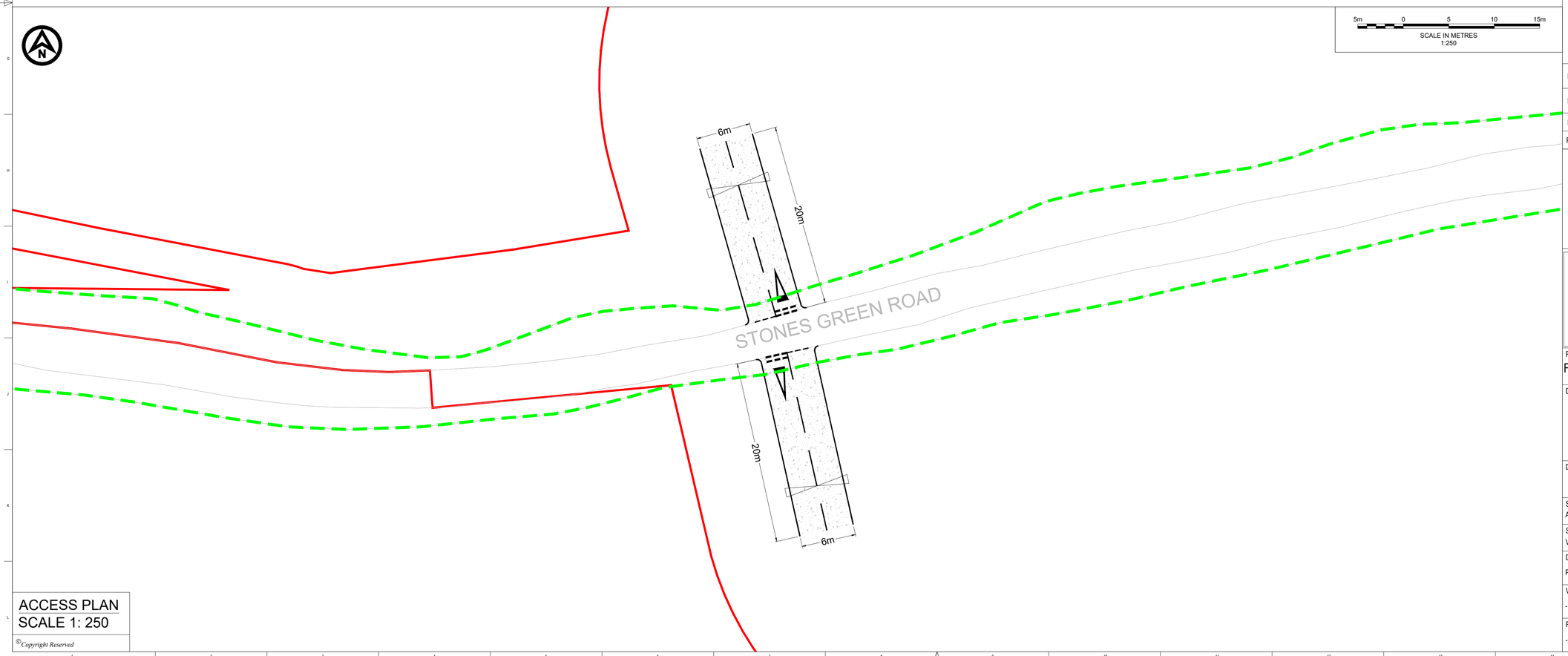
- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

CR-8A & CR-8B	Visibility	
	East	West
85% of Recorded Speeds (mph) (85RS)	39	
Required Y-distance SSD for 85RS (m) (DMRB)	120	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN





ACCESS PLAN
SCALE 1: 250

5m 0 5 10 15m
SCALE IN METRES
1:250

REV	DATE	DESCRIPTION	BY	CHK	APP
P04	18/06/2024	UPDATED CROSSING NUMBERING	CB	SKT	SKT
P03	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT
P02	09/01/2024	UPDATE TO CROSSING NUMBERING	CB	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm

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PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR-8A - STONES GREEN ROAD
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0014	P04
VE DOCUMENT NUMBER	REVISION
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RWE ECODOC NUMBER	SHEET No / REVISION
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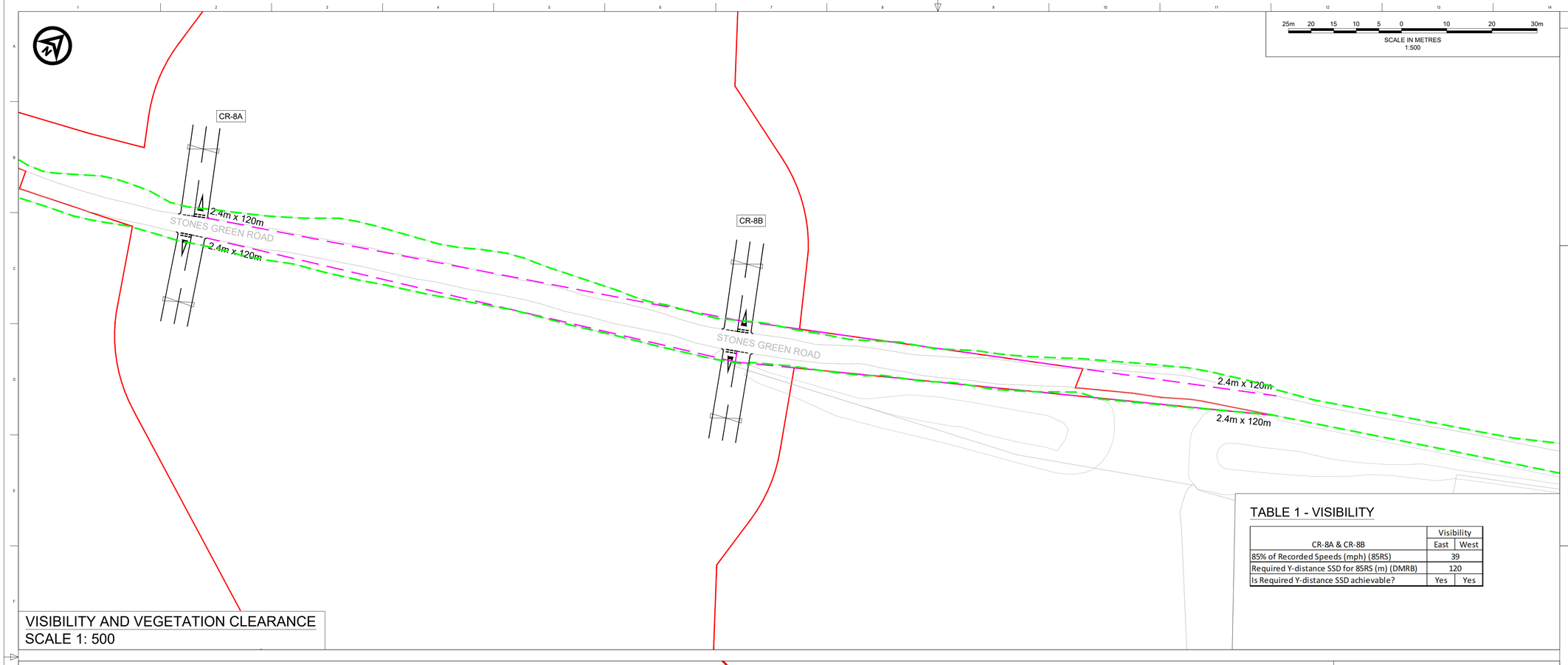
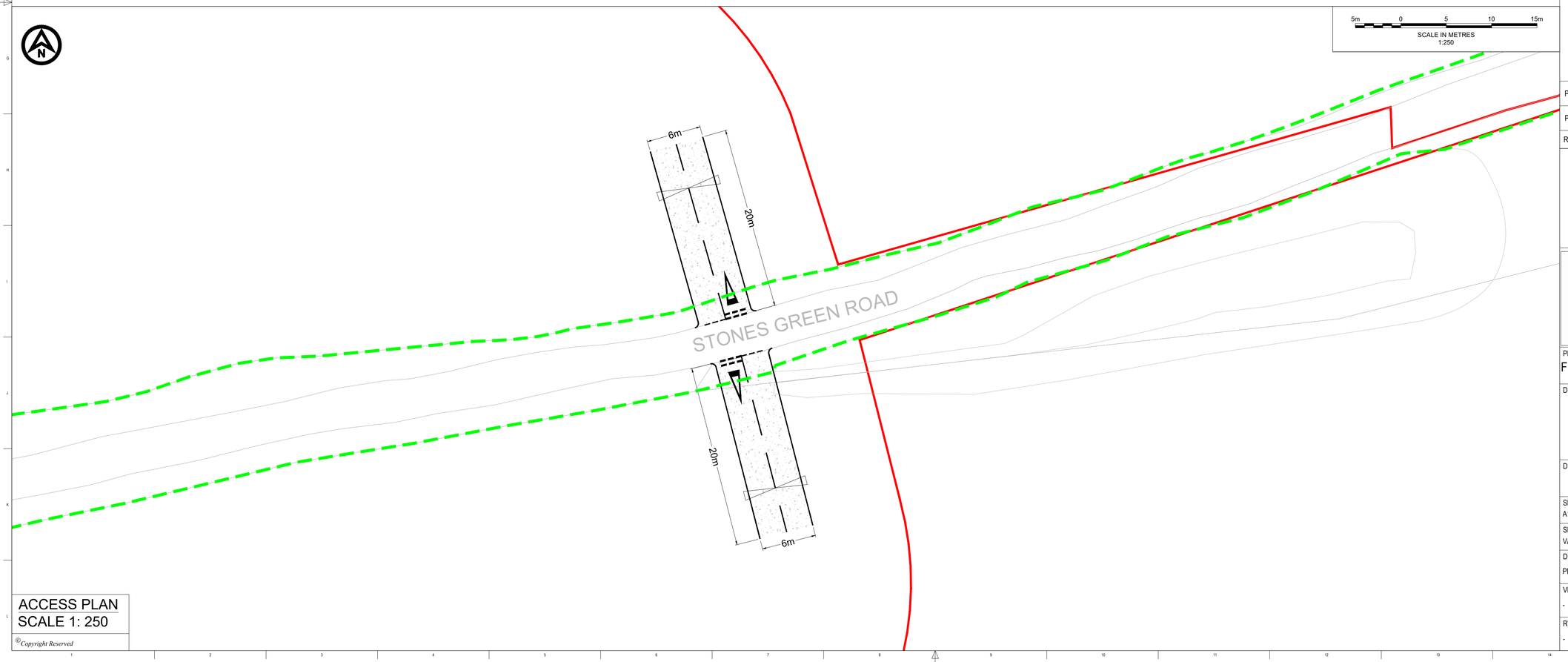


VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500

25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500



ACCESS PLAN
SCALE 1: 250

5m 0 5 10 15m
SCALE IN METRES
1:250

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4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.

KEY

- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

CR-8A & CR-8B	Visibility	
	East	West
85% of Recorded Speeds (mph) (85RS)	39	
Required Y-distance SSD for 85RS (m) (DMRB)	120	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN

REV	DATE	DESCRIPTION	BY	CHK	APP
P03	18/06/2024	UPDATED NUMBERING	CB	SKT	SKT
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm

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Tel +44(0)1932 569566
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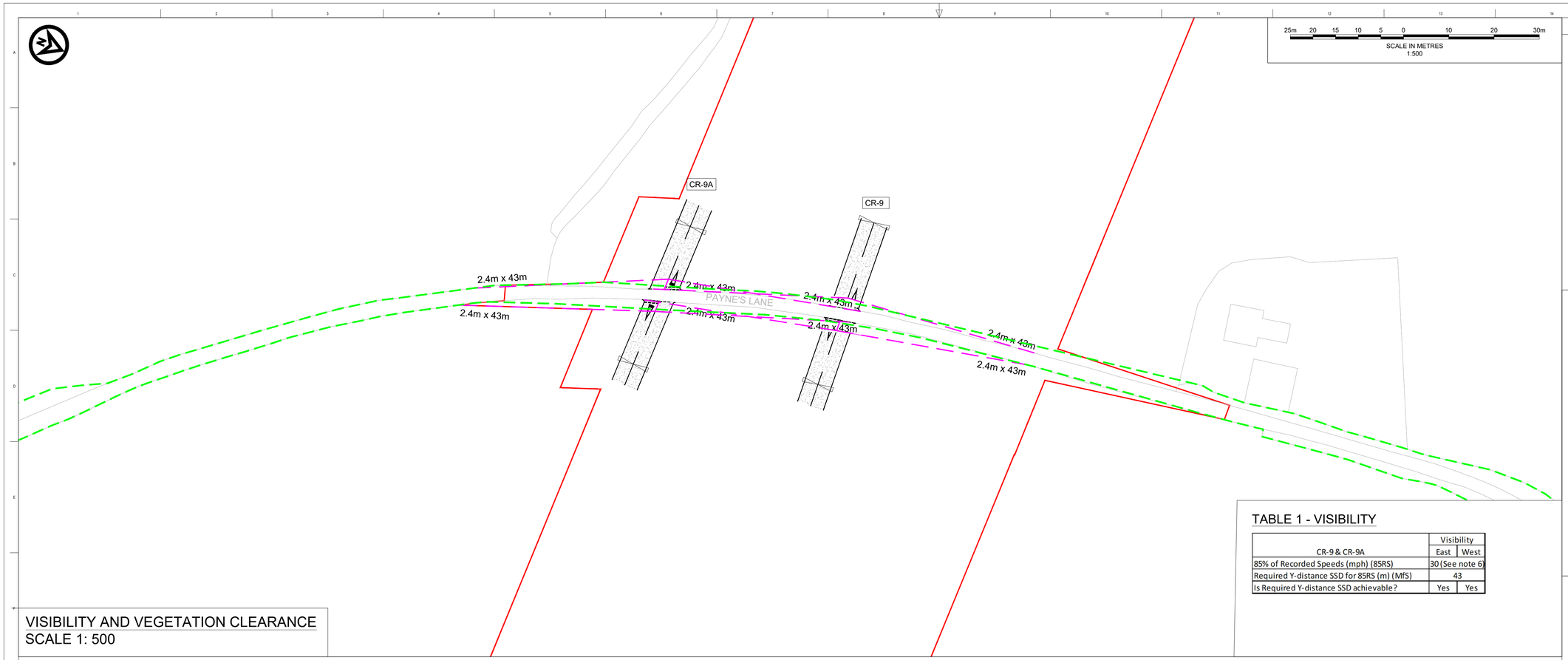
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR-8B - STONES GREEN ROAD
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0020	P02
VE DOCUMENT NUMBER	REVISION
-	-
RWE ECODOC NUMBER	SHEET No / REVISION
-	1_OF_1 / -



25m 20 15 10 5 0 10 20 30m
SCALE IN METRES
1:500

VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500

TABLE 1 - VISIBILITY

	Visibility	
CR-9 & CR-9A	East	West
85% of Recorded Speeds (mph) (85RS)	30 (See note 6)	
Required Y-distance SSD for 85RS (m) (MfS)	43	
Is Required Y-distance SSD achievable?	Yes	Yes

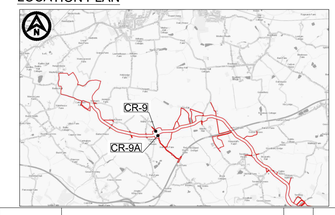
DO NOT SCALE FROM THIS DRAWING

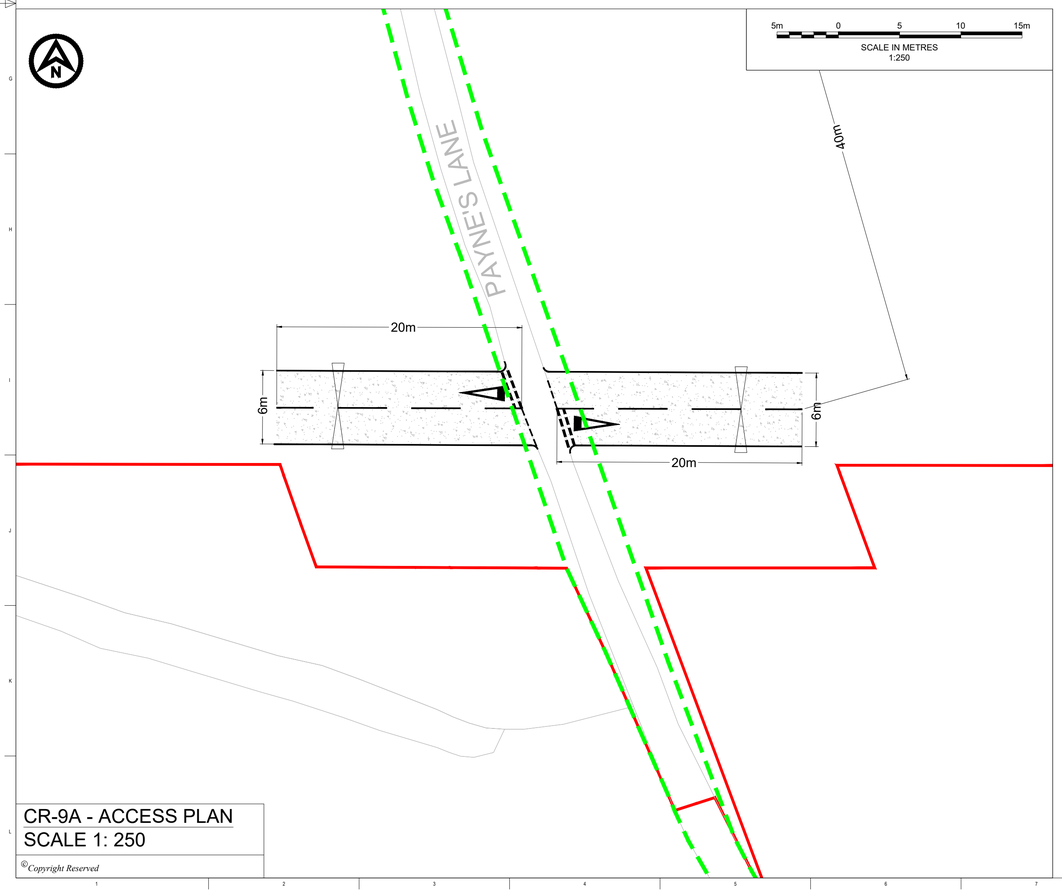
NOTES
1. Do not scale from this drawing. all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
6. Reduced speed limit and Manual for Streets (MfS) visibility splays have been taken into account considering the geometry of the existing road.

KEY

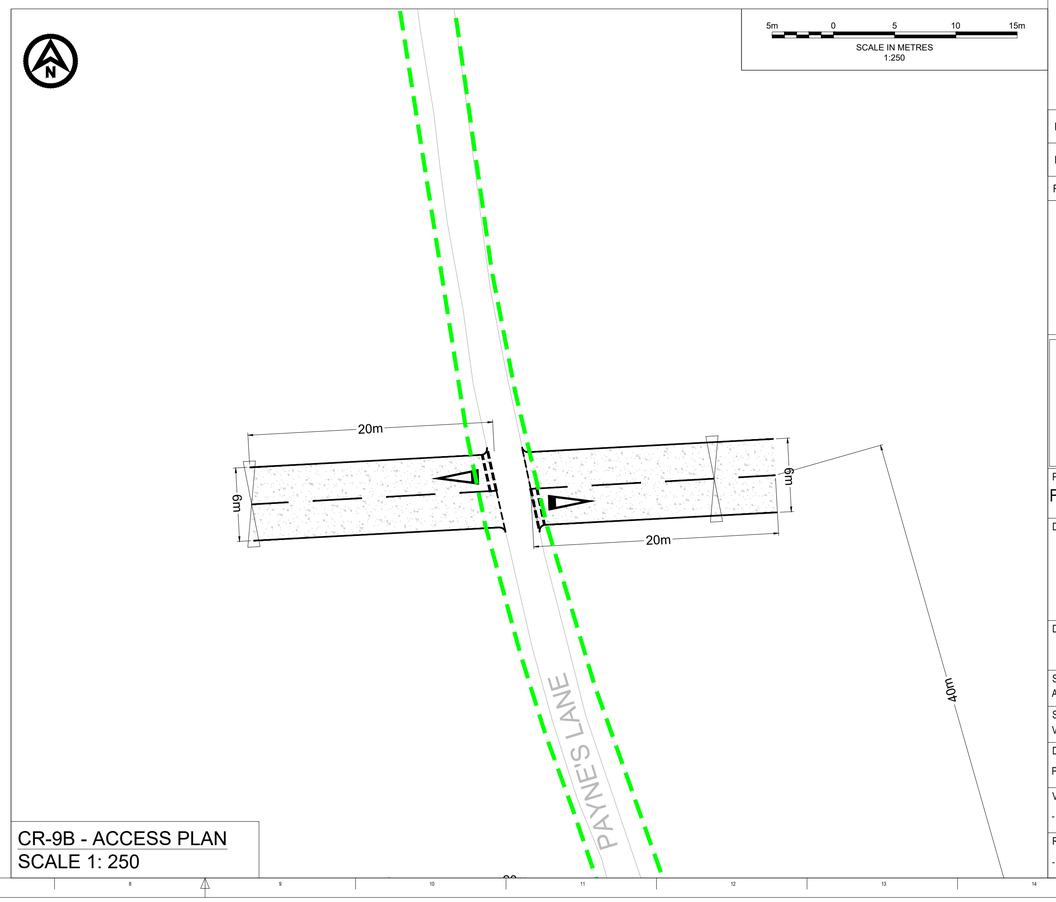
- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

LOCATION PLAN





CR-9A - ACCESS PLAN
SCALE 1: 250



CR-9B - ACCESS PLAN
SCALE 1: 250

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P03	18/06/2024	UPDATED CROSSING NUMBERING	CB	SKT	SKT
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm

Royal HaskoningDHV
Enhancing Society Together
Westpoint, Peterborough Business Park, Lynch Wood, Peterborough PE2 6FZ
Tel +44(0)1932 569566
www.royalhaskoningdhv.com

PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

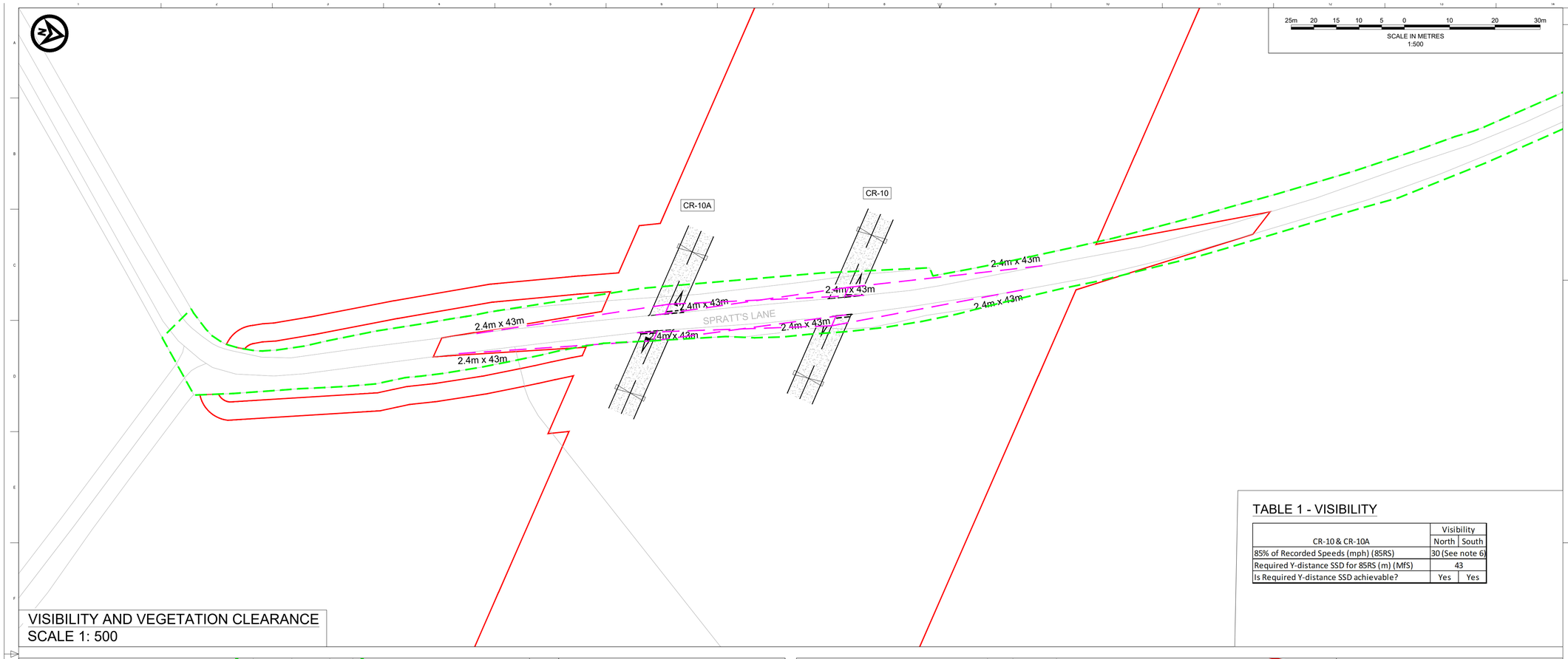
DRAWING TITLE
CR-9 & CR-9A - PAYNE'S LANE
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

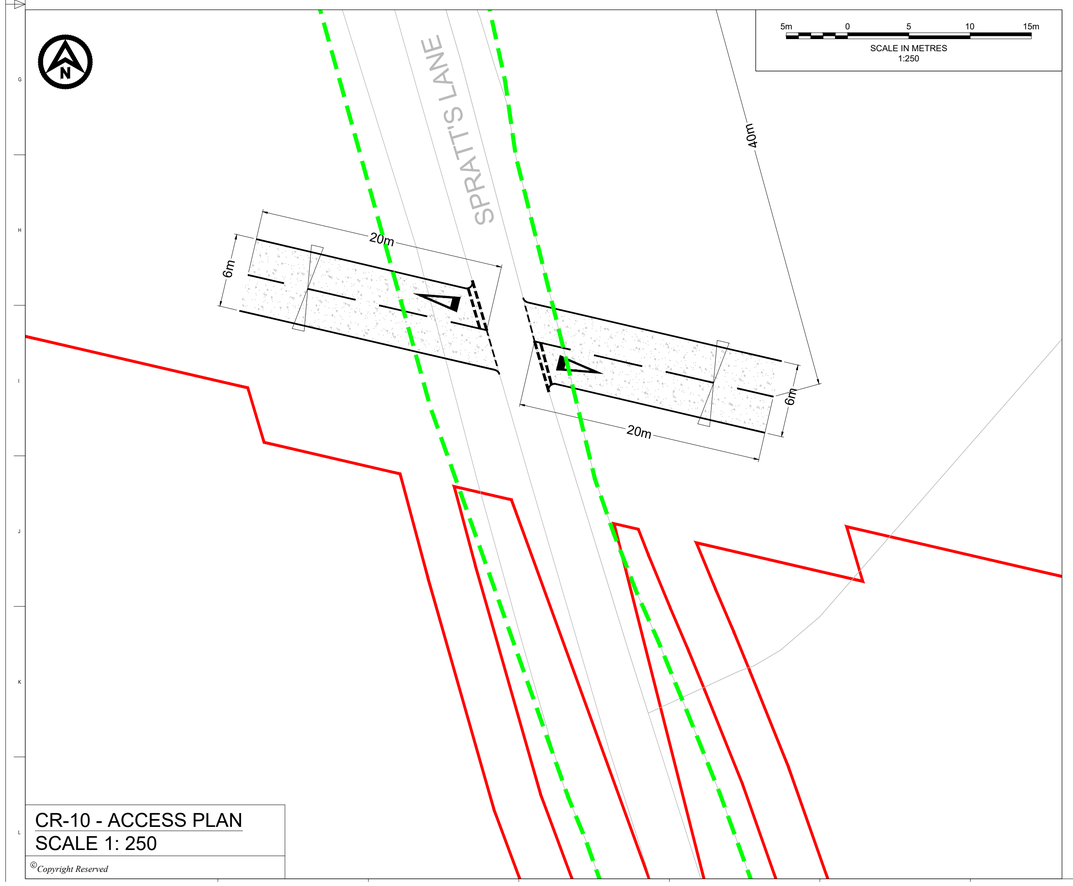
SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0017	P03
VE DOCUMENT NUMBER	REVISION
-	-

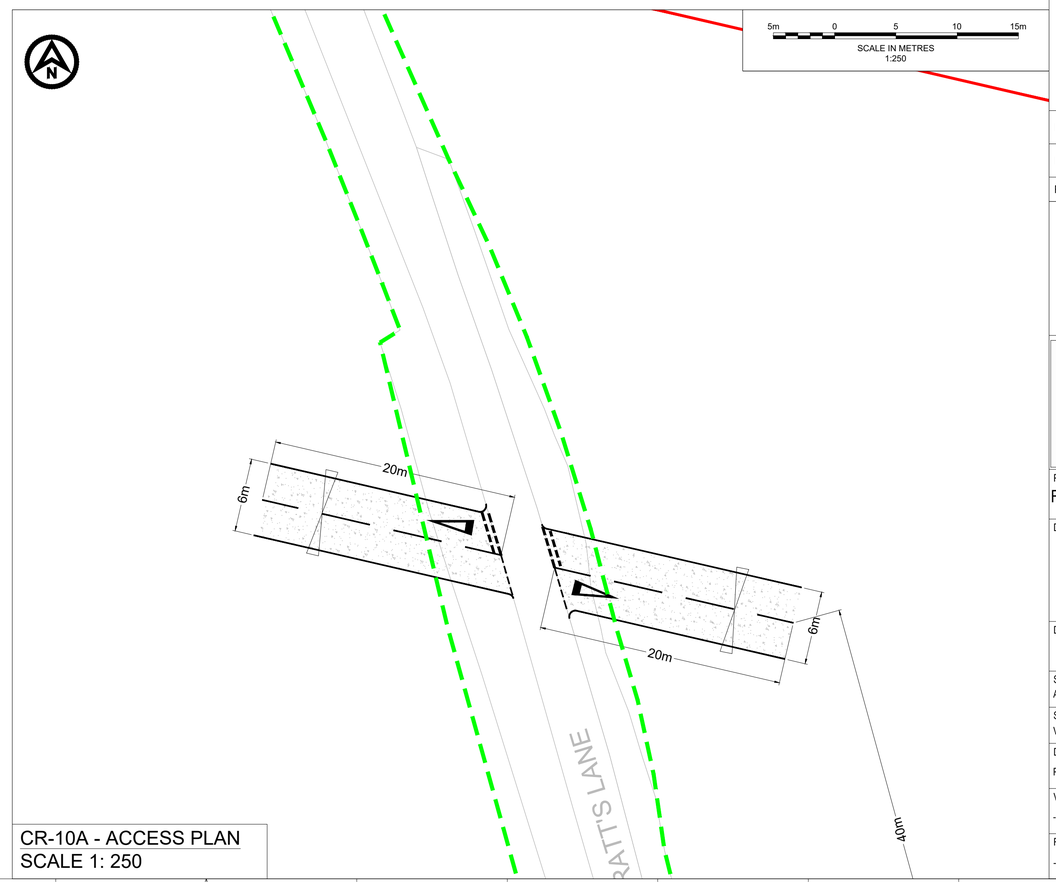
RWE ECODOC NUMBER	SHEET No	REVISION
-	1_OF_1	-



VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500



CR-10 - ACCESS PLAN
SCALE 1: 250



CR-10A - ACCESS PLAN
SCALE 1: 250

TABLE 1 - VISIBILITY

CR-10 & CR-10A	Visibility	
	North	South
85% of Recorded Speeds (mph) (85RS)	30 (See note 6)	
Required Y-distance SSD for 85RS (m) (MfS)	43	
Is Required Y-distance SSD achievable?	Yes	Yes

DO NOT SCALE FROM THIS DRAWING

NOTES
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2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
6. Reduced speed limit and Manual for Streets (MfS) visibility splays have been taken into account considering the geometry of the existing road.

KEY

- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

LOCATION PLAN

REV	DATE	DESCRIPTION	BY	CHK	APP
P03	18/06/2024	UPDATED CROSSING NUMBERING	CB	SKT	SKT
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT

FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm

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PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR-10 & CR-10A - SPRATT'S LANE
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

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PB9244-RHD-ZZ-ZZ-DR-R-0018	P03
VE DOCUMENT NUMBER	REVISION
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RWE ECODOC NUMBER	SHEET No / REVISION
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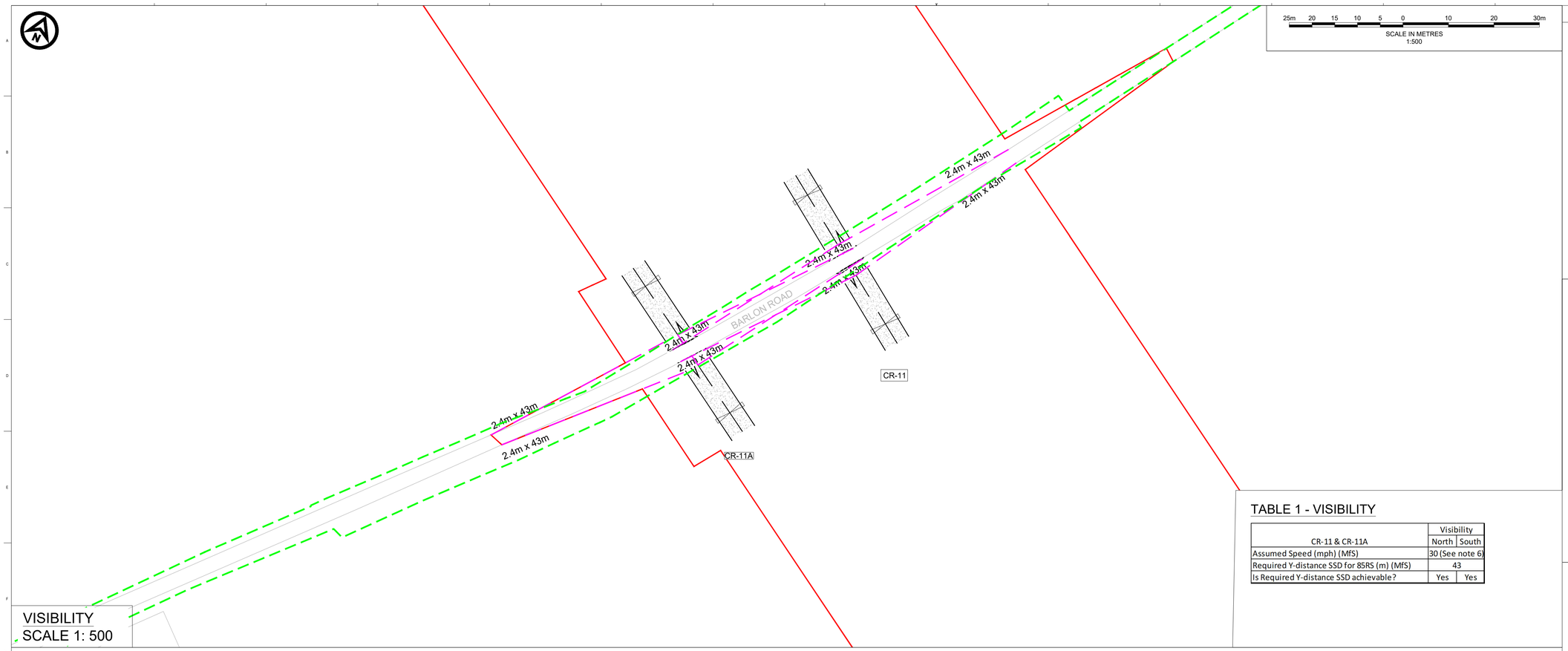

VISIBILITY
SCALE 1: 500

DO NOT SCALE FROM THIS DRAWING

NOTES
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4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
6. Reduced speed limit and Manual for Streets (MfS) visibility splays have been taken into account considering the geometry of the existing road.

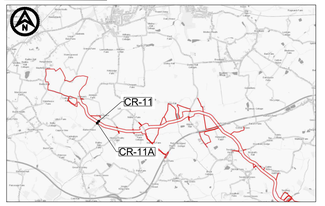
KEY

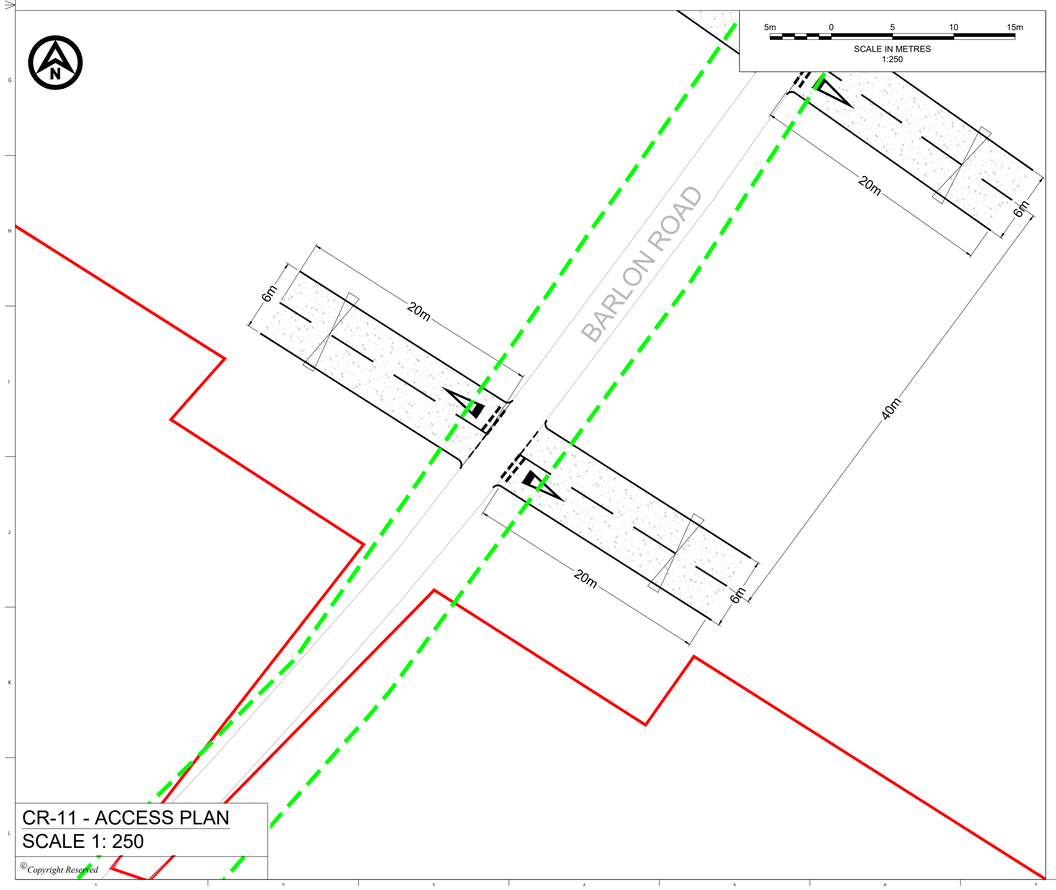
- EXISTING ARRANGEMENT
- ONSHORE RED LINE BOUNDARY
- PROPOSED GATE
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
- FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
- HIGHWAY BOUNDARY

TABLE 1 - VISIBILITY

CR-11 & CR-11A	Visibility	
	North	South
Assumed Speed (mph) (MfS)	30 (See note 6)	
Required Y-distance SSD for 85RS (m) (MfS)	43	
Is Required Y-distance SSD achievable?	Yes	Yes

LOCATION PLAN





CR-11 - ACCESS PLAN
SCALE 1: 250

CR-11A - ACCESS PLAN
SCALE 1: 250

REV	DATE	DESCRIPTION	BY	CHK	APP
P03	18/06/2024	UPDATED CROSSING NUMBERING	CB	SKT	SKT
P02	02/02/2024	ORDER LIMIT AND ROAD SAFETY AUDIT UPDATES	CB	SKT	SKT

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www.royalhaskoningdhv.com

PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS

DRAWING TITLE
CR-11 & CR-11A - BARLON ROAD
GENERAL ARRANGEMENT

DRAWING STATUS
PLANNING

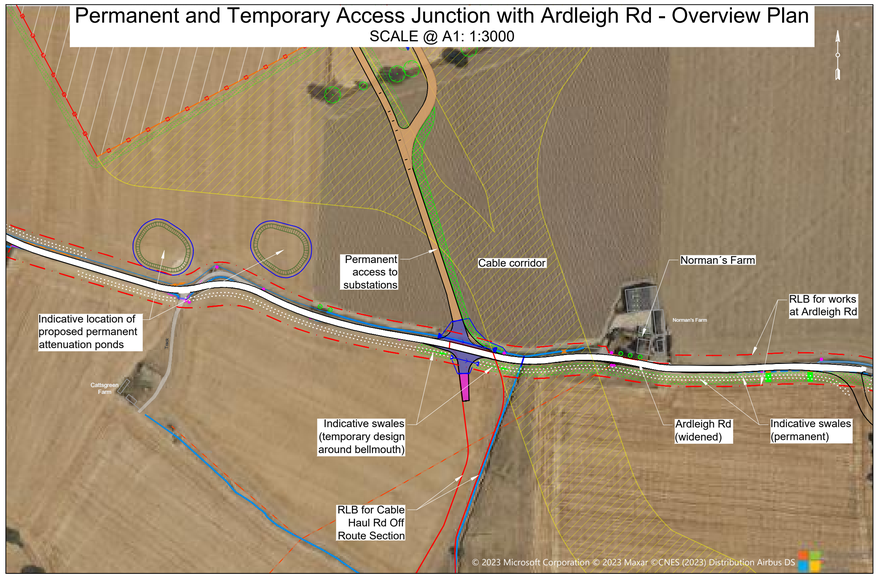
SHEET SIZE	DESIGNED	DRAWN	CHECKED	APPROVED
A1	AA	AA	SKT	SKT
SHEET SCALE	DATE	DATE	DATE	DATE
VARIES	07/08/2023	07/08/2023	07/08/2023	07/08/2023

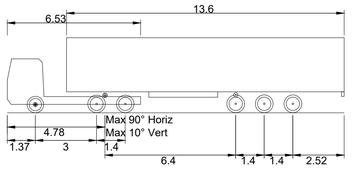
DRAWING NUMBER	REVISION
PB9244-RHD-ZZ-ZZ-DR-R-0015	P03
VE DOCUMENT NUMBER	REVISION
-	-

RWE ECODOC NUMBER	SHEET No	REVISION
-	1_OF_1	-

Permanent and Temporary Access Junction with Ardleigh Rd - Overview Plan

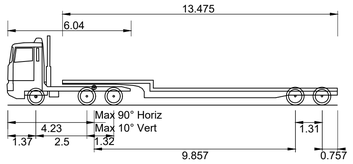
SCALE @ A1: 1:3000





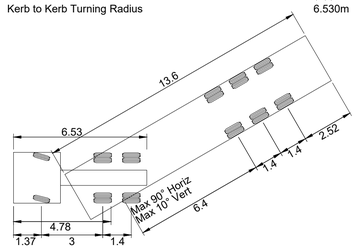
MAX. LEGAL LENGTH (UK) ARTICULATED VEHICLE (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m



LOW LOADER (16.154m)

Overall Length	16.154m
Overall Width	2.520m
Overall Body Height	3.393m
Min Body Ground Clearance	0.318m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.990m



Geometry has been checked against the bespoke vehicle models shown in the diagrams.
These models are generic and do not relate to any specific vehicle supplier's specification. All swept paths should be verified by the Contractor and their haulage supplier, once appointed, prior to detailed design and installation of the access.

Swept Path Analysis - Vehicles Details

Scale 1:150

Notes (continuation)

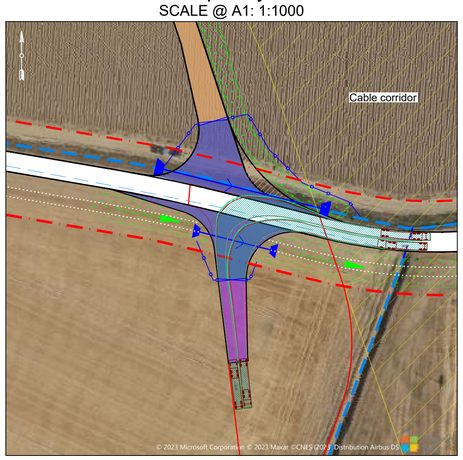
15. Alignment/specification of fencing and gates subject to site conditions and contractor requirements. Proposed fences to tie into existing fences/hedgerows.
16. Visibility splays and stopping sight distances (SSD) have been shown indicatively and have been determined in accordance with DMRB CD123 and CD109. The junctions is assumed to be simple priority. Minimum permissible setback (X) has been assumed to be 2.4m. Visibility for a setback of 9m has also been shown. Achievable road speed at this location is assumed to be < 60mph (national speed limit for single carriageway roads) due to its narrow width. However a conservative road speed value of 60mph was applied to determine the worst case scenario for vegetation clearance / crop growth limitation. The desirable SSD of 215m is currently achievable as there is only low vegetation on the affected land plots at the moment of analysis.
17. Vegetation clearance and groundwork may be required to facilitate any necessary sight distances.
18. A temporary 40mph speed limit is recommended for safety of all road users in the vicinity of the access.
19. Only partial utilities data has been provided for this indicative design. Full PAS128 utilities surveys shall be required at later design stages.
20. Geometric design of bellmouths has been carried out following guidance in the DMRB document CD123 *Geometric design of at-grade priority and signal-controlled junctions, Section 5,* along with SPA for the relevant vehicles.

Notes

1. Do not scale from this drawing.
2. Dimensions in m unless otherwise specified.
3. This drawing is to be read and printed in colour.
4. This drawing is to be read in conjunction with all relevant documents and drawings.
5. No unauthorised disclosure, storage or copying.
6. All spatial coordinates relate to the Ordnance Survey, British National Grid (OSGB36).
7. This drawing is for development purposes only and should not be used for construction.
8. Wider improvement works design at Ardleigh Rd carried out by others.
9. Proposed arrangements shown for indicative purposes only. Dimensions and design may vary following completion of site surveys at detailed design stage.
10. Swept path analysis carried out in this drawing refer to movements in/out of the bellmouths for the design vehicles indicated: a low loader with a turning radius of 6.990m (most restrictive turning radius) and articulated vehicle of maximum legal length in the UK. for details on the SPA for the AIL - AL50 Girder 24 Axle vehicle with rear tractor, please refer to drawing 104560-MMD-00-XX-DR-CE-1016 - Permanent Access Junction with Ardleigh Road.
11. Vehicle models used for the assessments are indicative only, actual turning radii and vehicle track will depend on the precise vehicles used by the works contractor.
12. For details on the bellmouth and overrun area at the proposed permanent access, please refer to drawing 104560-MMD-00-XX-DR-CE-1016.
13. For details on the proposed permanent access to the co-located substations, please refer to drawing 104560-MMD-00-XX-DR-CE-1015.
14. Drainage features are shown indicatively only. Drainage at bellmouths to be confirmed, construction boundary may change subject to drainage strategy and available outfalls.For further details on drainage features, please refer to drawing 104560-MMD-00-XX-DR-CE-1011.

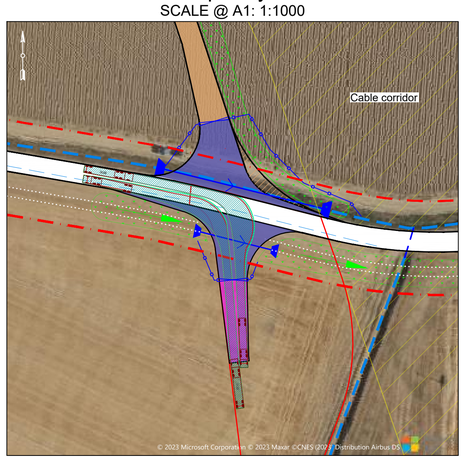
SPA - Right in/Right out movement to/from temporary bellmouth

SCALE @ A1: 1:1000



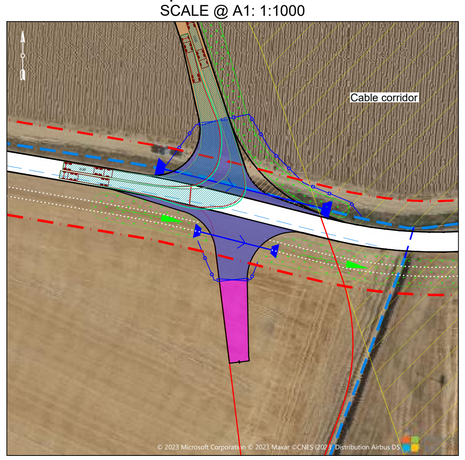
SPA - Left in/Left out movement to/from temporary bellmouth

SCALE @ A1: 1:1000



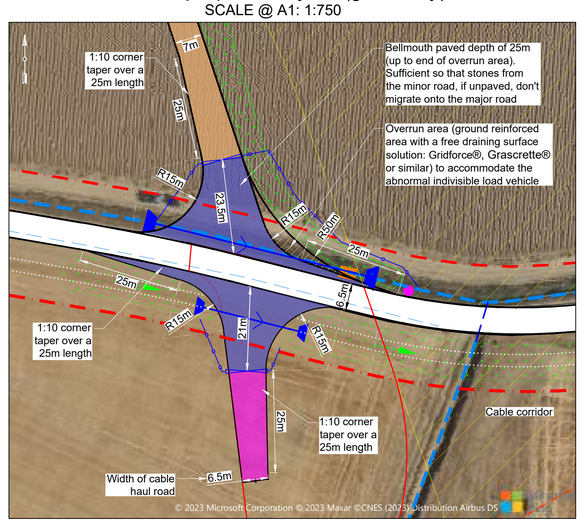
SPA - Right in/Right out movement to/from permanent bellmouth

SCALE @ A1: 1:1000



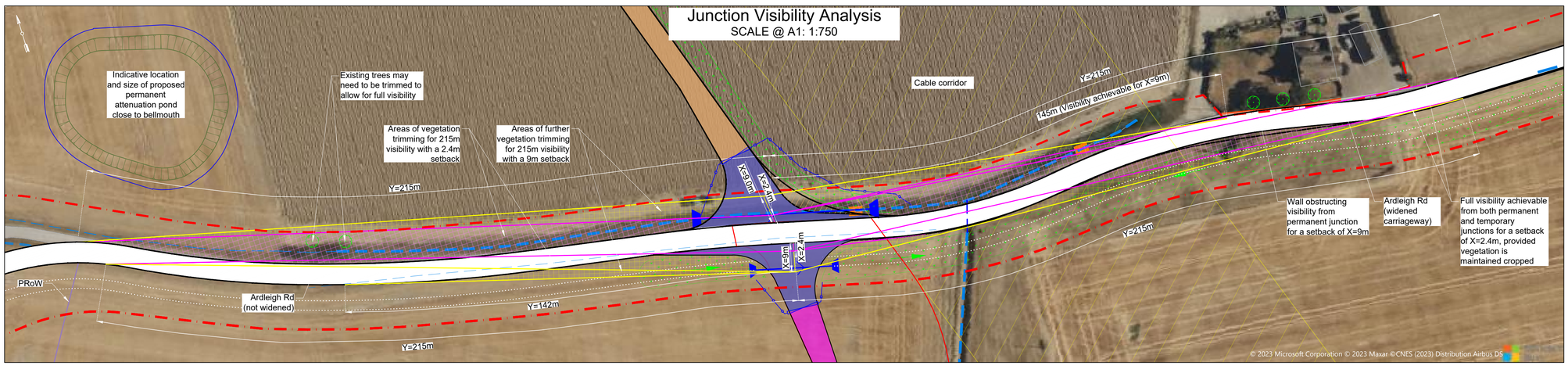
Junction proposed layout (geometry)

SCALE @ A1: 1:750



Junction Visibility Analysis

SCALE @ A1: 1:750



Legend:

- Cable corridor construction swathe
- Proposed edges of widened carriageway & bellmouth outline (by others)
- Proposed widened carriageway on Ardleigh Road (by others)
- Ardleigh Road construction swathe (@ scales 1:750 / 1:1000)
- Construction swathe for the cable haul road off route section
- Proposed tail of bellmouth at permanent access to substation
- Proposed paved area (tarmac) at bellmouths
- Proposed overrun area at the permanent access bellmouth
- Proposed tail of temporary bellmouth at the cable haul road
- Existing surface water ditch / watercourse (@ scales 1:750 / 1:1000)
- Assumed existing surface water ditch / watercourse (@ scales 1:750 / 1:1000)
- Assumed existing culvert below road
- Proposed permanent swale / infiltration ditch
- Proposed permanent drainage pipework / culvert
- Proposed permanent drainage headwall
- Indicative fenceline at co-located substations permanent access
- Indicative gate at co-located substations permanent access
- Visibility splays for an X=2.4m setback from stopping line
- Extents of vegetation clearance for full visibility at X=2.4m setback
- Visibility splays for an X=9m setback from stopping line
- Further extents of vegetation clearance for full visibility at X=9m setback
- Swept path - wheels (red) and vehicle body overswing (green) paths
- Envelope of vehicle body swept path
- Proposed location for a potential cycle track installation

Reference drawings

OS map
Essex County Council Private Rights of Way
Cable Route_Draft_Ardleigh_Rd_Update_Rev1_Opt.B (230628)
104560-MMD-00-XX-DR-CE-1004 - Site Layout/ Location Plan - AIS Option 2
104560-MMD-00-XX-DR-CE-1011 - Drainage Layout - Operational Phase - Opt. 2
104560-MMD-00-XX-DR-CE-1016 - Permanent Access Junction with Ardleigh Road

Rev	Date	Drawn	Description	Ch'k'd	App'd
02	15/12/2023	SAP	Ardleigh Rd widening updated w/ NG inform.	JW	AFC
01	18/10/2023	SAP	For Information	JW	AFC

Status Stamp

DRAFT

MOTT MACDONALD

Victory House
Trafalgar Place
Brighton, BN1 4FY
United Kingdom

T +44 (0)1273 36500
W www.mottmac.com

Client

NORTH FALLS Offshore Wind Farm

FIVE ESTUARIES OFFSHORE WIND FARM

Title

Co-located AIS Substations Early Design - Temporary and Permanent Access Junction with Ardleigh Road

Sheet 01 of 01

Designed	S. Amado-Pedrosa	SAP	Eng check	John Weeks	JW
Drawn	S. Amado-Pedrosa	SAP	Coordination	Andrea F. Crespo	AFC
Dwg check	John Weeks	JW	Approved	Andrea F. Crespo	AFC

MMD Project Number	Scale at A1	Security
104560-001	As Indicated	STD

Client Number	Suit. Code
004943785-02	S3

Drawing Number	Revision
104560-MMD-00-XX-DR-CE-1061	02

1:750 0 37.5m 75m

1:1000 0 50m 100m

1:3000 0 150m 300m

C:\Users\AMA100030\DC\ACCDocs\Mott MacDonald\100104560 - RWE Co-location project\Project Files\MOTTMAC\C_CIV_MMD\DR\104560-MMD-00-XX-DR-CE-1061.dwg Dec 15, 2023 - 6:48PM AMA100030

Annex 27.1.20 Stage 1 Road Safety Audit for Outline Access Design and Designers Response Report

Stage 1 Road Safety Audit

Five Estuaries / North Falls Wind Farm

RWE

Prepared by:

SLR Consulting Limited

Ground Floor Helmont House , Churchill Way, Cardiff,
CF10 2HE

SLR Project No.: 237699

Client Reference No: XXXX

7 November 2023

Revision: 05

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
01	17 October 2023	Alastair Pike	Sasha Boland	Alastair Pike
02	23 October 2023	Alastair Pike	Sasha Boland	Alastair Pike
03	25 October 2023	Alastair Pike	Sasha Boland	Alastair Pike
04	27 October 2023	Alastair Pike	Sasha Boland	Alastair Pike
05	7 November 2023	Alastair Pike	Sasha Boland	Alastair Pike

Basis of Report

This document has been prepared by SLR Consulting Limited (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with RWE (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

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Table of Contents

Appendices

Acronyms and Abbreviations

RSA	Road Safety Audit
DMRB	Design Manual for Roads and Bridges
MfS	Manual for Streets
PIC	Personal Injury Collisions
DfS	Departures from Standards
SPA	Swept Path Analysis

1.0 Introduction

1.1 This report results from a Stage 1 Road Safety Audit carried out on Tuesday 17th October 2023. The RSA was carried out on behalf of RWE. The Overseeing Organisation for this Stage 1 is Essex County Council.

1.2 An Audit Brief was prepared by Daniel Moran of SLR Consulting Ltd on 13th September 2023. This Audit Brief was formally accepted by the Audit Team on the same date.

1.3 This Road Safety Audit team was as follows:

ALASTAIR PIKE, MICE, MCIHT, MSoRSA, HE Approved Cert. Comp.
Audit Team Leader
Head of Road Safety
SLR Consulting Ltd

Sasha Respini, BSc (Hons), MSc, MCIHT, MSoRSA
Audit Team Member
Principal Transport Planner
SLR Consulting Ltd

1.4 A site visits were undertaken by the Audit Team on Wednesday 20th September 2023, between the hours of 12:00pm and 16:00pm. The weather at the time of the visit was overcast with light rain and the carriageway surface was generally dry. Vehicular traffic levels were considered to be low. There were no pedestrian and no cyclist movements observed during this time.

1.5 Site location plans can be found at **Appendix A** of this report.

1.6 The terms of reference of the Road Safety Audit are as described in the Design Manual for Roads and Bridges (DMRB) Standard, GG119 Road Safety Audit.

1.7 The Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem the Audit Team may, on occasion, have referred to a design standard without touching on technical audit.

1.8 A table of documents submitted for this Stage 1 RSA can be found in **Appendix B**.

1.9 The scheme subject to Stage 1 RSA comprises a number of construction access junctions and haul road crossings associated with the installation of an export cable to carry power from a proposed offshore windfarm located off the coast of Essex. These access points and haul roads will be required for a period of approximately 18 months. Access have been constructed to both DMRB and MfS design standards.

1.10 Submitted design drawings have been annotated to show the locations of any problems identified during this Stage 1 RSA. These plans can be found at **Appendix C**.

1.11 Whilst recommendations have been made within this report, there may be equally satisfactory alternatives. The Audit Team will be pleased to consider alternatives if required.

Departures from Standards

1.12 The Audit Team were not informed of any Departure from Standards (DfS) associated with the design proposals.

2.0 Matters arising from this Stage 1 RSA

Location AC1 - B1032 - General Arrangement

2.1 No road safety problems.

Location AC1 - B1032 - Swept Path Analysis

2.2 No road safety problems.

Location AC2 - B1032 - General Arrangement

2.3 No road safety problems.

Location AC2 - B1032 - Swept Path Analysis

2.4 No road safety problems.

Location AC3 – B1033 / Thorpe Road - General Arrangement

2.5 Problem.

Location: B1033 Thorpe Road access arrangements.

Summary: Drainage ditches either side of the carriageway may lead to loss of control type collisions.

Onsite observations found that there were drainage ditches running alongside the carriageway in the proposed location of the site access junctions. These ditches are not shown on design drawings to be culverted. This arrangement may lead to vehicles wishing to access / egress the site dropping a wheel into the existing ditches potentially leading to loss of control type collisions.

Recommendation:

It is recommended that any access point which crossed an existing drainage facility is appropriately culverted to ensure HGV's can access the site without loss of control issues.

Location AC3 – B1033 / Thorpe Road – Swept Path Analysis

2.6 No road safety problems.

Location AC4 – B1035 / Tendring Road - General Arrangement

2.7 Problem.

Location: B1035 Tendring Road access arrangement.

Summary: Drainage ditches either side of the carriageway may lead to loss of control type collisions.

Onsite observations found that there were drainage ditches running alongside the carriageway in the proposed location of the site access junctions. These ditches are not shown on design drawings to be culverted. This arrangement may lead to vehicles wishing to access / egress the site dropping a wheel into the existing ditches potentially leading to loss of control type collisions.

Recommendation:

It is recommended that any access point which crossed an existing drainage facility is appropriately culverted to ensure HGV's can access the site without loss of control issues.

2.8 Problem.

Location: B1035 Tendring Road access arrangement.

Summary: The level difference between the carriageway and site could result in loss of control or side swipe type collisions.

Onsite observations found that there was a difference in levels between the existing carriageway and the new access. The steep gradient may create difficulty for large construction vehicles wishing to access Tendring Road and may in turn lead to a lack of surface friction and slow egress movements potentially creating shunt / side swipe type collisions between egressing construction vehicles and vehicles travelling on Tendring Road.

Recommendation:

It is recommended that the existing gradient be amended to an appropriate level for the restart movements of large vehicles accessing Tendring Road from the proposed site.

Location AC4 – B1035 / Tendring Road – Swept Path Analysis

2.9 No road safety problems.

Location AC5 – B1035 / Thorpe Road - General Arrangement

2.10 Problem.

Location: Thorpe Road - both sides of the proposed access.

Summary: Signage obscured by vegetation leading to shunt type collisions or collisions between vehicles and signage installations

Onsite observations found that there was limited room to mount signage posts on the edge of the carriageway without being obscured by existing vegetation. Obstruction to the signage may lead to injudicious vehicles movements at the transition point potentially leading to side swipe or shunt type collisions between vehicles.

Recommendation.

It is recommended that the vegetation is cut back and maintained and that there is appropriate clearance to traffic such that the signage does not pose an obstruction to vehicles.

2.11 Problem.

Location: Proposed access.

Summary: Drainage ditches either side of the carriageway may lead to loss of control type collisions.

Onsite observations found that there were drainage ditches running alongside the carriageway in the proposed location of the site access junctions. These ditches are not shown on design drawings to be culverted. This arrangement may lead to vehicles wishing to access / egress the site dropping a wheel into the existing ditches potentially leading to loss of control type collisions.

Recommendation:

It is recommended that any access point which crossed an existing drainage facility is appropriately culverted to ensure HGV’s can access the site without loss of control issues.

2.12 Problem.

Location: Proposed access.

Summary: Existing vegetation may obscure visibility splay to the west and east potentially leading to side swipe type collisions.

Onsite observations noted that the presence of existing vegetation may constitute an obstruction to the junction visibility. Design drawings show the visibility splay crossing the carriageway but does not account for the existing vegetation that overhangs at the existing field access point. Obstruction to junction visibility splays may lead to injudicious vehicles movements at the proposed junction potentially leading to side swipe type collisions between vehicles.

Recommendation:

It is recommended that the vegetation to the west and east of the site access junction be cut back and maintained such that it does not pose an obstruction to visibility splays.

Location AC5 – B1035 / Thorpe Road – Swept Path Analysis

2.13 No road safety problems.

Location AC7 – B1035 - General Arrangement

2.14 Problem.

Location: Proposed site access.

Summary: Public Right of Way (PRoW) route following the access route could lead to side swipe type collisions.

An existing PRoW was signposted at the site access. The presence of this route could create a potential conflict between pedestrians and vehicles. Vulnerable road users may be at risk of being struck by turning vehicles or may inadvertently obstruct the path of the vehicles, increasing the likelihood of collisions due to the difference in speeds between vehicles and pedestrians.

Recommendation:

It is recommended to relocate the access or divert the PRoW to avoid potential collisions between vehicles and pedestrians.

Location AC7 – B1035 – Swept Path Analysis

2.15 No road safety problems.

Location AC8 – B1035 - General Arrangement

2.16 No road safety problems.

Location AC8 – B1035 – Swept Path Analysis

2.17 No road safety problems.

Location CR1 – Little Clacton Road - General Arrangement

2.18 Problem.

Location: Proposed access.

Summary: The position of the gate could cause rear end shunts.

The position of the proposed gate does not allow a vehicle to fully clear the main carriageway when waiting. There is no detail provided that shows the proposed operation of the gate features. Should they be closed for any reason their proposed locations may leave HGV's overhanging the public highway which may result in shunt / side swipe type collisions between vehicles.

Recommendation:

It is recommended that the gates are relocated further back into the site such that if a gate is closed for any reason, an HGV can still clear the public highway before stopping.

2.19 Problem.

Location: Proposed access.

Summary: The position of the gate could cause rear end shunts.

The position of the proposed gate does not allow a vehicle to fully clear the main carriageway when waiting. There is no detail provided that shows the proposed operation of the gate features. Should they be closed for any reason their proposed locations may leave HGV's overhanging the public highway which may result in shunt / side swipe type collisions between vehicles.

Recommendation:

It is recommended that the gates are relocated further back into the site such that if a gate is closed for any reason, an HGV can still clear the public highway before stopping.

2.20 Problem.

Location: Proposed access.

Summary: Drainage ditches either side of the carriageway may lead to loss of control type collisions.

Onsite observations found that there were drainage ditches running alongside the carriageway in the proposed location of the site access junctions. These ditches are not shown on design drawings to be culverted. This arrangement may lead to vehicles wishing to access / egress the site dropping a wheel into the existing ditches potentially leading to loss of control type collisions.

Recommendation:

It is recommended that any access point which crossed an existing drainage facility is appropriately culverted to ensure HGV's can access the site without loss of control issues.

Location CR3 – B1034 /Sneating Hall Lane - General Arrangement

2.21 Problem.

Location: General.

Summary: Low overhead cables could lead to damage to vehicles.

Onsite observations found that there were existing low hanging overhead cables parallel to the carriageway in the position of the proposed access. This could cause damage to vehicles and their occupants or could potentially cause congestion as vehicles manoeuvred around them, leading to side swipe or rear end shunt type collisions.

Recommendation:

It is recommended that a safe clearance height is provided and maintained, especially within the vicinity of the proposed site access.

2.22 Problem.

Location: B1034 / Sneating Hall Lane proposed access.

Summary: No information provided with regards to control of junctions and gates may lead to vehicles being left straddling the public highway at risk of shunt / side swipe collisions between vehicles.

Vehicles travelling along the B1034 / Sneating Hall Lane may not be aware of crossing HGV movements. There are no details provided which might indicate the operation of gates and therefore no certainty that vehicles may cross the public highway unassisted. These arrangements may lead to HGV's straddling the public highway with approaching vehicles unaware of this potential hazard which may in turn lead to side swipe / shunt type collisions.

Recommendation:

It is recommended that a control measure is introduced to ensure gates are open for crossing vehicles and that approaching vehicles on the public highway are given advanced warning of the potential for HGV traffic to be crossing the public highway.

2.23 Problem.

Location: Proposed access.

Summary: Drainage ditches either side of the carriageway may lead to loss of control type collisions.

Onsite observations found that there were drainage ditches running alongside the carriageway in the proposed location of the site access junctions. These ditches are not shown on design drawings to be culverted. This arrangement may lead to vehicles wishing to access / egress the site dropping a wheel into the existing ditches potentially leading to loss of control type collisions.

Recommendation:

It is recommended that any access point which crossed an existing drainage facility is appropriately culverted to ensure HGV's can access the site without loss of control issues.

Location CR4 – Damant's Farm Lane - General Arrangement

2.24 Problem.

Location: Proposed site access.

Summary: No information provided with regards to control of junctions and gates may lead to vehicles being left straddling the public highway at risk of shunt / side swipe collisions between vehicles.

Vehicles travelling along the Damant's Farm Lane may not be aware of crossing HGV movements. There are no details provided which might indicate the operation of gates and therefore no certainty that vehicles may cross the public highway unassisted. These arrangements may lead to HGV's straddling the public highway with approaching vehicles unaware of this potential hazard which may in turn lead to side swipe / shunt type collisions.

Recommendation:

It is recommended that a control measure is introduced to ensure gates are open for crossing vehicles and that approaching vehicles on the public highway are given advanced warning of the potential for HGV traffic to be crossing the public highway.

Location CR5 – B1414 / Andermere Road - General Arrangement

2.25 Problem.

Location: Proposed site access.

Summary: Public Right of Way (PRoW) route following the access route could lead to side swipe type collisions.

An existing PRoW was signposted at the site access. The presence of this route could create a potential conflict between pedestrians / cyclists and vehicles. Vulnerable road users may be at risk of being struck by turning vehicles or may inadvertently obstruct the path of the vehicles, increasing the likelihood of collisions due to the difference in speeds between vehicles and pedestrians.

Recommendation:

It is recommended to relocate the access or divert the PRoW to avoid potential collisions between vehicles and pedestrians / cyclists.

2.26 Problem.

Location: Proposed site access.

Summary: The position of the gate could cause rear end shunts.

The position of the proposed gate does not allow a vehicle to fully clear the main carriageway when waiting. There is no detail provided that shows the proposed operation of the gate features. Should they be closed for any reason their proposed locations may leave HGV's overhanging the public highway which may result in shunt / side swipe type collisions between vehicles.

Recommendation:

It is recommended that the gates are relocated further back into the site such that if a gate is closed for any reason, an HGV can still clear the public highway before stopping.

2.27 Problem.

Location: Proposed site access.

Summary: No information provided with regards to control of junctions and gates may lead to vehicles being left straddling the public highway at risk of shunt / side swipe collisions between vehicles.

Vehicles travelling along the B1414 may not be aware of crossing HGV movements. There are no details provided which might indicate the operation of gates and therefore no certainty that vehicles may cross the public highway unassisted. These arrangements may lead to HGV's straddling the public highway with approaching vehicles unaware of this potential hazard which may in turn lead to side swipe / shunt type collisions.

Recommendation:

It is recommended that a control measure is introduced to ensure gates are open for crossing vehicles and that approaching vehicles on the public highway are given advanced warning of the potential for HGV traffic to be crossing the public highway.

Location CR6a – Golden Lane - General Arrangement – Traffic Signals

2.28 Problem.

Location: Proposed access.

Summary: The position of the gate could cause rear end shunts.

The position of the proposed gate does not allow a vehicle to fully clear the main carriageway when waiting. There is no detail provided that shows the proposed operation of the gate features. Should they be closed for any reason their proposed locations may leave HGV's overhanging the public highway which may result in shunt / side swipe type collisions between vehicles.

Recommendation:

It is recommended that the gates are relocated further back into the site such that if a gate is closed for any reason, an HGV can still clear the public highway before stopping.

Location CR6b – Golden Lane - General Arrangement – Priority

2.29 Problem.

Location: Golden Lane proposed access.

Summary: No information provided with regards to control of junctions and gates may lead to vehicles being left straddling the public highway at risk of shunt / side swipe collisions between vehicles.

Vehicles travelling along Golden Lane may not be aware of crossing HGV movements. There are no details provided which might indicate the operation of gates and therefore no certainty that vehicles may cross the public highway unassisted. These arrangements may lead to HGV's straddling the public highway with approaching vehicles unaware of this potential hazard which may in turn lead to side swipe / shunt type collisions.

Recommendation:

It is recommended that a control measure is introduced to ensure gates are open for crossing vehicles and that approaching vehicles on the public highway are given advanced warning of the potential for HGV traffic to be crossing the public highway.

2.30 Problem.

Location: Proposed site access.

Summary: The position of the proposed gate obstructs incoming construction vehicles when closed which may lead to shunt type collisions on Golden Lane.

A proposed gate is shown on each priority and it is unclear from the drawings whether a construction vehicle will be able to pull off the main carriageway and wait without causing an obstruction on Little Clacton Road. This arrangement may lead to shunt type collisions.

Recommendation:

It is recommended that the proposed gate is relocated to ensure that construction vehicles are able to leave Golden Lane unobstructed.

2.31 Problem.

Location: Golden Lane.

Summary: Signage obscured by vegetation leading to shunt type collisions or collisions between vehicles and signage installations

Onsite observations found that there was limited room to mount signage posts on the edge of the carriageway without being obscured by existing vegetation. Obstruction to the signage may lead to injudicious vehicles movements at the transition point potentially leading to side swipe or shunt type collisions between vehicles.

Recommendation.

It is recommended that the vegetation is cut back and maintained and that there is appropriate clearance to traffic such that the signage does not pose an obstruction to vehicles.

Location CR7 – Lodge Lane - General Arrangement

2.32 Problem.

Location: Proposed access.

Summary: No information provided with regards to control of junctions and gates may lead to vehicles being left straddling the public highway at risk of shunt / side swipe collisions between vehicles.

Vehicles travelling along Lodge Lane may not be aware of crossing HGV movements. There are no details provided which might indicate the operation of gates and therefore no certainty that vehicles may cross the public highway unassisted. These arrangements may lead to HGV's straddling the public highway with approaching vehicles unaware of this potential hazard which may in turn lead to side swipe / shunt type collisions.

Recommendation:

It is recommended that a control measure is introduced to ensure gates are open for crossing vehicles and that approaching vehicles on the public highway are given advanced warning of the potential for HGV traffic to be crossing the public highway.

2.33 Problem.

Location: Proposed site access.

Summary: The position of the proposed gate obstructs incoming construction vehicles when closed which may lead to shunt type collisions on Lodge Lane.

A proposed gate is shown on each priority and it is unclear from the drawings whether a construction vehicle will be able to pull off the main carriageway and wait without causing an obstruction on Lodge Lane. This arrangement may lead to shunt type collisions.

Recommendation:

It is recommended that the proposed gate is relocated to ensure that construction vehicles are able to leave Lodge Lane unobstructed.

2.34 Problem.

Location: Proposed site access.

Summary: The level difference between the carriageway and site could result in loss of control or side swipe type collisions.

Onsite observations found that there was a difference in levels between the existing carriageway and the new access. The steep gradient may create difficulty for large construction vehicles wishing to access Lodge Lane and may in turn lead to a lack of surface friction and slow egress movements potentially creating shunt / side swipe type collisions between egressing construction vehicles and vehicles travelling on Lodge Lane.

Recommendation:

It is recommended that the existing gradient be amended to an appropriate level for the restart movements of large vehicles accessing Lodge Lane from the proposed site.

2.35 Problem.

Location: Proposed site access.

Summary: Drainage ditches either side of the carriageway may lead to loss of control type collisions.

Onsite observations found that there were drainage ditches running alongside the carriageway in the proposed location of the site access junctions. These ditches are not shown on design drawings to be culverted. This arrangement may lead to vehicles wishing to access / egress the site dropping a wheel into the existing ditches potentially leading to loss of control type collisions.

Recommendation:

It is recommended that any access point which crossed an existing drainage facility is appropriately culverted to ensure HGV's can access the site without loss of control issues.

Location CR8 P1 – Stones Green Road - General Arrangement

2.36 Problem.

Location: Proposed site access.

Summary: No information provided with regards to control of junctions and gates may lead to vehicles being left straddling the public highway at risk of shunt / side swipe collisions between vehicles.

Vehicles travelling along Stones Green Road may not be aware of crossing HGV movements. There are no details provided which might indicate the operation of gates and therefore no certainty that vehicles may cross the public highway unassisted. These arrangements may lead to HGV's straddling the public highway with approaching vehicles unaware of this potential hazard which may in turn lead to side swipe / shunt type collisions.

Recommendation:

It is recommended that a control measure is introduced to ensure gates are open for crossing vehicles and that approaching vehicles on the public highway are given advanced warning of the potential for HGV traffic to be crossing the public highway.

2.37 Problem.

Location: Proposed site access.

Summary: Drainage ditches either side of the carriageway may lead to loss of control type collisions.

Onsite observations found that there were drainage ditches running alongside the carriageway in the proposed location of the site access junctions. These ditches are not shown on design drawings to be culverted. This arrangement may lead to vehicles wishing to access / egress the site dropping a wheel into the existing ditches potentially leading to loss of control type collisions.

Recommendation:

It is recommended that any access point which crossed an existing drainage facility is appropriately culverted to ensure HGV's can access the site without loss of control issues.

2.38 Problem.

Location: Proposed site access.

Summary: The position of the proposed gate obstructs incoming construction vehicles when closed which may lead to shunt type collisions on Stones Green Road.

A proposed gate is shown as it is unclear from the drawings whether a construction vehicle will be able to pull off the main carriageway and wait without causing an obstruction on Stones Green Road. This arrangement may lead to shunt type collisions.

Recommendation:

It is recommended that the proposed gate is relocated to ensure that construction vehicles are able to leave Stones Green Road unobstructed.

Location CR9 P1&P2 – Paynes Lane - General Arrangement

2.39 Problem.

Location: Proposed site access.

Summary: No information provided with regards to control of junctions and gates may lead to vehicles being left straddling the public highway at risk of shunt / side swipe collisions between vehicles.

Vehicles travelling along Paynes Lane may not be aware of crossing HGV movements. There are no details provided which might indicate the operation of gates and therefore no certainty that vehicles may cross the public highway unassisted. These arrangements may lead to HGV's straddling the public highway with approaching vehicles unaware of this potential hazard which may in turn lead to side swipe / shunt type collisions.

Recommendation:

It is recommended that a control measure is introduced to ensure gates are open for crossing vehicles and that approaching vehicles on the public highway are given advanced warning of the potential for HGV traffic to be crossing the public highway.

2.40 Problem.

Location: Proposed site access.

Summary: The position of the proposed gate obstructs incoming construction vehicles when closed which may lead to shunt type collisions on Paynes Lane.

A proposed gate is shown on each priority access as it is unclear from the drawings whether a construction vehicle will be able to pull off the main carriageway and wait without causing an obstruction on Paynes Lane. This arrangement may lead to shunt type collisions.

Recommendation:

It is recommended that the proposed gate is relocated to ensure that construction vehicles are able to leave Paynes Lane unobstructed.

Location CR10 P1&P2 – Spratt's Lane - General Arrangement

2.41 Problem.

Location: Proposed site access

Summary: Existing passing places could be displaced due to the proposals causing shunt type collisions.

The proposed site access is in the location of existing passing places on the carriageway and if these got displaced could lead to rear end shunt type collisions due to vehicles reversing or driving off the road to allow oncoming vehicles to pass.

Recommendation

It is recommended that the either the site access or passing places are relocated so there are appropriate places for vehicles to pass on Spratt's Lane.

2.42 Problem.

Location: Proposed site access.

Summary: No information provided with regards to control of junctions and gates may lead to vehicles being left straddling the public highway at risk of shunt / side swipe collisions between vehicles.

Vehicles travelling along Spratt's Lane may not be aware of crossing HGV movements. There are no details provided which might indicate the operation of gates and therefore no certainty that vehicles may cross the public highway unassisted. These arrangements may lead to HGV's straddling the public highway with approaching vehicles unaware of this potential hazard which may in turn lead to side swipe / shunt type collisions.

Recommendation:

It is recommended that a control measure is introduced to ensure gates are open for crossing vehicles and that approaching vehicles on the public highway are given advanced warning of the potential for HGV traffic to be crossing the public highway.

2.43 Problem.

Location: Proposed site access.

Summary: The position of the proposed gate obstructs incoming construction vehicles when closed which may lead to shunt type collisions on Spratt's Lane.

A proposed gate is shown on each priority access as it is unclear from the drawings whether a construction vehicle will be able to pull off the main carriageway and wait without causing an obstruction on Spratt's Lane. This arrangement may lead to shunt type collisions.

Recommendation:

It is recommended that the proposed gate is relocated to ensure that construction vehicles are able to leave Spratt's Lane unobstructed.

2.44 Problem.

Location: Proposed site access.

Summary: Drainage ditches either side of the carriageway may lead to loss of control type collisions.

Onsite observations found that there were drainage ditches running alongside the carriageway in the proposed location of the site access junctions. These ditches are not shown on design drawings to be culverted. This arrangement may lead to vehicles wishing to access / egress the site dropping a wheel into the existing ditches potentially leading to loss of control type collisions.

Recommendation:

It is recommended that any access point which crossed an existing drainage facility is appropriately culverted to ensure HGV's can access the site without loss of control issues.

Location CR11 P1&P2 – Barlon Road - General Arrangement

2.45 Problem.

Location: Proposed site access.

Summary: No information provided with regards to control of junctions and gates may lead to vehicles being left straddling the public highway at risk of shunt / side swipe collisions between vehicles.

Vehicles travelling along Barlon Road may not be aware of crossing HGV movements. There are no details provided which might indicate the operation of gates and therefore no certainty that vehicles may cross the public highway unassisted. These arrangements may lead to HGV's straddling the public highway with approaching vehicles unaware of this potential hazard which may in turn lead to side swipe / shunt type collisions.

Recommendation:

It is recommended that a control measure is introduced to ensure gates are open for crossing vehicles and that approaching vehicles on the public highway are given advanced warning of the potential for HGV traffic to be crossing the public highway.

2.46 Problem.

Location: Proposed site access.

Summary: The position of the proposed gate obstructs incoming construction vehicles when closed which may lead to shunt type collisions on Barlon Road.

A proposed gate is shown on each priority access as it is unclear from the drawings whether a construction vehicle will be able to pull off the main carriageway and wait without causing an obstruction on Barlon Road. This arrangement may lead to shunt type collisions.

Recommendation:

It is recommended that the proposed gate is relocated to ensure that construction vehicles are able to leave Barlon Road unobstructed.

Location CR12 P1&P2 – Wolves Hall Lane - General Arrangement

2.47 Problem.

Location: Proposed site access.

Summary: Visibility splays not appropriate for site conditions and may lead to side swipe type collisions.

Visibility splays of 2.4 m x 59 m in line with MfS standards for 33mph are provided to the back of the carriageway in both directions from the proposed junctions, except looking right out of the northern access where it can only be provided to the opposite side of the carriageway due to a bend. This could lead to vehicles not slowing in time for an egressing vehicle and causing a side swipe or shunt type collision.

Recommendation

It is recommended that the access / visibility splays are amended to take account for the bend in Wolves Hall Lane.

Location CR8 P2 – Stones Green Road - General Arrangement

2.48 Problem.

Location: General.

Summary: No information provided with regards to control of junctions and gates may lead to vehicles being left straddling the public highway at risk of shunt / side swipe collisions between vehicles.

Vehicles travelling along Stones Green Road may not be aware of crossing HGV movements. There are no details provided which might indicate the operation of gates and therefore no certainty that vehicles may cross the public highway unassisted. These arrangements may lead to HGV's straddling the public highway with approaching vehicles unaware of this potential hazard which may in turn lead to side swipe / shunt type collisions.

Recommendation:

It is recommended that a control measure is introduced to ensure gates are open for crossing vehicles and that approaching vehicles on the public highway are given advanced warning of the potential for HGV traffic to be crossing the public highway.

2.49 Problem.

Location: Proposed site access.

Summary: The position of the proposed gate obstructs incoming construction vehicles when closed which may lead to shunt type collisions on Stones Green Road.

A proposed gate is shown on each priority access as it is unclear from the drawings whether a construction vehicle will be able to pull off the main carriageway and wait without causing an obstruction on Stones Green Road. This arrangement may lead to shunt type collisions.

Recommendation:

It is recommended that the proposed gate is relocated to ensure that construction vehicles are able to leave Stones Green Road unobstructed.

3.0 Audit Team Statement

3.1 We certify that this Audit has been carried out in accordance with the requirements of GG119.

Road Safety Audit Team Leader

Name: Alastair Pike

Signed: 

Position: Head of Road Safety
Organisation: SLR Consulting Ltd
Date: 7 November 2023

Road Safety Audit Team Member

Name: Sasha Respini

Signed:
Position: Principal Transport Planner
Organisation: SLR Consulting Ltd
Date: 7 November 2023

Appendix A Site Location Plans

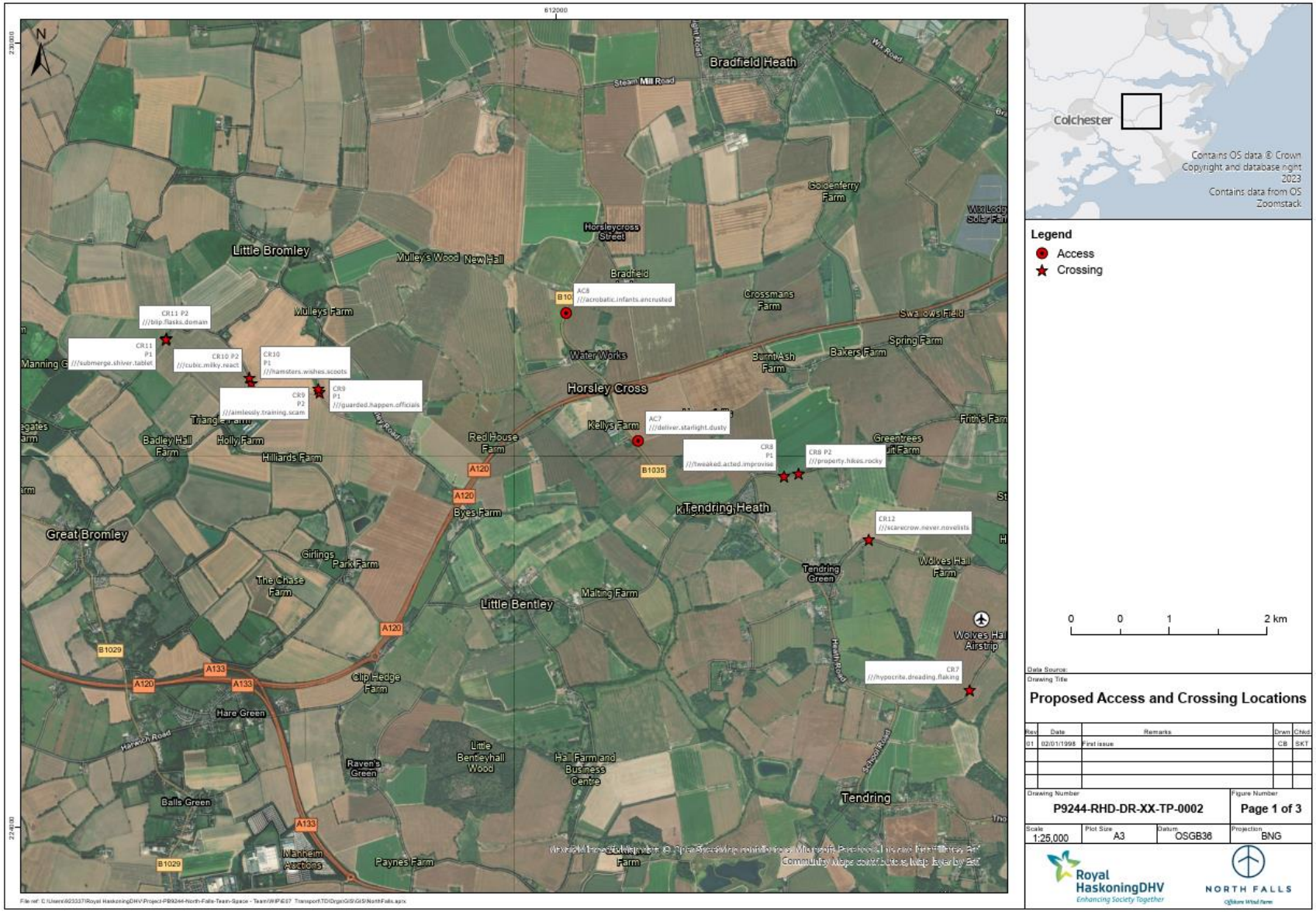
Stage 1 Road Safety Audit

Five Estuaries / North Falls Wind Farm

RWE

SLR Project No.: 237699

7 November 2023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Swallows Field
Spring Farm
Bakers Farm
Water Works
Burnt Ash Farm
Horsley Cross
Kelly's Farm
Red House Farm
Badley Hall Farm
Holly Farm
Hillards Farm
Triangle Farm
Greentrees
Byes Farm
Tendring Heath
Great Bromley
Girlings
Park Farm
The Chase Farm
Malting Farm
Little Bentley
Tendring Green
Wolves Hall Farm
Wolves Hall Airstrip
Clip Hedge Farm
Hare Green
Hamwich Road
Heath Road
School Road
Little Bentleyhall Wood
Hall Farm and Business Centre
Raven's Green
Balls Green
Tendring
Manheim Auctions
Paynes Farm
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A133
B1029
B1035
B10
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CR11 P1 ///submerge.shiver.tablet
CR10 P2 ///cubic.milky.react
CR10 P1 ///hamsters.wishes.scoots
CR9 P2 ///aimlessly.training.scam
CR9 P1 ///guarded.happen.officials
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AC7 ///deliver.starlight.dusty
CR8 P1 ///tweaked.acted.improvise
CR8 P2 ///property.hikes.rocky
CR12 ///scarecrow.never.novelists
CR7 ///hypocrite.dreading.flaking
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Enhancing Society Together
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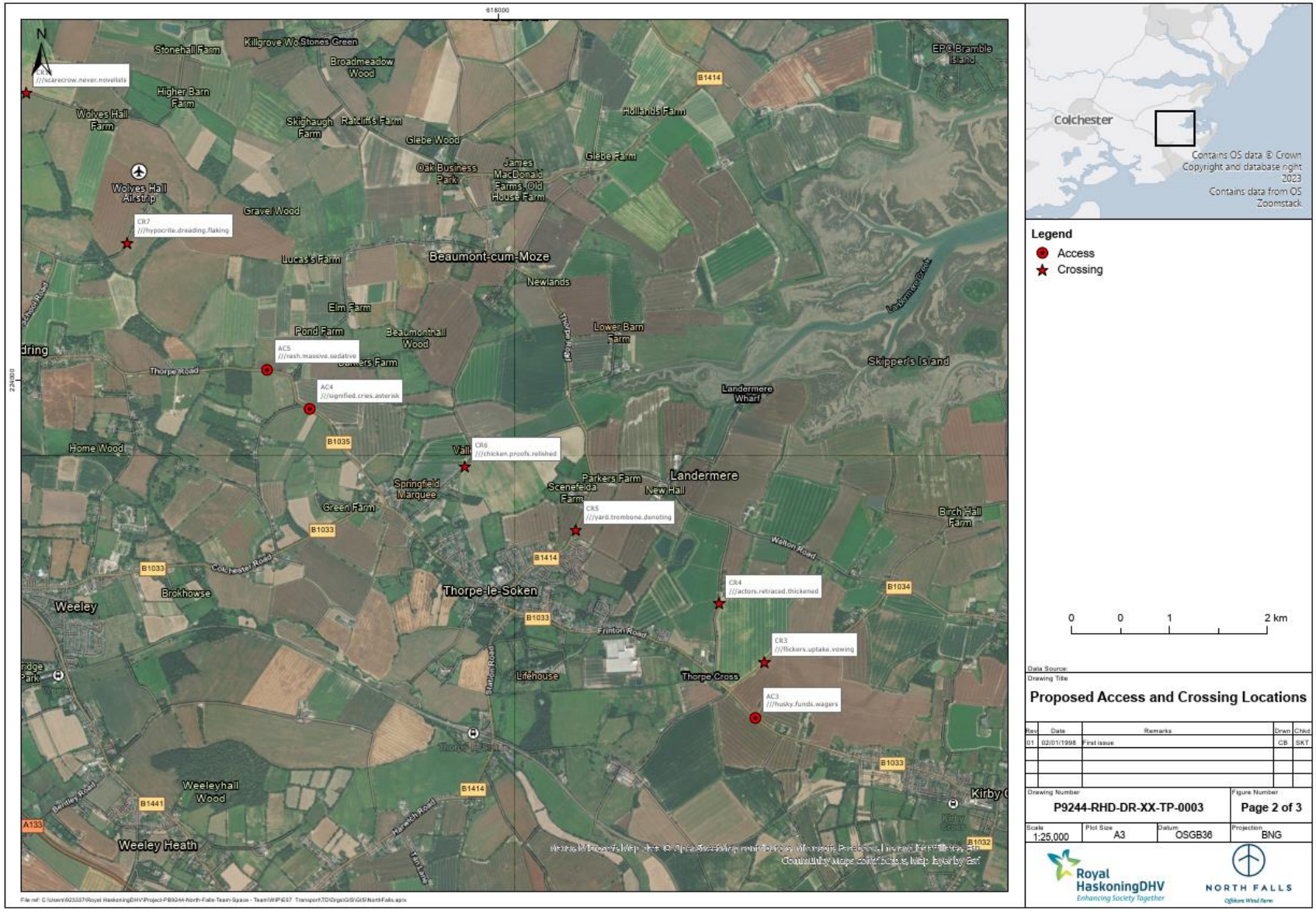
Offshore Wind Farm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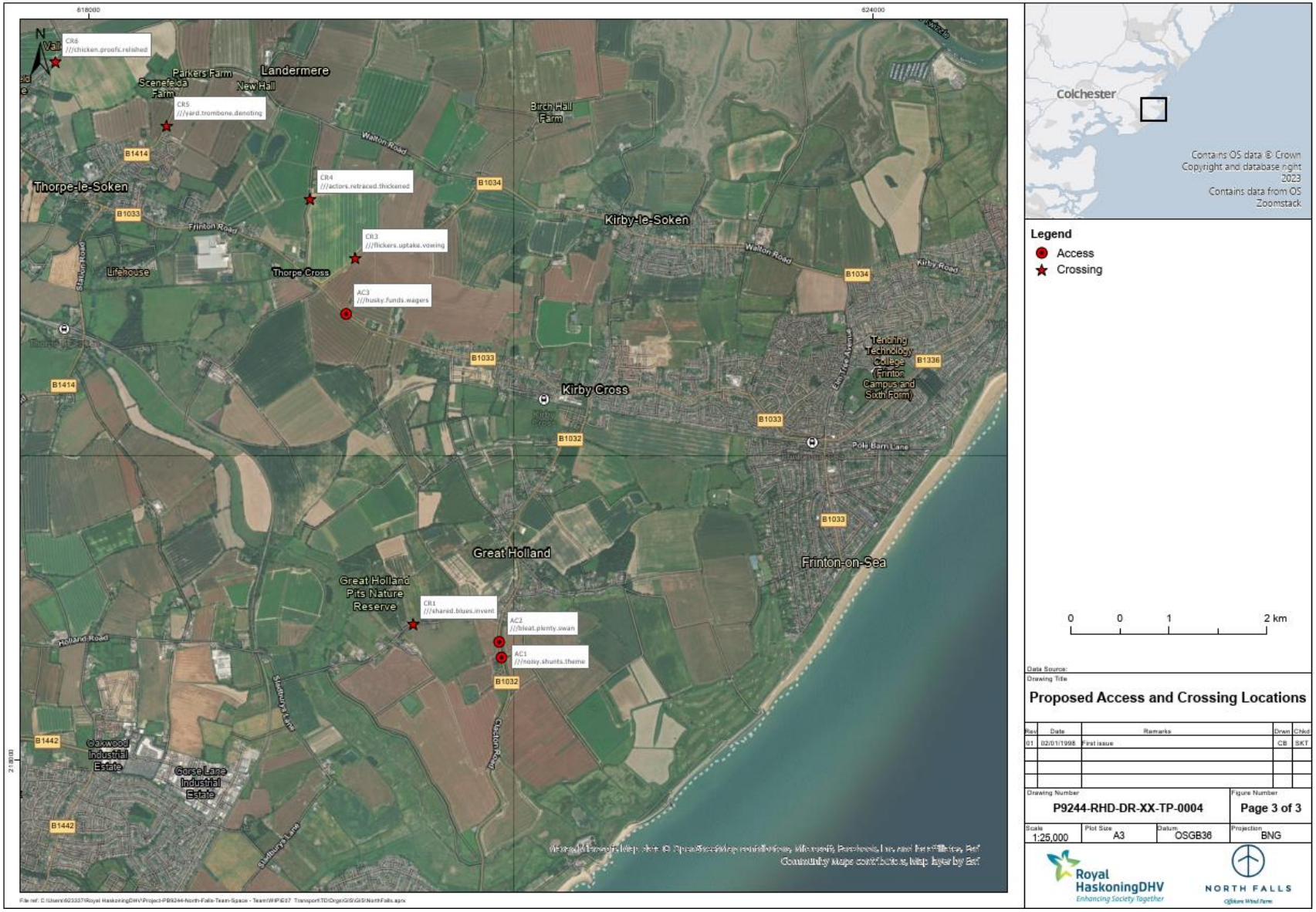
Stonehall Farm
Killgrove Wo
Stones Green
Broadmeadow Wood
EPG Bramble Island
Higher Barn Farm
Wolves Hall Farm
Skighaugh Farm
Ratcliffs Farm
Glebe Wood
Hollands Farm
Glebe Farm
Oak Business Park
James MacDonald Farms, Old House Farm
Wolves Hall Airstrip
Grave Wood
Lucas's Farm
Beaumont-cum-Moze
Newlands
Elm Farm
Pond Farm
Beaumonthall Wood
Lower Barn Farm
Skipper's Island
Landermere Wharf
Thorpe Road
Home Wood
Springfield Marquee
Parkers Farm
Scenefield Farm
Landermere
New Hall
Green Farm
Birch Hall Farm
Walton Road
Colchester Road
Brokhowse
Weeley
Thorpe-le-Soken
Frinton Road
Lifehouse
Thorpe Cross
Weeleyhall Wood
Weeley Heath
Kirby
B1414
B1035
B1033
B1034
B1441
B1032
A133
CR8 ///scarecrow.never.novelists
CR7 ///hypocrite.dreading.flaking
AC5 ///rash.massive.sedative
AC4 ///signified.cries.asterisk
CR6 ///chicken.proofs.relished
CR5 ///yard.trombone.denoting
CR4 ///actors.retraced.thickened
CR3 ///flickers.uptake.vowing
AC3 ///husky.funds.wagers
Colchester
Contains OS data © Crown Copyright and database right 2023
Contains data from OS Zoomstack
Legend
Access
Crossing
0 0 1 2 km
Data Source:
Drawing Title
Proposed Access and Crossing Locations
Rev Date Remarks Drwn Chkd
01 02/01/1998 First issue CB SKT
Drawing Number P9244-RHD-DR-XX-TP-0003
Figure Number Page 2 of 3
Scale 1:25,000
Plot Size A3
Datum OSGB36
Projection BNG
Royal HaskoningDHV
Enhancing Society Together
NORTH FALLS
Offshore Wind Farm


618000
624000
N
Vail
CR6
///chicken.proofs.relished
Parkers Farm
Landermere
Scenefields Farm
New Hall
CR5
///yard.trombone.donating
Birch Hall Farm
Walton Road
B1414
B1034
Thorpe-le-Soken
CR4
///actors.retraced.thickened
B1033
Frinton Road
Kirby-le-Soken
CR3
///flickers.uptake.vowing
Station Road
Lifehouse
Thorpe Cross
AC3
///husky.funds.wagers
Kirby Road
B1336
Tendring Technology College (Frinton Campus and Sixth Form)
Kirby Cross
B1032
Pole Barn Lane
Great Holland
Frinton-on-Sea
Great Holland Pits Nature Reserve
CR1
///shared.blues.invent
AC2
///bleat.plenty.swan
AC1
///noisy.shunts.theme
Holland Road
Skelbury's Lane
Clacton Road
B1442
Oakwood Industrial Estate
Gorse Lane Industrial Estate
Colchester
Contains OS data © Crown Copyright and database right 2023
Contains data from OS Zoomstack
Legend
Access
Crossing
0 0 1 2 km
Data Source:
Drawing Title
Proposed Access and Crossing Locations
Rev | Date | Remarks | Drwn | Chkd
01 | 02/01/1998 | First issue | CB | SKT
Drawing Number
P9244-RHD-DR-XX-TP-0004
Figure Number
Page 3 of 3
Scale
1:25,000
Plot Size
A3
Datum
OSGB36
Projection
BNG
Royal HaskoningDHV
Enhancing Society Together
NORTH FALLS

Appendix B Submitted Documents

Stage 1 Road Safety Audit

Five Estuaries / North Falls Wind Farm

RWE

SLR Project No.: 237699

7 November 2023

Submitted Documents

Document	Document Title
All Docs	404.05356.00010_Five Estauries_RSA Brief 230919_VE Trip Generation Access Design Accident Summary CombinedSheets PB9244-RHD-DR-ZZ-ZZ-DR-R-0012 PB9244-RHD-DR-ZZ-ZZ-DR-R-0021

Appendix C Problem Location Plans

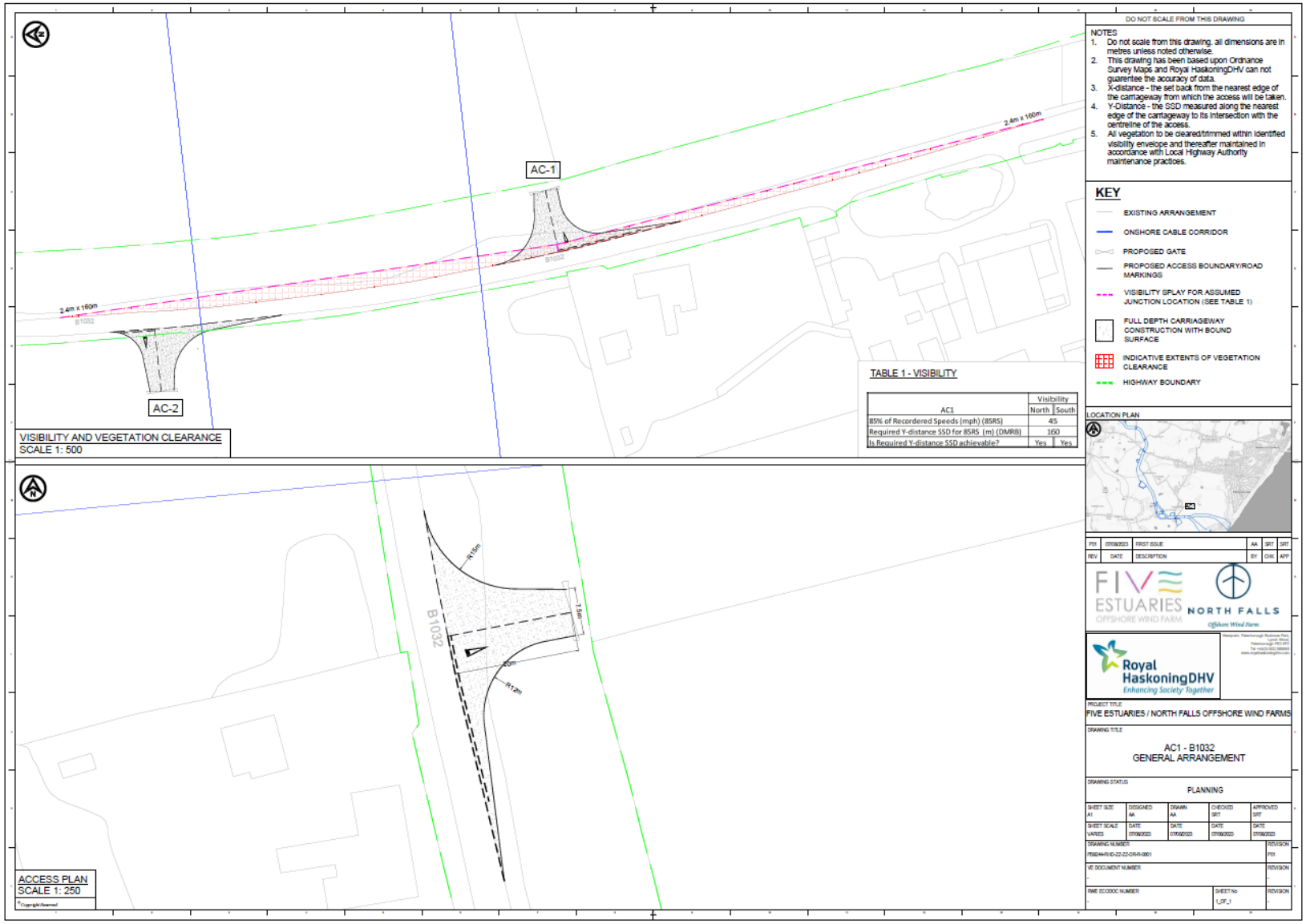
Stage 1 Road Safety Audit

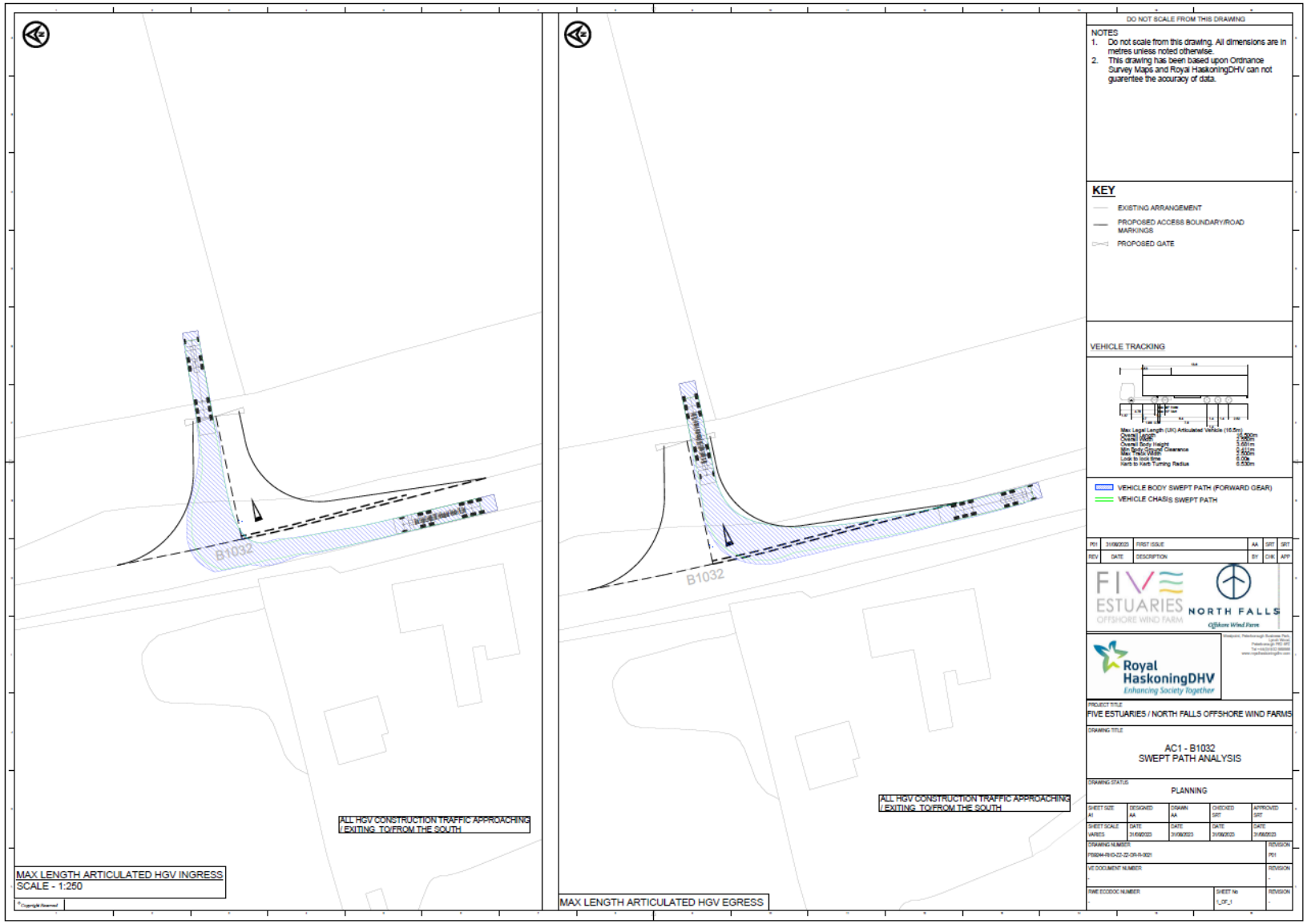
Five Estuaries / North Falls Wind Farm

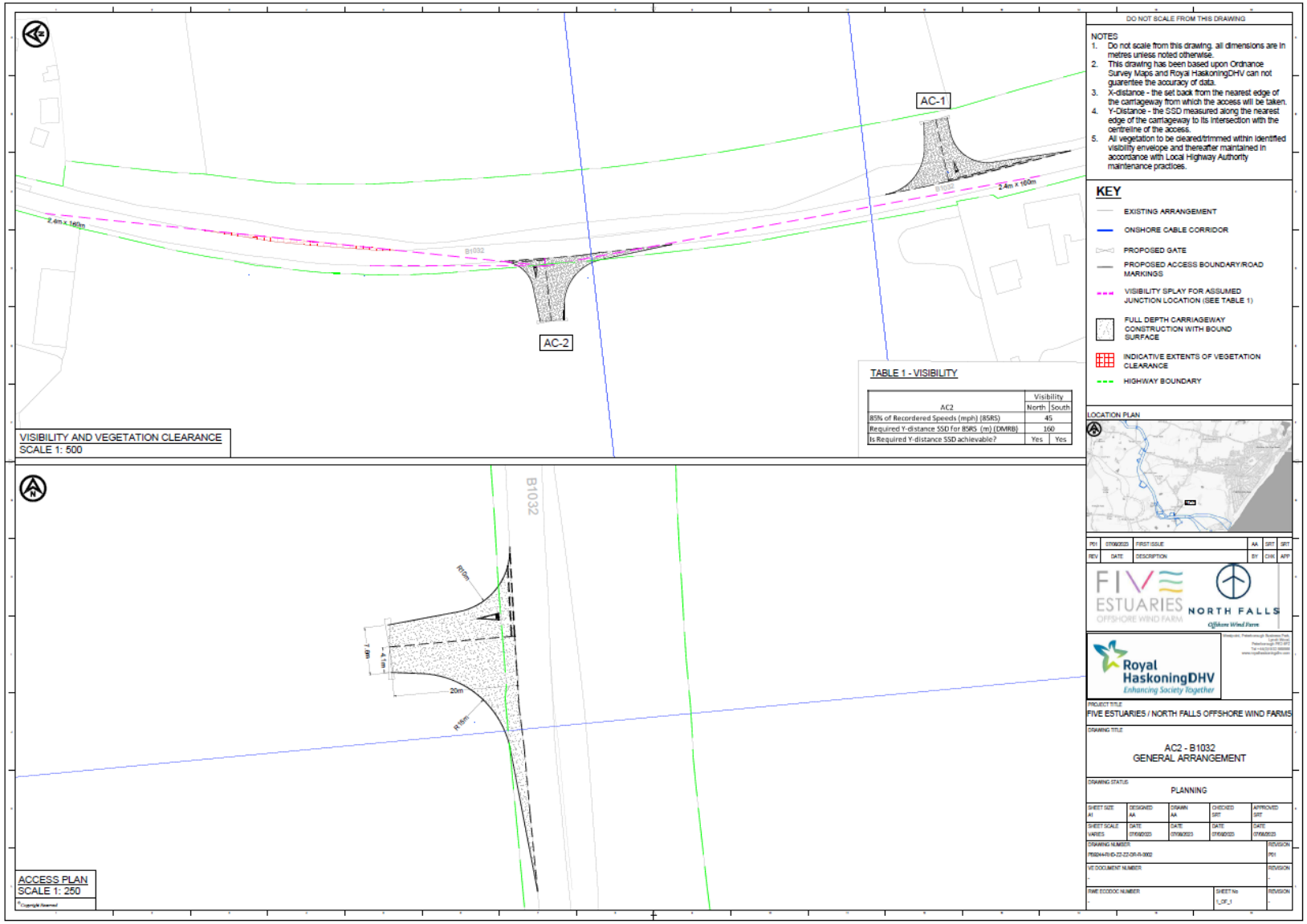
RWE

SLR Project No.: 237699

7 November 2023


AC-1
AC-2
2.4m x 160m
2.4m x 160m
B1032
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
ACCESS PLAN
SCALE 1: 250
B1032
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing, all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
TABLE 1 - VISIBILITY
AC1
Visibility
North
South
85% of Recordered Speeds (mph) (85RS)
45
Required Y-distance SSD for 85RS (m) (DMRB)
160
Is Required Y-distance SSD achievable?
Yes
Yes
LOCATION PLAN
P01 07/09/2023 FIRST ISSUE AA SRT SRT
REV DATE DESCRIPTION BY CHK APP
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC1 - B1032
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING


B1032
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH
MAX LENGTH ARTICULATED HGV INGRESS
SCALE - 1:250
B1032
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH
MAX LENGTH ARTICULATED HGV EGRESS
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing. All dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordinance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
KEY
EXISTING ARRANGEMENT
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
PROPOSED GATE
VEHICLE TRACKING
VEHICLE BODY SWEPT PATH (FORWARD GEAR)
VEHICLE CHASIS SWEPT PATH
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC1 - B1032
SWEPT PATH ANALYSIS
DRAWING STATUS
PLANNING


AC-1
AC-2
B1032
2.4m x 160m
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
ACCESS PLAN
SCALE 1: 250
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing, all dimensions are in metres unless noted otherwise.
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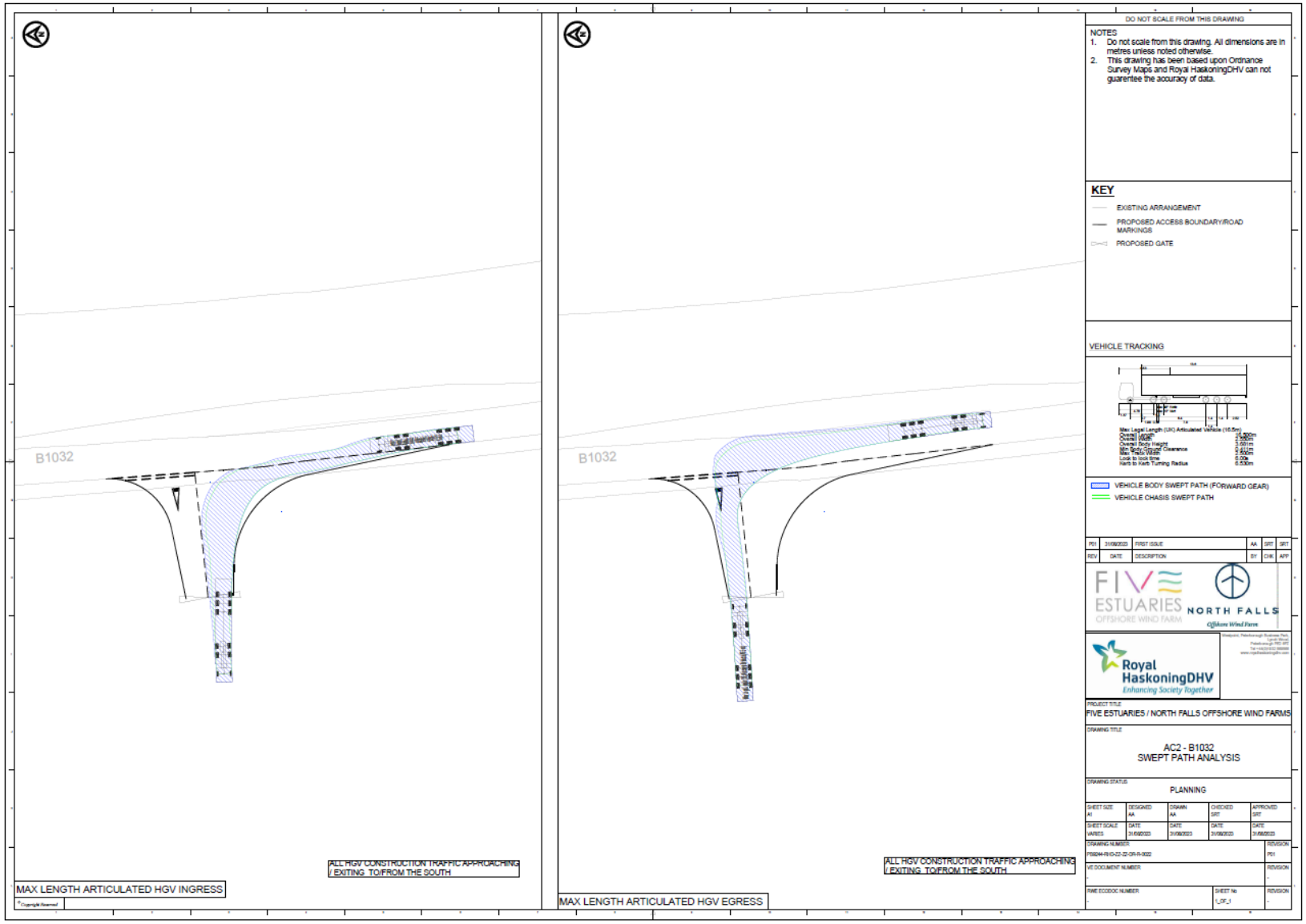
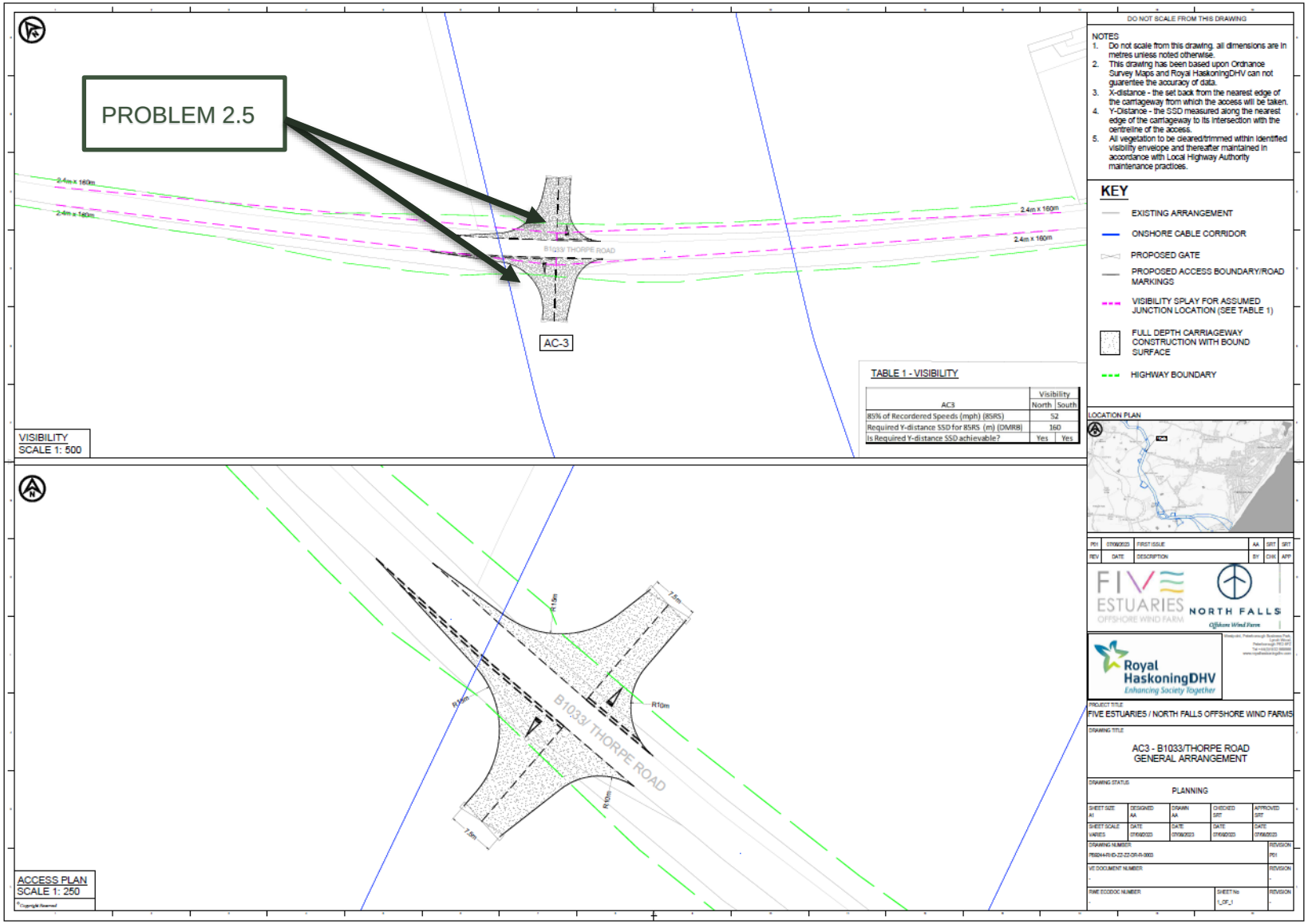
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
TABLE 1 - VISIBILITY
AC2
Visibility
North
South
85% of Recordered Speeds (mph) (85RS)
45
Required Y-distance SSD for 85RS (m) (DMRB)
160
Is Required Y-distance SSD achievable?
Yes
Yes
LOCATION PLAN
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC2 - B1032
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING


B1032
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH
MAX LENGTH ARTICULATED HGV INGRESS
B1032
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH
MAX LENGTH ARTICULATED HGV EGRESS
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing. All dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
KEY
EXISTING ARRANGEMENT
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
PROPOSED GATE
VEHICLE TRACKING
VEHICLE BODY SWEPT PATH (FORWARD GEAR)
VEHICLE CHASIS SWEPT PATH
P01 31/08/2023 FIRST ISSUE AA GRT GRT
REV DATE DESCRIPTION BY CHK APP
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC2 - B1032
SWEPT PATH ANALYSIS
DRAWING STATUS
PLANNING
SHEET SIZE A1 | DESIGNED AA | DRAWN AA | CHECKED GRT | APPROVED GRT
SHEET SCALE VARIES | DATE 31/08/2023 | DATE 31/08/2023 | DATE 31/08/2023 | DATE 31/08/2023
DRAWING NUMBER P01
VE DOCUMENT NUMBER -
RWE ECODOC NUMBER -
SHEET No 1_OF_1
REVISION -


PROBLEM 2.5
2.4m x 160m
2.4m x 160m
B1033/ THORPE ROAD
2.4m x 160m
2.4m x 160m
AC-3
VISIBILITY
SCALE 1: 500
TABLE 1 - VISIBILITY
AC3
Visibility
North
South
85% of Recordered Speeds (mph) (85RS)
52
Required Y-distance SSD for 85RS (m) (DMRB)
160
Is Required Y-distance SSD achievable?
Yes
Yes
DO NOT SCALE FROM THIS DRAWING
NOTES
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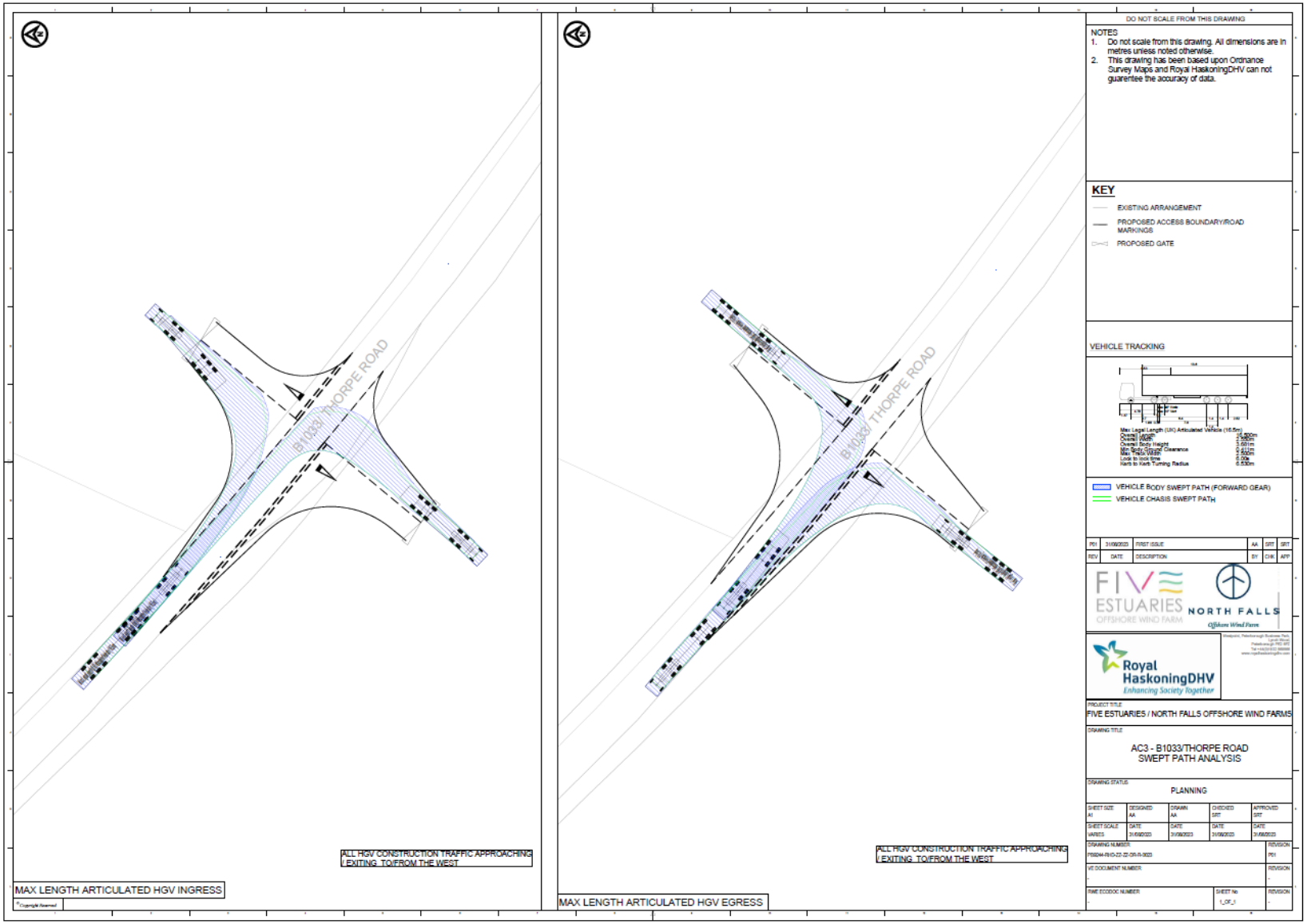
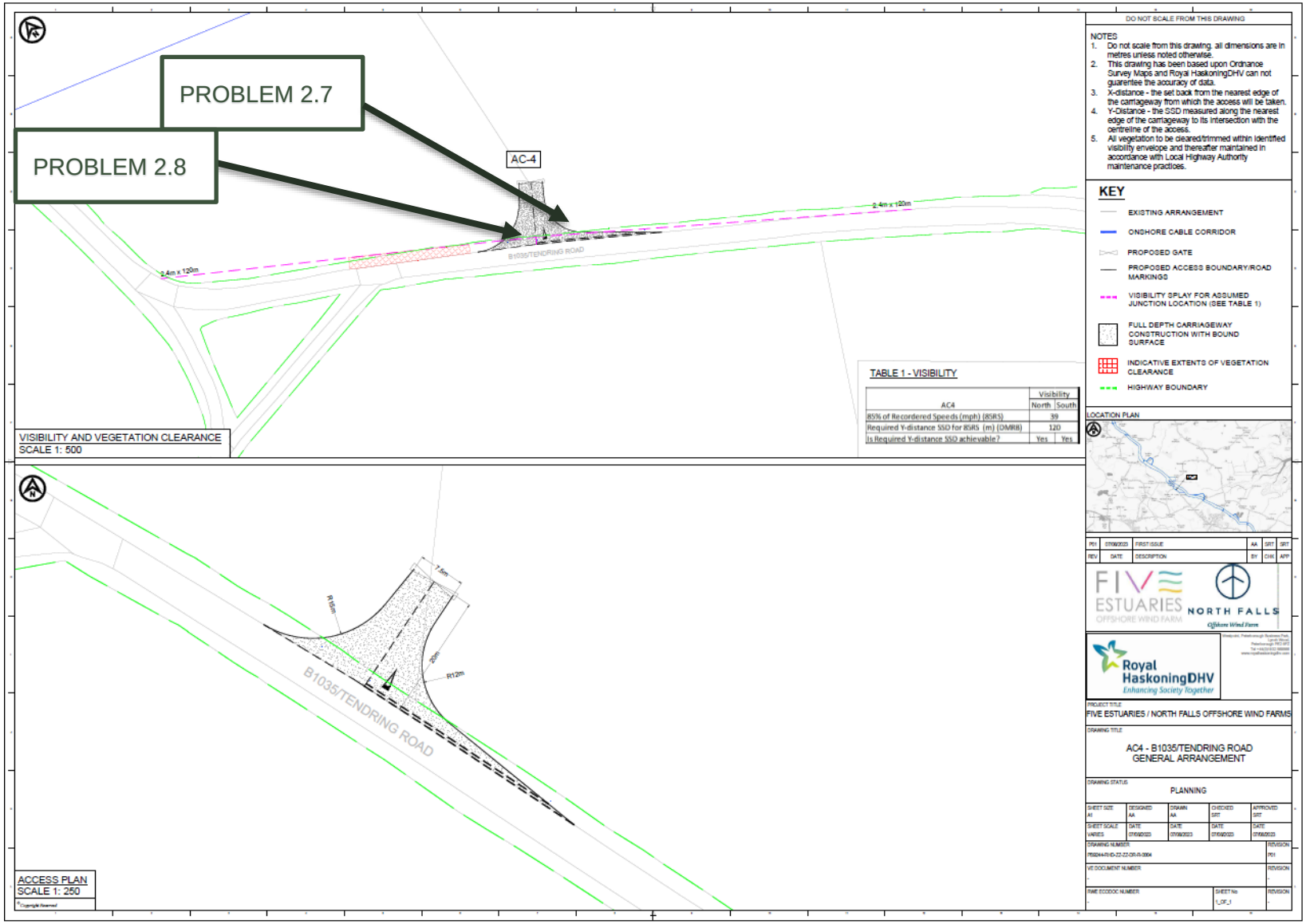
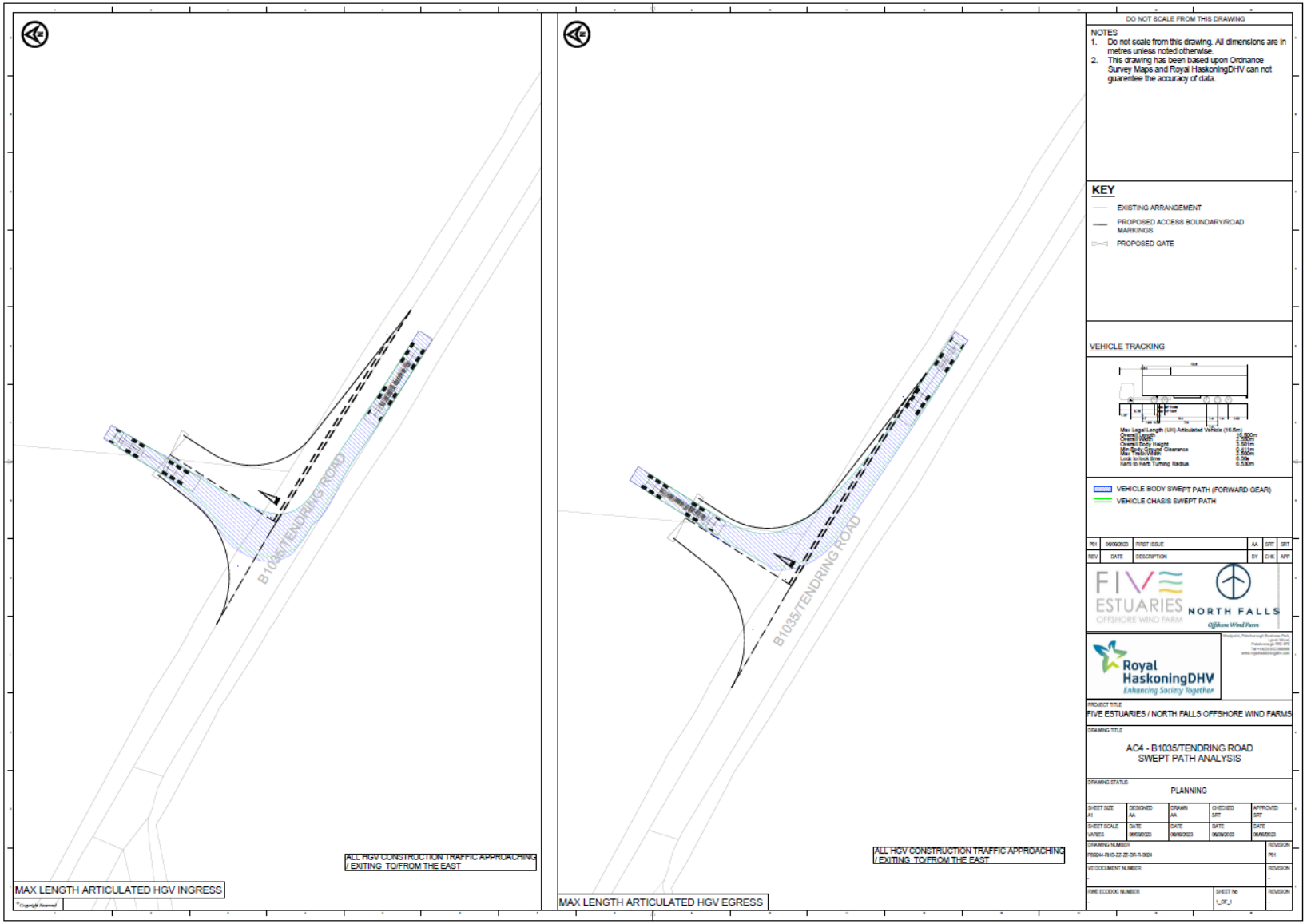
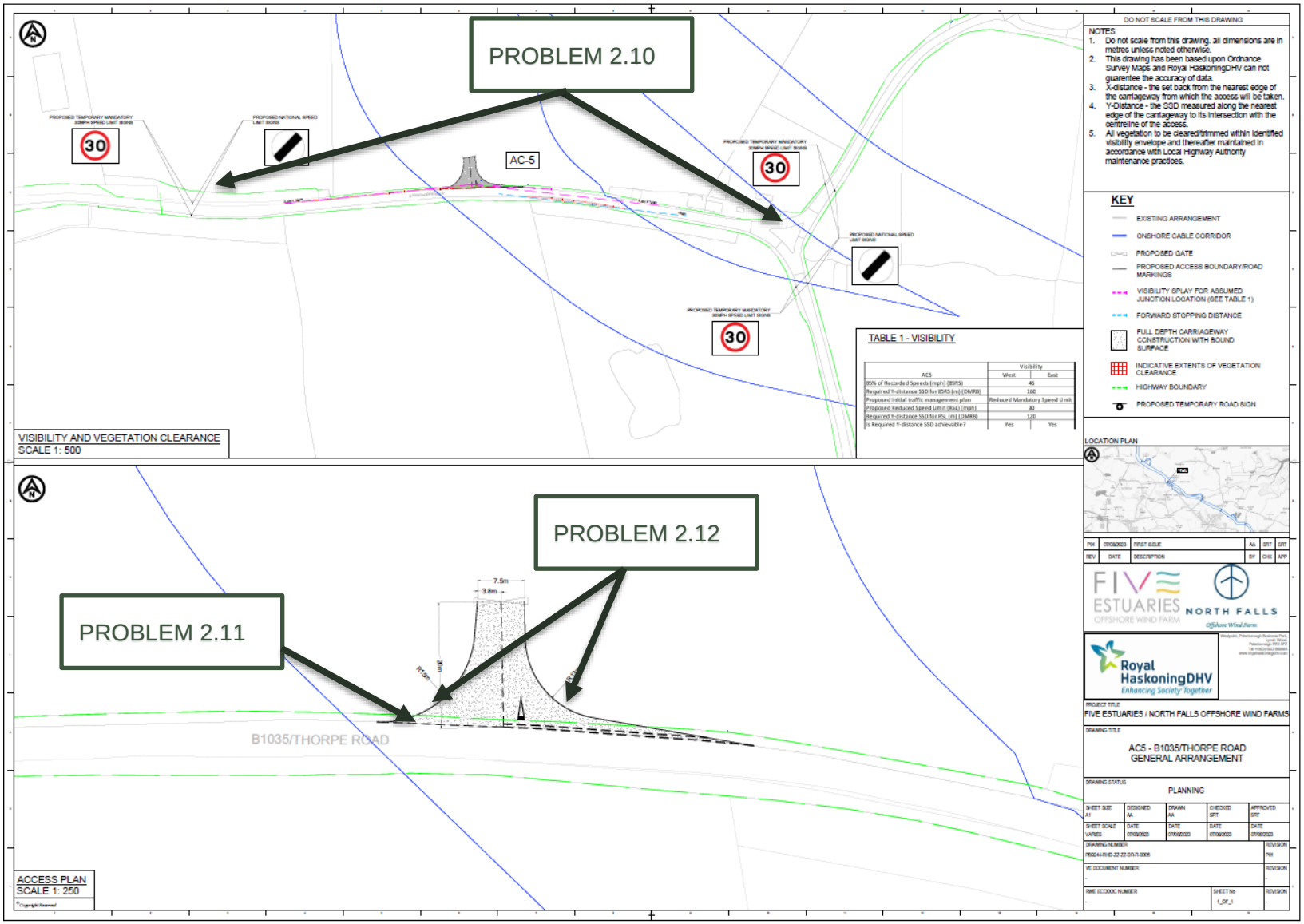
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
HIGHWAY BOUNDARY
LOCATION PLAN
R10m
R10m
R10m
R10m
7.3m
7.3m
B1033/ THORPE ROAD
ACCESS PLAN
SCALE 1: 250
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC3 - B1033/THORPE ROAD
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING


B1033/ THORPE ROAD
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE WEST
MAX LENGTH ARTICULATED HGV INGRESS
B1033/ THORPE ROAD
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE WEST
MAX LENGTH ARTICULATED HGV EGRESS
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing. All dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordinance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
KEY
EXISTING ARRANGEMENT
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
PROPOSED GATE
VEHICLE TRACKING
VEHICLE BODY SWEPT PATH (FORWARD GEAR)
VEHICLE CHASSIS SWEPT PATH
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC3 - B1033/THORPE ROAD
SWEPT PATH ANALYSIS
DRAWING STATUS
PLANNING


PROBLEM 2.7
PROBLEM 2.8
AC-4
2.4m x 120m
B1035/TENDRING ROAD
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
ACCESS PLAN
SCALE 1: 250
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing, all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
TABLE 1 - VISIBILITY
AC4
Visibility
North
South
85% of Recordered Speeds (mph) (85RS)
39
Required Y-distance SSD for 85RS (m) (DMRB)
120
Is Required Y-distance SSD achievable?
Yes
Yes
LOCATION PLAN
FIVE ESTUARIES
OFFSHORE WIND FARM
NORTH FALLS
Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC4 - B1035/TENDRING ROAD
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING


B1035/TENDRING ROAD
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE EAST
MAX LENGTH ARTICULATED HGV INGRESS
B1035/TENDRING ROAD
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE EAST
MAX LENGTH ARTICULATED HGV EGRESS
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing. All dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
KEY
EXISTING ARRANGEMENT
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
PROPOSED GATE
VEHICLE TRACKING
VEHICLE BODY SWEPT PATH (FORWARD GEAR)
VEHICLE CHASIS SWEPT PATH
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC4 - B1035/TENDRING ROAD SWEPT PATH ANALYSIS
DRAWING STATUS
PLANNING


PROBLEM 2.10
AC-5
30
30
30
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
PROBLEM 2.12
PROBLEM 2.11
B1035/THORPE ROAD
ACCESS PLAN
SCALE 1: 250
DO NOT SCALE FROM THIS DRAWING
NOTES
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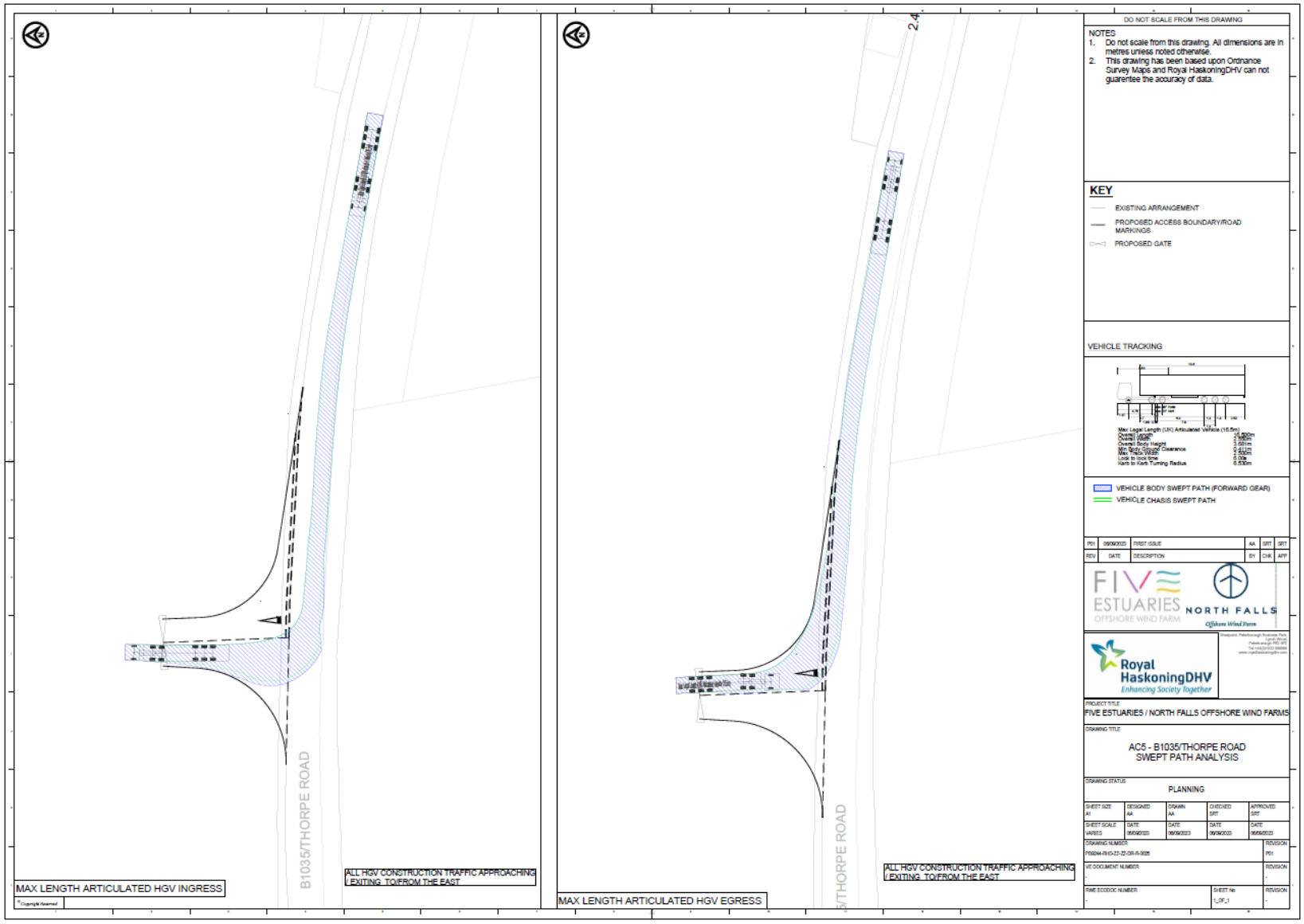
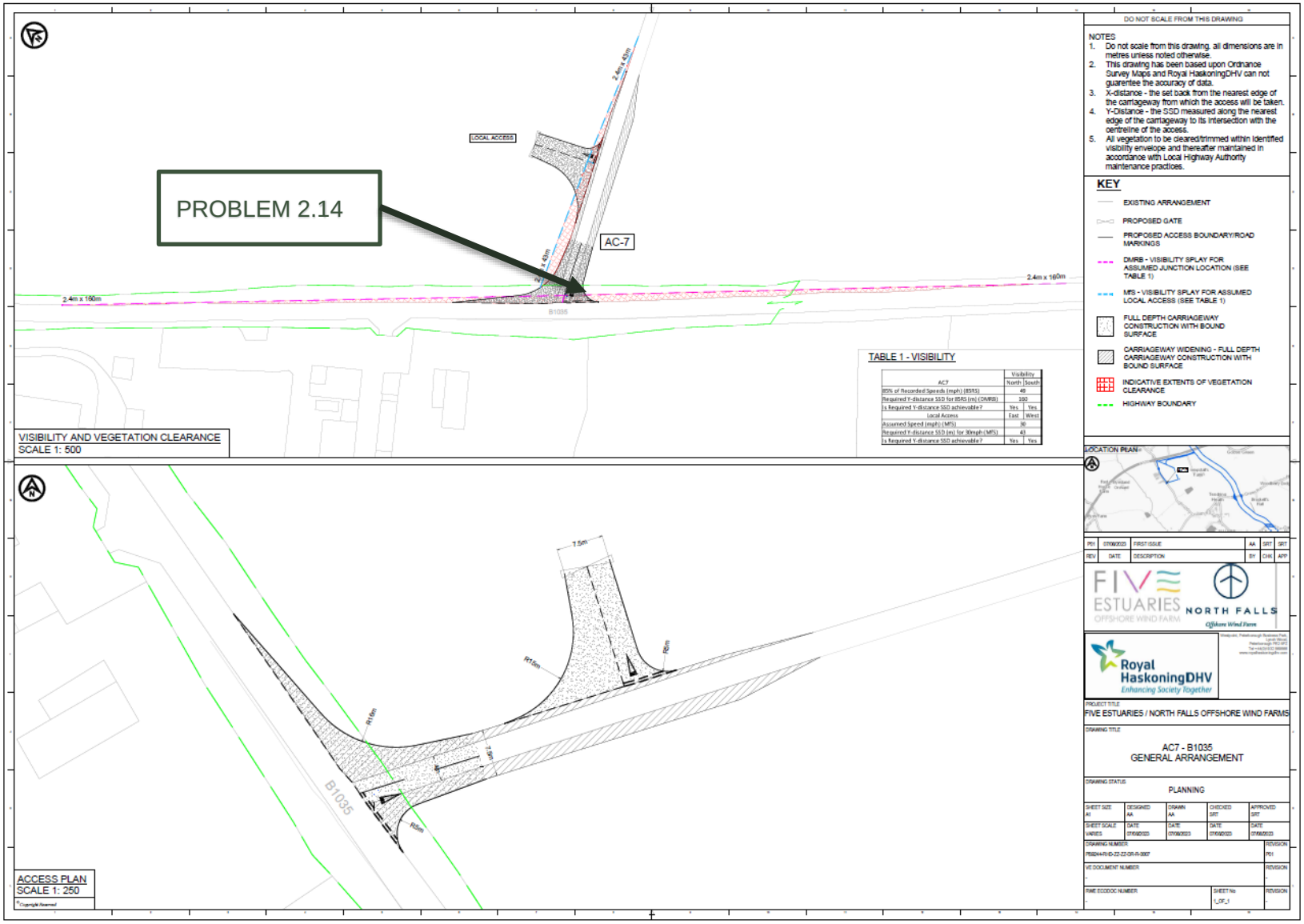
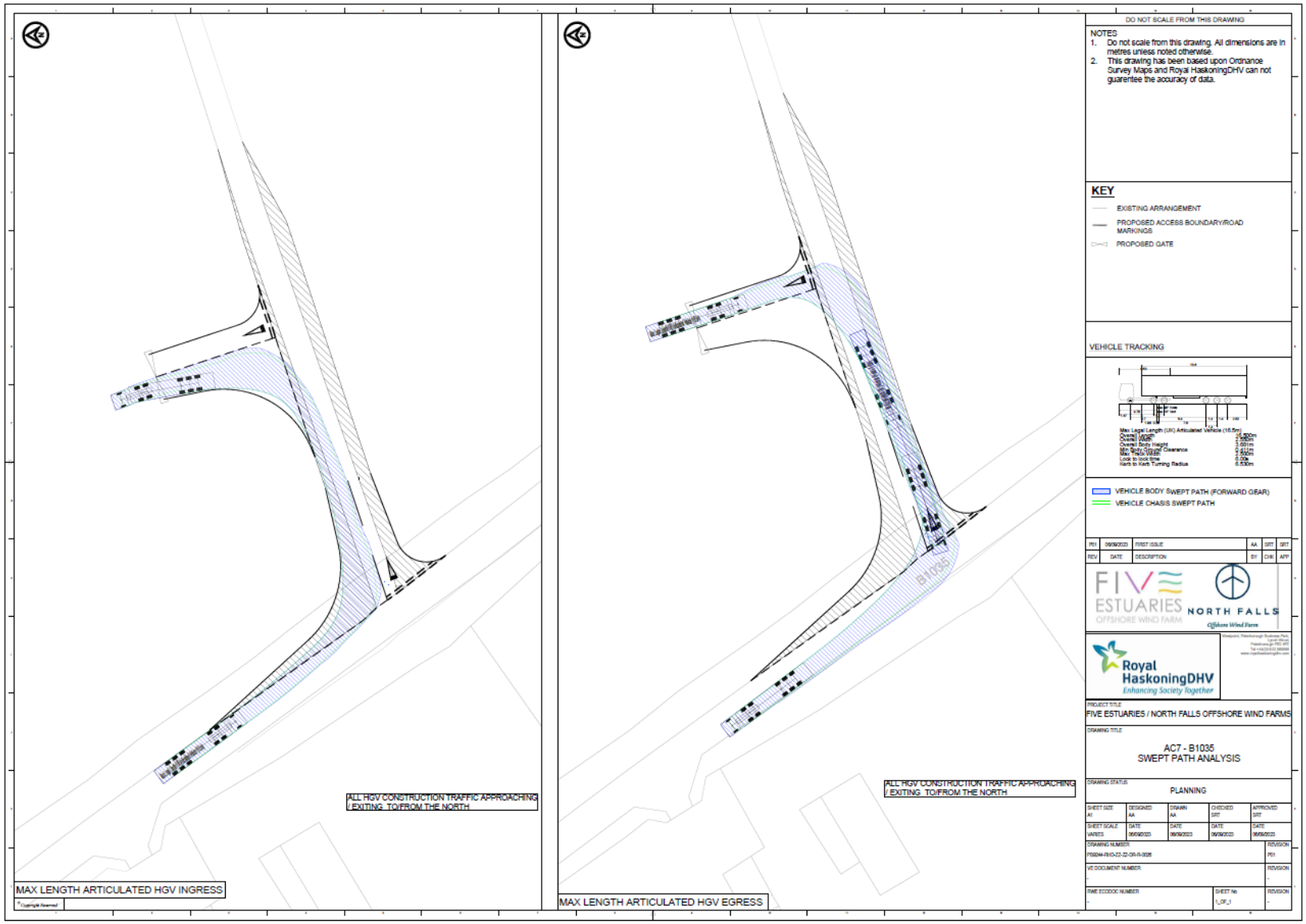
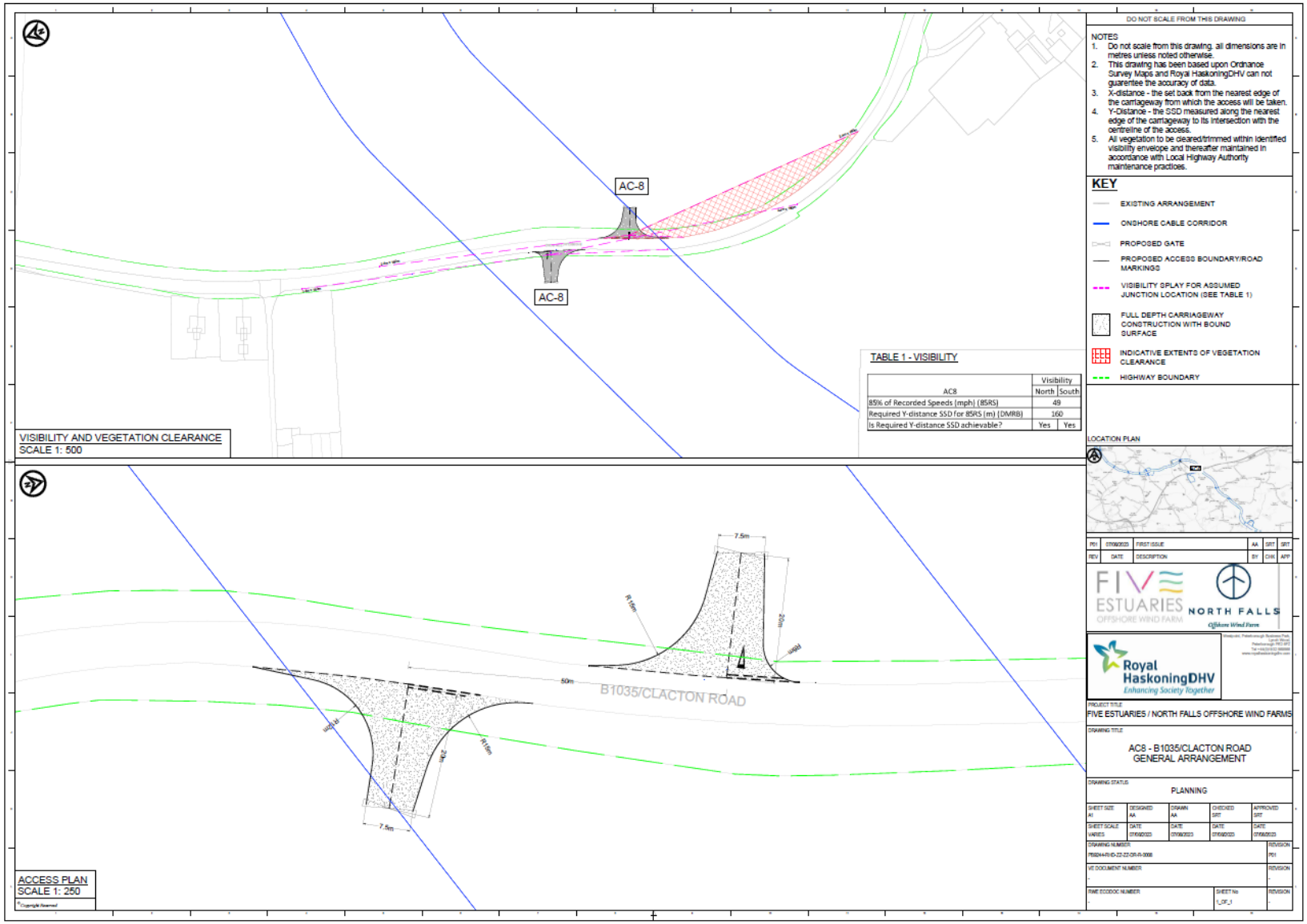
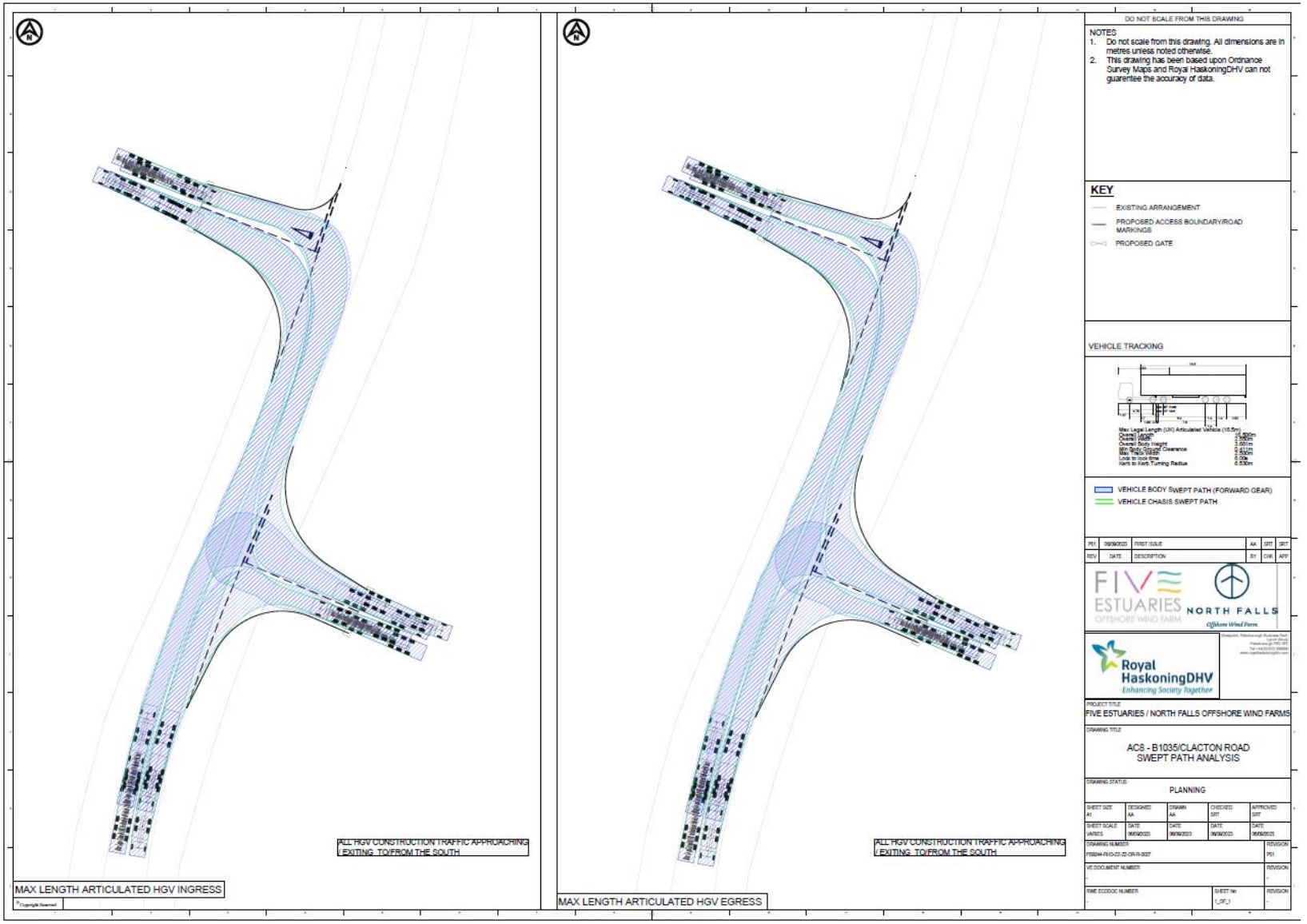
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FORWARD STOPPING DISTANCE
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
PROPOSED TEMPORARY ROAD SIGN
TABLE 1 - VISIBILITY
LOCATION PLAN
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC5 - B1035/THORPE ROAD
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING

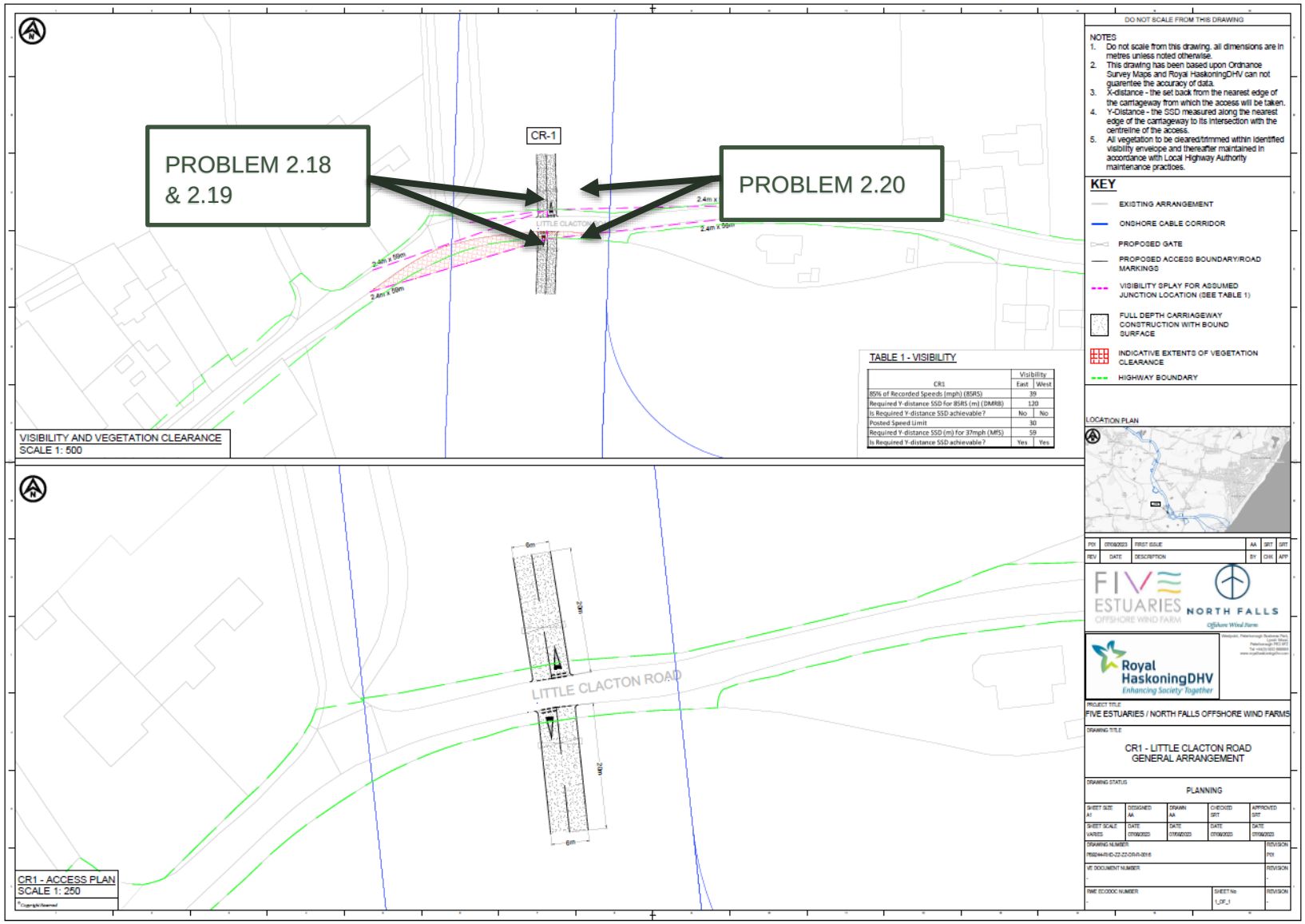

B1035/THORPE ROAD
MAX LENGTH ARTICULATED HGV INGRESS
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE EAST
B1035/THORPE ROAD
MAX LENGTH ARTICULATED HGV EGRESS
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE EAST
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing. All dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
KEY
EXISTING ARRANGEMENT
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
PROPOSED GATE
VEHICLE TRACKING
VEHICLE BODY SWEPT PATH (FORWARD GEAR)
VEHICLE CHASIS SWEPT PATH
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC5 - B1035/THORPE ROAD
SWEPT PATH ANALYSIS
DRAWING STATUS
PLANNING


PROBLEM 2.14
AC-7
LOCAL ACCESS
2.4m x 160m
2.4m x 160m
2.4m x 43m
2.4m x 43m
B1035
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
TABLE 1 - VISIBILITY
AC7
Visibility
North
South
85% of Recorded Speeds (mph) (85%S)
40
Required Y-distance SSD for 85%S (m) (DMRB)
160
Is Required Y-distance SSD achievable?
Yes
Yes
Local Access
East
West
Assumed Speed (mph) (MfS)
30
Required Y-distance SSD (m) for 30mph (MfS)
43
Is Required Y-distance SSD achievable?
Yes
Yes
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing. all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
DMRB - VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
MfS - VISIBILITY SPLAY FOR ASSUMED LOCAL ACCESS (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
CARRIAGEWAY WIDENING - FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
LOCATION PLAN
P01 07/08/2023 FIRST ISSUE AA SRT SRT
REV DATE DESCRIPTION BY CHK APP
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC7 - B1035
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING
SHEET SIZE A1
DESIGNED AA
DRAWN AA
CHECKED SRT
APPROVED SRT
SHEET SCALE VARIES
DATE 07/08/2023
DRAWING NUMBER
REVISION
P01
VE DOCUMENT NUMBER
RWE ECODOC NUMBER
SHEET No 1_OF_1
ACCESS PLAN
SCALE 1: 250
7.5m
R15m
R10m
R8m
B1035

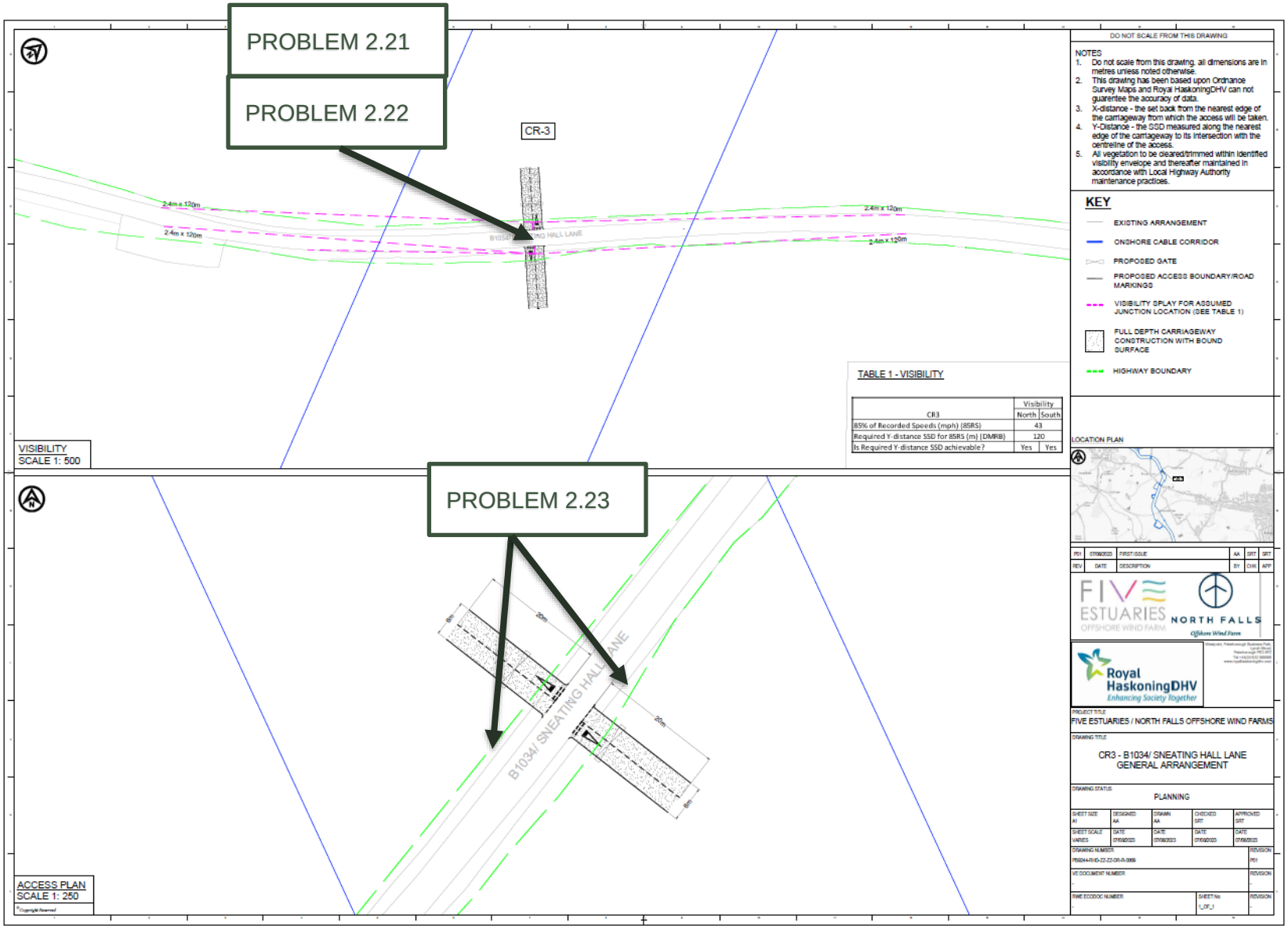

MAX LENGTH ARTICULATED HGV INGRESS
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE NORTH
MAX LENGTH ARTICULATED HGV EGRESS
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE NORTH
B1035
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing. All dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
KEY
EXISTING ARRANGEMENT
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
PROPOSED GATE
VEHICLE TRACKING
VEHICLE BODY SWEPT PATH (FORWARD GEAR)
VEHICLE CHASIS SWEPT PATH
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC7 - B1035
SWEPT PATH ANALYSIS
DRAWING STATUS
PLANNING


AC-8
AC-8
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
TABLE 1 - VISIBILITY
AC8
Visibility
North
South
85% of Recorded Speeds (mph) (85RS)
49
Required Y-distance SSD for 85RS (m) (DMRB)
160
Is Required Y-distance SSD achievable?
Yes
Yes
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing, all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
LOCATION PLAN
7.5m
R15m
215m
60m
B1035/CLACTON ROAD
R15m
215m
7.5m
ACCESS PLAN
SCALE 1: 250
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
AC8 - B1035/CLACTON ROAD
GENERAL ARRANGEMENT
PLANNING


MAX LENGTH ARTICULATED HGV INGRESS
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH
MAX LENGTH ARTICULATED HGV EGRESS
ALL HGV CONSTRUCTION TRAFFIC APPROACHING / EXITING TO/FROM THE SOUTH
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing. All dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
KEY
EXISTING ARRANGEMENT
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
PROPOSED GATE
VEHICLE TRACKING
VEHICLE BODY SWEPT PATH (FORWARD GEAR)
VEHICLE CHASIS SWEPT PATH
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
AC8 - B1035/CLACTON ROAD
SWEPT PATH ANALYSIS
DRAWING STATUS
PLANNING



	Visibility	
CR1	East	West
85% of Recorded Speeds (mph) (85RS)	39	
Required Y-distance SSD for 85RS (m) (DMRB)	120	
Is Required Y-distance SSD achievable?	No	No
Posted Speed Limit	30	
Required Y-distance SSD (m) for 37mph (MfS)	59	
Is Required Y-distance SSD achievable?	Yes	Yes


PROBLEM 2.21
PROBLEM 2.22
CR-3
2.4m x 120m
2.4m x 120m
2.4m x 120m
2.4m x 120m
B1034/ SNEATING HALL LANE
VISIBILITY
SCALE 1: 500
PROBLEM 2.23
B1034/ SNEATING HALL LANE
20m
20m
ACCESS PLAN
SCALE 1: 250
DO NOT SCALE FROM THIS DRAWING
NOTES
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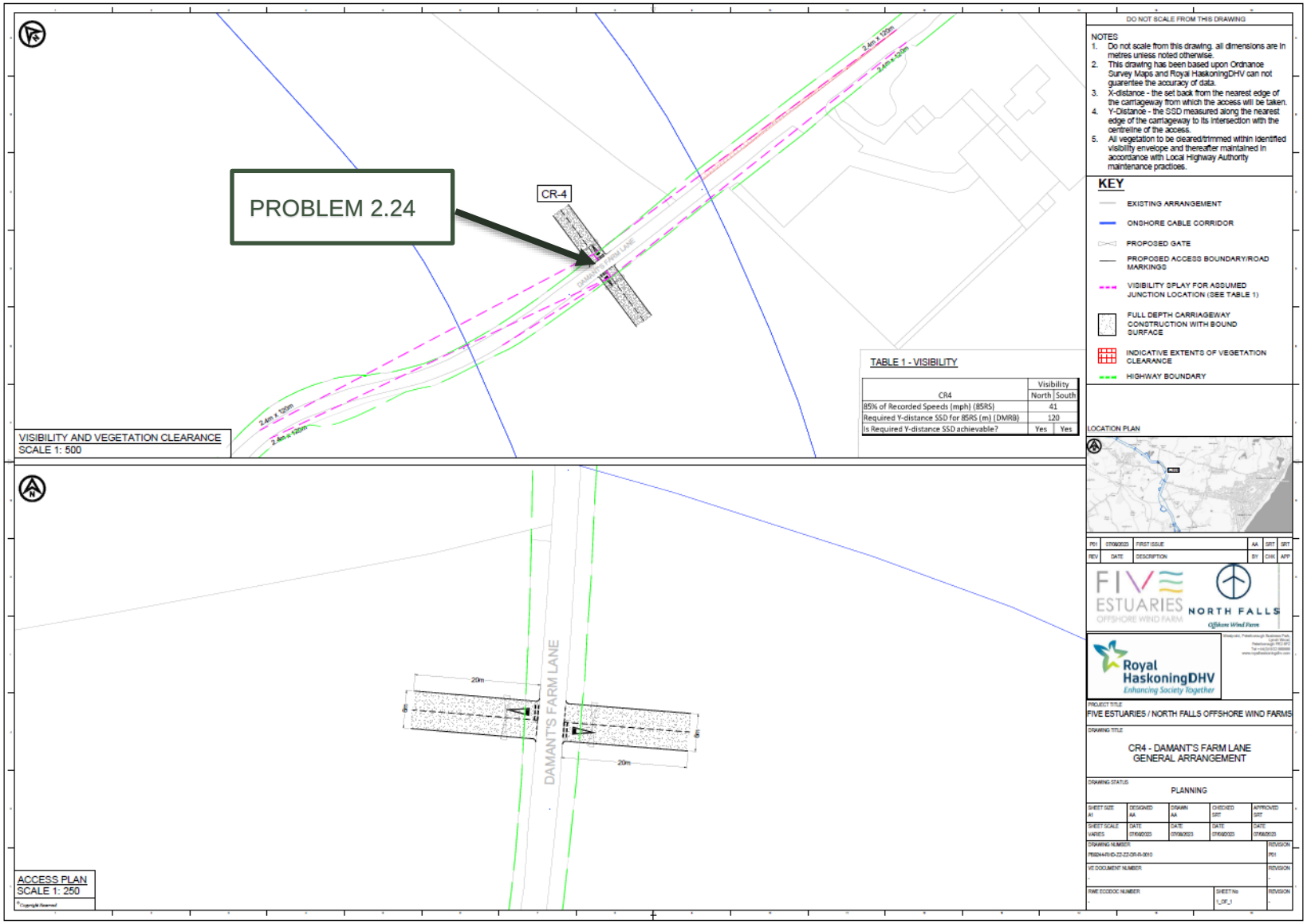
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
HIGHWAY BOUNDARY
TABLE 1 - VISIBILITY
CR3
Visibility
North
South
85% of Recorded Speeds (mph) (85RS)
43
Required Y-distance SSD for 85RS (m) (DMRB)
120
Is Required Y-distance SSD achievable?
Yes
Yes
LOCATION PLAN
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
CR3 - B1034/ SNEATING HALL LANE
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING


PROBLEM 2.24
CR-4
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
ACCESS PLAN
SCALE 1: 250
DAMANT'S FARM LANE
20m
20m
DO NOT SCALE FROM THIS DRAWING
NOTES
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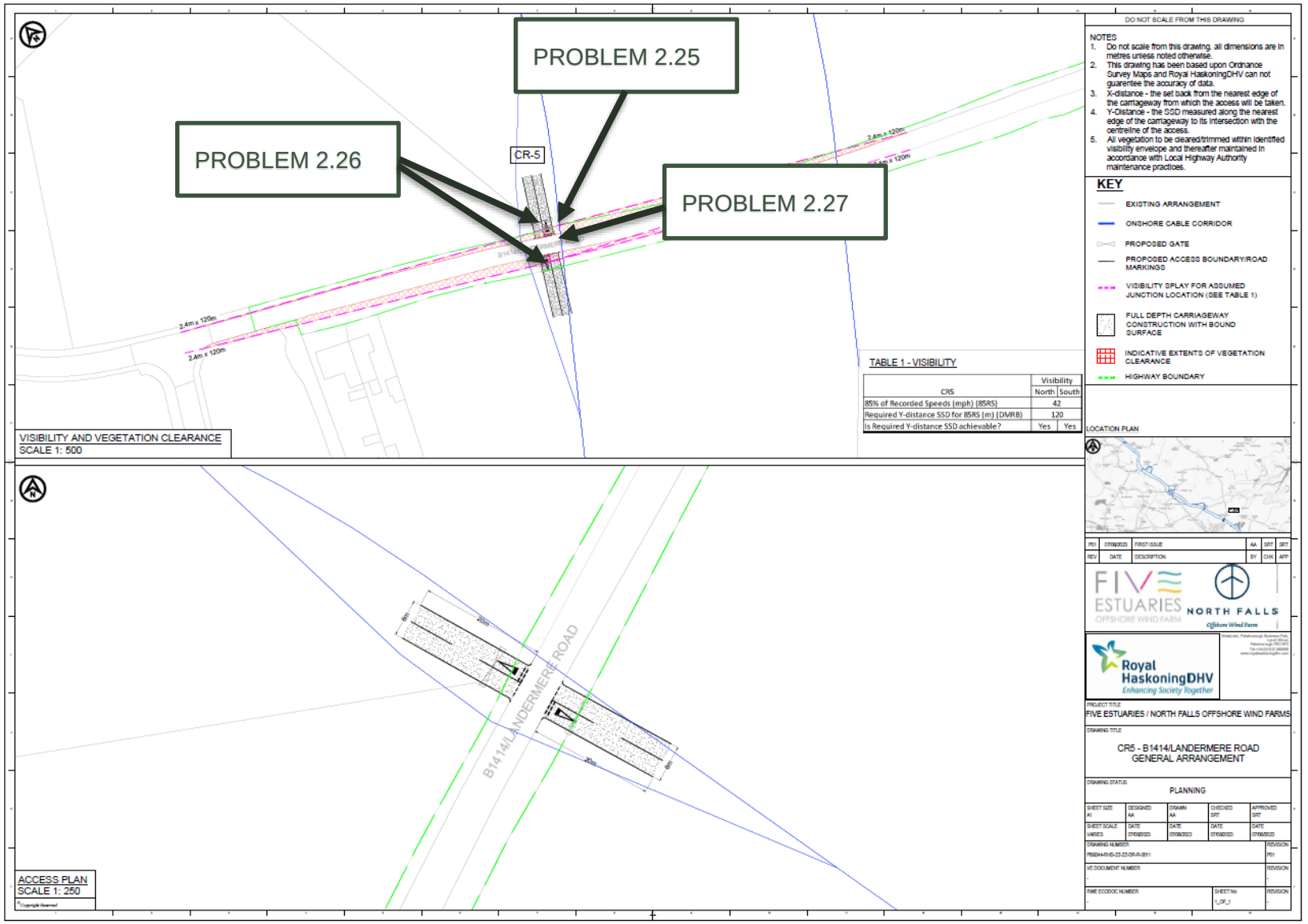
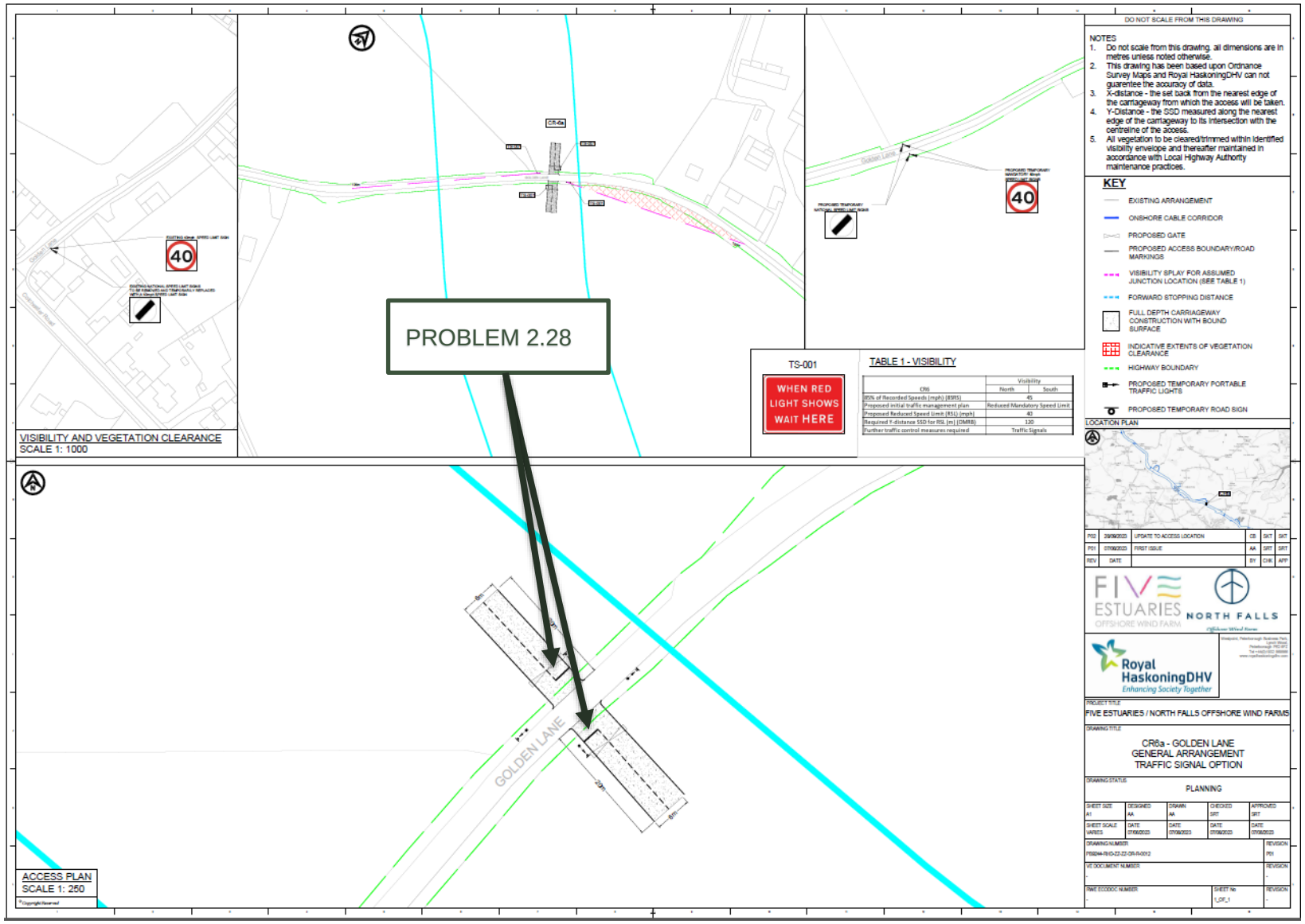
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
TABLE 1 - VISIBILITY
CR4
Visibility
North
South
85% of Recorded Speeds (mph) (85RS)
41
Required Y-distance SSD for 85RS (m) (DMRB)
120
Is Required Y-distance SSD achievable?
Yes
Yes
LOCATION PLAN
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
CR4 - DAMANT'S FARM LANE
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING


PROBLEM 2.25
PROBLEM 2.26
PROBLEM 2.27
CR-5
2.4m x 120m
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
ACCESS PLAN
SCALE 1: 250
B1414/LANDERMERE ROAD
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing, all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
TABLE 1 - VISIBILITY
CR5
Visibility
North
South
85% of Recorded Speeds (mph) (85RS)
42
Required Y-distance SSD for 85RS (m) (DMRB)
120
Is Required Y-distance SSD achievable?
Yes
Yes
LOCATION PLAN
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
CR5 - B1414/LANDERMERE ROAD
GENERAL ARRANGEMENT
PLANNING


PROBLEM 2.28
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 1000
ACCESS PLAN
SCALE 1: 250
GOLDEN LANE
TS-001
WHEN RED LIGHT SHOWS WAIT HERE
TABLE 1 - VISIBILITY
DO NOT SCALE FROM THIS DRAWING
NOTES
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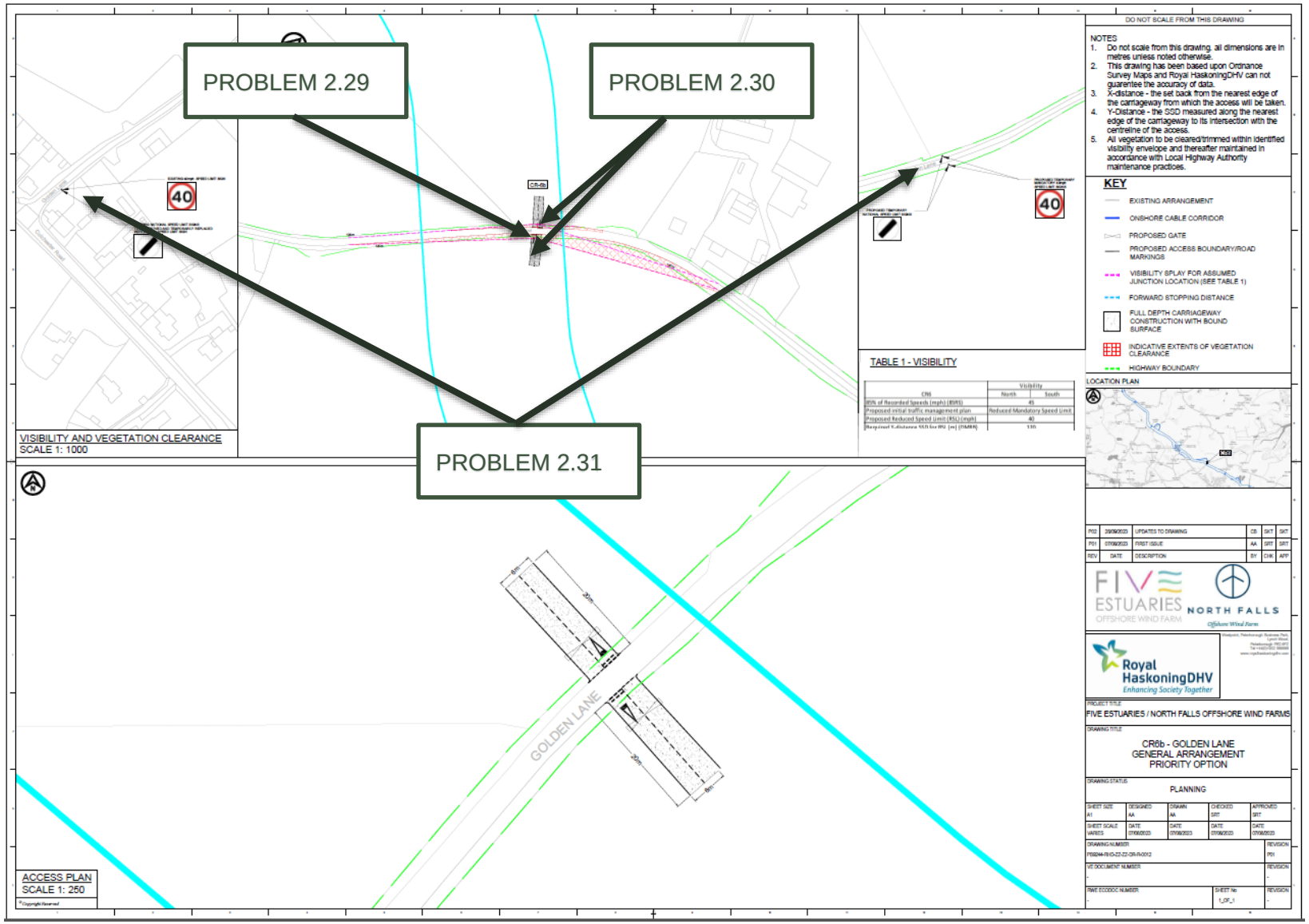
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FORWARD STOPPING DISTANCE
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
PROPOSED TEMPORARY PORTABLE TRAFFIC LIGHTS
PROPOSED TEMPORARY ROAD SIGN
LOCATION PLAN
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
CR6a - GOLDEN LANE
GENERAL ARRANGEMENT
TRAFFIC SIGNAL OPTION
DRAWING STATUS
PLANNING


PROBLEM 2.29
PROBLEM 2.30
PROBLEM 2.31
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 1000
ACCESS PLAN
SCALE 1: 250
GOLDEN LANE
TABLE 1 - VISIBILITY
DO NOT SCALE FROM THIS DRAWING
NOTES
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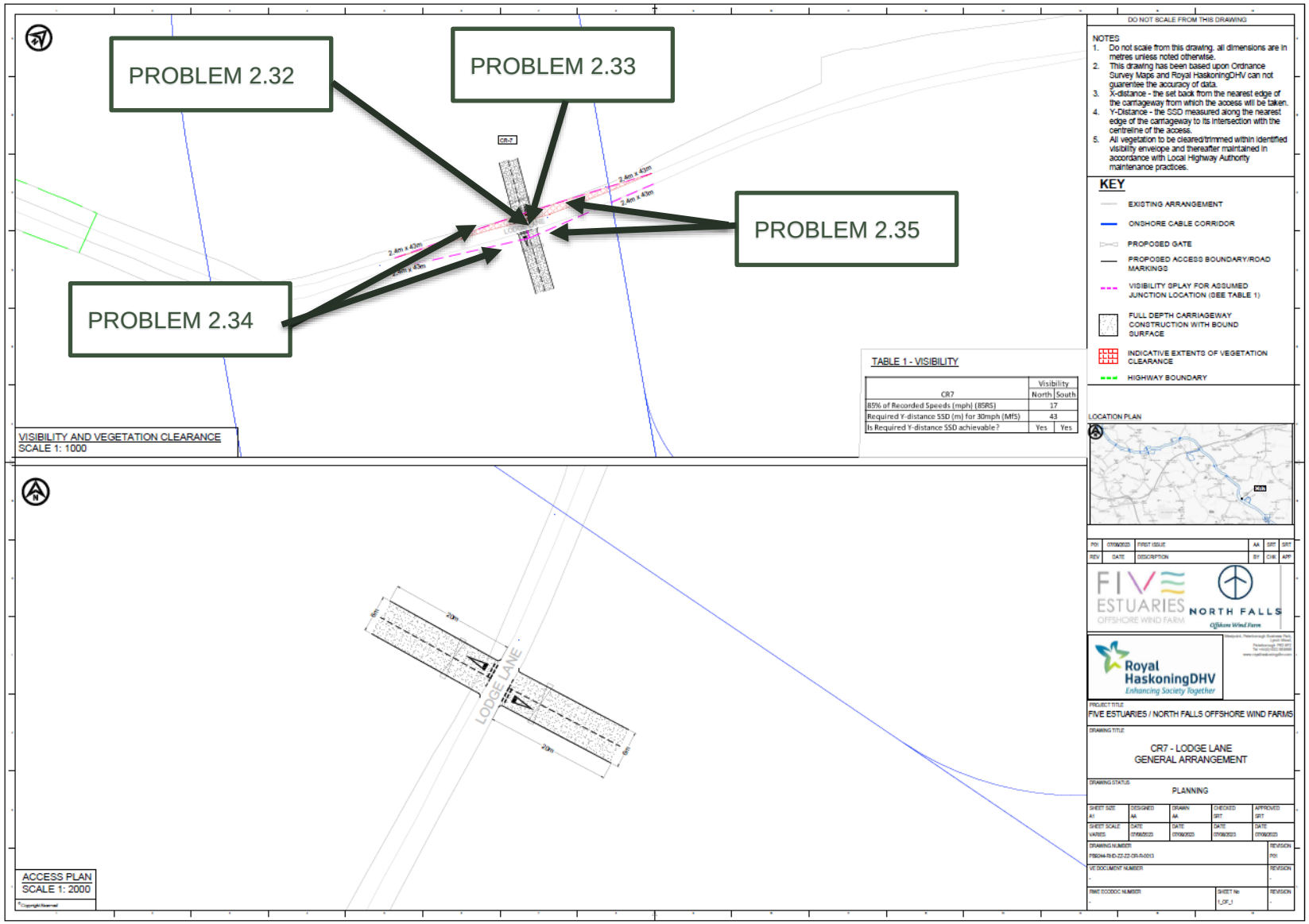
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FORWARD STOPPING DISTANCE
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
LOCATION PLAN
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
CR6b - GOLDEN LANE
GENERAL ARRANGEMENT
PRIORITY OPTION
PLANNING


PROBLEM 2.32
PROBLEM 2.33
PROBLEM 2.35
PROBLEM 2.34
CR7
2.4m x 43m
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 1000
TABLE 1 - VISIBILITY
CR7
Visibility
North
South
85% of Recorded Speeds (mph) (85RS)
17
Required Y-distance SSD (m) for 30mph (MfS)
43
Is Required Y-distance SSD achievable?
Yes
Yes
DO NOT SCALE FROM THIS DRAWING
NOTES
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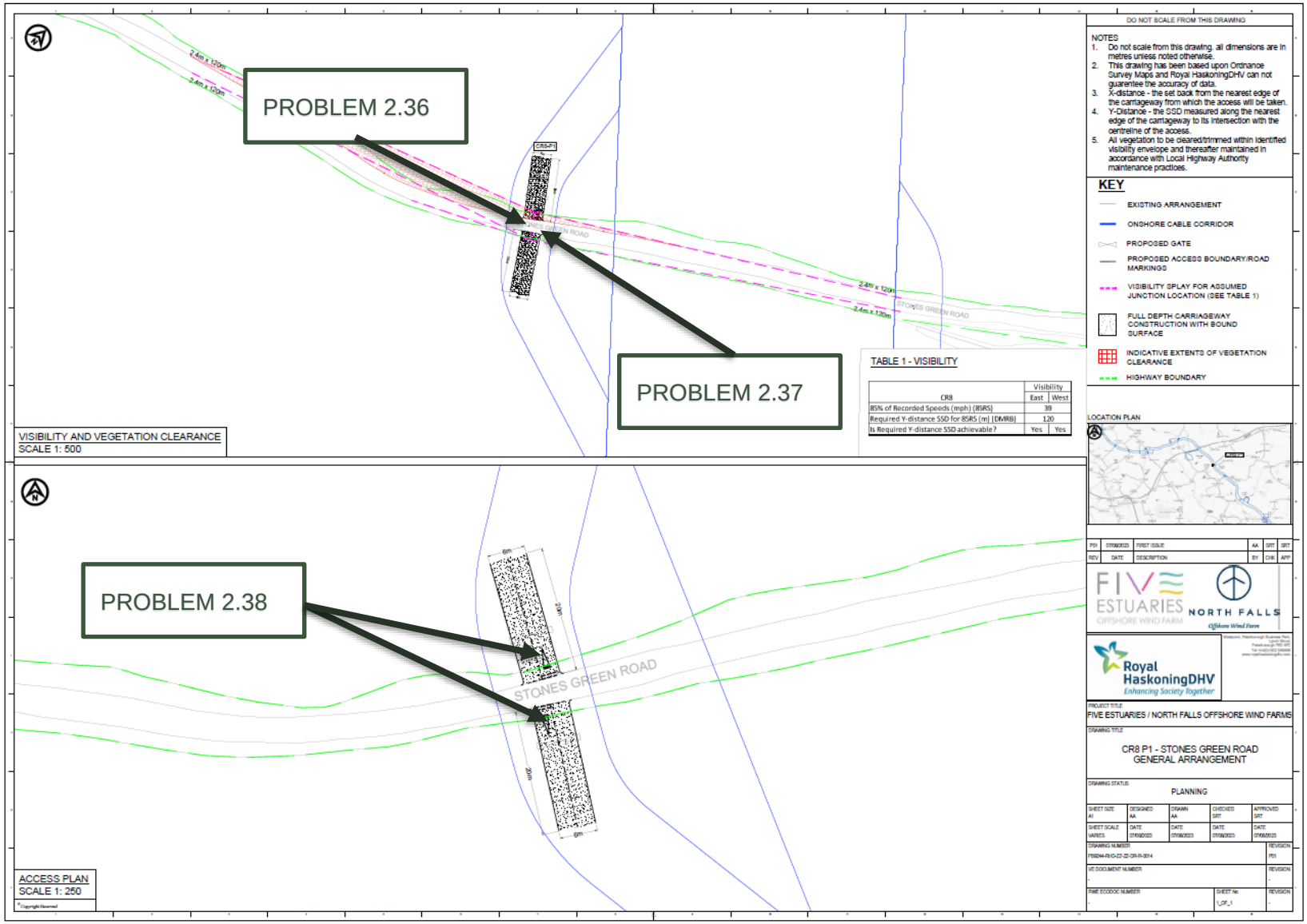
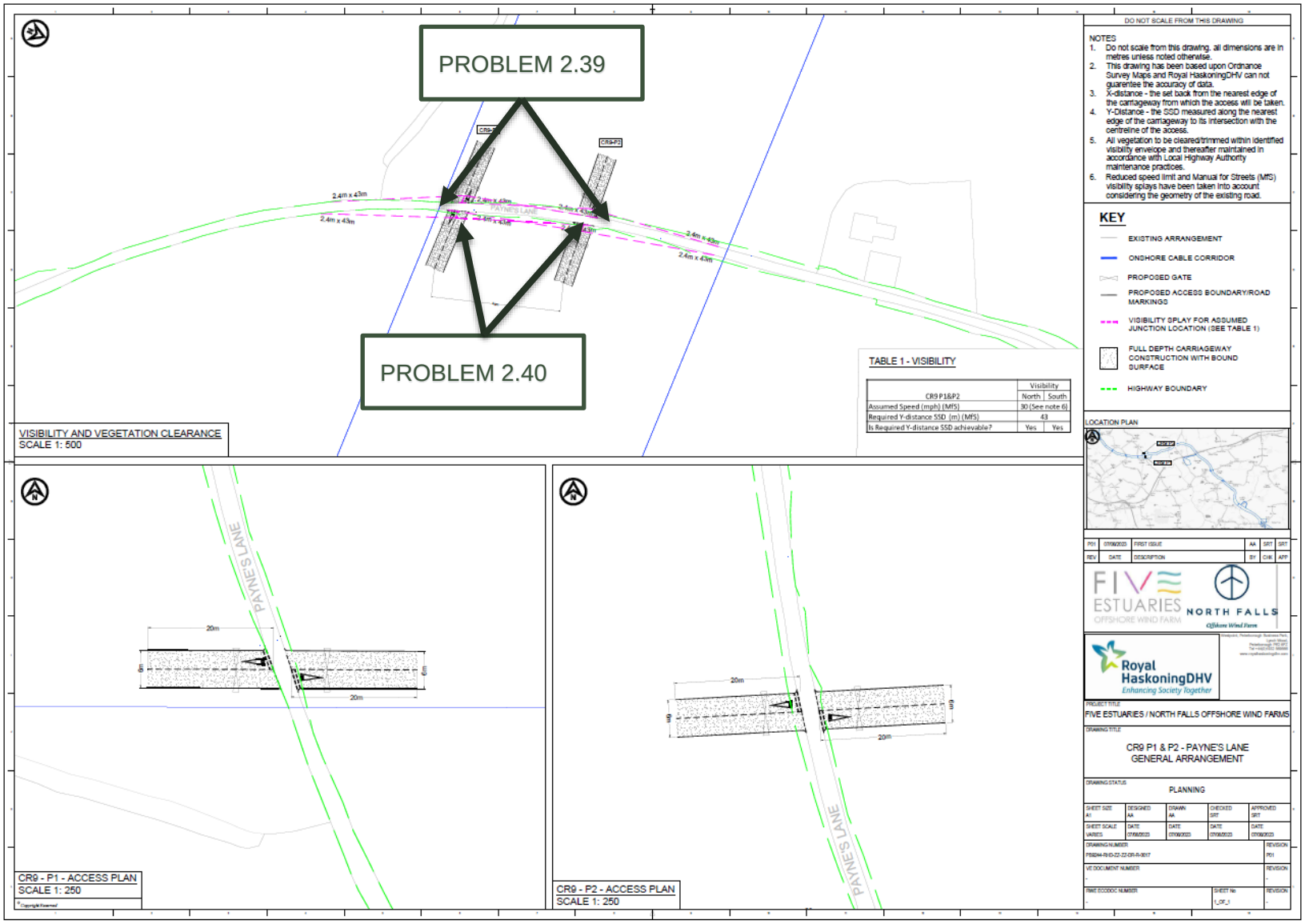
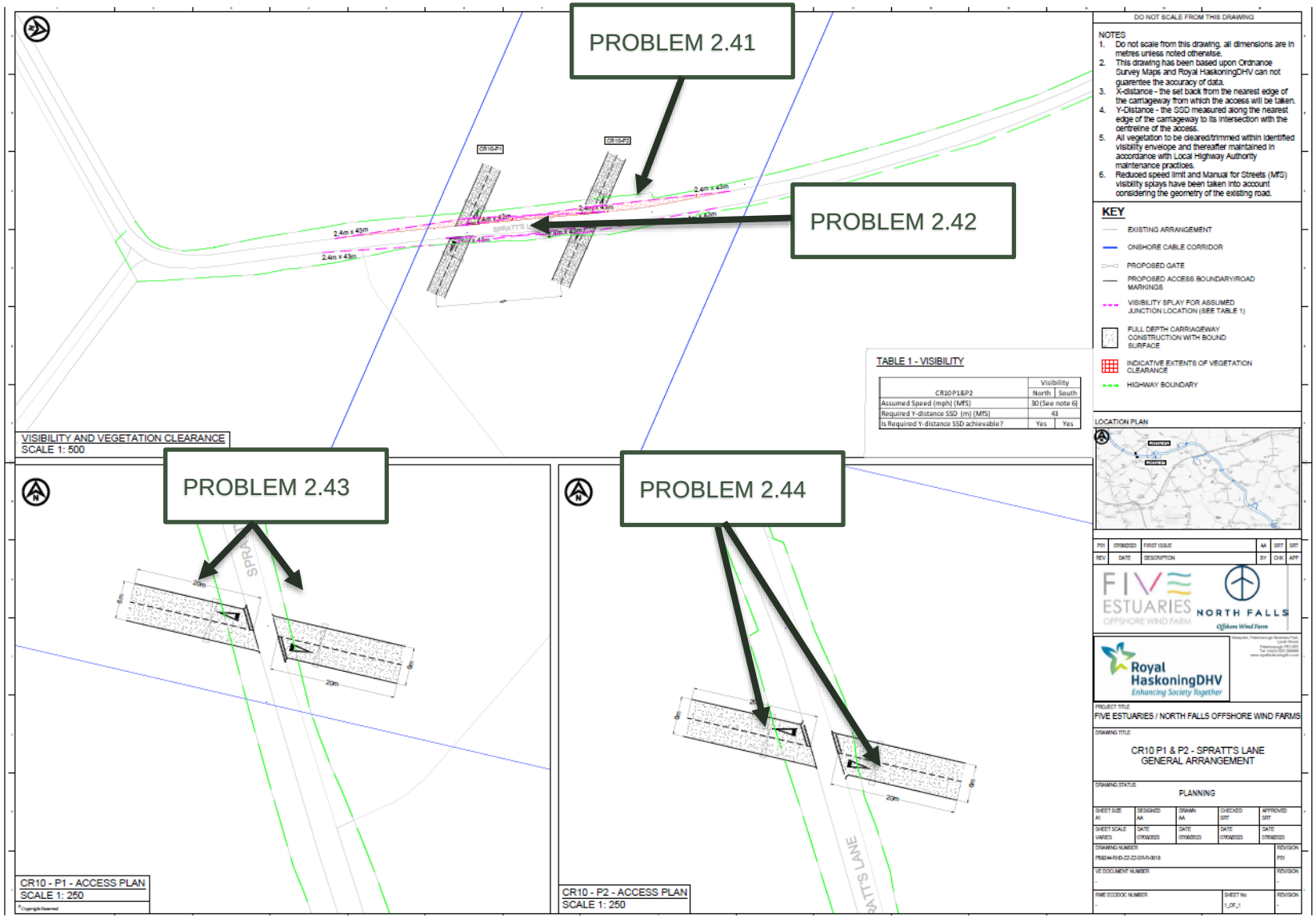
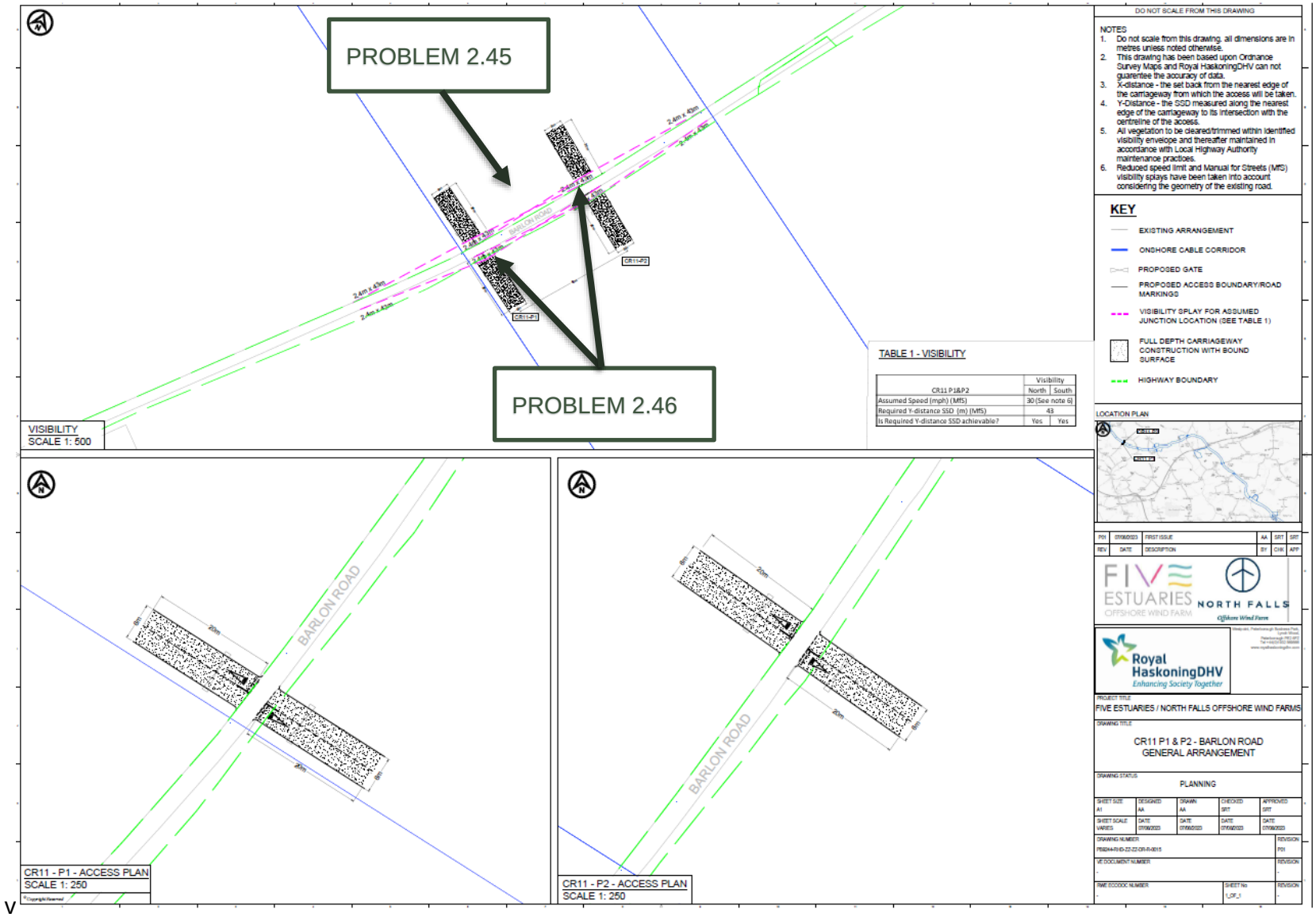
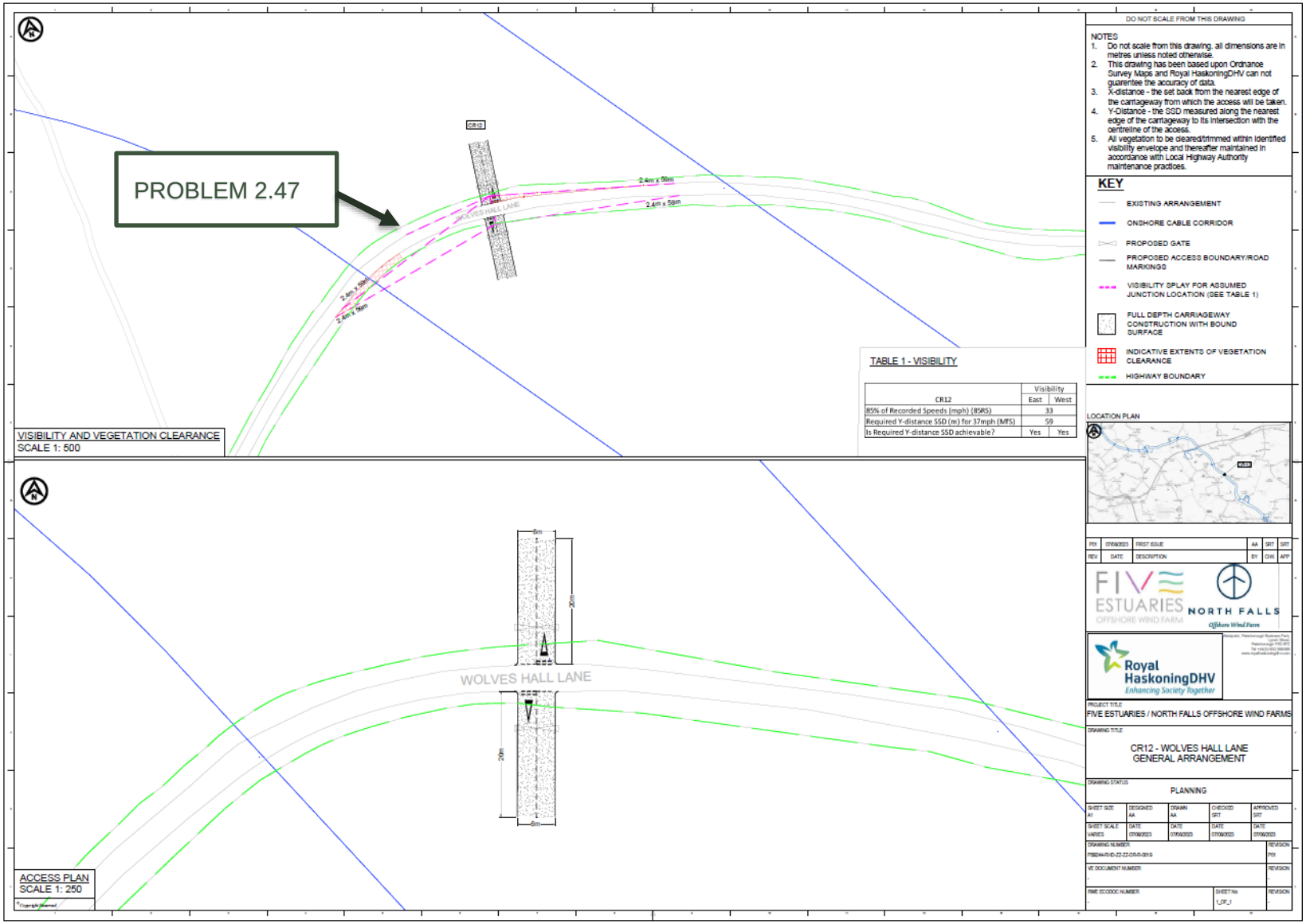
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
LOCATION PLAN
LODGE LANE
ACCESS PLAN
SCALE 1: 2000
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
CR7 - LODGE LANE
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING

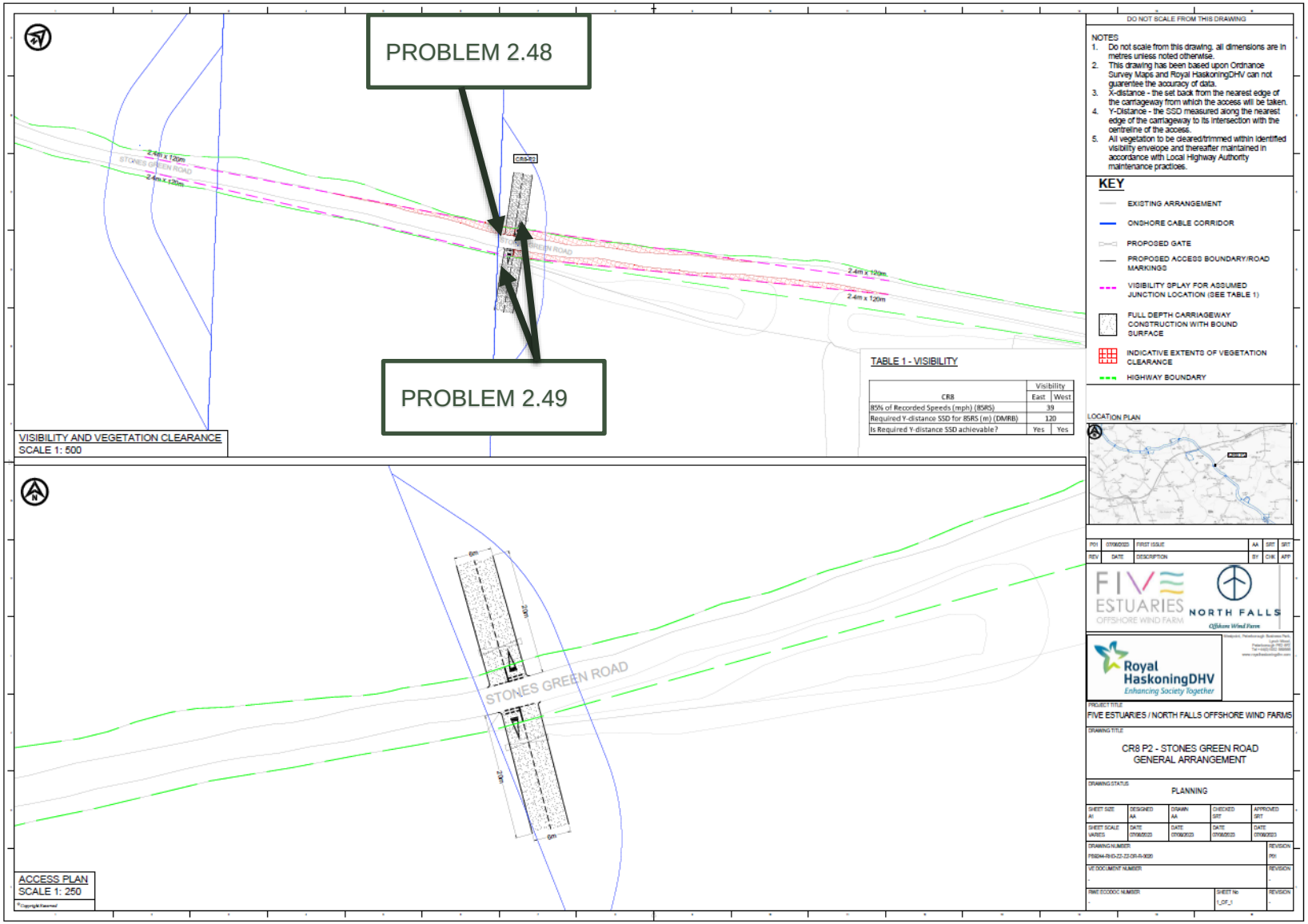

PROBLEM 2.36
PROBLEM 2.37
PROBLEM 2.38
STONES GREEN ROAD
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
ACCESS PLAN
SCALE 1: 250
TABLE 1 - VISIBILITY
CR8
Visibility
East
West
85% of Recorded Speeds (mph) (85RS)
39
Required Y-distance SSD for 85RS (m) [DMRB]
120
Is Required Y-distance SSD achievable?
Yes
Yes
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing, all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
LOCATION PLAN
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
CR8 P1 - STONES GREEN ROAD
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING


PROBLEM 2.39
PROBLEM 2.40
PAYNE'S LANE
2.4m x 43m
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
TABLE 1 - VISIBILITY
CR9 P1&P2
Visibility
North
South
Assumed Speed (mph) (MfS)
30 (See note 6)
Required Y-distance SSD (m) (MfS)
43
Is Required Y-distance SSD achievable?
Yes
Yes
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing, all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
6. Reduced speed limit and Manual for Streets (MfS) visibility splays have been taken into account considering the geometry of the existing road.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
HIGHWAY BOUNDARY
LOCATION PLAN
CR9 - P1 - ACCESS PLAN
SCALE 1: 250
CR9 - P2 - ACCESS PLAN
SCALE 1: 250
20m
6m
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
CR9 P1 & P2 - PAYNE'S LANE
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING


PROBLEM 2.41
PROBLEM 2.42
PROBLEM 2.43
PROBLEM 2.44
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
CR10 - P1 - ACCESS PLAN
SCALE 1: 250
CR10 - P2 - ACCESS PLAN
SCALE 1: 250
SPRATT'S LANE
TABLE 1 - VISIBILITY
CR10 P1&P2
Visibility
North
South
Assumed Speed (mph) (MfS)
30 (See note 6)
Required Y-distance SSD (m) (MfS)
43
Is Required Y-distance SSD achievable?
Yes
Yes
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing, all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
6. Reduced speed limit and Manual for Streets (MfS) visibility splays have been taken into account considering the geometry of the existing road.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
LOCATION PLAN
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
CR10 P1 & P2 - SPRATT'S LANE
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING


PROBLEM 2.45
PROBLEM 2.46
VISIBILITY
SCALE 1: 500
CR11 - P1 - ACCESS PLAN
SCALE 1: 250
CR11 - P2 - ACCESS PLAN
SCALE 1: 250
BARLON ROAD
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing, all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
6. Reduced speed limit and Manual for Streets (MfS) visibility splays have been taken into account considering the geometry of the existing road.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
HIGHWAY BOUNDARY
TABLE 1 - VISIBILITY
CR11 P1&P2
Visibility
North
South
Assumed Speed (mph) (MfS)
30 (See note 6)
Required Y-distance SSD (m) (MfS)
43
Is Required Y-distance SSD achievable?
Yes
Yes
LOCATION PLAN
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
CR11 P1 & P2 - BARLON ROAD GENERAL ARRANGEMENT
PLANNING


PROBLEM 2.47
CR12
WOLVES HALL LANE
2.4m x 59m
2.4m x 59m
2.4m x 59m
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
TABLE 1 - VISIBILITY
CR12
Visibility
East
West
85% of Recorded Speeds (mph) (85%S)
33
Required Y-distance SSD (m) for 37mph (MfS)
59
Is Required Y-distance SSD achievable?
Yes
Yes
DO NOT SCALE FROM THIS DRAWING
NOTES
1. Do not scale from this drawing, all dimensions are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarentee the accuracy of data.
3. X-distance - the set back from the nearest edge of the carriageway from which the access will be taken.
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
LOCATION PLAN
WOLVES HALL LANE
ACCESS PLAN
SCALE 1: 250
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
CR12 - WOLVES HALL LANE
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING


PROBLEM 2.48
PROBLEM 2.49
VISIBILITY AND VEGETATION CLEARANCE
SCALE 1: 500
ACCESS PLAN
SCALE 1: 250
STONES GREEN ROAD
2.4m x 120m
TABLE 1 - VISIBILITY
CR8
Visibility
East
West
85% of Recorded Speeds (mph) (85RS)
39
Required Y-distance SSD for 85RS (m) (DMRB)
120
Is Required Y-distance SSD achievable?
Yes
Yes
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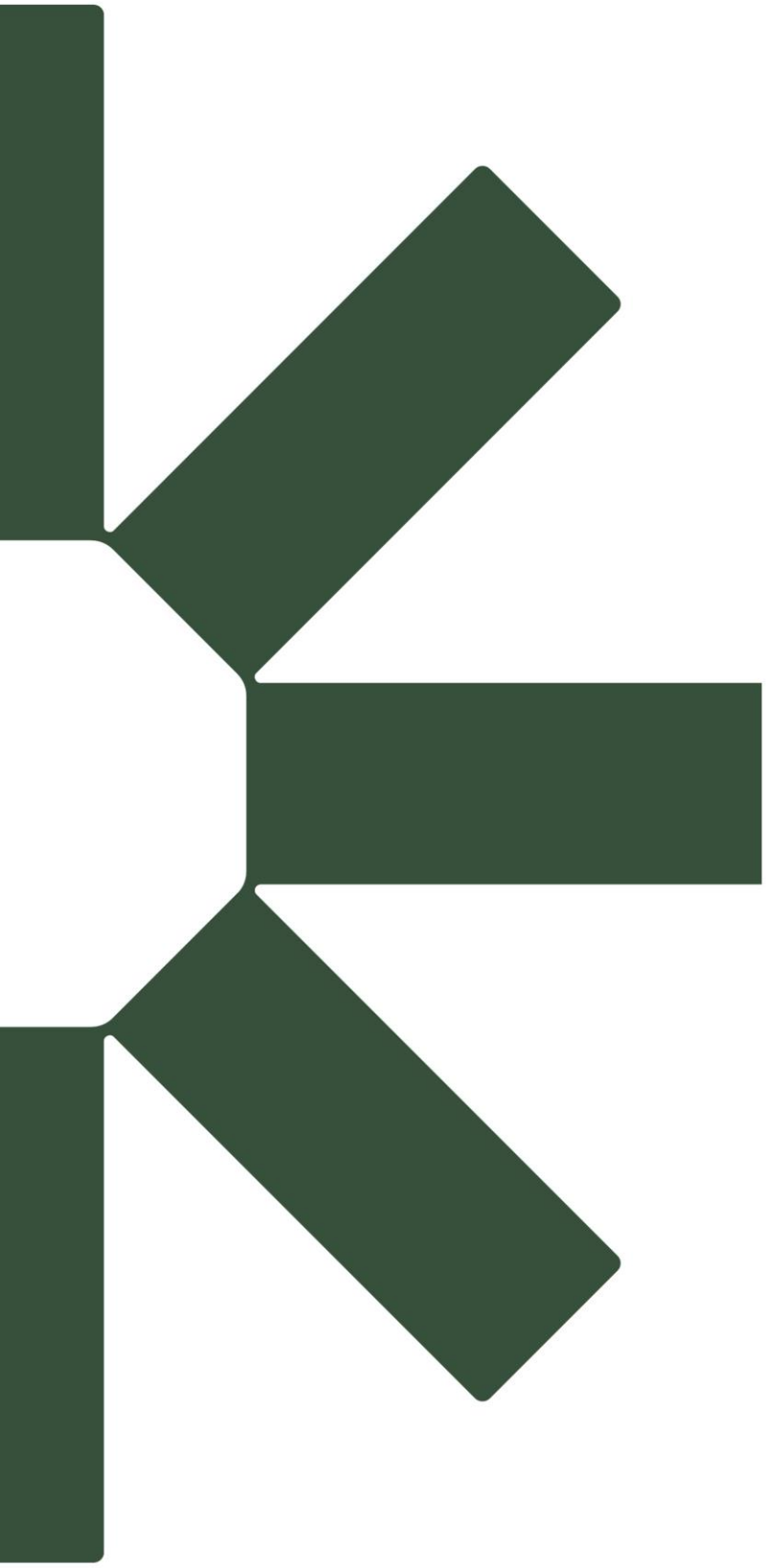
4. Y-Distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
5. All vegetation to be cleared/trimmed within identified visibility envelope and thereafter maintained in accordance with Local Highway Authority maintenance practices.
KEY
EXISTING ARRANGEMENT
ONSHORE CABLE CORRIDOR
PROPOSED GATE
PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
VISIBILITY SPLAY FOR ASSUMED JUNCTION LOCATION (SEE TABLE 1)
FULL DEPTH CARRIAGEWAY CONSTRUCTION WITH BOUND SURFACE
INDICATIVE EXTENTS OF VEGETATION CLEARANCE
HIGHWAY BOUNDARY
LOCATION PLAN
FIVE ESTUARIES OFFSHORE WIND FARM
NORTH FALLS Offshore Wind Farm
Royal HaskoningDHV
Enhancing Society Together
PROJECT TITLE
FIVE ESTUARIES / NORTH FALLS OFFSHORE WIND FARMS
DRAWING TITLE
CR8 P2 - STONES GREEN ROAD
GENERAL ARRANGEMENT
DRAWING STATUS
PLANNING



Making Sustainability Happen

ROAD SAFETY AUDIT – DESIGNER'S RESPONSE

Project Details

Project Title	Five Estuaries / North Falls Wind Farm
Date of Audit	7 November 2023
Document Reference and revision	237699
Prepared by	Alastair Pike and Sasha Boland of SLR
On behalf of	Five Estuaries / North Falls Wind Farm

Road Safety Audit Decision Log

Problem No.	Problem Accepted (Yes / No)	Recommended Measure Accepted (Yes / No)	Alternative Measure (describe)
2.5, 2.7, 2.11, 2.20, 2.23, 2.35, 2.37, 2.44	Yes	Yes. *Details of the design of the ditch crossings will be provided at Stage 2 as part of the detailed design process. This will include appropriate detail in regard to separation between the edge of the access/crossing and the ditch.*	n/a
2.8, 2.34	Yes	Yes. *Detailed design of the accesses will be provided at Stage 2 as part of the detailed design process. Accesses and crossings will be designed to provide a smooth and level transition.*	n/a
2.10, 2.31	Yes	Yes. *Details of the design of the signage will be provided at Stage 2 as part of the detailed design process. This will include detail of sign sizes, offsets from the edge of the highway and any foliage that may need to be cut back to improve visibility.*	n/a
2.12	Yes	Yes. *The design of access AC5 has been amended to show the vegetation to the east and west of the junction being cut back.*	n/a
2.14, 2.25	Yes	No	*The design of access AC7 and CR4 have been amended to include a segregated route for pedestrians alongside the access. This route would separate pedestrians and construction traffic.*
2.18, 2.26, 2.28, 2.30, 2.33, 2.38, 2.40, 2.43, 2.46, 2.49	Yes	Yes. *The proposed gates will be set back from the edge of the road providing space for a HGV to wait off the highway in the event that the gates are closed.*	n/a
2.21	Yes	Yes. *The detailed design drawings to be provide at Stage 2 will include detail of all statutory undertaker plant and necessary accommodation works.*	n/a
2.22, 2.24, 2.27, 2.29, 2.32, 2.36, 2.39, 2.42, 2.45, 2.48	Yes	Yes. *The proposed gates will be set back from the edge of the road providing space for a HGV to wait off the highway in the event that the gates are closed.*	n/a
2.41	Yes	No	*It is accepted that one of the crossings is located*

ROAD SAFETY AUDIT – DESIGNER'S RESPONSE

Problem No.	Problem Accepted (Yes / No)	Recommended Measure Accepted (Yes / No)	Alternative Measure (describe)
			'on top of' an existing informal passing place. The crossing would therefore remove this passing place. There are however passing places approximately 50m north and south of this crossing. The final design of the crossing will include surfacing/verge details showing how the passing place will be removed for the duction of construction.
2.47	Yes	Yes. *The design of CR12 has been amened to show visibility splay drawn to the northern side of the road.*	n/a

Design Organisation and Overseeing Organisation statements

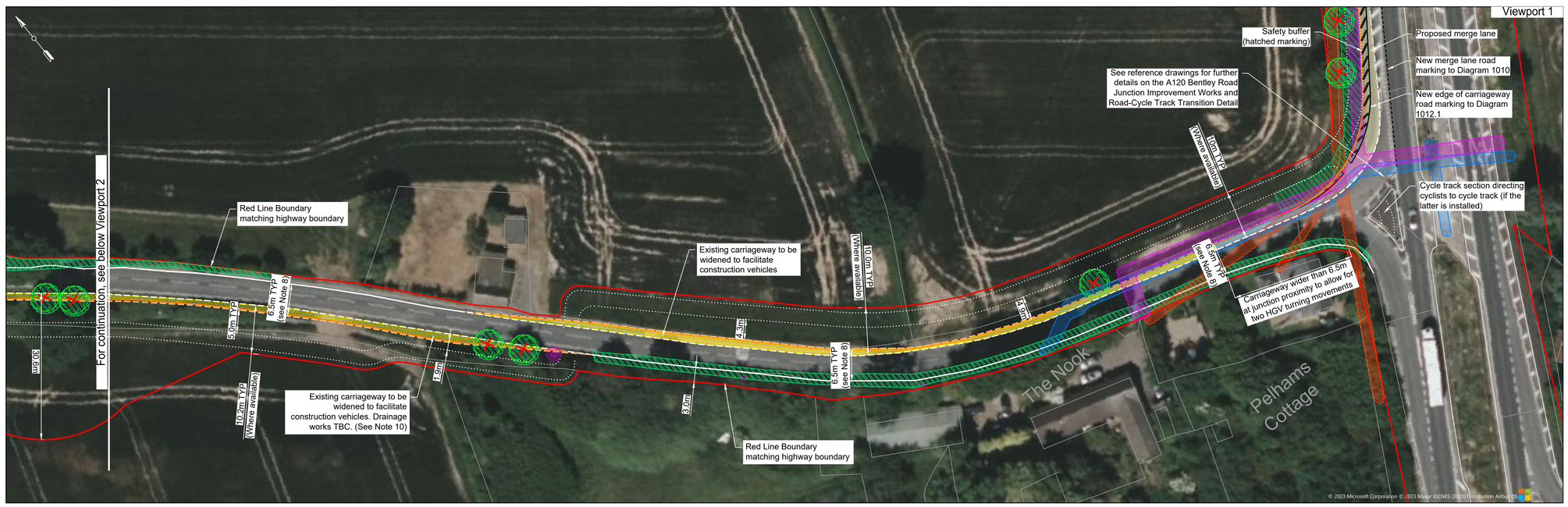
On behalf of the design organisation I certify that:

The RSA actions identified in response to the road safety audit problems in the road safety audit have been discussed and agreed with the Overseeing Organisation

Name	*SKT*
Signed	*SKT*
Position	*Asscociate Director*
Organisation	*Royal HaskoningDHV*
Date	*08.11.2023*

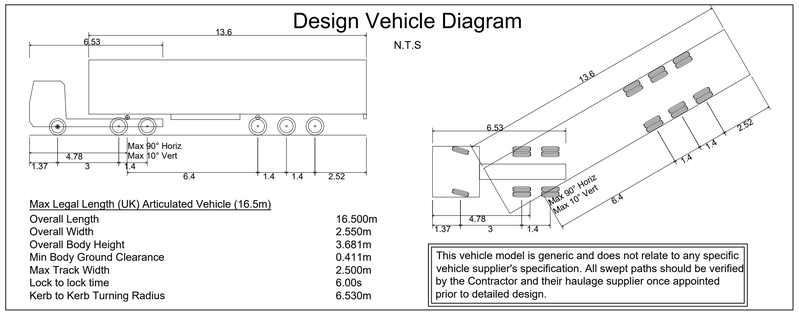
Please submit this completed Designer's Response to the Local Highway Authority, in conjunction with the associated Road Safety Audit.

Annex 27.1.21 Highways Works Outline Designs



Design Vehicle Diagram

N.T.S



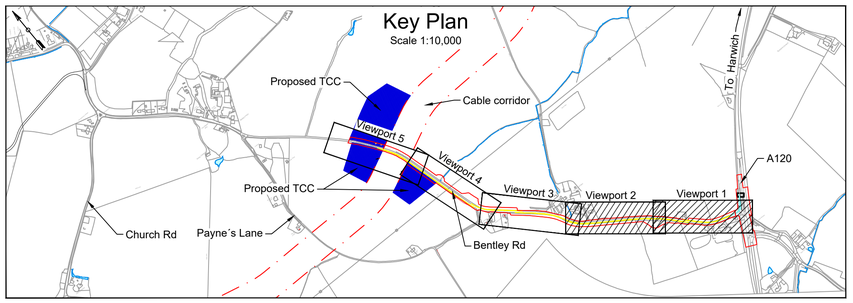
Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

This vehicle model is generic and does not relate to any specific vehicle supplier's specification. All swept paths should be verified by the Contractor and their haulage supplier once appointed prior to detailed design.

Legend (continuation)

- Existing trees to be removed (subject to detailed survey)
- Assumed location of existing electricity / communication poles
- Location of existing communication pole extracted from survey
- Location of existing electricity pole extracted from survey



1:500 0 25m 50m

1:10,000 0 500m 1000m

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7. AIL vehicle deliveries are expected to use both carriageway lanes and will require traffic control / pilots during movements. Additional works (not shown), i.e. removal of street furniture, vegetation and structures may be required to facilitate AIL vehicle over-swings. All swept paths should be verified by the Contractor and their haulage suppliers at the earliest opportunity to ensure clearances are suitable for the intended vehicles.
8. Existing carriageway lines have been determined using OS Mastermap data in absence of Topographical survey data. OS data is considered to be less accurate. Widening works are intended to show the concept of an increase to a 6.5m carriageway width where the installation of a segregated cycle track is included in the final arrangement. The outline of a potential carriageway widening to 6.75m (where no dedicated cycle/pedestrian provision is to be installed) is also shown as another option. The extents of the widening works and planning application boundary are therefore subject to change following detailed horizontal alignment design and receipt of Topographical data.
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10. Drainage works/strategy have not been considered as part of this concept design and will need to be developed in liaison with the lead local flood authority / Environment Agency (EA) and local highways authority during subsequent stages of design. Replacement and/or realignment of existing drainage may be required, existing watercourse crossings may need to be replaced and mitigation measures may be necessary to account for an increase in impermeable areas. The planning application boundary may need to be increased to incorporate these drainage works where required.

Legend:

- OS grid map feature lines
- Construction works boundary (red line boundary) at Bentley Rd
- Existing carriageway edge - OS feature line - to remain unaltered
- Existing carriageway edge - OS feature line - to be modified
- Proposed new carriageway edge (indicative) for a width of 6.5m
- Proposed carriageway widening at Bentley Rd for a width of 6.5m
- Proposed new carriageway edge (indicative) for a width of 6.75m
- Proposed location for a potential cycle track installation
- Proposed carriageway widening at junction with the A120
- Existing surface water wide ditch / watercourse to remain
- Utility diversion or undergrounding required (Comms)
- Utility diversion or undergrounding required (HV)
- Water pipe protection or diversion required
- Vegetation / trees to be trimmed (or removed if on side to be widened; subject to detailed survey)

Reference drawings

104560-MMD-00-XX-DR-CE-1028 - A120 Bentley Road Junction Improvement Works
104560-MMD-00-XX-DR-CE-1032-1 & 2 - Bentley Rd w/ Cable Haul Rd Jct & SPA (Sheets 1 & 2)
104560-MMD-00-XX-DR-CE-1033 - New Bellmouth Access at Bentley Rd Jct for AIL Haul Road Diversion
104560-MMD-00-XX-DR-CE-1034 - Bentley Rd to Ardleigh Rd AIL Haul Rd Diversion
104560-MMD-00-XX-DR-CE-1059-1 & 2 - Proposed Cross-over points for Cycle Track
Utility Report Digitised_OSGB36 (received in January 2023)
VE-NF_Draft_Combined_Cable_Corridor_Rev_6 (received 29/09/2023)
VE-NF_Draft_TCC_Locations_Rev_6 (received 29/09/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13_Extract (received 16/11/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13B_Extract (received 16/11/2023)

Rev	Date	Drawn	Description	Ch'k'd	App'd
P03	30/11/2023	SAP	RLB & cycle track updated	JW	AFC
P02	08/09/2023	SAP	Red Line Boundary updated	JW	AFC
P01	24/04/2023	SG	Concept design for comment	JW	MB

Status Stamp

PRELIMINARY

MOTT MACDONALD
Victory House
Trafalgar Place
Brighton, BN1 4FY
United Kingdom
T +44 (0)1273 36500
W www.mottmac.com

Client

NORTH FALLS Offshore Wind Farm
FIVE ESTUARIES OFFSHORE WIND FARM

Title

Co-located Substation Early Design Bentley Rd Improvements Layout and Red Line Boundary for works

Sheet 01 of 03

Designed	S. Goode	SG	Eng check	J. Weeks	JW
Drawn	S. Goode	SG	Coordination	J. Weeks	JW
Dwg check	S. Amado-Pedrosa	SAP	Approved	M. Barton	MB

MMD Project Number 104560-001	Scale at A1 1:500	Security STD
Client Number 004786178-03		Suit. Code S3
Drawing Number 104560-MMD-00-XX-DR-CE-1031-1		Revision P03

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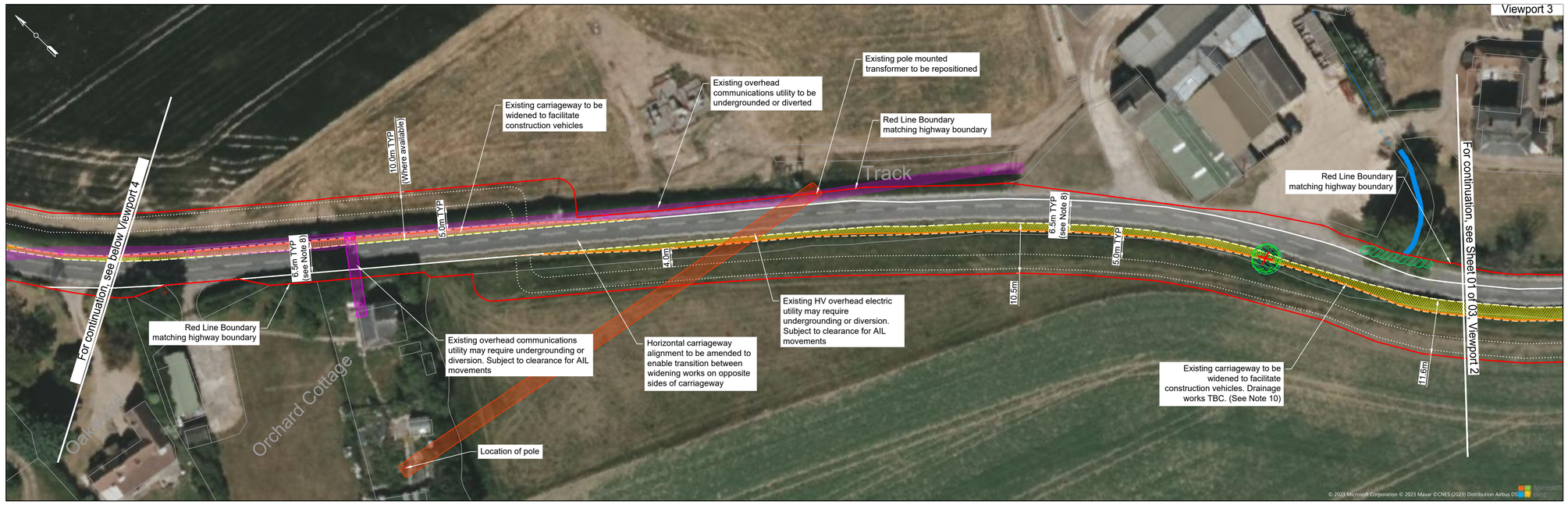
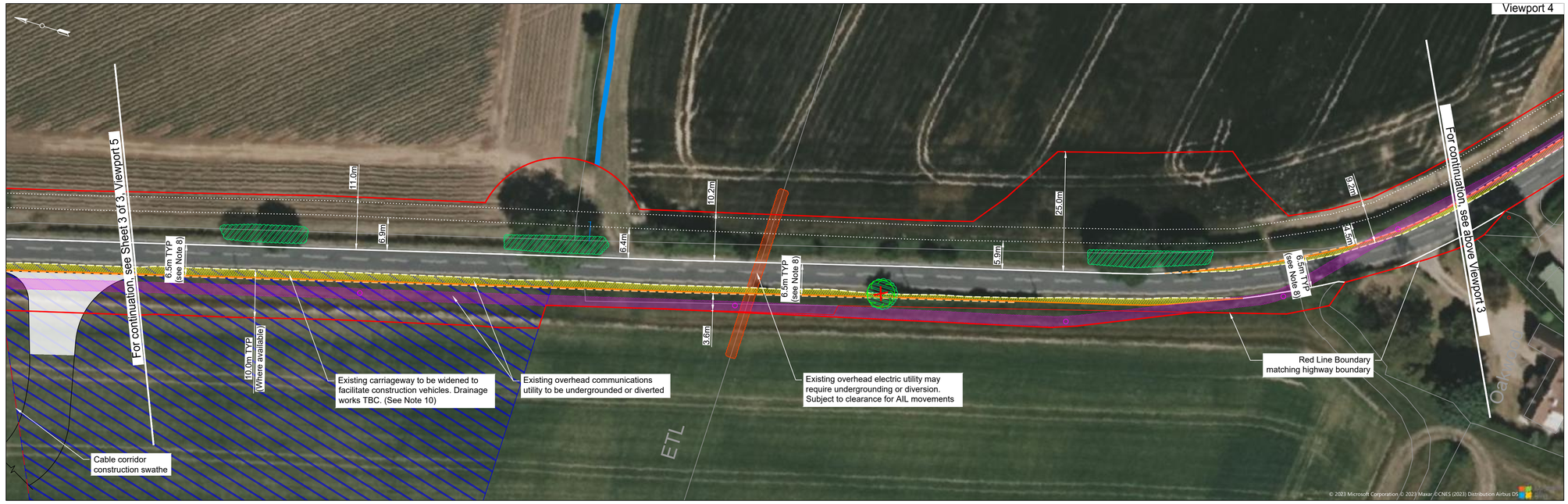
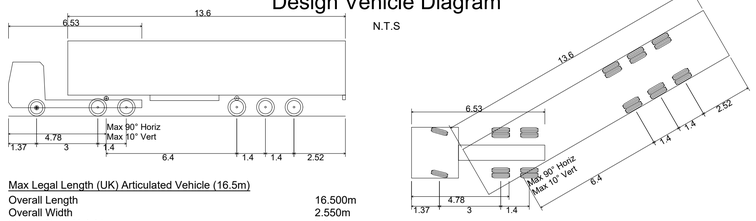




Design Vehicle Diagram

N.T.S



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

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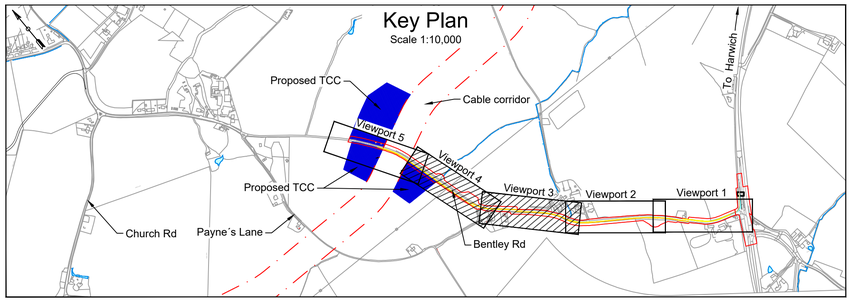
Legend (continuation)

- Proposed TCC location
- Location of existing communication pole extracted from survey
- Location of existing electricity pole extracted from survey

Key Plan

Scale 1:10,000



1:500 0 25m 50m

1:10,000 0 500m 1000m

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Legend:

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Client

NORTH FALLS Offshore Wind Farm
FIVE ESTUARIES OFFSHORE WIND FARM

Title

Co-located Substation Early Design Bentley Rd Improvements Layout

Sheet 02 of 03

Designed	S. Goode	SG	Eng check	J. Weeks	JW
Drawn	S. Goode	SG	Coordination	J. Weeks	JW
Dwg check	S. Amado-Pedrosa	SAP	Approved	M. Barton	MB

MMD Project Number 104560-001	Scale at A1 1:500	Security STD
Client Number 004786179-03		Suit. Code S3
Drawing Number 104560-MMD-00-XX-DR-CE-1031-2		Revision P03

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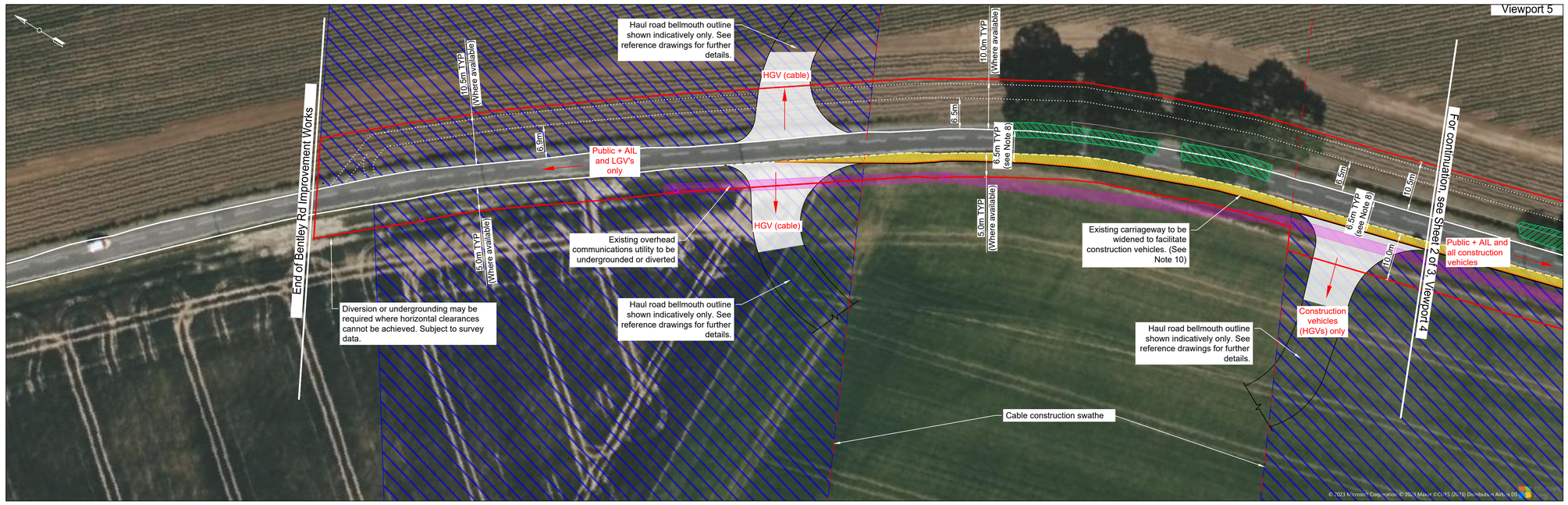
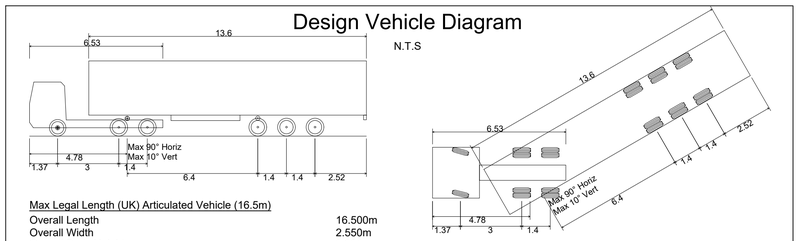


End of sheet set

Design Vehicle Diagram

N.T.S



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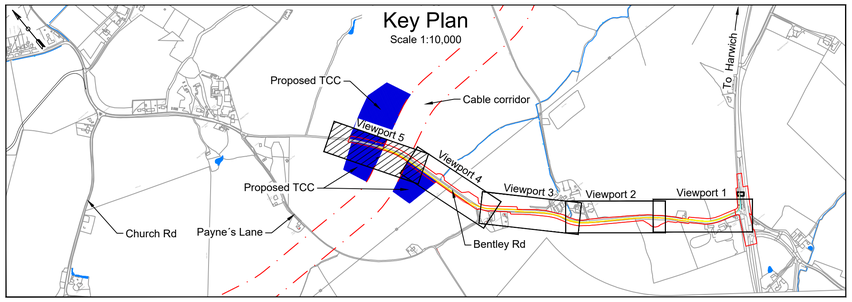
Key Plan

Scale 1:10,000



1:500 0 25m 50m

1:10,000 0 500m 1000m

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- Proposed location for a potential cycle track installation
- Utility diversion or undergrounding required (Comms)
- Location of existing communication pole extracted from survey
- Vegetation / trees to be trimmed
- Proposed TCC location

Reference drawings

104560-MMD-00-XX-DR-CE-1028 - A120 Bentley Road Junction Improvement Works
104560-MMD-00-XX-DR-CE-1032-1 & 2 - Bentley Rd w/ Cable Haul Rd Jct & SPA (Sheets 1 & 2)
104560-MMD-00-XX-DR-CE-1033 - New Bellmouth Access at Bentley Rd Jct for AIL Haul Road Diversion
104560-MMD-00-XX-DR-CE-1034 - Bentley Rd to Ardleigh Rd AIL Haul Rd Diversion
104560-MMD-00-XX-DR-CE-1059-1 & 2 - Proposed Cross-over points for Cycle Track
Utility Report Digitised_OSGB36 (received in January 2023)
VE-NF_Draft_Combined_Cable_Corridor_Rev_6 (received 29/09/2023)
VE-NF_Draft_TCC_Locations_Rev_6 (received 29/09/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13_Extract (received 16/11/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13B_Extract (received 16/11/2023)

Rev	Date	Drawn	Description	Ch'k'd	App'd
P03	30/11/2023	SAP	RLB & cycle track updated	JW	AFC
P02	08/09/2023	SAP	Red Line Boundary updated	JW	AFC
P01	24/04/2023	SG	Concept design for comment	JW	MB

Status Stamp

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Client

NORTH FALLS Offshore Wind Farm
FIVE ESTUARIES OFFSHORE WIND FARM

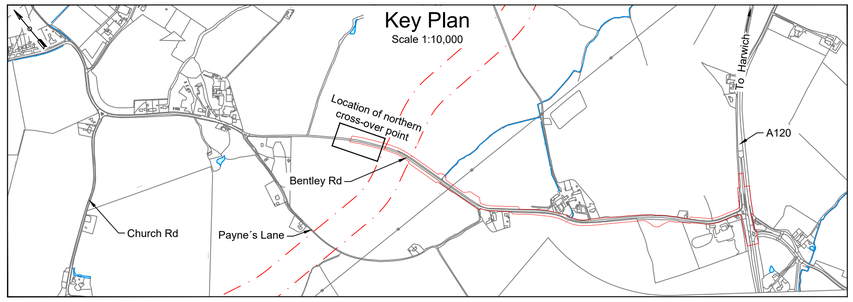
Title

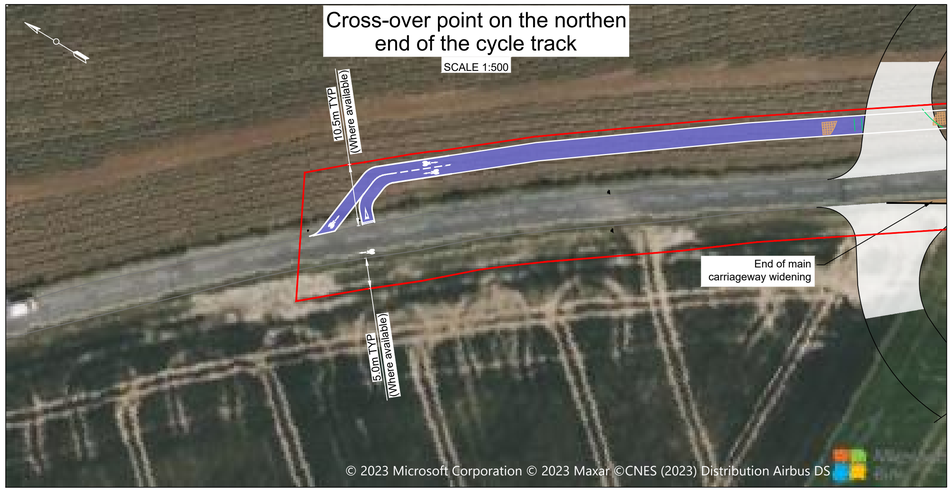
Co-located Substation Early Design
Bentley Rd Improvements Layout

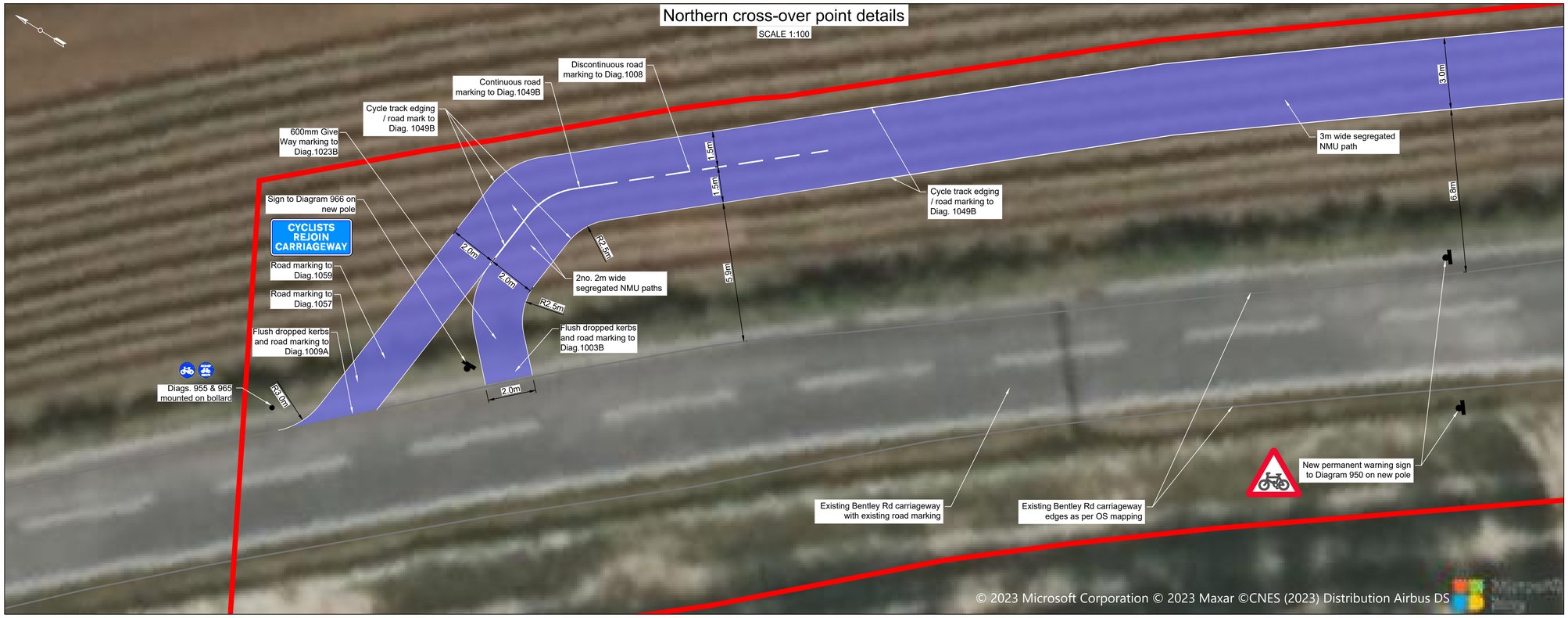
Sheet 03 of 03

Designed	S. Goode	SG	Eng check	J. Weeks	JW
Drawn	S. Goode	SG	Coordination	J. Weeks	JW
Dwg check	S. Amado-Pedrosa	SAP	Approved	M. Barton	MB

MMD Project Number 104560-001	Scale at A1 1:500	Security STD
Client Number 004786180-03		Suit. Code S3
Drawing Number 104560-MMD-00-XX-DR-CE-1031-3		Revision P03







Notes

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2. All dimensions are in millimetres unless otherwise stated.
3. This drawing is to be read in conjunction with all relevant related documents and drawings.
4. No unauthorised disclosure, storage or copying.
5. This drawing is for development purposes only and should not be used for construction. This design is generic and provided indicatively only. This design is based on general Highways standards but does not incorporate the relevant local highway authority´s requirements and design specifications, which would need to be followed at later design stages.
6. Drainage works/strategy have not been considered as part of this concept design and will need to be developed in liaison with the lead local flood authority / Environment Agency (EA) and local highways authority during subsequent stages of design. Replacement and/or realignment of existing drainage may be required, existing watercourse crossings may need to be replaced and mitigation measures may be necessary to account for an increase in impermeable areas.
7. Road markings and upright signs are defined to document *The Traffic Signs and General Directions* (TSRGD) 2016.

Legend:

- Red Line Boundary for Works in Bentley Road
- Existing carriageway edges from OS mapping
- Proposed cycle track carriageway edges / road markings
- Proposed cycle track carriageway surface
- Proposed upright sign mounted on pole
- Proposed signing bollard

NOT FOR CONSTRUCTION

Reference drawings

104560-MMD-00-XX-DR-CE-1031- 1 to 3 - Bentley Road Improvements Layout and Red Line Boundary for works
104560-MMD-00-XX-DR-CE-1058 - Bentley Rd Improvements - Proposed Typical Cross Sections without /with Cycle Track
VE-NF_Draft_Combined_Cable_Corridor_Rev_6 (dated 29/09/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13_Extract (dated 16/11/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13B_Extract (dated 16/11/2023)

Rev	Date	Drawn	Description	Ch'k'd	App'd
P02	24/11/2023	SAP	Cycle track layout updated	JW	AFC
P01	19/09/2023	SAP	Concept design for comment	JW	AFC

Status Stamp

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Client

NORTH FALLS Offshore Wind Farm
FIVE ESTUARIES OFFSHORE WIND FARM

Title

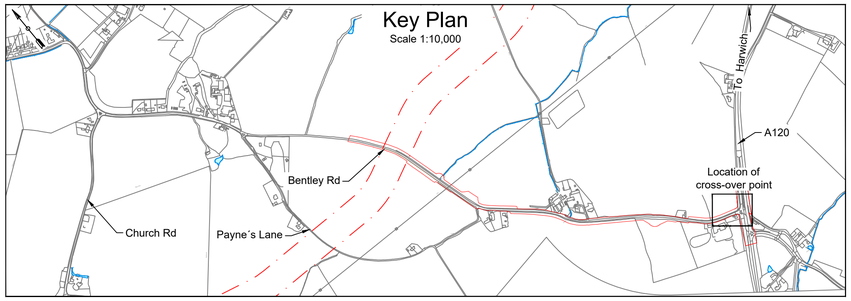
Co-located Substation Early Design
Bentley Rd Improvements - Proposed Cross-over Points for Cycle Track
Sheet 01 of 02

Designed	S. Amado-Pedrosa	SAP	Eng check	J. Weeks	JW
Drawn	S. Amado-Pedrosa	SAP	Coordination	A. F. Crespo	AFC
Dwg check	J. Weeks	JW	Approved	A. F. Crespo	AFC

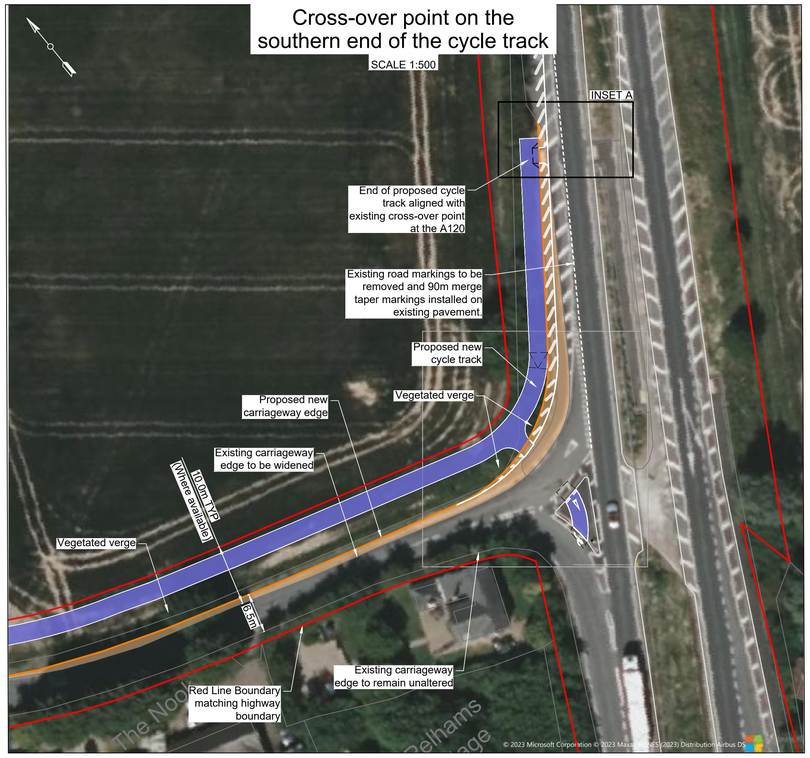
MMD Project Number	Scale at A1	Security
104560-001	As indicated	STD
Client Number		Suit. Code
004921123-02		S3
Drawing Number		Revision
104560-MMD-00-XX-DR-CE-1059-1		P02

1:20 0 1m 2m
1:500 0 25m 50m
1:10,000 0 500m 1000m

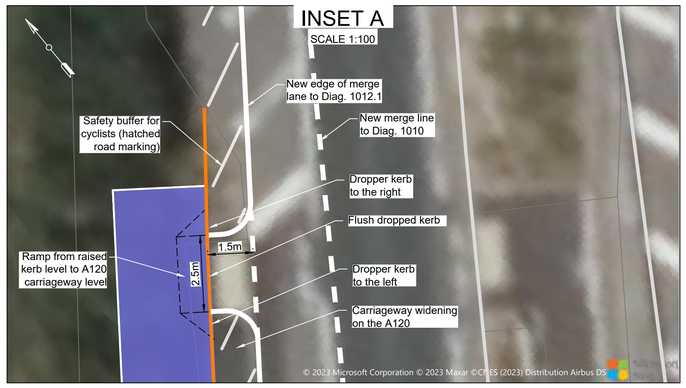
C:\Users\AMA100030\DC\ACCDocs\Mott MacDonald\t100104560 - RWE Co-location project\Project Files\MOTTMAC\C_CIV_MMD\DR\104560-MMD-00-XX-DR-CE-1059.dwg Nov 23, 2023 - 8:41AM AMA100030



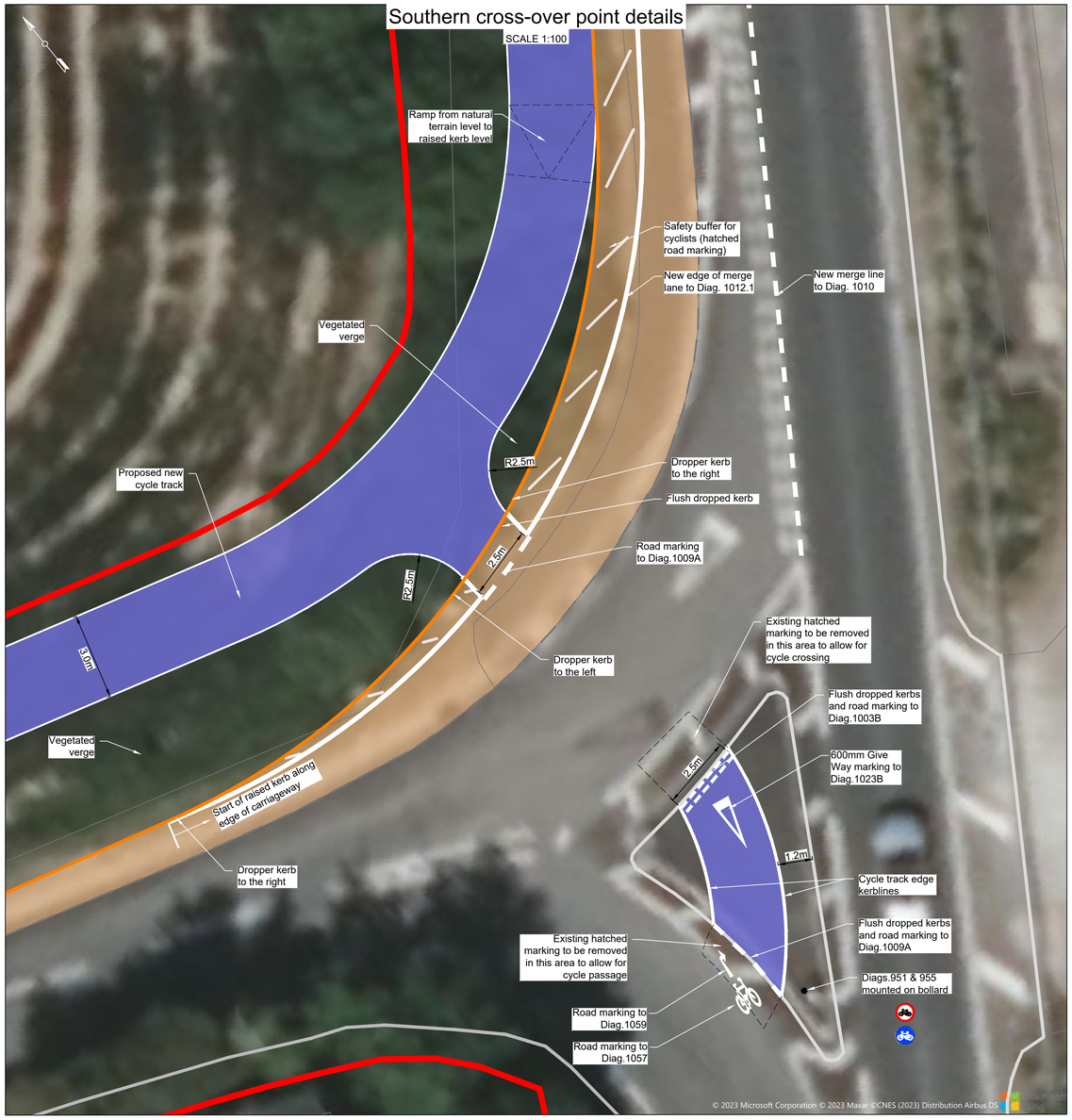
Cross-over point on the southern end of the cycle track



INSET A



Southern cross-over point details



1:20 0 1m 2m

1:500 0 25m 50m

1:10,000 0 500m 1000m

Notes

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7. Road markings and upright signs are defined to document *The Traffic Signs and General Directions* (TSRGD) 2016.
8. Safety buffer width at junction with the A120 is zero, since vehicles turning in/out of the junction are assumed to travel at a speed <30mph.

Legend:

- Red Line Boundary for Works in Bentley Road
- Existing carriageway edge from OS mapping to remain unaltered
- Existing carriageway edge from OS mapping to be widened
- Proposed new carriageway edge
- Proposed new carriageway widening
- Proposed cycle track carriageway edging
- Proposed cycle track carriageway surface
- Proposed signing bollard

NOT FOR CONSTRUCTION

Reference drawings

104560-MMD-00-XX-DR-CE-1031- 1 to 3 - Bentley Road Improvements Layout and Red Line Boundary for works
104560-MMD-00-XX-DR-CE-1058 - Bentley Rd Improvements - Proposed Typical Cross Sections without /with Cycle Track
VE-NF_Draft_Combined_Cable_Corridor_Rev_6 (dated 29/09/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13_Extract (dated 16/11/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13B_Extract (dated 16/11/2023)

Rev	Date	Drawn	Description	Ch'k'd	App'd
P02	24/11/2023	SAP	Cycle track layout updated	JW	AFC
P01	19/09/2023	SAP	Concept design for comment	JW	AFC

Status Stamp: PRELIMINARY

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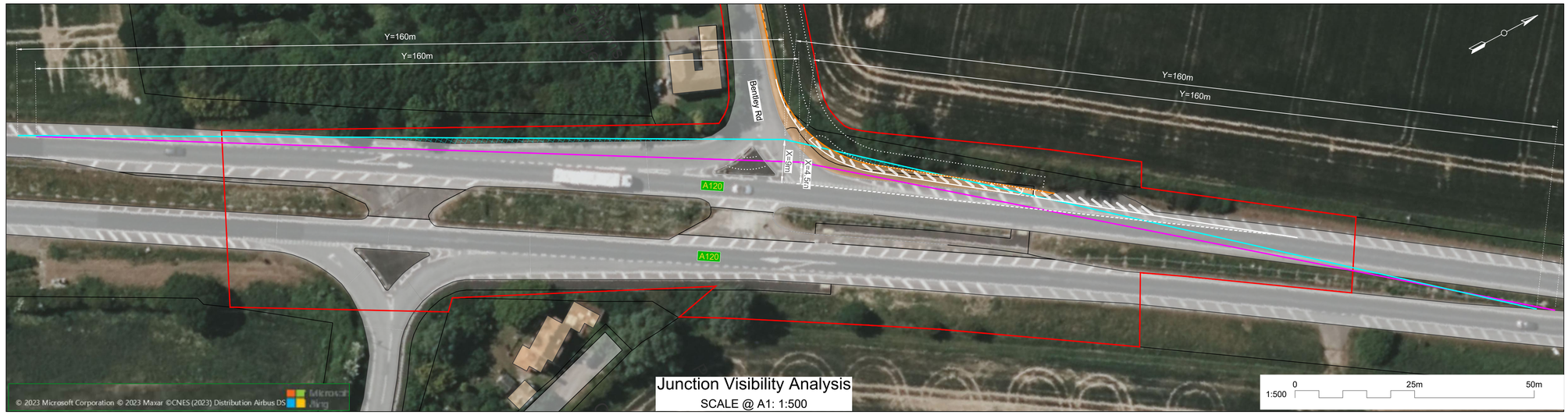
Client: NORTH FALLS Offshore Wind Farm; FIVE ESTUARIES OFFSHORE WIND FARM

Title: Co-located Substation Early Design
Bentley Rd Improvements - Proposed Cross-over Points for Cycle Track
Sheet 02 of 02

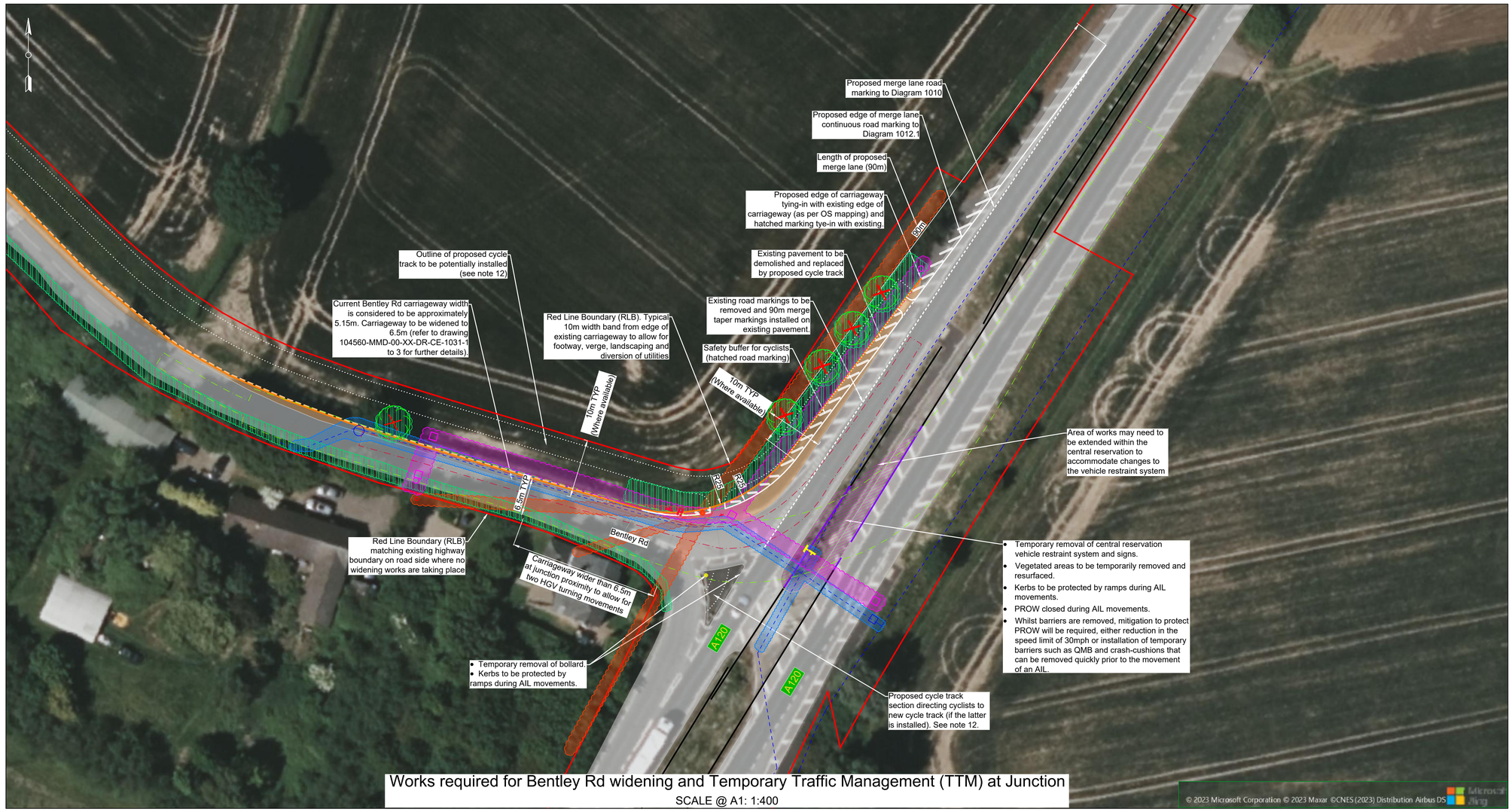
Designed	S. Amado-Pedrosa	SAP	Eng check	J. Weeks	JW
Drawn	S. Amado-Pedrosa	SAP	Coordination	A. F. Crespo	AFC
Dwg check	J. Weeks	JW	Approved	A. F. Crespo	AFC

MMD Project Number: 104560-001	Scale at A1: As indicated	Security: STD
Client Number: 004930806-02		Suit. Code: S3
Drawing Number: 104560-MMD-00-XX-DR-CE-1059-2		Revision: P02



Junction Visibility Analysis
SCALE @ A1: 1:500

1:500 0 25m 50m



Works required for Bentley Rd widening and Temporary Traffic Management (TTM) at Junction
SCALE @ A1: 1:400

1:400 0 20m 40m

Notes

1. Do not scale from this drawing.
2. All dimensions are in meters unless otherwise stated.
3. This drawing is to be printed in colour.
4. This drawing is to be read in conjunction with all relevant documents and drawings.
5. No unauthorised disclosure, storage or copying.
6. All spatial coordinates relate to the Ordnance Survey, British National Grid (OSGB36).
7. All levels are in meters and relate to AOD (Ordnance Survey, Newlyn).
8. The A road A120 has a 50mph (~80.5kph) speed limit applying to the dual carriageway section, where the junction with Bentley Road is located. For the purpose of visibility analysis, it has been considered a design speed of 85kph (~100kph) for the A120, as the above closer value as per DMRB, CD 109 *Highway link design*, Table 2.10. Based on Table 2.10, the desirable minimum length of visibility splays (Stopping sight distance - SSD) for a design speed of 85kph is 160m.
9. Indicative design layout based of OS grid, works may vary subject to detailed design and site survey.
10. Only partial utilities data has been provided for this indicative design, full PAS128 utilities surveys shall be required and additional land take may be required to accommodate diversions.
11. For swept path details, refer to drawings 104560-MMD-00-XX-DR-CE-1026 and 104560-MMD-00-XX-DR-CE-1027.
12. For further information on the transition detail carriageway/cycle track for the proposed cycle track, please refer to drawing 104560-MMD-00-XX-DR-CE-1059, Sheet 2.
13. Existing water utility may require diversion or protection in some areas.

Legend:

- OS grid map feature lines
- Visibility splays at 4.5m from stopping line
- Visibility splays at 9m from stopping line
- Extents of vegetation and street furniture clearance to achieve visibility requirements at X=9m
- Construction works boundary (red line boundary)
- Proposed new edge of carriageway
- Proposed permanent carriageway widening at junction
- Proposed new carriageway edge (indicative) for a width of 6.75m
- Proposed location for a potential cycle track installation
- AIL vehicle body & load swept path envelope
- Wheels swept path envelope for HGV exiting Bentley Rd
- Existing underground water pipes
- Existing road restraint system at central reservation
- Existing road restraint system elements to be temporarily removed
- Area of works in central reservation for TTM
- Existing road signs to be removed during AIL movements
- Existing road signs to be relocated for road widening
- Existing bollard to be removed during AIL movements
- Electricity pole to be relocated (location extracted from Survey)
- Utility diversion or undergrounding required (Comms)
- Utility diversion or undergrounding required (Electricity)
- Water pipe protection or diversion required
- Vegetation / trees to be trimmed (or removed if on side to be widened; subject to detailed survey)
- Existing trees to be removed (subject to detailed survey)
- Existing electricity pole (location extracted from Survey)
- Existing communications chamber/pole (location extracted from Survey)
- Existing water chambers (location extracted from Survey)

Reference drawings

104560-MMD-00-XX-DR-CE-1026 - Swept Path Analysis AIL (...) accessing Bentley Rd
104560-MMD-00-XX-DR-CE-1027 - Swept Path Analysis (...) Artic. Veh.-Two Way Traff.
104560-MMD-00-XX-DR-CE-1031-1 to 3 - Bentley Rd Improvements Layout and Red Line Boundary for works
104560-MMD-00-XX-DR-CE-1059-1 & 2 - Proposed Cross-over points for Cycle Track
Utility Report Digitised_OSGB36 (dated January 2023)
UK_FES_Work_Areas_py_OSGB36_v8_13_Extract (dated 16/11/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13B_Extract (dated 16/11/2023)

Rev	Date	Drawn	Description	Ch'k'd	App'd
P03	30/11/2023	SAP	Cycle track added; road width updated	JW	AFC
P02	13/04/2023	SAP	Merge taper incorporated	JW	MB
P01	05/04/2023	SAP	Preliminary	JW	MB

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Client
NORTH FALLS Offshore Wind Farm
FIVE ESTUARIES OFFSHORE WIND FARM

Title
A120 - Bentley Road Junction
Swept Path Analysis
Road improvements layout

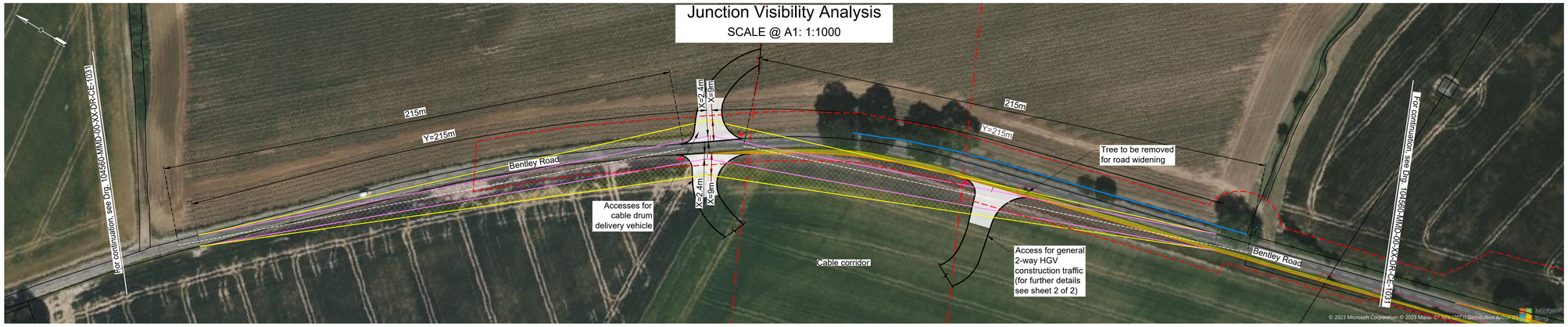
Sheet 01 of 01

Designed	S. Amado-Pedrosa	SAP	Eng check	John Weeks	JW
Drawn	S. Amado-Pedrosa	SAP	Coordination	Andrea F. Crespo	AFC
Dwg check	Ollie Jeffcock	OJ	Approved	Matthew Barton	MB

MMD Project Number	Scale at A1	Security
104560-001	As Shown	STD
Client Number		Suit. Code
004781329-03		S3
Drawing Number		Revision
104560-MMD-00-XX-DR-CE-1028		P03

Junction Visibility Analysis

SCALE @ A1: 1:1000

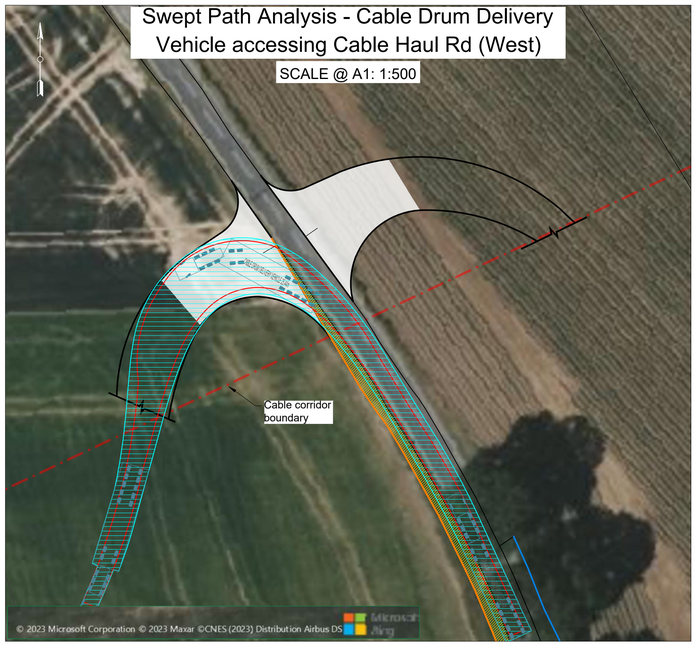


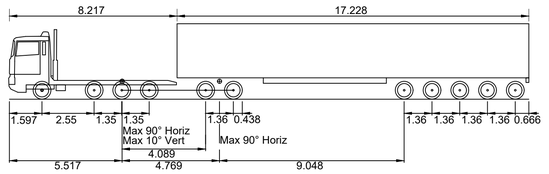
Swept Path Analysis - Cable Drum Delivery Vehicle accessing Cable Haul Rd (East)

SCALE @ A1: 1:500

Swept Path Analysis - Cable Drum Delivery Vehicle accessing Cable Haul Rd (West)

SCALE @ A1: 1:500





CABLE DRUM DELIVERY VEHICLE 25.44m

Overall Length	25.440m
Overall Width	4.500m
Overall Body Height	3.695m
Min Body Ground Clearance	0.332m
Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	14.500m

Note: Vehicles considered for the swept path analysis do not incorporate rear axles steering.

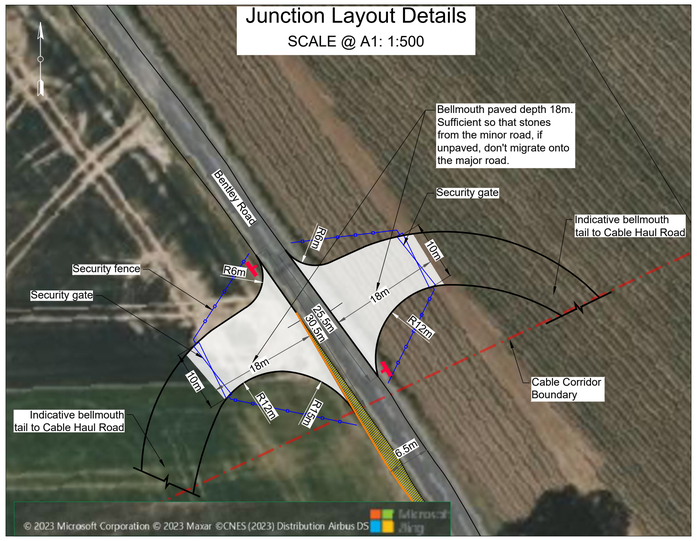
Geometry has been checked against the bespoke vehicle model shown in the diagram.
This model is generic and does not relate to any specific vehicle supplier's specification. All swept paths should be verified by the Contractor and their haulage supplier, once appointed, prior to detailed design and installation of the access.

Swept Path Analysis - Vehicle Details

Scale 1:150

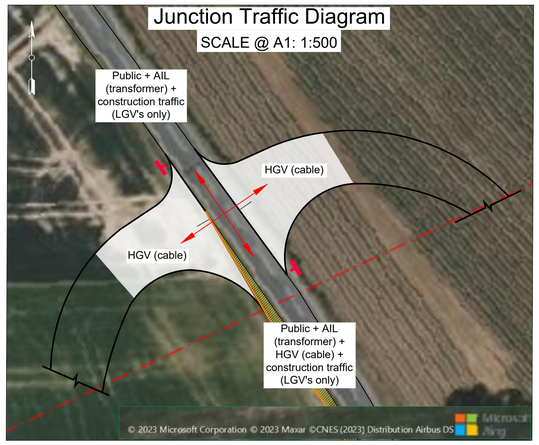
Junction Layout Details

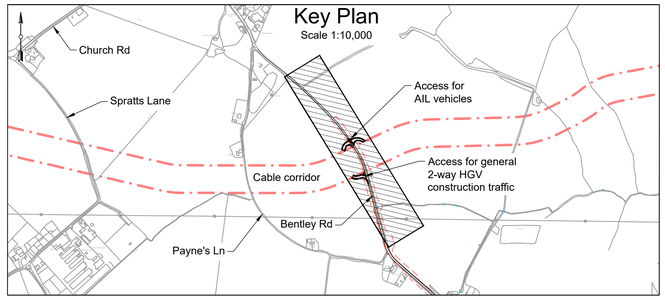
SCALE @ A1: 1:500



Junction Traffic Diagram

SCALE @ A1: 1:500





0 25m 50m
1:500

0 50m 100m
1:1000

0 500m 1000m
1:10,000

Notes

1. Do not scale any items of information from this drawing.
2. All dimensions are in metres unless otherwise stated.
3. This drawing is to be printed in colour and read in conjunction with all other relevant documents and drawings.
4. No unauthorised disclosure, storage or copying.
5. This drawing is for development purposes only and should not be used for construction.
6. Proposed arrangements shown for indicative purposes only. Dimensions and design may vary following completion of site surveys and the detailed design.
7. Alignment/specification of fencing and gates subject to site conditions and contractor requirements. Proposed fences to tie into existing fences/hedgerows.
8. Vegetation clearance and groundwork may be required to facilitate any necessary sight distances.
9. Vehicles used in this drawing are indicative of those expected to be using this construction access. Actual turning radii and vehicle track will depend on the precise vehicles used by the works contractor.
10. Where required by the local highways authority, the proposed junction will be controlled by traffic signals designed and installed in accordance with Chapter 6 of the Traffic Signs Manual. Appropriate warning signage will be used where necessary.
11. Visibility splay of 215m either side of bellmouth used to indicate required Stopping Site Distance as per CD 109 of the DMRB for 60mph design speeds. Bentley road speed limit considered to be the national speed limit on single carriageways, that is 60mph (~96 kph).
12. A temporary 40mph speed limit is recommended for safety of all road users in the vicinity of the access.
13. Cable deliveries are expected to require use of additional lanes and will require traffic control measures.
14. For construction of the bellmouths it is anticipated that temporary traffic signals will be installed with alternate lane closures. Cables crossing the road will be installed using trenchless techniques.
15. The junction has been assessed for the cable drum delivery vehicle, the max. legal length articulated vehicle (16.5m log) and a generic low loader (16.154m long). The junction geometry has been considered suitable to accommodate the movements of the forementioned vehicles.
16. Only partial utilities data has been provided for this indicative design. Full PAS128 utilities surveys shall be required at later design stages.
17. Drainage at bellmouth to be confirmed, construction boundary may change subject to drainage strategy and available outfalls.

Legend:

- Edge of carriageway line from OS Mastermap
- New carriageway edge (indicative) at Bentley Rd
- Edge of carriageway at bellmouth accesses
- Cable corridor
- RLB for Bentley Rd works
- Vehicle chassis/wheels outline
- Vehicle body outline
- Area swept by vehicle body/overhang
- Visibility splays at X=4.5m from stopping line
- Extents of vegetation and street furniture clearance to achieve visibility requirements at X=4.5m
- Visibility splays at X=9m from stopping line
- Extents of vegetation and street furniture further clearance to achieve visibility requirements at X=9m
- Forward visibility (Length= 175m)
- Bellmouth paved carriageway
- Proposed road widening
- Proposed vertical sign to be installed
- Proposed fence
- Proposed gate at bellmouth
- Existing surface water ditch / watercourse

Reference drawings

OS Mastermap
Essex County Council Private Rights of Way
VE-NF_Draft_Combined_Cable_Corridor_Rev_6 (dated 29/09/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13_Extract (dated 16/11/2023)
104560-MMD-00-XX-DR-CE-1031- 1 to 3 - Bentley Rd Improvements Layout

Rev	Date	Drawn	Description	Ch'k'd	App'd
03	24/11/2023	SAP	Forward visibility added	JW	AFC
02	26/06/2023	SAP	Cable route & bellmouth arrangement updated	JW	AFC
01	25/04/2023	SAP	Preliminary	SG	JW

Status Stamp

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Client

NORTH FALLS Offshore Wind Farm
FIVE ESTUARIES OFFSHORE WIND FARM

Title

Co-located Substation Early Design
Bentley Rd with Cable Haul Rd
Junction & SPA

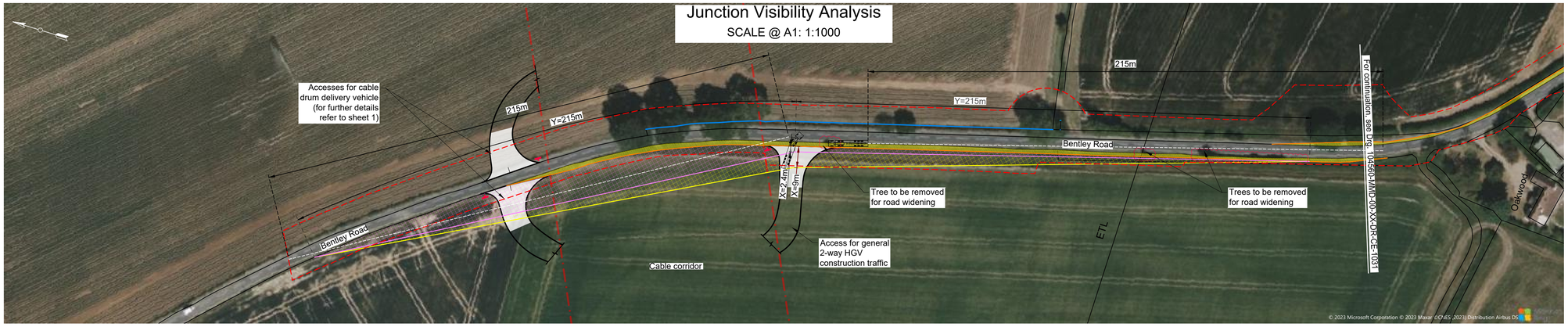
Sheet 01 of 02

Designed	S. Amado-Pedrosa	SAP	Eng check	Sam Goode	SG
Drawn	S. Amado-Pedrosa	SAP	Coordination	John Weeks	JW
Dwg check	Sam Goode	SG	Approved	John Weeks	JW

MMD Project Number	Scale at A1	Security
104560-001	As shown	STD
Client Number		Suit. Code
004786171-03		S3
Drawing Number		Revision
104560-MMD-00-XX-DR-CE-1032-1		03

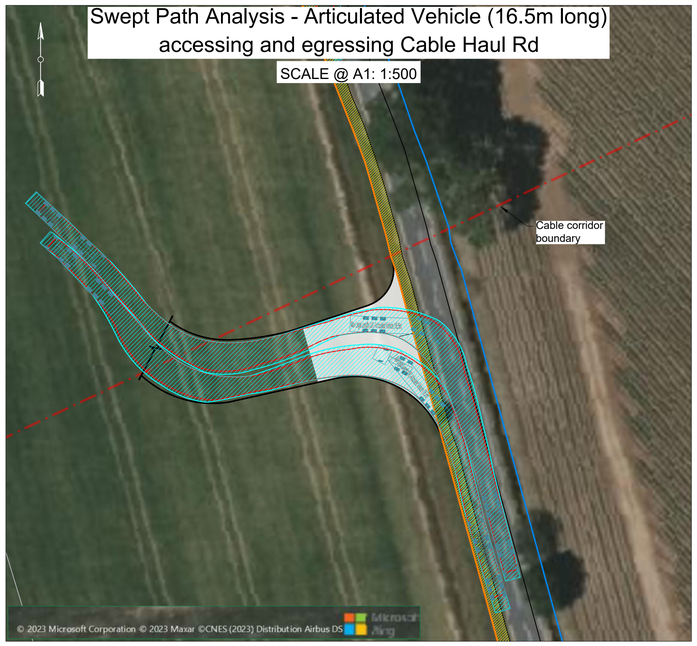
Junction Visibility Analysis

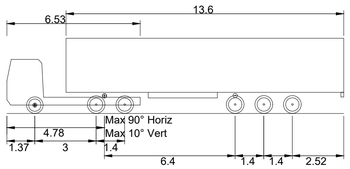
SCALE @ A1: 1:1000



Swept Path Analysis - Articulated Vehicle (16.5m long) accessing and egressing Cable Haul Rd

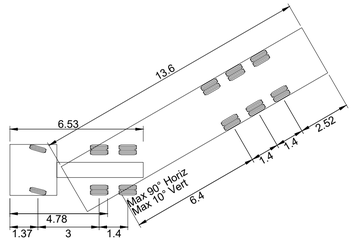
SCALE @ A1: 1:500



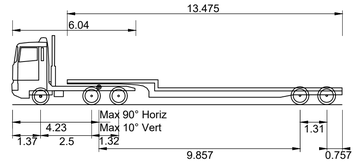


MAX. LEGAL LENGTH (UK) ARTICULATED VEHICLE (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m



Geometry has been checked against the bespoke vehicle models shown in the diagrams.
These models are generic and do not relate to any specific vehicle supplier's specification. All swept paths should be verified by the Contractor and their haulage supplier, once appointed, prior to detailed design and installation of the access.



LOW LOADER (16.154m)

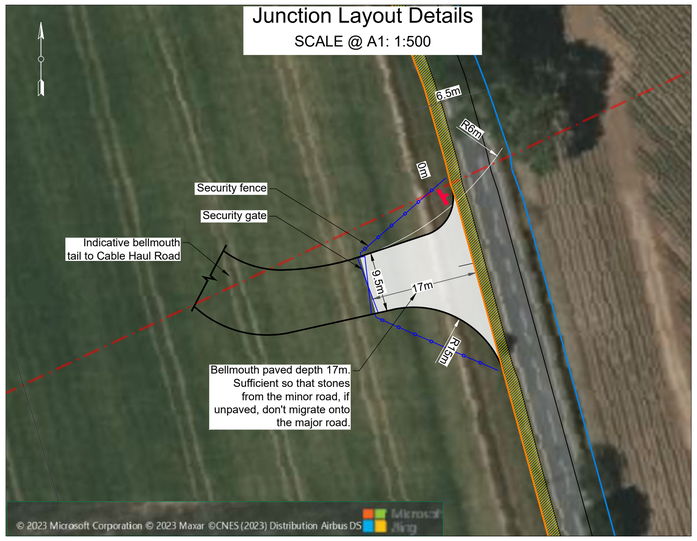
Overall Length	16.154m
Overall Width	2.520m
Overall Body Height	3.393m
Min Body Ground Clearance	0.318m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.990m

Swept Path Analysis - Vehicle Details

Scale 1:150

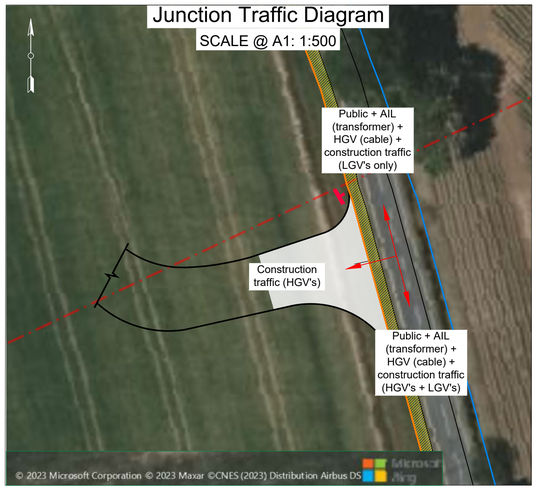
Junction Layout Details

SCALE @ A1: 1:500



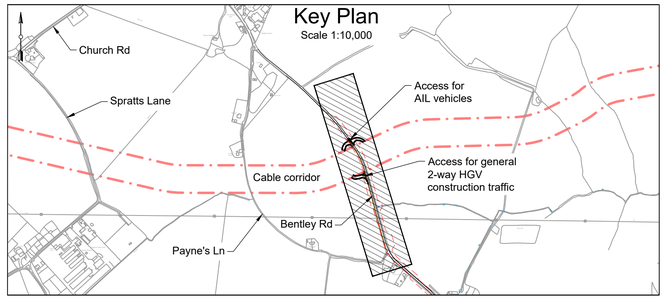
Junction Traffic Diagram

SCALE @ A1: 1:500



Key Plan

Scale 1:10,000



1:500 — 0 — 25m — 50m

1:1000 — 0 — 50m — 100m

1:10,000 — 0 — 500m — 1000m

C:\Users\AMA100030\DC\ACCDocs\Mott MacDonald\100104560 - RWE Co-location project\Project Files\MOTTMAC\C_CIV_MMD\DR\104560-MMD-00-XX-DR-CE-1032.dwg Nov 28, 2023 - 8:01PM AMA100030

Notes

1. Do not scale any items of information from this drawing.
2. All dimensions are in metres unless otherwise stated.
3. This drawing is to be printed in colour and read in conjunction with all other relevant documents and drawings.
4. No unauthorised disclosure, storage or copying.
5. This drawing is for development purposes only and should not be used for construction.
6. Proposed arrangements shown for indicative purposes only. Dimensions and design may vary following completion of site surveys and the detailed design.
7. Alignment/specification of fencing and gates subject to site conditions and contractor requirements. Proposed fences to tie into existing fences/hedgerows.
8. Vegetation clearance and groundwork may be required to facilitate any necessary sight distances.
9. Vehicles used in this drawing are indicative of those expected to be using this construction access. Actual turning radii and vehicle track will depend on the precise vehicles used by the works contractor.
10. Where required by the local highways authority, the proposed junction will be controlled by traffic signals designed and installed in accordance with Chapter 6 of the Traffic Signs Manual. Appropriate warning signage will be used where necessary.
11. Visibility splay of 215m either side of bellmouth used to indicate required Stopping Site Distance as per CD 109 of the DMRB for 60mph design speeds. Bentley road speed limit considered to be the national speed limit on single carriageways, that is 60mph (~96 kph).
12. A temporary 40mph speed limit is recommended for safety of all road users in the vicinity of the access.
13. Cable deliveries are expected to require use of additional lanes and will require traffic control measures.
14. For construction of the bellmouths it is anticipated that temporary traffic signals will be installed with alternate lane closures. Cables crossing the road will be installed using trenchless techniques.
15. The junction has been assessed for the cable drum delivery vehicle, the max. legal length articulated vehicle (16.5m log) and a generic low loader (16.154m long). The junction geometry has been considered suitable to accommodate the movements of the forementioned vehicles.
16. Only partial utilities data has been provided for this indicative design. Full PAS128 utilities surveys shall be required at later design stages.
17. Drainage at bellmouth to be confirmed, construction boundary may change subject to drainage strategy and available outfalls.

Legend:

- Edge of carriageway line from OS Mastermap
- New carriageway edge (indicative) at Bentley Rd
- Edge of carriageway at bellmouth accesses
- Cable corridor
- RLB for Bentley Rd works
- Vehicle chassis/wheels outline
- Vehicle body outline
- Area swept by vehicle body/overhang
- Visibility splays at X=4.5m from stopping line
- Extents of vegetation and street furniture clearance to achieve visibility requirements at X=4.5m
- Visibility splays at X=9m from stopping line
- Extents of vegetation and street furniture further clearance to achieve visibility requirements at X=9m
- Forward visibility (Length= 175m)
- Bellmouth paved carriageway
- Proposed road widening
- Proposed vertical sign to be installed
- Proposed fence
- Proposed gate at bellmouth
- Existing surface water ditch / watercourse

Reference drawings

OS Mastermap
Essex County Council Private Rights of Way
VE-NF_Draft_Combined_Cable_Corridor_Rev_6 (dated 29/09/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13_Extract (dated 16/11/2023)
104560-MMD-00-XX-DR-CE-1031- 1 to 3 - Bentley Rd Improvements Layout

Rev	Date	Drawn	Description	Ch'k'd	App'd
02	24/11/2023	SAP	Forward visibility added	JW	AFC
01	26/06/2023	SAP	Cable route & bellmouth arrangement updated	JW	AFC

Status Stamp

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Client

NORTH FALLS Offshore Wind Farm
FIVE ESTUARIES OFFSHORE WIND FARM

Title

Co-located Substation Early Design Bentley Rd with Cable Haul Rd Junction & SPA

Sheet 02 of 02

Designed	S. Amado-Pedrosa	SAP	Eng check	John Weeks	JW
Drawn	S. Amado-Pedrosa	SAP	Coordination	Andrea F. Crespo	AFC
Dwg check	John Weeks	JW	Approved	Andrea F. Crespo	AFC

MMD Project Number	Scale at A1	Security
104560-001	As shown	STD
Client Number		Suit. Code
004845330-02		S3
Drawing Number		Revision
104560-MMD-00-XX-DR-CE-1032-2		02

Notes

1. Do not scale from this drawing.
2. All dimensions are in meters unless otherwise stated.
3. This drawing is to be printed in colour.
4. This drawing is to be read in conjunction with all relevant documents and drawings.
5. No unauthorised disclosure, storage or copying.
6. All spatial coordinates relate to the Ordnance Survey, British National Grid (OSGB36).
7. All levels are in meters and relate to AOD (Ordnance Survey, Newlyn).
8. The A road A120 has a 50mph (~80.5kph) speed limit applying to the dual carriageway section, where the junction with Bentley Road is located. For the purpose of visibility analysis, it has been considered a design speed of 85kph (~100kph) for the A120, as the above closer value as per DMRB, CD 109 *Highway link design*, Table 2.10. Based on Table 2.10, the desirable minimum length of visibility splays (Stopping sight distance - SSD) for a design speed of 85kph is 160m.
9. The visibility splay on Bentley Road are shown as what is feasible.
10. Indicative design layout based of OS grid, works may vary subject to detailed design and site survey.
11. Only partial utilities data has been provided for this indicative design, full PAS128 utilities surveys shall be required and additional land take may be required to accommodate diversions.
12. For swept path details, refer to drawings 104560-MMD-00-XX-DR-CE-1026 and 104560-MMD-00-XX-DR-CE-1027.
12. For further information on the transition detail carriageway/cycle track for the proposed cycle track, please refer to drawing 104560-MMD-00-XX-DR-CE-1059, Sheet 2.
13. Existing water utility may require diversion or protection in some areas.

Legend:

- Indicative visibility splay from property driveway
- Five Estuaries Order Limits Boundary
- North Falls Order Limits Boundary
- Proposed new edge of carriageway
- Proposed permanent carriageway widening at junction
- 2m shift of carriageway
- Cycle path

Reference drawings

104560-MMD-00-XX-DR-CE-1028 - Bentley Rd Junction SPA Road improvements
104560-MMD-00-XX-DR-CE-1064 - Early Design Bentley Rd SPA "contra-flow" Option
104560-MMD-00-XX-DR-CE-1031-1 to 3 - Bentley Rd Improvements Layout and Red Line Boundary for works
UK_FES_Work_Areas_py_OSGB36_v8_13_Extract (dated 16/11/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13B_Extract (dated 16/11/2023)

Rev	Date	Drawn	Description	Ch'k'd	App'd
P02	08.03.2024	AT	Issue for comment	JW	AFC
P01	23.02.2024	AT	Issue for comment	JW	AFC

Status Stamp

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Client

NORTH FALLS Offshore Wind Farm
FIVE ESTUARIES OFFSHORE WIND FARM

Title

A120 - Bentley Road Junction Alternative Alignment

Sheet 01 of 01

Designed	A. Towse	AT	Eng check	J. Weeks	JW
Drawn	A. Towse	AT	Coordination	A. Fontaina Crespo	AFC
Dwg check	J. Weeks	JW	Approved	A. Fontaina Crespo	AFC

MMD Project Number	Scale at A1	Security
104560-001	1:500	STD

Client Number	Suit. Code
005070991-02	S3

Drawing Number	Revision
104560-MMD-00-XX-DR-CE-1065	P02

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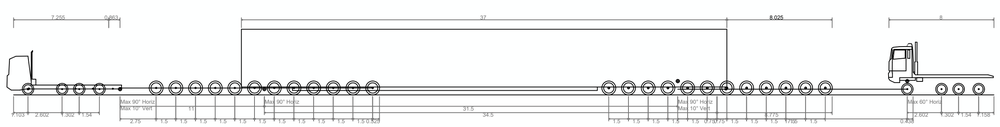

AIL- AL50 Girder 12 Axial (with rear tractor)

Overall Length	74.720m
Overall Width	6.300m
Overall Body Height	5.000m
Min Body Ground Clearance	0.337m
Max Track Width	3.000m
Lock to lock time	6.00s
Wall to Wall Turning Radius	11.550m

Geometry has been checked against a bespoke vehicle model shown in the diagram. This model is generic and does not relate to any specific vehicle supplier's specification. All swept paths should be verified by the Contractor and their haulage supplier once appointed prior to detailed design and installation of the access.

Notes

1. Do not scale from this drawing
2. All dimensions are in metres unless otherwise stated
3. This drawing is to be read in conjunction with all relevant documents and drawings
4. No unauthorised disclosure, storage or copying
5. All spatial coordinates relate to the Ordnance Survey, British National Grid (OSGB36)
6. All levels are in meters and relate to AOD (Ordnance Survey, Newlyn)
7. Geometry has been checked against a bespoke vehicle model shown in the diagram. This model is generic and does not relate to any specific vehicle suppliers specification. All swept paths should be verified by the Contractor and their haulage supplier once appointed prior to detailed design and installation of the access.
8. Kerb line would need to be realigned to accommodate AIL movement requiring increased pavement widening.
9. AIL switch to contraflow position can occur between Red House Farm and the Single Lane Dual Carriageway section of the A120.

Key to symbols

- Chassis outline
- Body outline
- Swept path area by vehicle body
- OS map feature lines
- Five Estuaries Order Limits Boundary
- Proposed kerb line
- Proposed pavement widening
- Cycle path
- North Falls Order Limits Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P3	07/03/2024	AT	Issue for comment	JW	AFC
P2	23/02/2024	AT	Issue for comment	JW	AFC
P1	08/02/2024	AT	Issue for comment	JW	AFC

Status Stamp

DRAFT

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Client

NORTH FALLS Offshore Wind Farm

FIVE ESTUARIES OFFSHORE WIND FARM

Title

Co-located Substation Early Design
A120 - Bentley Road Junction
Swept Path Analysis
"contra-flow" Option
Sheet 01 of 01

Designed	A. Towse	AT	Eng check	J. Weeks	JW
Drawn	A. Towse	AT	Coordination	A. Fontaina Crespo	AFC
Dwg check	J. Weeks	JW	Approved	A. Fontaina Crespo	AFC

MMD Project Number	Scale at A1	Security
104560	1:400	STD
Client Number		Suit. Code
005069954-03		S3
Drawing Number		Revision
104560-MMD-00-XX-DR-CE-1064		P3

1:400 0 20m 40m

Annex 27.1.22 Highways Works Stage 1 Road Safety Audit and Designers Response Report

Stage 1 Road Safety Audit

Ardleigh Road / Bentley Road, Five Estuaries Wind Farm

RWE

Prepared by:

SLR Consulting Limited

Ground Floor Helmont House , Churchill Way, Cardiff,
CF10 2HE

SLR Project No.: 425.002196.00001

Client Reference No: XXXX

27 November 2023

Revision: 01

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
01	27 November 2023	Sasha Respini	Alastair Pike	Alastair Pike
	Click to enter a date.			

Basis of Report

This document has been prepared by SLR Consulting Limited (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with RWE (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

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Table of Contents

Appendices

Acronyms and Abbreviations

RSA	Road Safety Audit
DMRB	Design Manual for Roads and Bridges
MfS	Manual for Streets
PIC	Personal Injury Collisions
DfS	Departures from Standards
SPA	Swept Path Analysis

1.0 Introduction

1.1 This report results from a Stage 1 Road Safety Audit carried out on Monday 27th November 2023. The RSA was carried out on behalf of RWE. The Overseeing Organisation for this Stage 1 is Essex County Council.

1.2 An Audit Brief was prepared by Daniel Moran of SLR Consulting Ltd on 13th September 2023. This Audit Brief was formally accepted by the Audit Team on the same date.

1.3 This Road Safety Audit team was as follows:

Sasha Respini, BSc (Hons), MSc, MCIHT, MSoRSA
Audit Team Leader
Principal Transport Planner
SLR Consulting Ltd

ALASTAIR PIKE, MICE, MCIHT, MSoRSA, HE Approved Cert. Comp.
Audit Team Member
Head of Road Safety
SLR Consulting Ltd

1.4 A site visit was undertaken by the Audit Team on Thursday 09th November 2023, between the hours of 13:00 and 14:30. The weather at the time of the visit was overcast and the carriageway surface was generally dry. Vehicular traffic levels were considered to be low. There were no pedestrian and no cyclist movements observed during this time.

1.5 Site location plans can be found at **Appendix A** of this report.

1.6 The terms of reference of the Road Safety Audit are as described in the Design Manual for Roads and Bridges (DMRB) Standard, GG119 Road Safety Audit.

1.7 The Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem the Audit Team may, on occasion, have referred to a design standard without touching on technical audit.

1.8 A table of documents submitted for this Stage 1 RSA can be found in **Appendix B**.

1.9 The scheme subject to Stage 1 RSA for both Ardleigh Road and Bentley Road comprises a construction access junction and haul road crossings associated with the installation of an export cable to carry power from a proposed offshore windfarm located off the coast of Essex. This access point and haul road are located on Ardleigh Road, Little Bentley and will be required for a period of approximately 18 months.

1.10 Submitted design drawings have been annotated to show the locations of any problems identified during this Stage 1 RSA. These plans can be found at **Appendix C**.

1.11 Whilst recommendations have been made within this report, there may be equally satisfactory alternatives. The Audit Team will be pleased to consider alternatives if required.

Departures from Standards

1.12 The Audit Team were not informed of any Departure from Standards (DfS) associated with the design proposals.

2.0 Matters arising from this Stage 1 RSA

004943785-01-MOT - Co-located Substations Early Design – Permanent and Temporary Access Junction with Ardleigh Road

2.1 Problem.

Location: Site access.

Summary: Overhead cables may lead to damage to infrastructure, vehicles and occupants.

Onsite observations noted that the presence of overhead cables that cross Ardleigh Road in various locations in the vicinity of the proposed development. The vertical alignment of proposed HGV access movements may lead to damage to infrastructure or damage to vehicles and injury to occupants.

Recommendation:

It is recommended that the vertical assessment is carried out for the appropriate vehicle types to ensure no conflict remains.

2.2 Problem.

Location: Site access.

Summary: Westbound HGV egress does not allow for two way working for large vehicles potentially leading to shunt or head on type collisions.

The proposed access swept path analysis shows a vehicle both egressing and accessing the proposed junction from the west. This location does not support the two-way movements of HGV's and this movement may in turn lead to head on or shunt type collisions between vehicles.

Recommendation:

It is recommended that all HGV access should be controlled such that opposing vehicles meet to the east of the access junction.

2.3 Problem.

Location: Site haul road.

Summary: There is no tolerance for HGVs when turning into / out of the site access which may lead to loss of control type collisions.

The vehicle tracking demonstrates no additional tolerance in surfaced width for HGVs at the site access and along the haul road track. This arrangement does not allow any room for manoeuvre along the track and relies on a perfect HGV turn each time. This proposed arrangement may lead to loss of control type collisions.

Recommendation:

It is recommended that the proposed haul road is widened to allow more width for large construction vehicles.

104560-MMD-00-XX-DR-CE-1032-1

2.4 Problem.

Location: Site access.

Summary: At a 9m setback, existing trees may obscure the visibility splay potentially leading to side swipe type collisions.

Onsite observations noted that the presence of existing vegetation may constitute an obstruction to the junction visibility. Obstruction to visibility splays may lead to injudicious vehicle movements at the proposed junction leading to side swipe collisions between vehicles.

Recommendation:

It is recommended that the trees be cut back and maintained as such that it does not pose an obstruction to the visibility splays.

2.5 Problem.

Location: Site access.

Summary: The position of the gate could cause rear end shunts.

The position of the proposed gate is set back 18m and does not allow the largest vehicle (25m) to fully clear the main carriageway when waiting. There is no detail provided that shows the proposed operation of the gate features. Should they be closed for any reason their proposed location could leave HGVs overhanging the public highway which may result in shunt / side swipe type collisions.

Recommendation:

It is recommended that the gates are relocated further back into the site such that if a gate is closed for whatever reason, an HGV can still clear the public highway before stopping.

2.6 Problem.

Location: Site haul road.

Summary: There is no tolerance for HGVs when turning into / out of the site access which may lead to loss of control type collisions.

The vehicle tracking demonstrates no additional tolerance in surfaced width for HGVs at the site access and along the haul road track. This arrangement does not allow any room for manoeuvre along the track and relies on a perfect HGV turn each time. This proposed arrangement may lead to loss of control type collisions.

Recommendation:

It is recommended that the proposed haul road is widened to allow more width for large construction vehicles.

2.7 Problem.

Location: Internal site.

Summary: No turning area is provided to allow vehicles to turn and egress the site in a forward gear, may lead to side swipe type collisions.

It is not clear from the supplied drawings whether a construction compound, or similar, will be provided on the site to allow for vehicles to turn within the site, this could compel drivers to reverse from the site onto the public highway which could lead to obscured visibility and side swipe type collisions.

Recommendation:

It is recommended that a turning area for large construction vehicles is provided within the site boundary during the construction works to ensure vehicles can access and egress the site in a forward gear.

104560-MMD-00-XX-DR-CE-1032-2

2.8 Problem.

Location: Proposed site access.

Summary: The level difference between the carriageway and site could result in loss of control or side swipe type collisions.

Onsite observations found that there was a difference in levels between the existing carriageway and the new access. An excessive gradient may create difficulty for large construction vehicles wishing to access Lodge Lane and may in turn lead to a lack of surface friction and slow egress movements potentially creating shunt / side swipe type collisions between egressing construction vehicles and vehicles travelling on Bentley Road.

Recommendation:

It is recommended that the existing gradient be amended to an appropriate level for the restart movements of large vehicles accessing Bentley Road from the proposed site.

3.0 Audit Team Statement

3.1 We certify that this Audit has been carried out in accordance with the requirements of GG119.

Road Safety Audit Team Leader

Name: Sasha Respini

Signed:
Position: Principal Transport Planner
Organisation: SLR Consulting Ltd
Date: 27 November 2023

Road Safety Audit Team Member

Name: Alastair Pike

Signed: 

Position: Head of Road Safety
Organisation: SLR Consulting Ltd
Date: 27 November 2023

Appendix A Site Location Plans

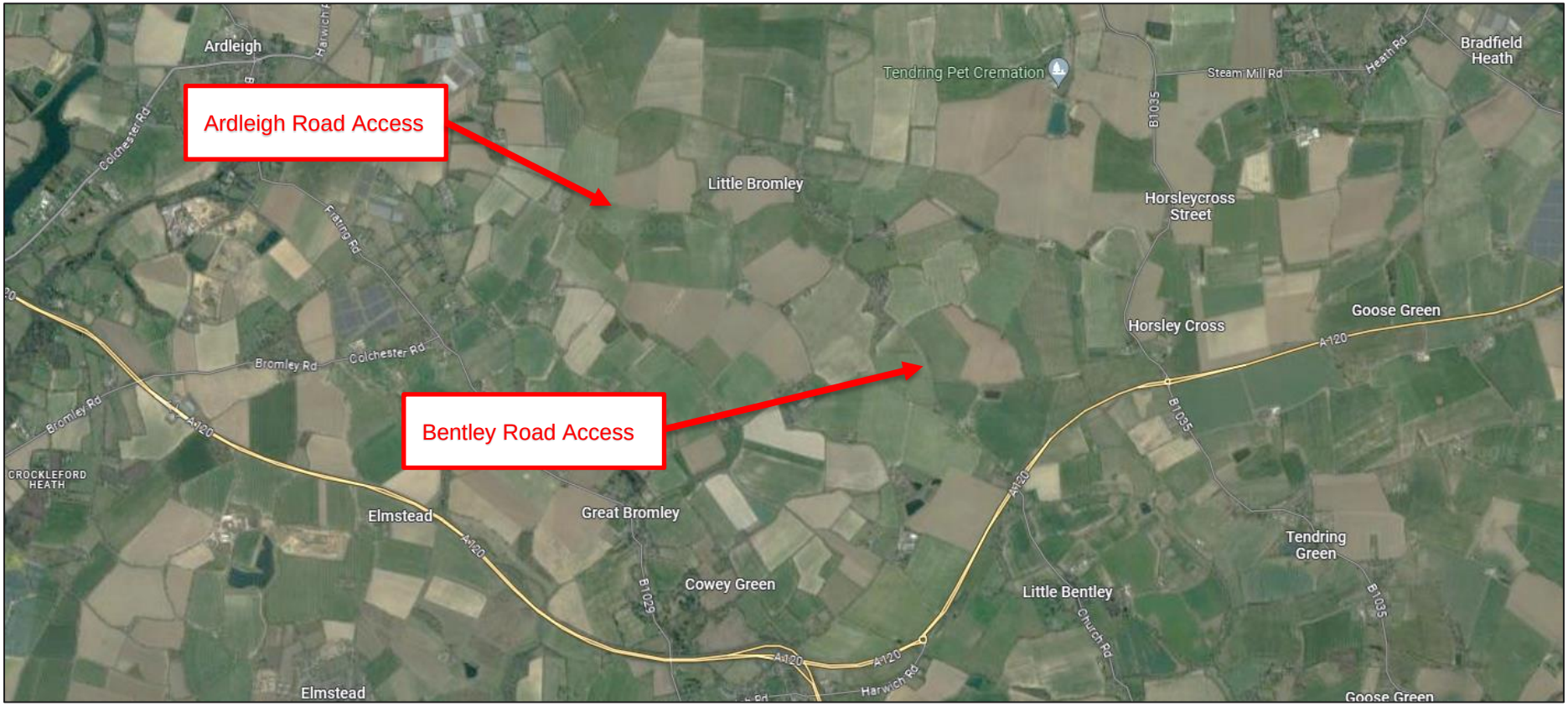
Stage 1 Road Safety Audit

Ardleigh Road / Bentley Road, Five Estuaries Wind Farm

RWE

SLR Project No.: 425.002196.00001

27 November 2023


Ardleigh Road Access
Bentley Road Access
Ardleigh
Tendring Pet Cremation
Steam Mill Rd
Heath Rd
Bradfield Heath
B1035
Colchester Rd
Little Bromley
Horsleycross Street
Frating Rd
Horsley Cross
Goose Green
A120
Bromley Rd
Colchester Rd
Bromley Rd
CROCKLEFORD HEATH
Elmstead
Great Bromley
B1029
Cowey Green
Little Bentley
Church Rd
Tendring Green
Harwich Rd
Elmstead
Goose Green

Appendix B Submitted Documents

Stage 1 Road Safety Audit

Ardleigh Road / Bentley Road, Five Estuaries Wind Farm

RWE

SLR Project No.: 425.002196.00001

27 November 2023

Submitted Documents

Document	Document Title
Design Drawings	104560-MMD-00-XX-DR-CE-1032-1 004943785-01-MOT - Co-located Substations Early Design – Permanent and Temporary Access Junction with Ardleigh Road 104560-MMD-00-XX-DR-CE-1032-1 104560-MMD-00-XX-DR-CE-1032-2

Appendix C Problem Location Plans

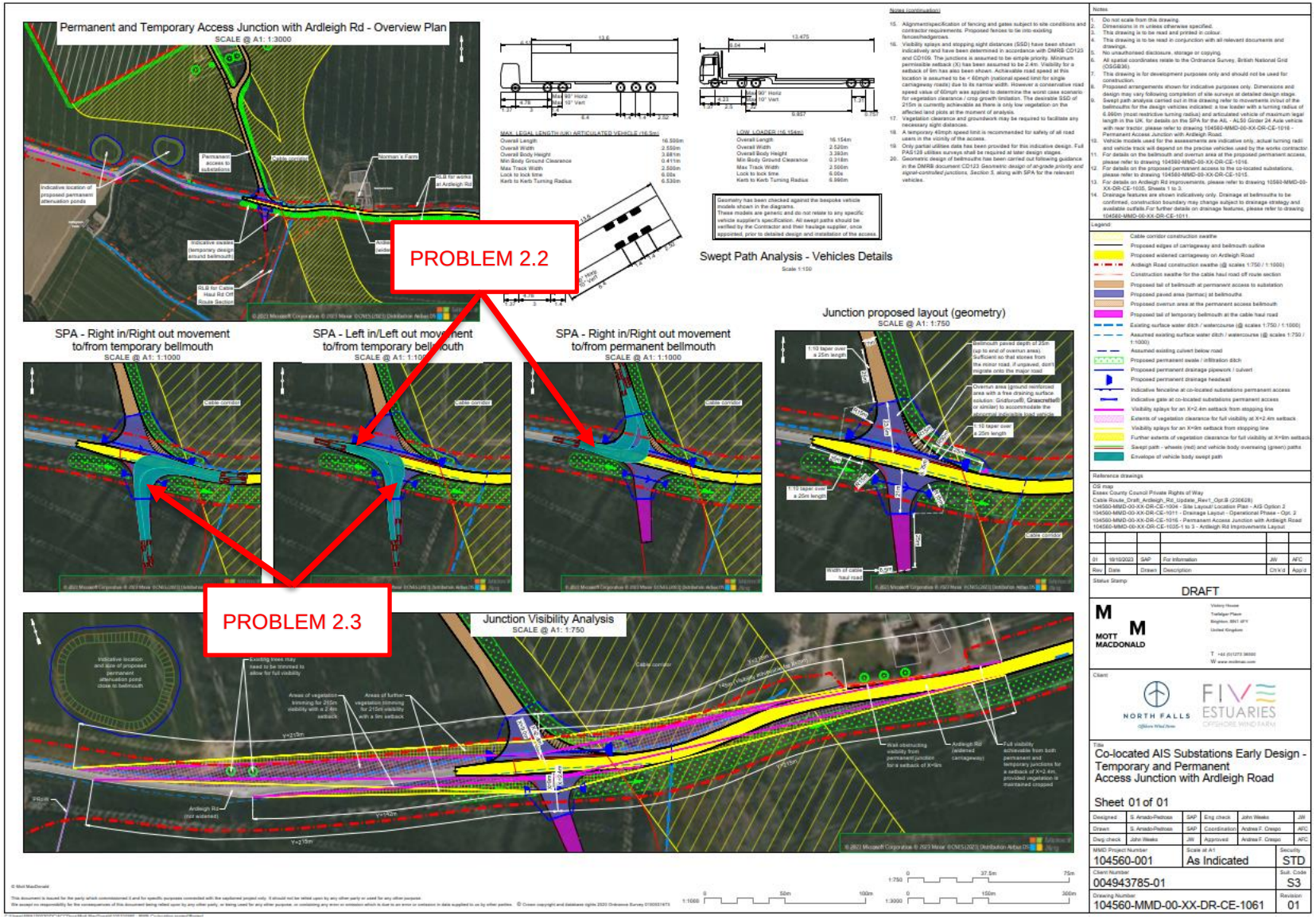
Stage 1 Road Safety Audit

Ardleigh Road / Bentley Road, Five Estuaries Wind Farm

RWE

SLR Project No.: 425.002196.00001

27 November 2023


Permanent and Temporary Access Junction with Ardleigh Rd - Overview Plan
SCALE @ A1: 1:3000
PROBLEM 2.2
Swept Path Analysis - Vehicles Details
SPA - Right in/Right out movement to/from temporary bellmouth
SCALE @ A1: 1:1000
SPA - Left in/Left out movement to/from temporary bellmouth
SCALE @ A1: 1:1000
SPA - Right in/Right out movement to/from permanent bellmouth
SCALE @ A1: 1:1000
Junction proposed layout (geometry)
SCALE @ A1: 1:750
PROBLEM 2.3
Junction Visibility Analysis
SCALE @ A1: 1:750
DRAFT
MOTT MACDONALD
NORTH FALLS
FIVE ESTUARIES
Co-located AIS Substations Early Design - Temporary and Permanent Access Junction with Ardleigh Road
Sheet 01 of 01
104560-001
As Indicated
STD
004943785-01
S3
104560-MMD-00-XX-DR-CE-1061
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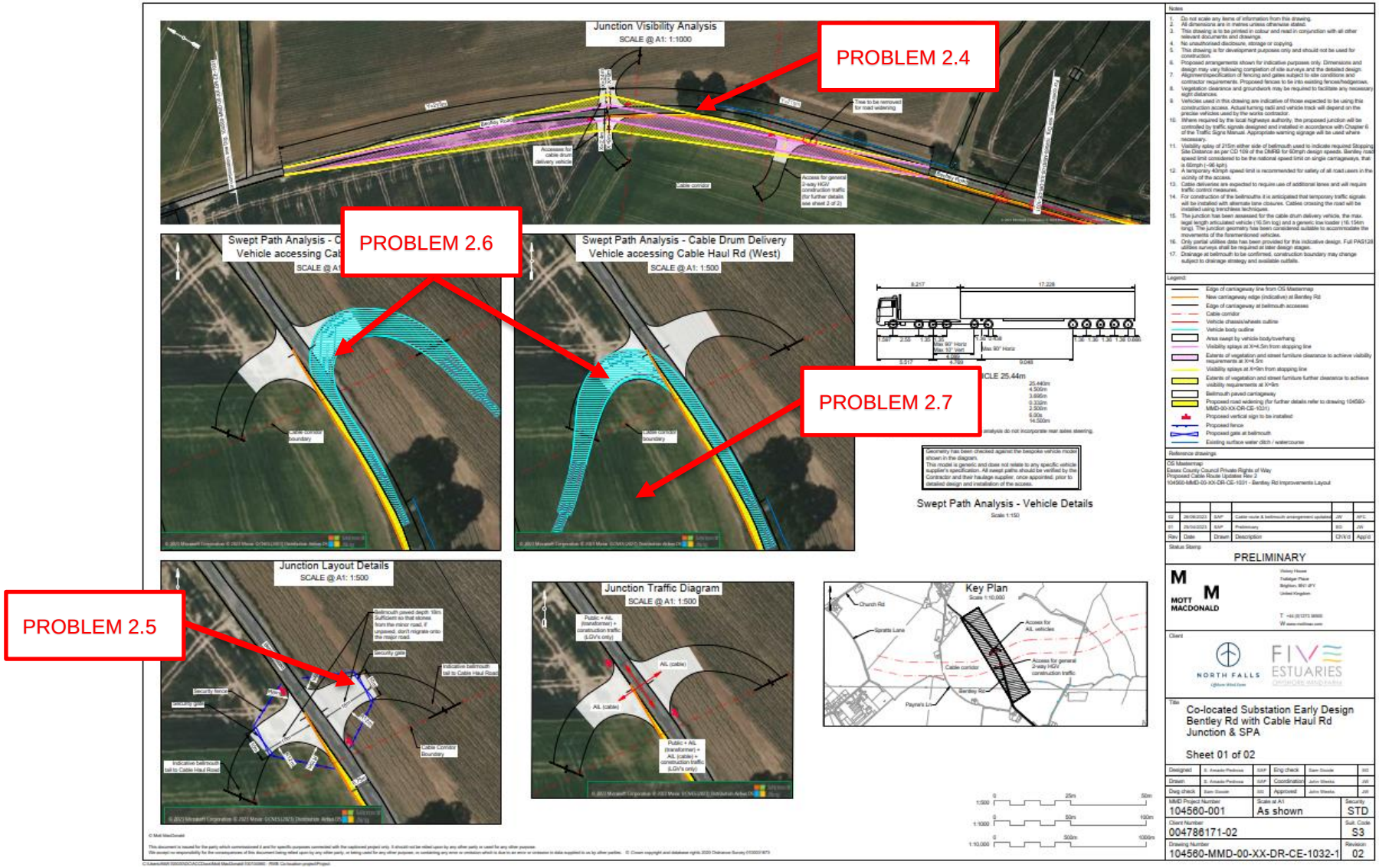
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PROBLEM 2.7
PROBLEM 2.5
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Swept Path Analysis - Cable Drum Delivery Vehicle accessing Cable Haul Rd (West)
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Bentley Rd with Cable Haul Rd
Junction & SPA
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As shown
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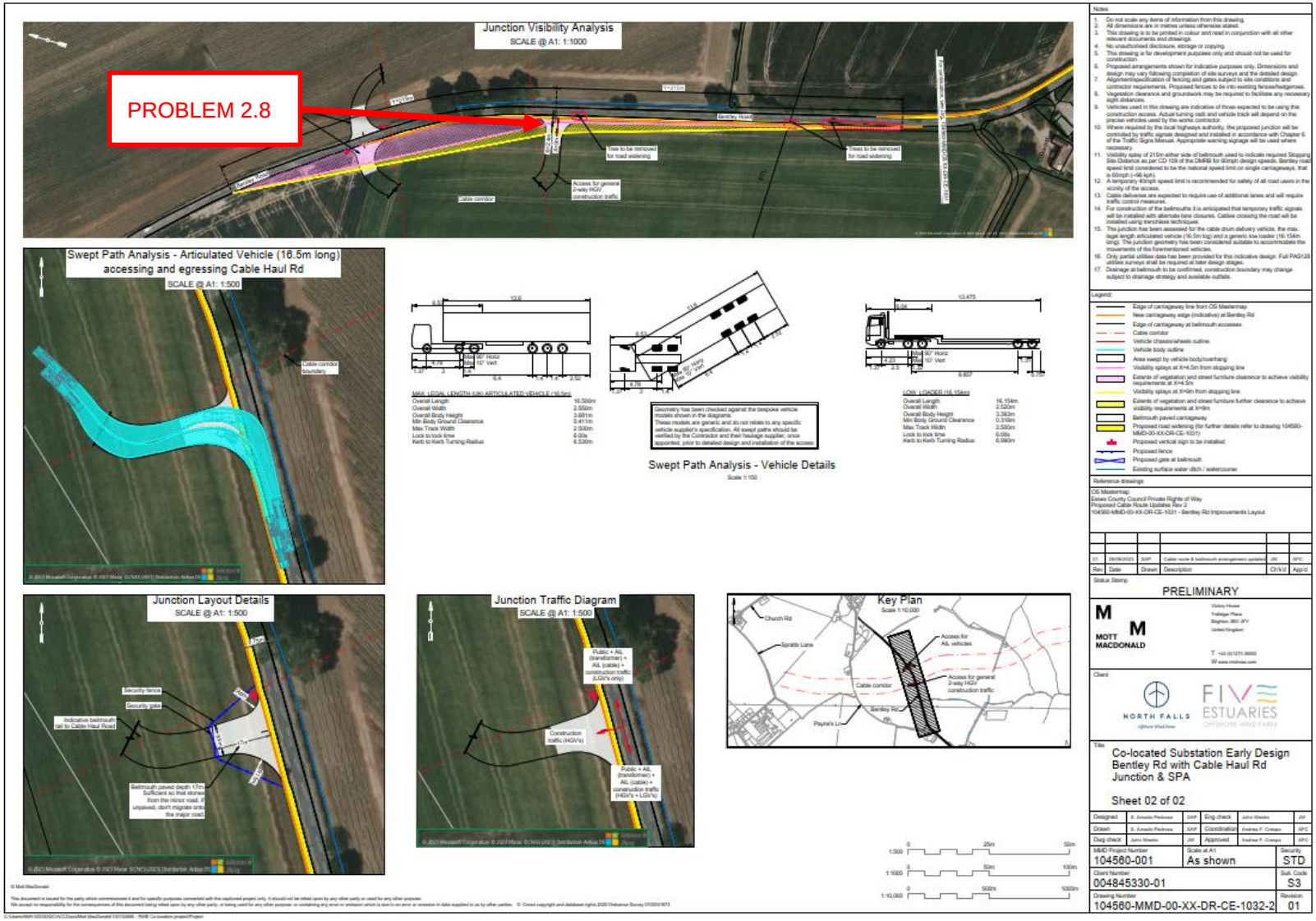
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Bentley Rd with Cable Haul Rd
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As shown
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S3
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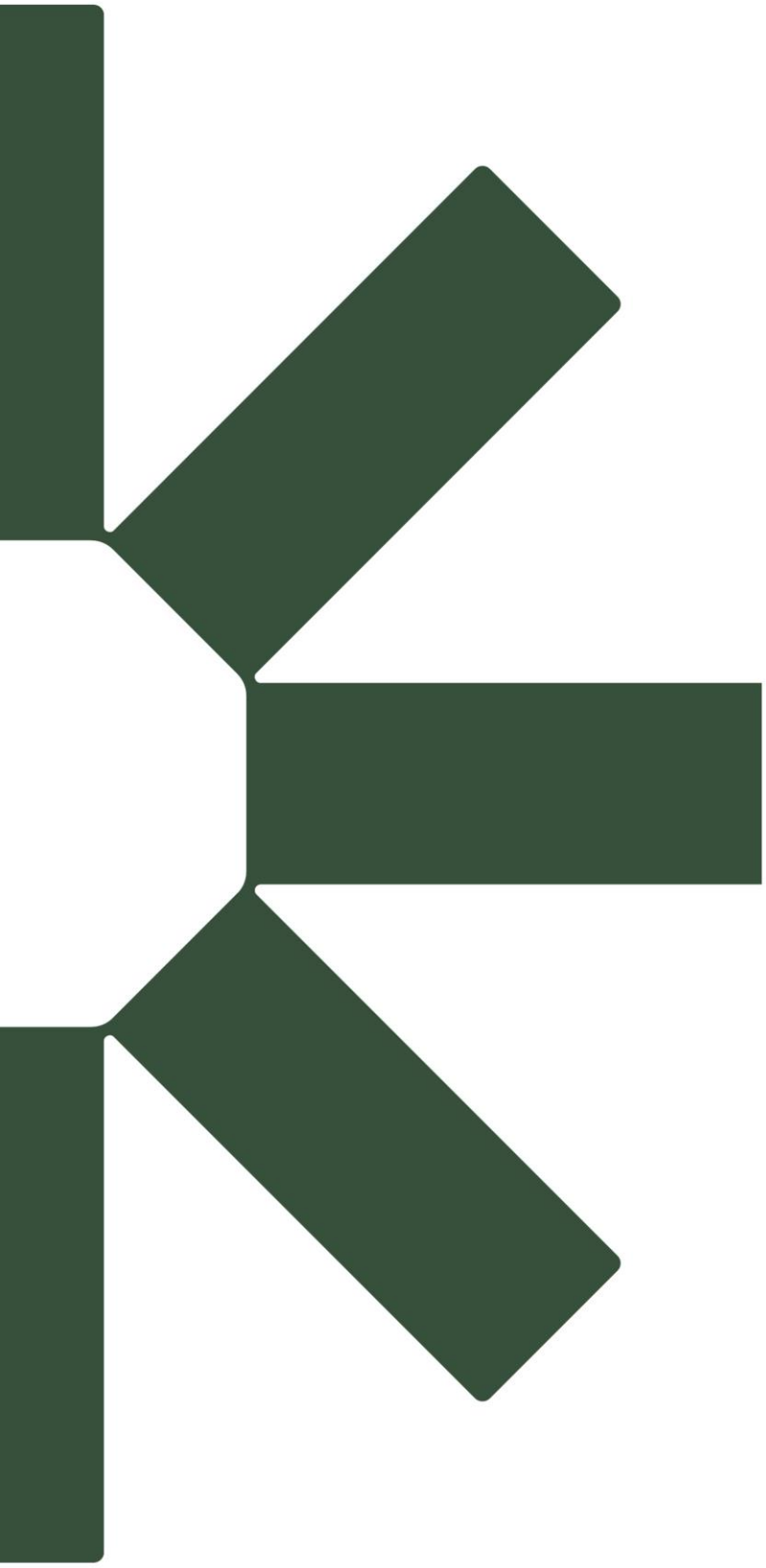

Making Sustainability Happen

Contractor Coversheet

Project Name:	FE_NF_Mott Macdonald Co-Located Substation Studies	**Package No:**	PROJECTCODE 12 - Electrical Systems

Document Title:	Co-located AIS Substations Early Design - Ardleigh Road Junction - Audit Response Report
Classification:	Confidential

Contractor Doc. No:	104560-MMD-00-XX-RP-HE-1062	**Contractor Revision:**	01
Date:	20/12/2023	**Pages:**	17

Employer Doc. No:	005014244 -01	**Employer Revision:**	NA
Document Status:	Preliminary		
Reason for Issue	Review		

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Co-Located Substation Early Design - Ardleigh Road Junction

Stage 1 RSA Designer's Response

December 2023

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Co-Located Substation Early Design - Ardleigh Road Junction

Stage 1 RSA Designer's Response

December 2023

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
01	20/12/2023	Sonia A. Pedrosa	John Weeks	Andrea F. Crespo	First Issue for Comment

Document reference: 104560 | 104560-MMD-00-XX-RP-HE-1062 | 01 | 005014244-01

Information class: Standard

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1 Introduction

This Road Safety Audit Response Report documents considered responses aligned with road safety 'problems' and 'recommendations' defined through the Stage 1 Road Safety Audit process.

1.1 Overview

This report documents original Stage 1 Road Safety Audit (RSA) 'problems' and 'recommendations' for the Ardleigh Road junction design defined by the SLR Consulting Ltd. Road Safety Audit Team and includes formally considered RSA responses developed by Mott MacDonald Designers.

The audit was carried out by SLR Consulting Ltd at the request of RWE, the Client and Project Sponsor. The Overseeing Organisation for this Stage 1 is Essex County Council.

The scheme subject to Stage 1 RSA comprises a construction access junction and haul road crossings associated with the installation of an export cable to carry power from a proposed offshore windfarm located off the coast of Essex. This access point and haul road are located on Ardleigh Road, Little Bromley and will be required for a period of approximately 18 months.

The Road Safety Audit was originally carried out with reference to the supplied Road Safety Audit Brief prepared by SLR Consulting Ltd on 13th September 2023 and formally accepted by the Audit Team on the same date. The terms of reference of the Road Safety Audit are as described in the Design Manual for Roads and Bridges (DMRB) Standard, GG119 Road Safety Audit.

A site visit was undertaken by the Audit Team on Thursday 09th November 2023, between the hours of 14:00 and 14:30. The weather at the time of the visit was overcast and the carriageway surface was generally dry. Vehicular traffic levels were considered to be low. There were no pedestrian and no cyclist movements observed during this time.

The Road Safety Audit comprised an examination of the documentation and drawings listed in **Appendix A**. Accompanying drawings indicating the location of identified safety related issues are provided in **Appendix B** and **C**.

Figure 1.1 shows the location of the accesses included in scheme in a local context.

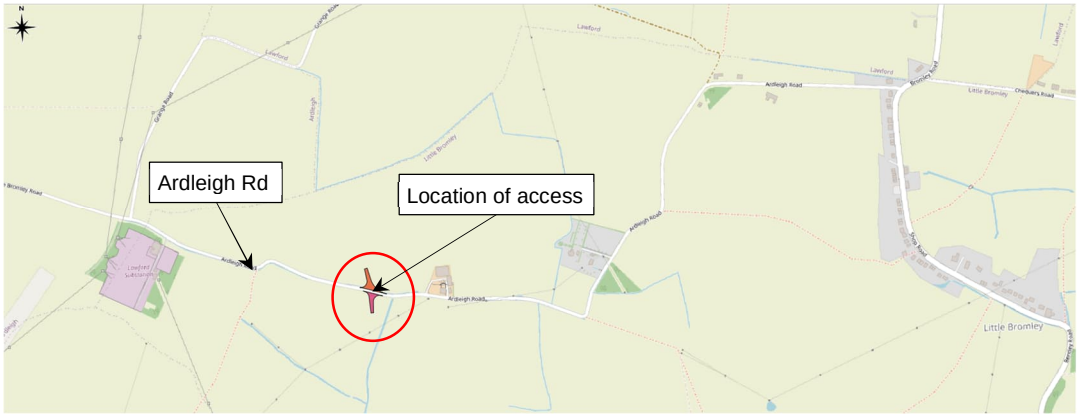


Figure 1.1. Location of the proposed Ardleigh Rd Junction

Source: Mott MacDonald based on OpenStreetMap

1.2 Relevant Parties

Project Sponsor: **RWE**

Client: **RWE**

Designer: **Mott MacDonald**

The Road Safety Audit Team consisted of:

Sasha Respini	BSc (Hons), MSc, MCIHT, MSoRSA Audit Team Leader Principal Transport Planner SLR Consulting Ltd
Alastair Pike	MICE, MCIHT, MSoRSA, HE Approved Cert. Comp. Audit Team Member Head of Road Safety SLR Consulting Ltd

The Road Safety Audit Designer Response has been prepared by:

John Weeks	Design Lead for Bentley Road Improvement Works and Access Junction to the Haul Road, Mott MacDonald
Sonia A. Pedrosa	Design Team Member for Bentley Road Improvement Works and Access Junction to the Haul Road, Mott MacDonald

The client representatives are:

Emmanuelle Bassey	Civil Engineering Lead, RWE
Ian Maclean	Engineering Manager, RWE

1.3 Report Structure

- **Section 2** comprises of a 'Road Safety Audit Decision Log'.
- **Section 3** includes audit response statements.

2 Road Safety Audit Decision Log

This section presents a road safety audit decision log, incorporating 'Designer Responses' to all identified problems and recommendations from the Stage 1 RSA; see **Table 2.1**.

Table 2.1: Road Safety Audit Decision Log

Ref.	RSA Problem	RSA Recommendation	Design Organisation Response	Audit Team Supplementary Comment	Client / Project Sponsor Comment	Agreed RSA action
PROBLEMS IDENTIFIED AND ALIGNED RECOMMENDATIONS FROM STAGE 1 RSA						
Scheme: Ardleigh Road Junction						
Drawing 104560-MMD-00-XX-DR-CE-1061_Rev01						
2.1	Location: Site Access (Temporary Access Junction with Ardleigh Rd) Summary: Overhead cables may lead to damage to infrastructure, vehicles and occupants. Onsite observations noted the presence of overhead cables that cross Ardleigh Road in various locations in the vicinity of the proposed development. The vertical alignment of proposed HGV access movements may lead to damage to infrastructure or damage to vehicles and injury to occupants.	It is recommended that the vertical assessment is carried out for the appropriate vehicle types to ensure no conflict remains.	• RSA problem and recommendation agreed. • This matter will be appraised further as an integral part of the detailed design process, when full PAS128 utilities surveys are to be obtained, and drawings detailing diversion or undergrounding (and/or further measures required) of utilities in the vicinity of the proposed access junction and crossing will be developed to take due account of the safety problem and the aligned recommendation. • A wider utility diversion / undergrounding assessment would need to be carried out by the third party in charge of the Ardleigh Rd improvement works design at the scheme detailed design stage, when full PAS128 utilities surveys shall be completed. Coordination between Mott MacDonald and that third party may be required. • Notes 9 and 19 in drawing 104560-MMD-00-XX-DR-CE-1061_Rev01 are intended to account for this matter: • Note 9. «Proposed arrangements shown for indicative purposes only. Dimensions and design may vary following completion of site surveys at detailed design stage». • Note 19. «Only partial utilities data has been provided for this indicative design. Full PAS128 utilities surveys shall be required at later design stages».	TBC	TBC	This matter will be appraised further as an integral part of the detailed design process, when full PAS128 utilities surveys are to be obtained, and drawings detailing diversion or undergrounding of utilities in the vicinity of the proposed access junction and crossing will be developed to take due account of the safety problem and the aligned recommendation (TBC).
2.2	Location: Site Access (Temporary Access Junction with Ardleigh Rd). Refer to Appendix B. Summary: Westbound HGV egress does not allow for two-way working for large vehicles potentially leading to shunt or head on type collisions. The proposed access swept path analysis shows a vehicle both egressing and accessing the proposed junction from the west. This location does not support the two-way movements of HGV's and this movement may in turn lead to head on or shunt type collisions between vehicles.	It is recommended that all HGV access should be controlled such that opposing vehicles meet to the east of the access junction.	• RSA problem acknowledged but recommendation dismissed due to it being outdated after recent changes to design. • Developers have agreed with third party stakeholders to continue the Ardleigh Rd improvement works (which include carriageway widening) to the west of the Five Estuaries & North Falls co-located substation access (i.e., site access). Ardleigh Rd Junction proposed layout has been updated to adjust to the new proposed edges of carriageway and it is allowing now for HGV two-way movements west of the junction. • RSA problem solved in drawing 104560-MMD-00-XX-DR-CE-1061_Rev02 (refer to Appendix C). Swept path analysis (SPA) at the updated Ardleigh Rd Junction layout shows that there are no issues with two-way movements West of the junction.	TBC	TBC	RSA problem no longer relevant after recent design updates, as shown in drawing 104560-MMD-00-XX-DR-CE-1061_Rev02 (refer to Appendix C). Swept path analysis (SPA) at the updated Ardleigh Rd Junction layout shows that there are no issues with two-way movements West of the junction in latest design anymore (TBC).
2.3	Location: Site Haul Road Access (Temporary Access Junction with Ardleigh Rd). Refer to Appendix B. Summary: There is no tolerance for HGVs when turning into / out of the site access which may lead to loss of control type collisions. The vehicle tracking demonstrates no additional tolerance in surfaced width for HGVs at the site access and along the haul road track. This arrangement does not allow any room for manoeuvre along the track and relies on a perfect HGV turn each time. This proposed arrangement may lead to loss of control type collisions.	It is recommended that the proposed haul road is widened to allow more width for large construction vehicles.	• RSA problem and recommendation acknowledged and partially agreed, since simultaneous HGV access and egress movements from/to either to the West or East of Ardleigh Road are expected to occur on the odd occasion. The majority of HGV movements at the concerned junction are expected to be crossing movements from the cable haul road to the co-located permanent access and vice versa. HGVs working at third party substation development are not expected to be using the co-located substation cable haul road. Current design represents a compromise between safety for manoeuvres, design of bellmouth compliant with standard (CD123, Section 5) and minimisation of total area of bellmouth, along with minimisation of land-take and volumes of material required to construct the junction. • Also, please note that the SPA shown in drawing 104560-MMD-00-XX-DR-CE-1061_Rev01 is not making full use of the junction surface since it is not using the corner taper at the permanent access bellmouth north of Ardleigh Rd. This shall be updated by the designer in drawing 104560-MMD-00-XX-DR-CE-1061_Rev02, showing greater easiness for manoeuvring.	TBC	TBC	Designer to update vehicles swept paths accessing/egressing Ardleigh Rd East leg in drawing 104560-MMD-00-XX-DR-CE-1061_Rev02, making use of the full junction surface so that manoeuvring of vehicles appears less constrained. (TBC)

Ref.	RSA Problem	RSA Recommendation	Design Organisation Response	Audit Team Supplementary Comment	Client / Project Sponsor Comment	Agreed RSA action
			• Also please note that vehicle models used to perform the SPA (low loaders) are conservative and representing the worst case scenario since they have the greatest requirement for turning radius (6.99m). The overall maximum vehicle width is 2.55m (Max. legal length articulated vehicle), as shown in vehicle details, which means that a two-way movement will need a road width greater than 5.1m. Ardleigh Rd proposed widened carriageway width of 6.5m satisfies this condition although the SPA drawn appears tight in the drawings. We can conclude that if the swept path fits within the carriageway limits with these conservative vehicle models (as it does), room is to be sufficient in reality. • Note 12 in drawing 104560-MMD-00-XX-DR-CE-1061_Rev01 («Vehicle models used for the assessments are indicative only, actual turning radii and vehicle track will depend on the precise vehicles used by the works contractor») and disclaimer shown in Vehicle Details («These models are generic and do not relate to any specific vehicle supplier's specification. All swept paths should be verified by the Contractor and their haulage supplier, once appointed, prior to detailed design and installation of the access») were included as caveats in relation to this matter.			

3 Audit Response Statements

This section summarises the RSA process status and provides response statements from Mott MacDonald as designers and RWE (as Project Sponsor and Client) consistent with the Design Manual for Roads and Bridges (DMRB) Road Safety Audit guidelines contained within document GG119 Road Safety Audit.

Design Organisation Statement

On behalf of the Design Organisation, we certify that: **The RSA actions identified in response to the Road Safety Audit problems in this Road Safety Audit have been discussed and agreed with the Project Sponsor / Client.**	
Name:	John Weeks
Signed:	
Position:	Highways Design Lead
Organisation:	Mott MacDonald
Date:	

Project Sponsor / Client Statement

On behalf of the Project Sponsor / Client I certify that: **The RSA actions identified in response to the Road Safety Audit problems in this Road Safety Audit have been discussed and agreed with the Design Organisation; and** **The agreed RSA actions will be progressed.**	
Name:	
Signed:	
Position:	
Organisation:	RWE
Date:	

Appendices

A. Documents and Drawings Referenced

Table A.1: Documents and Drawings Referenced

Ref.	Title	Date
RSA1: 425.002196.00001	Stage 1 Road Safety Audit - Ardleigh Road, Five Estuaries Wind Farm_Rev01	27/11/2023
Design Drawing: 104560-MMD-00-XX-DR-CE-1061_Rev01 (Client No. 004943785-01)	Co-located Substations Early Design – Permanent and Temporary Access Junction with Ardleigh Road_Rev01	18/10/2023
Design Drawing: 104560-MMD-00-XX-DR-CE-1061_Rev02 (Client No. 004943785-02)	Co-located Substations Early Design – Permanent and Temporary Access Junction with Ardleigh Road_Rev02	15/12/2023

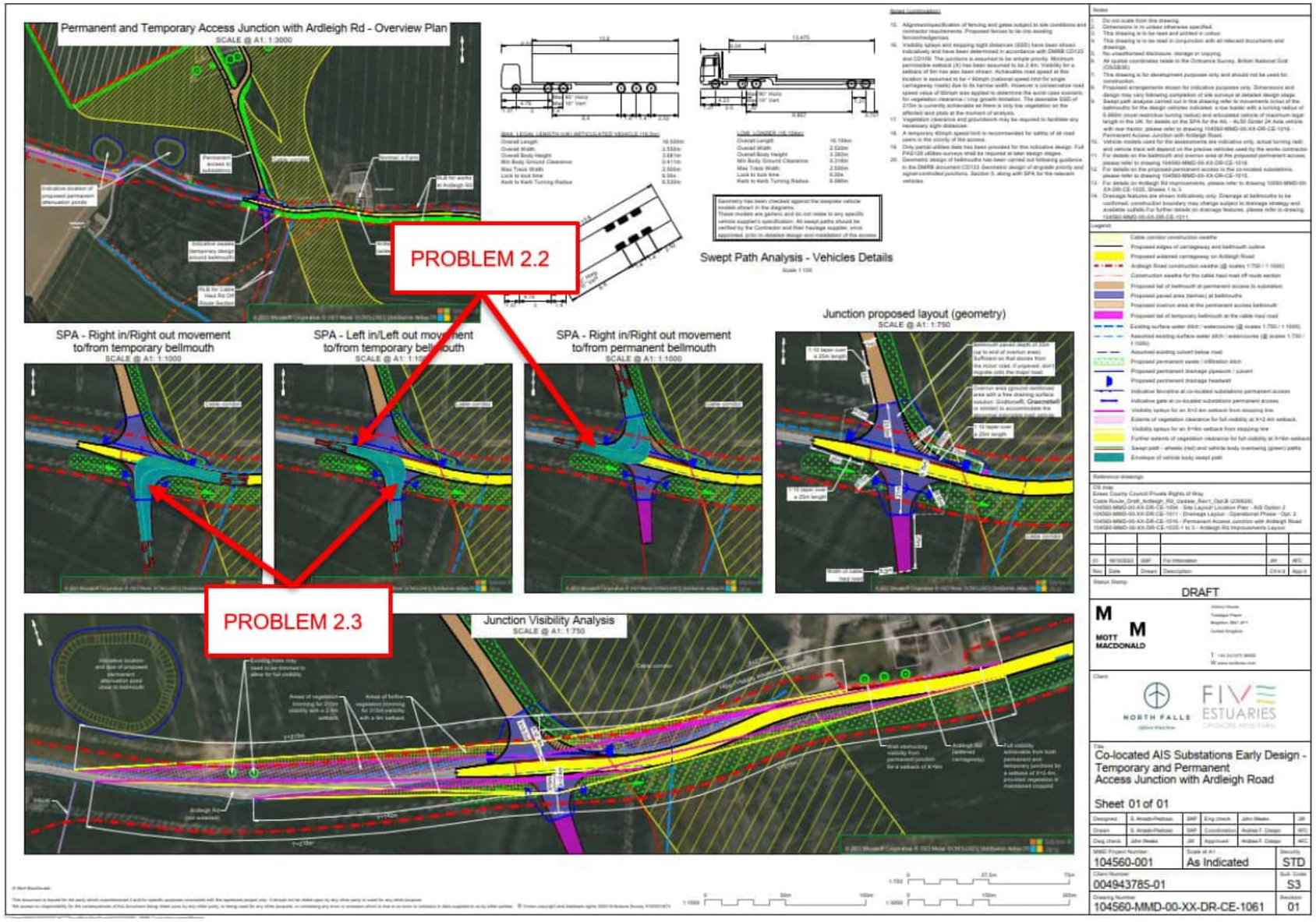
Source: Mott MacDonald

B. Key Plan - Drawing subjected to Stage 1 RSA

Drawing 104560-MMD-00-XX-DR-CE-1061_Rev01

RWE
Stage 1 Road Safety Audit

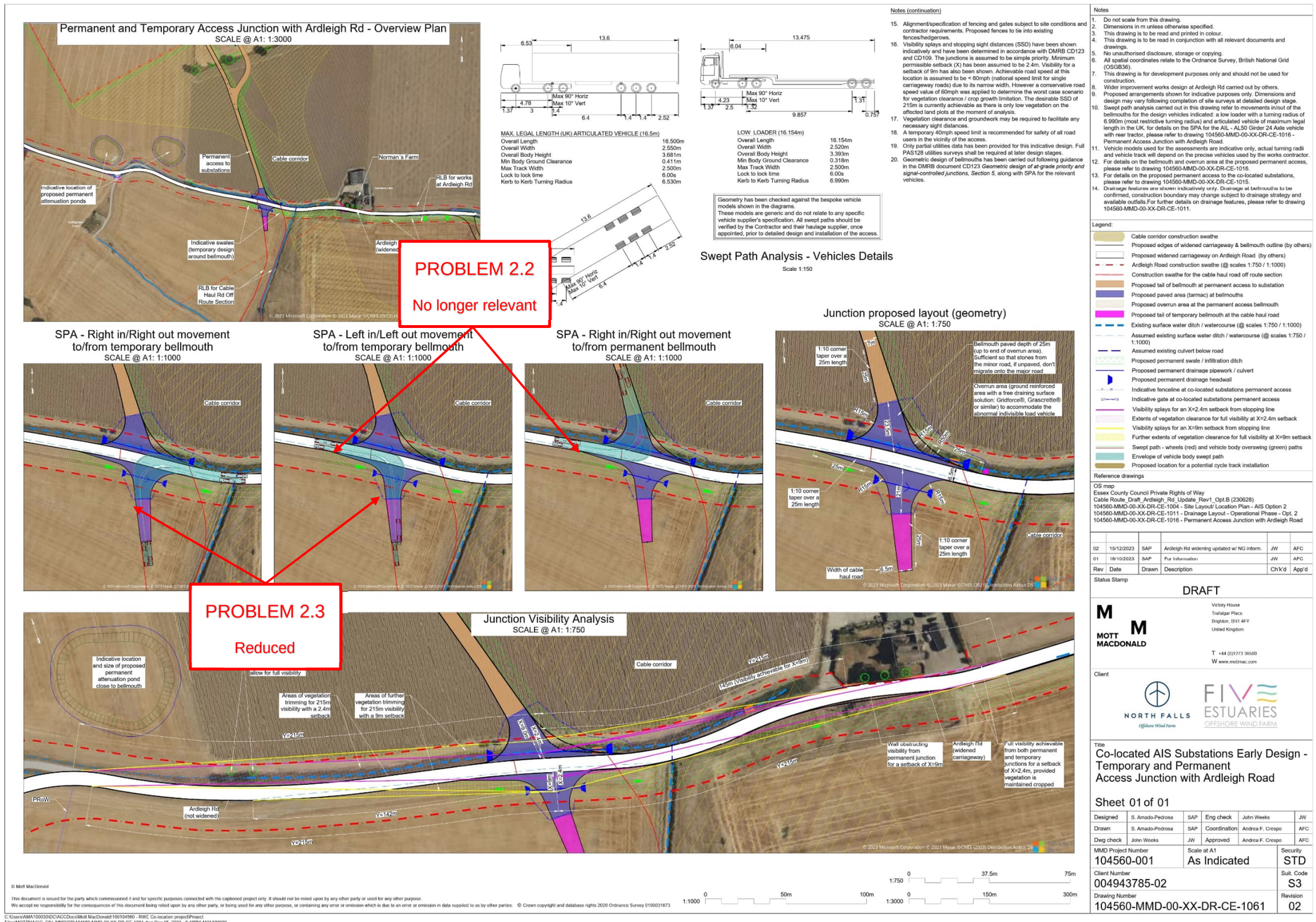
27 November 2023
SLR Project No.: 425.002196.00001



(Source: SLR Consulting, Stage 1 RSA Audit, Problem Location Plan, SLR Project No.:425.002196.00001)

C. Key Plan – Drawing incorporating latest design decisions previous to receiving Stage 1 RSA report

Drawing 104560-MMD-00-XX-DR-CE-1061_Rev02



(Source: Mott MacDonald based on SLR Consulting, Stage 1 RSA Audit, Problem Location Plan, SLR Project No.:425.002196.00001)

Contractor Coversheet

Project Name:	FE_NF_Mott Macdonald Co-Located Substation Studies	**Package No:**	PROJECTCODE 12 - Electrical Systems

Document Title:	Co-located AIS Substations Early Design - Bentley Road Junction - Audit Response Report
Classification:	Confidential

Contractor Doc. No:	104560-MMD-00-XX-RP-HE-1063	**Contractor Revision:**	01
Date:	20/12/2023	**Pages:**	18

Employer Doc. No:	005016415 - 01	**Employer Revision:**	NA
Document Status:	Preliminary		
Reason for Issue	Review		

MOTT MACDONALD

Co-Located Substation Early Design - Bentley Road

Stage 1 RSA Designer's Response

December 2023

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Co-Located Substation Early Design - Bentley Road

Stage 1 RSA Designer's Response

December 2023

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
01	20/12/2023	Sonia A. Pedrosa	John Weeks	Andrea F. Crespo	First Comment for Issue

Document reference: 104560 | 104560-MMD-00-XX-RP-HE-1063 | 01 | 005016415-01

Information class: Standard

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The Road Safety Audit was originally carried out with reference to the supplied Road Safety Audit Brief prepared by SLR Consulting Ltd on 13th September 2023 and formally accepted by the Audit Team on the same date. The terms of reference of the Road Safety Audit are as described in the Design Manual for Roads and Bridges (DMRB) Standard, GG119 Road Safety Audit.

A site visit was undertaken by the Audit Team on Thursday 09th November 2023, between the hours of 13:00 and 14:00. The weather at the time of the visit was overcast and the carriageway surface was generally dry. Vehicular traffic levels were considered to be low. There were no pedestrian and no cyclist movements observed during this time.

The Road Safety Audit comprised an examination of the documentation and drawings listed in **Appendix A**. An accompanying drawing indicating the location of identified safety related issues is provided in **Appendix B.**

Figure 1.1 shows the location of accesses included in scheme in a local context.

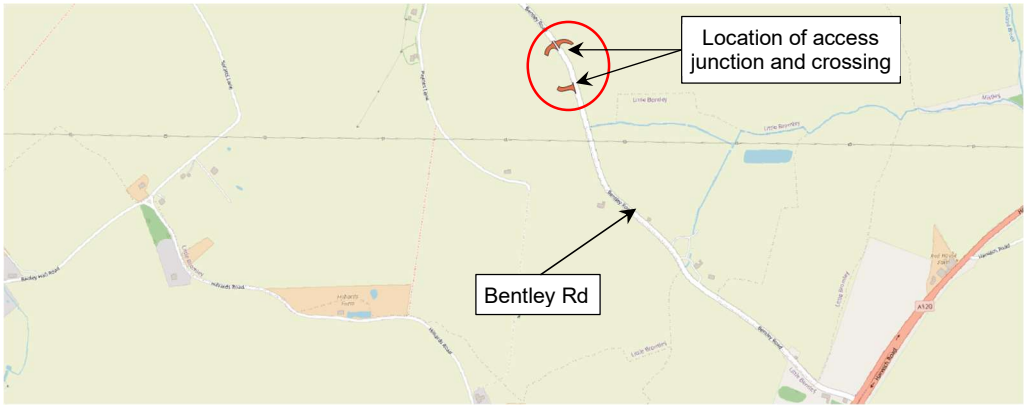


Figure 1.1. Location of the proposed Bentley Rd Junction and crossing
Source: Mott MacDonald based on OpenStreetMap

1.2 Relevant Parties

Project Sponsor: **RWE**

Client: **RWE**

Designer: **Mott MacDonald**

The Road Safety Audit Team consisted of:

Sasha Respini	BSc (Hons), MSc, MCIHT, MSoRSA Audit Team Leader Principal Transport Planner SLR Consulting Ltd
Alastair Pike	MICE, MCIHT, MSoRSA, HE Approved Cert. Comp. Audit Team Member Head of Road Safety SLR Consulting Ltd

The Road Safety Audit Designer Response has been prepared by:

John Weeks	Design Lead for Bentley Road Improvement Works and Access Junction to the Haul Road, Mott MacDonald
Sonia A. Pedrosa	Design Team Member for Bentley Road Improvement Works and Access Junction to the Haul Road, Mott MacDonald

The client representatives are:

Emmanuelle Bassey	Civil Engineering Lead, RWE
Ian Maclean	Engineering Manager, RWE

1.3 Report Structure

- **Section 2** comprises of a 'Road Safety Audit Decision Log'.
- **Section 3** includes audit response statements.

2 Road Safety Audit Decision Log

This section presents a road safety audit decision log, incorporating 'Designer Responses' to all identified problems and recommendations from the Stage 1 RSA; see **Table 2.1**.

Table 2.1: Road Safety Audit Decision Log

Ref.	RSA Problem	RSA Recommendation	Design Organisation Response	Audit Team Supplementary Comment	Client / Project Sponsor Comment	Agreed RSA action
PROBLEMS IDENTIFIED AND ALIGNED RECOMMENDATIONS FROM STAGE 1 RSA						
Scheme: Bentley Road Junction and crossing						
Drawing 104560-MMD-00-XX-DR-CE-1032-1_Rev02						
2.1	Location: Site Access (Temporary Access Junction with Bentley Rd). Refer to Appendix B. Summary: At a 9m setback, existing trees may obscure the visibility splay potentially leading to side swipe type collisions. Onsite observations noted that the presence of existing vegetation may constitute an obstruction to the junction visibility. Obstruction to visibility splays may lead to injudicious vehicle movements at the proposed junction leading to side swipe collisions between vehicles.	It is recommended that the trees be cut back and maintained as such that it does not pose an obstruction to the visibility splays.	• RSA problem and recommendation acknowledged but not agreed since it is not considered that these trees have an impact on the visibility clearance areas. The visibility splay with a 9m setback on the eastern side of Bentley Rd (northern side of Bentley Rd on drawing 104560-MMD-00-XX-DR-CE-1032-1) only captures a small area of road verge west of these existing trees, to run across the road to the other verge side west of Bentley Rd (South of Bentley Rd in drawing 104560-MMD-00-XX-DR-CE-1032-1). Cutting back or trimming the trees will not produce any changes to visibility. Trees are located on the southeast of the road and will cast shadow during most part of the day unless they are totally cut. • In drawing 104560-MMD-00-XX-DR-CE-1031-3 for the same scheme (refer to Appendix C in this document), it is indicated the trimming of these existing trees to facilitate passage of vehicles, which will also help with general visibility. • No designer action proposed.	TBC	TBC	No action (TBC).
2.2	Location: Site Access (Temporary Haul Road crossing at Bentley Rd). Refer to Appendix B. Summary: The position of the gate could cause rear end shunts. The position of the proposed gate is set back 18m and does not allow the largest vehicle (25m) to fully clear the main carriageway when waiting. There is no detail provided that shows the proposed operation of the gate features. Should they be closed for any reason their proposed location could leave HGVs overhanging the public highway which may result in shunt / side swipe type collisions.	It is recommended that the gates are relocated further back into the site such that if a gate is closed for whatever reason, an HGV can still clear the public highway before stopping.	• RSA problem and recommendation agreed. • Design drawing will be amended in accord.	TBC	TBC	Design drawing will be amended consistent with RSA recommendation (TBC).
2.3	Location: Site Haul Road Access (Temporary Access Junction with Bentley Rd). Refer to Appendix B. Summary: There is no tolerance for HGVs when turning into / out of the site access which may lead to loss of control type collisions. The vehicle tracking demonstrates no additional tolerance in surfaced width for HGVs at the site access and along the haul road track. This arrangement does not allow any room for manoeuvre along the track and relies on a perfect HGV turn each time. This proposed arrangement may lead to loss of control type collisions.	It is recommended that the proposed haul road is widened to allow more width for large construction vehicles.	• RSA problem and recommendation acknowledged but partially agreed since it is not considered to constitute a significant safety concern at this stage for the following reasons: • The turning movements of the cable drum delivery HGV from Bentley Rd onto the cable haul road are expected to occur on the odd occasion. Cable Drum delivery is considered to be a non-Special Order abnormal load movement and will be subject to agreement with the LHA and Police through the ESDAL system, as a controlled movement they will be timed with other deliveries so as not to be impeded. Majority of cable drum delivery HGV movements at the crossing are expected to be crossing movements from the cable haul road on one side of Bentley Rd to the cable haul road on the other side. The current design represents a compromise between safety for manoeuvres, design of bellmouth compliant with standard (CD123, Section 5) and minimisation of total area of bellmouth, along with minimisation of land-take and volumes of material required to construct the junction. • Also please note that the swept path hatched area in drawing 104560-MMD-00-XX-DR-CE-1032-1 corresponds to the vehicle body envelope and not to the vehicle chassis envelope. For clarity, drawing to be updated to show that the hatched area corresponding to the vehicle chassis envelope, instead of the vehicle body	TBC	TBC	• Designer to update vehicle swept path hatched areas to enhance vehicle chassis envelope as well as vehicle body envelope, showing that vehicle turning movements fit within the bellmouth outlines. The chassis envelope line will be brought forward in the drawing for clarity. (TBC)

Ref.	RSA Problem	RSA Recommendation	Design Organisation Response	Audit Team Supplementary Comment	Client / Project Sponsor Comment	Agreed RSA action
			envelope, fits within the bellmouth outlines. The chassis envelope line will be brought forward in the drawing for clarity. • Also please note that vehicle models used to perform the SPA are conservative and representing a worst case scenario. We can conclude that if the vehicle chassis swept path fits within the carriageway limits with these conservative vehicle models (as it does), room is to be sufficient in reality. • Note 9 in drawing 104560-MMD-00-XX-DR-CE-1032-1_Rev02 («Vehicles used in this drawing are indicative of those expected to be using this construction access. Actual turning radii and vehicle track will depend on the precise vehicles used by the works contractor») and disclaimer shown in Vehicle Details («This model is generic and do not relate to any specific vehicle supplier's specification. All swept paths should be verified by the Contractor and their haulage supplier, once appointed, prior to detailed design and installation of the access») were included as caveats in relation to this matter.			
2.4	Location: Internal site. Refer to Appendix B. Summary: No turning area is provided to allow vehicles to turn and egress the site in a forward gear, may lead to side swipe type collisions. It is not clear from the supplied drawings whether a construction compound, or similar, will be provided on the site to allow for vehicles to turn within the site, this could compel drivers to reverse from the site onto the public highway which could lead to obscured visibility and side swipe type collisions.	It is recommended that a turning area for large construction vehicles is provided within the site boundary during the construction works to ensure vehicles can access and egress the site in a forward gear	• RSA problem and recommendation acknowledged and partially agreed. • Construction compound areas, which would allow for vehicle turning movements, are shown in drawing 104560-MMD-00-XX-DR-CE-1031-3 for the same scheme (refer to Appendix C in this document). • Drawing 104560-MMD-00-XX-DR-CE-1032-1_Rev02 to be updated to show the construction compound areas for clarity.	TBC	TBC	Designer to update drawing 104560-MMD-00-XX-DR-CE-1032-1_Rev02 to show the construction compound areas for clarity (TBC)
Drawing 104560-MMD-00-XX-DR-CE-1032-2_Rev01						
2.5	Location: Proposed site access. Refer to Appendix B. Summary: The level difference between the carriageway and site could result in loss of control or side swipe type collisions. Onsite observations found that there was a difference in levels between the existing carriageway and the new access. An excessive gradient may create difficulty for large construction vehicles wishing to access Lodge Lane and may in turn lead to a lack of surface friction and slow egress movements potentially creating shunt / side swipe type collisions between egressing construction vehicles and vehicles travelling on Bentley Road.	It is recommended that the existing gradient be amended to an appropriate level for the restart movements of large vehicles accessing Bentley Road from the proposed site	• RSA problem and recommendation agreed. • This matter will be appraised further as an integral part of the detailed design process and drawings developed to take due account of the safety problem and the aligned recommendation.	TBC	TBC	This matter will be appraised further as an integral part of the detailed design process and drawings developed to take due account of the safety problem and the aligned recommendation. (TBC)

3 Audit Response Statements

This section summarises the RSA process status and provides response statements from Mott MacDonald as designers and RWE (as Project Sponsor and Client) consistent with the Design Manual for Roads and Bridges (DMRB) Road Safety Audit guidelines contained within document GG119 Road Safety Audit.

Design Organisation Statement

On behalf of the Design Organisation, we certify that: **The RSA actions identified in response to the Road Safety Audit problems in this Road Safety Audit have been discussed and agreed with the Project Sponsor / Client.**	
Name:	John Weeks
Signed:	
Position:	Highways Design Lead
Organisation:	Mott MacDonald
Date:	

Project Sponsor / Client Statement

On behalf of the Project Sponsor / Client I certify that: **The RSA actions identified in response to the Road Safety Audit problems in this Road Safety Audit have been discussed and agreed with the Design Organisation; and** **The agreed RSA actions will be progressed.**	
Name:	
Signed:	
Position:	
Organisation:	RWE
Date:	

Appendices

A. Documents and Drawings Referenced

Table A.1: Documents and Drawings Referenced

Ref.	Title	Date
RSA1: 237699	Stage 1 Road Safety Audit - Bentley Road, Five Estuaries Wind Farm_Rev01	13/11/2023
Design Drawing: 104560-MMD-00-XX-DR-CE-1032-1_Rev02 (Client No. 004786171-02)	Co-located Substation Early Design – Bentley Rd with Cable Haul Rd Junction & SPA_Sheet 1 of 2 Rev01	26/06/2023
Design Drawing: 104560-MMD-00-XX-DR-CE-1032-2_Rev1 (Client No. 004845330-01)	Co-located Substation Early Design – Bentley Rd with Cable Haul Rd Junction & SPA_Sheet 2 of 2 Rev01	26/06/2023
Design Drawing: 104560-MMD-00-XX-DR-CE-1031-_Rev3 (Client No. 004786180-03)	Co-located Substation Early Design – Bentley Rd improvement works_Sheet 3 of 3 Rev03	30/11/2023

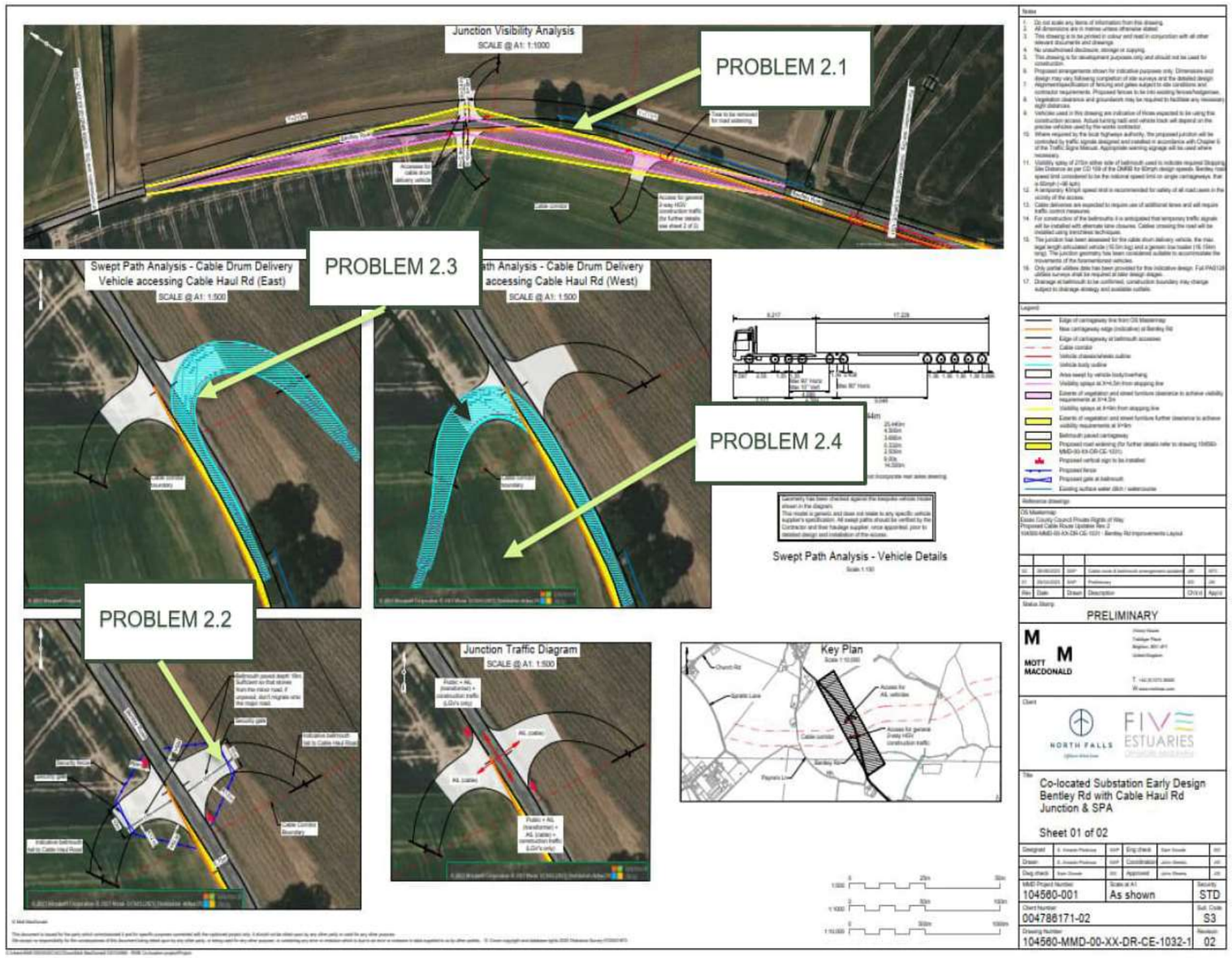
Source: Mott MacDonald

B. Key Plans - Drawings subjected to Stage 1 RSA

Drawing 104560-MMD-00-XX-DR-CE-1032-1_Rev02

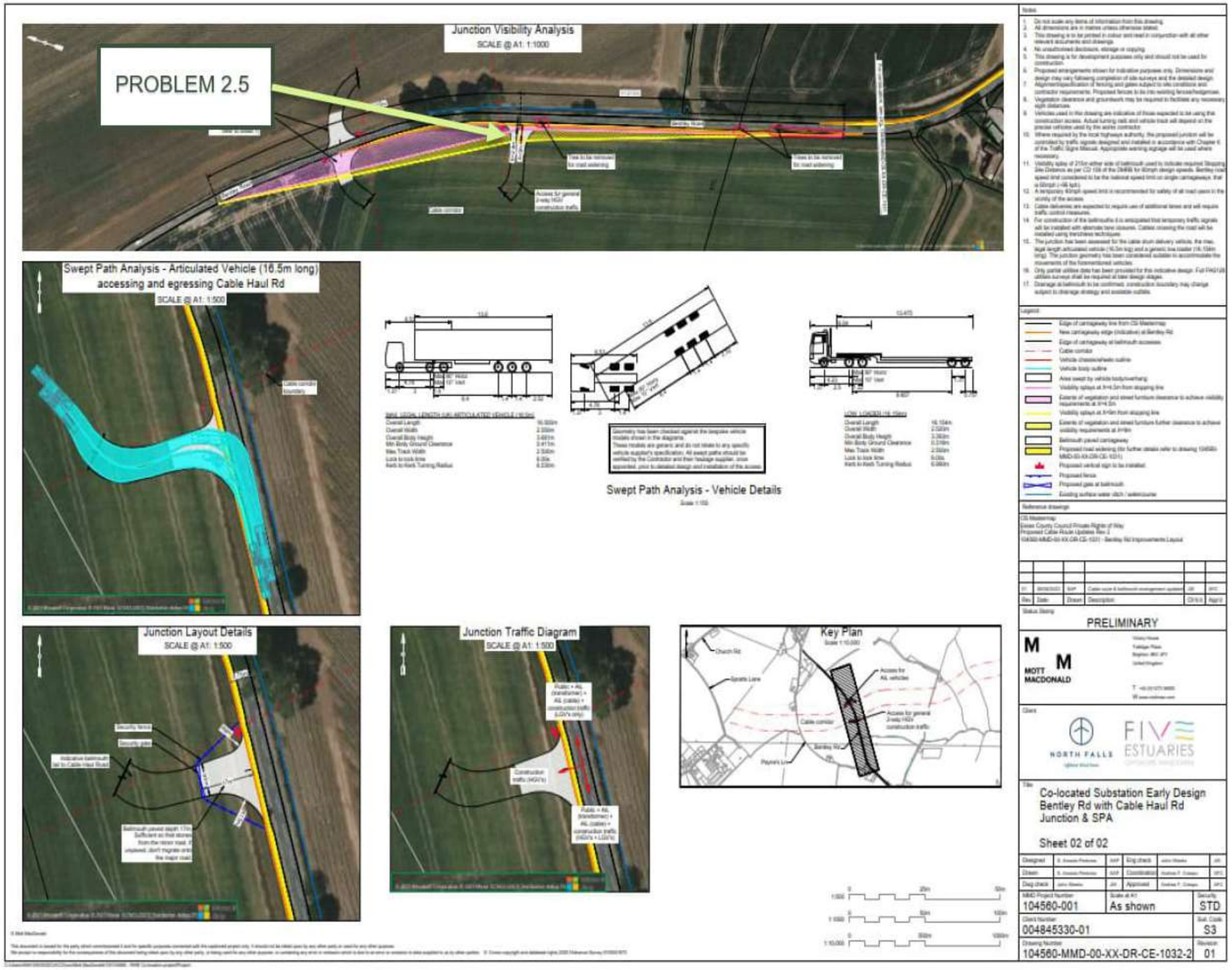
RWE
Stage 1 Road Safety Audit

13 November 2023
SLR Project No.: 237699



(Source: "SLR Consulting, Stage 1 RSA Audit, Problem Location Plan, SLR Project No.:237699")

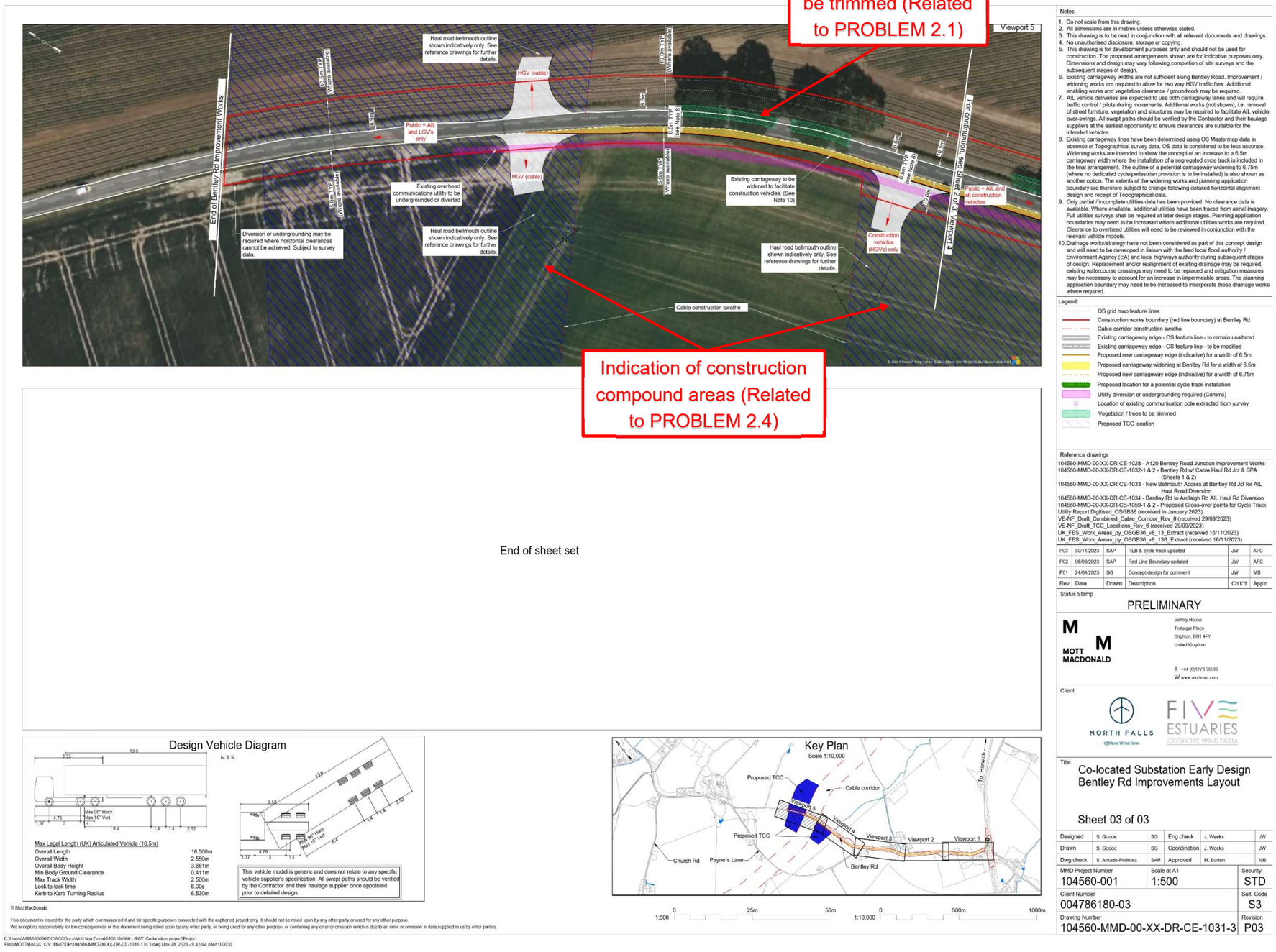
Drawing 104560-MMD-00-XX-DR-CE-1032-2_Rev01



(Source: "SLR Consulting, Stage 1 RSA Audit, Problem Location Plan, SLR Project No.:237699")

C. Additional Key Plans for completeness of information (Not subjected to Stage 1 RSA)

Drawing 104560-MMD-00-XX-DR-CE-1031-3_Rev03



C:\Users\AMA100030\DC\ACCDocs\Mott MacDonald\100104560 - RWE Co-location project\Project Files\MOTTMACDC_CIV_MMD\DR\104560-MMD-00-XX-DR-CE-1031-1 to 3.dwg Nov 28, 2023 - 9:42AM AMA100030

Notes

1. Do not scale from this drawing.
2. All dimensions are in metres unless otherwise stated.
3. This drawing is to be read in conjunction with all relevant documents and drawings.
4. No unauthorised disclosure, storage or copying.
5. This drawing is for development purposes only and should not be used for construction. The proposed arrangements shown are for indicative purposes only. Dimensions and design may vary following completion of site surveys and the subsequent stages of design.
6. Existing carriageway widths are not sufficient along Bentley Road. Improvement / widening works are required to allow for two way HGV traffic flow. Additional enabling works and vegetation clearance / groundwork may be required.
7. AIL vehicle deliveries are expected to use both carriageway lanes and will require traffic control / pilots during movements. Additional works (not shown), i.e. removal of street furniture, vegetation and structures may be required to facilitate AIL vehicle over-swings. All swept paths should be verified by the Contractor and their haulage suppliers at the earliest opportunity to ensure clearances are suitable for the intended vehicles.
8. Existing carriageway lines have been determined using OS Mastermap data in absence of Topographical survey data. OS data is considered to be less accurate. Widening works are intended to show the concept of an increase to a 6.5m carriageway width where the installation of a segregated cycle track is included in the final arrangement. The outline of a potential carriageway widening to 6.75m (where no dedicated cycle/pedestrian provision is to be installed) is also shown as another option. The extents of the widening works and planning application boundary are therefore subject to change following detailed horizontal alignment design and receipt of Topographical data.
9. Only partial / incomplete utilities data has been provided. No clearance data is available. Where available, additional utilities have been traced from aerial imagery. Full utilities surveys shall be required at later design stages. Planning application boundaries may need to be increased where additional utilities works are required. Clearance to overhead utilities will need to be reviewed in conjunction with the relevant vehicle models.
10. Drainage works/strategy have not been considered as part of this concept design and will need to be developed in liaison with the lead local flood authority / Environment Agency (EA) and local highways authority during subsequent stages of design. Replacement and/or realignment of existing drainage may be required, existing watercourse crossings may need to be replaced and mitigation measures may be necessary to account for an increase in impermeable areas. The planning application boundary may need to be increased to incorporate these drainage works where required.

Legend:

- OS grid map feature lines
- Construction works boundary (red line boundary) at Bentley Rd
- Cable corridor construction swathe
- Existing carriageway edge - OS feature line - to remain unaltered
- Existing carriageway edge - OS feature line - to be modified
- Proposed new carriageway edge (indicative) for a width of 6.5m
- Proposed carriageway widening at Bentley Rd for a width of 6.5m
- Proposed new carriageway edge (indicative) for a width of 6.75m
- Proposed location for a potential cycle track installation
- Utility diversion or undergrounding required (Comms)
- Location of existing communication pole extracted from survey
- Vegetation / trees to be trimmed
- Proposed TCC location

Reference drawings

104560-MMD-00-XX-DR-CE-1028 - A120 Bentley Road Junction Improvement Works
104560-MMD-00-XX-DR-CE-1032-1 & 2 - Bentley Rd w/ Cable Haul Rd Jct & SPA (Sheets 1 & 2)
104560-MMD-00-XX-DR-CE-1033 - New Bellmouth Access at Bentley Rd Jct for AIL Haul Road Diversion
104560-MMD-00-XX-DR-CE-1034 - Bentley Rd to Ardleigh Rd AIL Haul Rd Diversion
104560-MMD-00-XX-DR-CE-1059-1 & 2 - Proposed Cross-over points for Cycle Track
Utility Report Digitised_OSGB36 (received in January 2023)
VE-NF_Draft_Combined_Cable_Corridor_Rev_6 (received 29/09/2023)
VE-NF_Draft_TCC_Locations_Rev_6 (received 29/09/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13_Extract (received 16/11/2023)
UK_FES_Work_Areas_py_OSGB36_v8_13B_Extract (received 16/11/2023)

Rev	Date	Drawn	Description	Ch'k'd	App'd
P03	30/11/2023	SAP	RLB & cycle track updated	JW	AFC
P02	08/09/2023	SAP	Red Line Boundary updated	JW	AFC
P01	24/04/2023	SG	Concept design for comment	JW	MB

Status Stamp: PRELIMINARY

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Client: NORTH FALLS Offshore Wind Farm; FIVE ESTUARIES OFFSHORE WIND FARM

Title: Co-located Substation Early Design
Bentley Rd Improvements Layout

Sheet 03 of 03

Designed	S. Goode	SG	Eng check	J. Weeks	JW
Drawn	S. Goode	SG	Coordination	J. Weeks	JW
Dwg check	S. Amado-Pedrosa	SAP	Approved	M. Barton	MB

MMD Project Number 104560-001	Scale at A1 1:500	Security STD
Client Number 004786180-03		Suit. Code S3
Drawing Number 104560-MMD-00-XX-DR-CE-1031-3		Revision P03

(Source: "Mott MacDonald")

NORTH FALLS

Offshore Wind Farm

sse Renewables | RWE

HARNESSING THE POWER OF NORTH SEA WIND

North Falls Offshore Wind Farm Limited

A joint venture company owned equally by SSE Renewables and RWE.

To contact please email contact@northfallsoffshore.com