# Appendix G1

## Abnormal Indivisible Loads Assessment

Statkraft UK Limited

# EAST CLAYDON – GREENER GRID PARK

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# 1 INTRODUCTION

## 1.1 BACKGROUND AND SCOPE

1.1.1. WSP has been commissioned by Statkraft UK Limited to prepare an Abnormal Indivisible Load (AIL) assessment in relation to a full planning application for the construction of a Greener Grid Park comprising energy storage and grid balancing equipment and associated infrastructure including access, drainage, landscaping and other incidental works on East Claydon Road, East Claydon, Buckinghamshire.

1.1.2. As part of this proposed development, the construction phase will involve the transportation of AILs, consisting of movement of transformers which are essential to the completion of the facility. AILs are characterised by their size and weight, which exceed the standard dimensions and limits permitted on public roads. Due to the complexities involved in transporting these oversized loads, including potential impacts on road infrastructure and local communities and businesses, it is necessary to undertake a thorough assessment to ensure that they can be safely delivered to the proposed development.

1.1.3. It should be noted that this AIL assessment takes into account discussions that have been undertaken with Connect Plus Services, National Highways and Network Rail in relation to AIL movements on the highway networks associated with the construction of the proposed development. All relevant correspondence with Connect Plus Services, National Highways and Network Rail are enclosed in **Appendix A.**

1.1.4. The aim of this AIL assessment is to outline the legislative framework, the proposed construction route, potential constraints, and any proposed mitigation and management measures related to AIL movements, in accordance with UK legislation and relevant transport regulations and policies. It should be read in conjunction with the Construction Traffic Management Plan (CTMP) and the Transport Statement (TS) that have been prepared separately for the proposed development.

## 1.2 AIMS AND OBJECTIVES

1.2.1. The main aim of this AIL assessment is to ensure that AIL movements associated with the construction of the proposed ‘Greener Grid Park’ at East Claydon are planned and undertaken in a safe, compliant and efficient manner. The AIL assessment will:

1. Assess the feasibility of proposed construction route based on road infrastructure, restrictions, and suitability for AIL movements;
2. Identify potential impacts on local and strategic road networks, including traffic congestion, road safety, and structural capacity issues;
3. Recommend mitigation and management measures to minimise disruption to the local community, ensure road safety is maintained, and prevent damage to the road infrastructure;
4. Ensure compliance with relevant legislative and policy frameworks, including UK and local transport regulations and policies; and
5. Coordinate with stakeholders, including highway authorities, local councils, and emergency services, to ensure all parties are informed and engaged throughout the construction of the proposed development.

## 1.3 REPORT STRUCTURE

1.3.1. The remainder of this AIL assessment is structured as follows:

- **Chapter 2 – Legislative and Policy Framework:** Outlines the relevant UK and local transport regulations and policies governing AIL movements;
- **Chapter 3 – Site and Construction Context:** Outlines the site location and description, as well as the development proposals including construction access, period and working hours;
- **Chapter 4 – Load Specifications**: Provides details in relation to the transformers and the configuration of the AIL vehicle that will be transporting these transformers;
- **Chapter 5 – AIL Proposed Construction Route Assessment:** Outlines the proposed construction route and any identified constraints to AIL movements along the relevant highway networks;
- **Chapter 6 – AIL Consultation**: Outlines the consultation that has been undertaken with stakeholders to obtain feedback on the proposed construction route for AIL vehicles;
- **Chapter 7 – AIL Proposed Traffic Management and Mitigation:** Outlines the proposed traffic management and mitigation measures along the proposed construction route; and
- **Chapter 8 – Summary and Conclusion:** Summarises and concludes the AIL assessment.

# 2 LEGISLATIVE AND POLICY FRAMEWORK

## 2.1 INTRODUCTION

2.1.1. This section of the AIL assessment outlines the relevant UK and local transport regulations and policies governing AIL movements. Understanding these requirements ensures compliance with national and local regulations and helps to mitigate potential impacts of the movement of AILs on the highway networks associated with the construction of the proposed development.

## 2.2 ABNORMAL INDIVISIBLE LOADS

2.2.1. According to the Road Vehicles (Authorisation of Special Types) (General) Order 2003 (STGO) and guidance from National Highways, AILs typically have one or more of the following characteristics:

- **Weight –** Gross weight exceeds 44T;
- **Width –** Load width exceeds 2.9m; and
- **Length –** Load length exceeds 18.65m for a rigid vehicle or 25.9m for a combination vehicle.

2.2.2. AILs require special permission to be moved on public highways, as their size and weight can affect road infrastructure, traffic flow, and public safety. Operators must apply for relevant permissions, and AIL movements are subject to specific routing, timing, and escort requirements depending on the loads' dimensions and associated impact.

## 2.3 LEGISLATION

2.3.1. The movement of AILs in the UK is subject to strict legislative controls to ensure that road infrastructure is protected, minimise traffic disruption, and ensure public safety. These laws set out the requirements for transporting oversized and overweight loads, specifying the responsibilities of those involved in the movement of AILs, as well as the permissions and notifications required before any AIL movements can take place.

2.3.2. The Road Vehicles (Construction & Use) Regulations 1986 and the Road Vehicles (Authorised Weight) Regulations 1998 regulate the weights and dimensions of all vehicles used on UK roads, including Heavy Goods Vehicles (HGV). The standard vehicle key legislations include the following:

**The Road Vehicles (Construction and Use) Regulations 1986 (as amended)**

2.3.3. This sets out the requirements that all vehicles must meet in order to legally operate on UK roads. These regulations set the standards for vehicle construction, dimensions, weight, and operation, with specific focus on ensuring safety and minimising damage to road infrastructure. For AIL movements, compliance with these regulations ensures that both the AIL vehicle and load that they are carrying are transported in a manner that minimises risks to road users and road infrastructure.

**The Road Vehicles (Authorisation of Special Types) (General) Order 2003 (STGO)**

2.3.4. This sets out the conditions under which vehicles carrying abnormal loads can operate and provides the legal framework for authorising the movement of vehicles exceeding standard size or weight limits. The STGO divides vehicles into three categories based on weight:

- **Category 1 –** Vehicles between 44 and 50T;
- **Category 2 –** Vehicles between 50 and 80T; and
- **Category 3 –** Vehicles between 80 and 150T.

2.3.5. Under the STGO, operators must notify highway authorities, local councils, and emergency services about planned AIL movements to ensure that roads, bridges, and infrastructure along the proposed construction route can support the load.

**Highways Act 1980**

2.3.6. This provides the framework for managing public roads and highways in the UK, including the use of roads for AIL movements. It gives local highway authorities the power to regulate and restrict road use where necessary to accommodate AIL movements. Under the Highways Act:

- Temporary road closures or restrictions can be enforced to facilitate AIL movements safely;
- Damage caused to road surfaces or infrastructure by AIL movements must be repaired at the operator's expense; and
- Local highway authorities must be consulted and notified about planned AIL movements.

**Electronic Service Delivery for Abnormal Loads (ESDAL)**

2.3.7. This system is the UK's official platform for notifying relevant authorities about AIL movements. It enables operators to notify relevant stakeholders, including highway authorities, local councils, and emergency services about planned AIL movements. The system also allows feedback to be received on construction route suitability, infrastructure constraints, and required modifications.

# 3 SITE AND CONSTRUCTION CONTEXT

## 3.1 INTRODUCTION

3.1.1. This section of the AIL assessment outlines the site location and description, as well as the development proposals themselves including construction access, period and working hours.

## 3.2 SITE LOCATION AND DESCRIPTION

3.2.1. The proposed development is located on the north side of East Claydon Road, East Claydon, Buckinghamshire, north of the existing East Claydon substation which is located on the south side of the East Claydon Road. The site is located approximately 1.2km east of the village of East Claydon, between Winslow approximately 2.5km to the north east and Granborough approximately 1.8km to the south east. The site is approximately 45.3 hectares in size and is bounded to the north, east and west by agricultural fields and to the south by East Claydon road. A location plan is enclosed in **Figure 3-1**, and a wider site location plan is enclosed in **Figure 3-2**.

**Figure 3-1 – Site Location Plan**

**Figure 3-2 – Wider Site Location Plan**

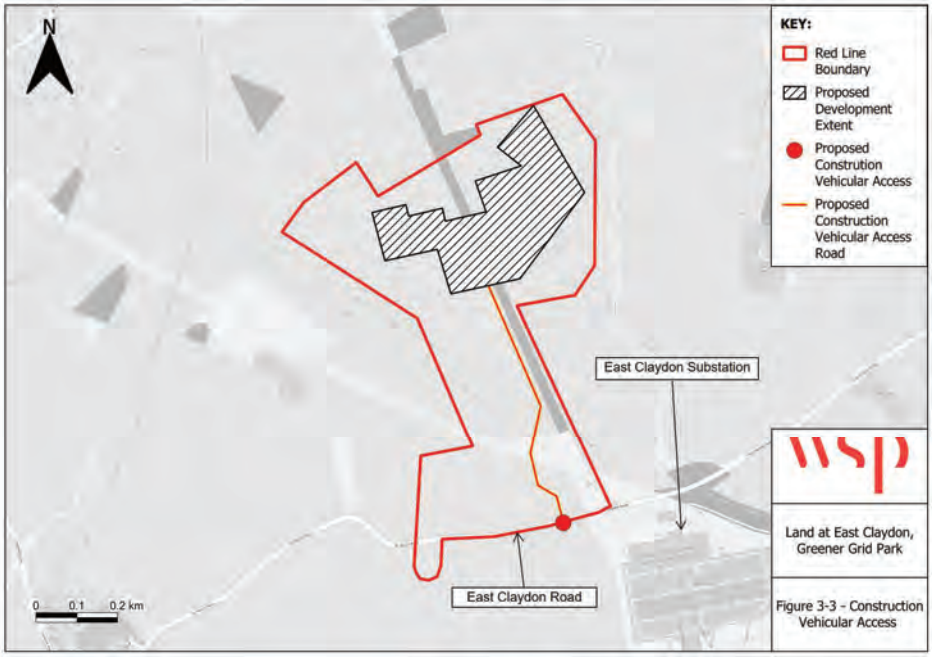

## 3.3 DEVELOPMENT PROPOSALS

3.3.1. The proposed development will involve the construction of a Greener Grid Park comprising energy storage and grid balancing equipment and associated infrastructure including access, drainage, landscaping and other incidental works on East Claydon Road, East Claydon, Buckinghamshire. The proposed 'Greener Grid Park' at East Claydon will support the UK's transition to Net Zero by 2050 by supporting this transition to a low carbon energy network.

### CONSTRUCTION ACCESS

3.3.2. It is proposed that a construction vehicular access will be provided on the north side of East Claydon road approximately 260m west of the existing vehicular access to the East Claydon substation opposite an existing field access on the south side of the road. This will be the subject of minor works and laying of consolidated material to ensure it is suitable for construction and AIL vehicle movements. It should be noted that access for emergency services during construction will be provided via the temporary construction vehicular access on East Claydon Road, with emergency services being notified of the location of the emergency access to the proposed development before construction work commences. The location of the proposed construction vehicular access on East Claydon Road is shown in **Figure 3-3**

**Figure 3-3 – Proposed Construction Vehicular Access**




3.3.3. A temporary construction vehicular access road will also be provided from the temporary proposed construction vehicular access on East Claydon Road to where the 'Greener Grid Park' will be constructed approximately 670m north of East Claydon Road. It will be 6.0m wide for its entire length, but due to its meandering nature there will be widening on the bends between 8.0 – 8.8m to allow for the movement of two-way vehicles along the temporary construction vehicular access road at the same time where appropriate and if required. It should be noted that the proposed temporary construction vehicular access road will be made up of a consolidated material for the first 20.0m so that debris and loose material is not taken onto East Claydon Road. The location of the proposed temporary construction vehicular access road is shown in **Figure 3-3**. The general access arrangements of the proposed temporary construction vehicular access on East Claydon Road is shown in Drawing 0029773-WSP-ZZ-ZZ-SK-TP-007-P06 enclosed in **Appendix B**.

3.3.4. In order to improve visibility at the proposed temporary construction vehicular access on East Claydon Road a limited amount of vegetation will need to be cut back as necessary which can be achieved within the highway boundary along the north side of East Claydon Road. In addition, traffic will be managed and controlled at the temporary construction vehicular access on East Claydon Road by a trained banksman, which will minimise traffic conflicts and protect pedestrians and cyclists on East Claydon Road, and will protect all road users and maintain road safety at the proposed construction vehicular access.

3.3.5. Swept path analysis has been undertaken at the proposed temporary construction vehicular access on East Claydon Road as well as along the proposed temporary construction vehicular access road for the AIL vehicles that will access and egress the site for a 26.5m articulated heavy load vehicle. The swept path analysis demonstrates that the proposed temporary construction vehicular access on East Claydon Road and the proposed temporary construction vehicular access road can satisfactorily accommodate the movement of a 26.5m articulated heavy load vehicle on East

Claydon Road as shown in Drawing 0029773-WSP-ZZ-ZZ-SK-TP-008-P06 enclosed in **Appendix C**.

### CONSTRUCTION PERIOD

3.3.6. In terms of the construction period depending on the relevant approvals being obtained within the statutory timeframes, construction activities are expected to last approximately 24 months, with AILs movements expected to take place during July and August 2029. It should be noted that this construction programme of works has been provided by the Statkfraft UK Limited who have extensive knowledge and experience of constructing similar sites to that of the proposed development. An indicative construction programme of works in enclosed in **Appendix D**.

### CONSTRUCTION WORKING HOURS

3.3.7. It should be noted that deliveries will take place between 09:00 – 15:00 Monday to Friday and between 10:00 – 12:00 on Saturdays with peak periods on the highway networks being avoided where possible. No construction works will be undertaken outside these hours or on Sundays or Bank Holidays. Any construction works outside of these hours will be limited to emergency works. Delivery hours during construction can be controlled through a suitably worded planning condition. In terms of construction on site this will take place between 08:00 – 18:00 Monday to Friday and between 09:00 – 13:00 on Saturdays.

# 4 LOAD SPECIFICATION

## 4.1 INTRODUCTION

4.1.1. This section of the AIL assessment provides details in relation to the transformers and the configuration of the AIL vehicle that will be transporting these transformers to the proposed development.

## 4.2 TRANSFORMERS

4.2.1. It is anticipated that the principal requirement for AILs for the proposed development will arise due to the delivery of the transformers. A transformer is an electrical device that transfers electrical energy between two or more circuits through electromagnetic induction. Transformers are used to increase or decrease voltage levels in power systems, making them essential for efficient power transmission and distribution. They play a crucial role in ensuring that electricity can be safely and efficiently delivered from power plants to homes and businesses. An example of a typical transformer is shown in **Figure 4-1** below.

**Figure 4-1 – Typical Transformer**

4.2.2. The maximum design weights and dimensions of the transformers that will be transported to the proposed development have been provided by Statkraft UK Limited with a length of 10000mm, a width of 3400mm and a height of 4500mm with a weight of 117.5T.

## 4.3 AIL VEHICLE CONFIGURATION

4.3.1. The delivery of transformers requires the use of a specialised AIL vehicle which will have the capability to transport abnormal loads. The proposed AIL vehicle configuration for transporting the transformers to the development will consist of one tractor unit with an axle frame trailer which will accommodate the abnormal load. It is proposed that a 14 axle tractor and trailer transport

arrangement will be used, with the tractor having 4 axles, and the trailer having 10 axles. The dimensions of the proposed AIL vehicle that will be used in the delivery of the transformers to the proposed development is shown in **Figure 4-2** and summarised in **Table 4-1** below.

**Figure 4-2 – Proposed AIL Vehicle Dimensions**

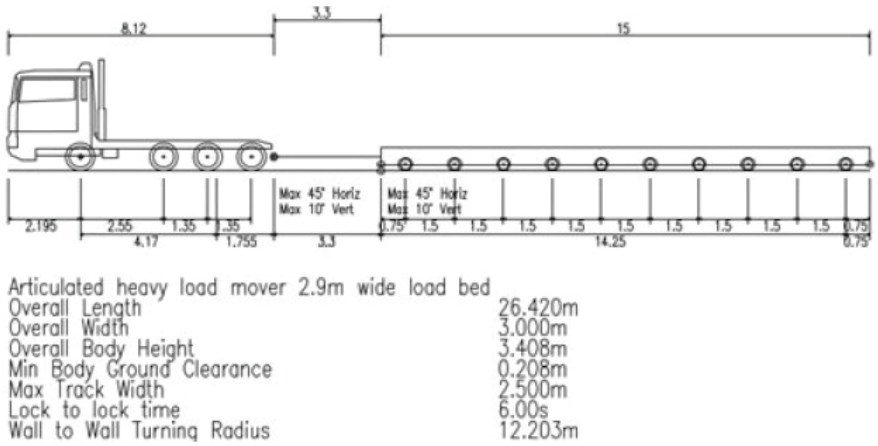



**Table 4-1 – Proposed AIL Vehicle Dimensions**

| Category | Dimensions |
|---|---|
| Overall Length | 26.420m |
| Overall Width | 3.000m |
| Overall Body Height | 3.408m |
| Maximum Turning Radius | 13.500m |
| Wall to Wall Turning Radius | 12.203m |

4.3.2. This setup will allow the vehicle to handle gross weights over 80T, up to a maximum of 150T, assuming proper weight distribution across the axles. Each axle can carry up to 16500kg under STGO Category 3.

# 5 AIL PROPOSED CONSTRUCTION ROUTE ASSESSMENT

## 5.1 INTRODUCTION

5.1.1. This section of the AIL assessment sets out the approach undertaken to identify the proposed construction route to transport the transformers from Tilbury Docks to the proposed development along the relevant highway networks.

## 5.2 ASSESSMENT APPROACH

5.2.1. A number of proposed construction routes were assessed for transporting the transformers from Tilbury Docks to the proposed development via a desktop analysis of the relevant highway networks. This analysis was undertaken using Ordnance Survey (OS) maps, Google Earth Pro, Google Maps and Google Street View and assessed the proposed construction routes against a number of parameters including road type, horizontal and vertical alignment constraints as well as height and weight restrictions to identify constraints to AIL movements along the relevant highway networks.

## 5.3 PORT OF ENTRY

5.3.1. Best practice guidelines set by National Highways states that, where possible, the nearest port to the proposed development should be used in relation to the movement of AILs, which in the case of the proposed development is Tilbury Docks. Located on the north bank of the River Thames in Essex, it is one of the UK's major ports, offering extensive handling capacity for large and heavy loads.

5.3.2. As a well-established commercial port, Tilbury Docks has the infrastructure, equipment, and experience needed to manage the offloading, handling, and dispatch of oversized cargo. It has facilities including heavy lift cranes, storage space, and specialized equipment to safely handle oversized cargo such as transformers. In addition, Tilbury Docks has good connectivity to the Strategic Road Network (SRN), enabling the movement of AILs via major roads with minimal disruption to traffic. From Tilbury, the main connection is via the A1089 Dock Approach Road, which links directly to the A13. The A13 is a key arterial road connecting Tilbury Docks with the M25.

## 5.4 PROPOSED CONSTRUCTION ROUTE

5.4.1. The selected construction route was identified through the analysis undertaken as the option with the fewest constraints and restrictions affecting AIL movements. A description of the journey along the proposed construction route that an AIL vehicle would take from Tilbury Docks to the proposed development along the relevant highway networks is summarised as follows:

- Start the journey on the A1089 Dock Approach Road northbound adjacent to Tilbury Docks;
- Continue on the A1089 Dock Approach Road, and then merge onto the A13 westbound and continue to M25 Junction 30, and then take a right turn to join the M25 northbound;
- Continue on M25 to Junction 21A, and then take a left turn to join the A405 North Orbital Road southbound;
- Continue on the A405 North Orbital Road to the A41 North Western Avenue, and then take a right turn to join the A41 North Western Avenue westbound;

- Continue on the A41 North Western Avenue to the A41 Watford Road, and then take a right turn to join the A41 Watford Road northbound;
- Continue on the A41 Watford Road to the M25 at Junction 20, and then take a left turn to join the M25 southbound;
- Continue on the M25 to Junction 16, and then take a right turn to join the M40 at Junction 1A westbound;
- Continue on the M40 to Junction 10, and then take a right turn to join the A43 northbound;
- Continue on the A43 to the A421, and then take a right turn to join the A421 eastbound;
- Continue on the A421 eastbound, and then take right turn to join the A413 London Road southbound;
- Continue on A413 London Road, and then take a right turn to join Vicarage Road westbound;
- Continue on Vicarage Road, and take a left turn to join Burleys Road southbound;
- Continue on Burleys Road, and then take a right turn to join Granborough Road southbound;
- Continue on Granborough Road, and then take a right turn to join East Claydon Road; and
- Continue on East Claydon Road, and then take a right turn to access the proposed development via the temporary proposed vehicular construction access on East Claydon Road to end the journey.

## 5.5 PROPOSED CONSTRUCTION ROUTE CONSTRAINTS

5.5.1. The minimum clearance headroom on the relevant highway networks is 5.03m. Where clearance on the relevant highway networks is less than this standard, warning signs will be provided in advance of and at the relevant structure. The UK electricity supply industry and plant manufacturers generally work to a travelling height of 4.95m to allow for a safety margin. It should be noted that the transformers considered in this AIL assessment should be able to be carried at below 5.03m and therefore no specific difficulties with overhead wires are envisaged.

5.5.2. It should be noted that standard single lane widths in the UK are typically between 3.20m and 3.75m, which means the proposed AIL vehicle will unlikely exceed a single lane. However, there may be some overlap into the opposite lane along some sections of the route, particularly on narrower roads closer to the development, as assessed through the swept path analysis that has been undertaken.

### JUNCTION ASSESSMENT

5.5.3. As part of the desktop analysis, a junction assessment was undertaken to identify key junctions along the proposed construction route from Tilbury Docks to the proposed development where constraints and restrictions could prevent AIL movements. The identified junctions along the proposed construction route are shown in **Figures 5-1 – 5-3** and are summarised in **Table 5-1** below.

**Figure 5-1 – Key Junctions along the Proposed Construction Route used by AIL Vehicles (Section 1)**

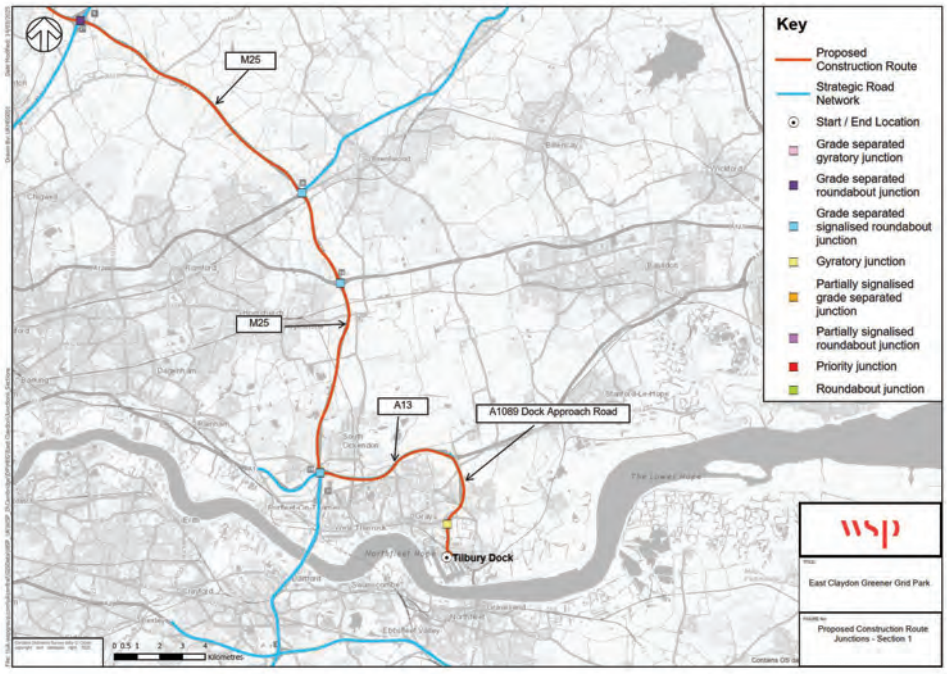



**Figure 5-2 – Key Junctions along the Proposed Construction Route used by AIL Vehicles (Section 2)**

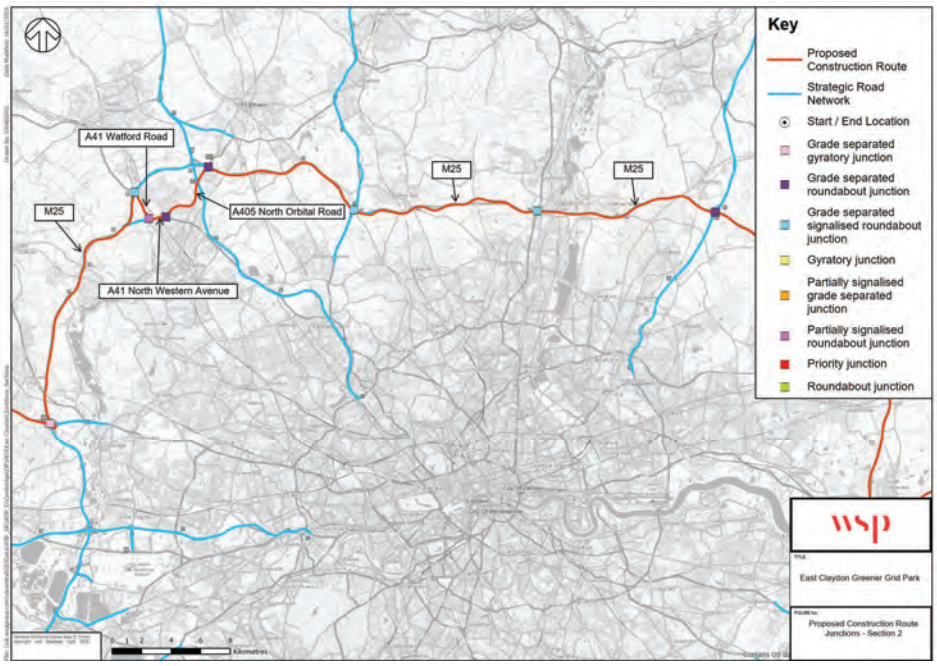


**Figure 5-3 – Key Junctions along the Proposed Construction Route used by AIL Vehicles (Section 3)**

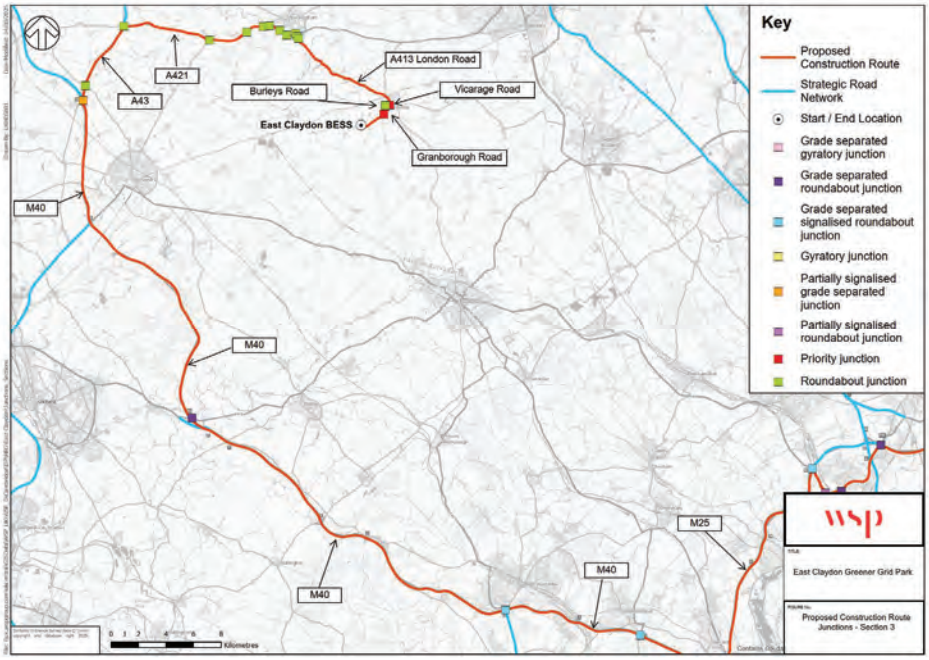



**Table 5-1 – Key Junctions along the Proposed Construction Route used by AIL Vehicles**

| Number | Junction | Type |
|---|---|---|
| 1 | A1089 Dock Approach Road / A13 | Gyratory junction |
| 2 | A13 / M25 Junction 30 | Grade separated signalised roundabout junction |
| 3 | M25 Junction 29 / A127 | Grade separated signalised roundabout junction |
| 4 | M25 Junction 28 / A12 | Grade separated signalised roundabout junction |
| 5 | M25 Junction 27 / M11 Junction 6 | Grade separated roundabout junction |
| 6 | M25 Junction 25 / A10 | Grade separated signalised roundabout junction |
| 7 | M25 Junction 25 / A1(M) | Grade separated signalised roundabout junction |
| 8 | M25 Junction 21A / A405 North Orbital Road | Grade separated roundabout junction |
| 9 | A405 North Orbital Road / A41 North Western Avenue | Grade separated roundabout junction |
| 10 | A41 North Western Road / Watford Road | Partially signalised roundabout junction |
| 11 | M25 Junction 20 / A41 Watford Road | Grade separated signalised roundabout junction |
| 12 | M40 Junction 1A / M25 Junction 16 | Grade separated gyratory junction |
| 13 | M40 Junction 2 / A355 | Grade separated signalised roundabout junction |

| Number | Junction | Type |
|---|---|---|
| 14 | M40 Junction 4 / A404 | Grade separated signalised roundabout junction |
| 15 | M40 Junction 8A / A40 | Grade separated roundabout junction |
| 16 | A43 / M40 Junction 10 | Partially signalised grade separated junction |
| 17 | A43 / B4100 | Roundabout junction |
| 18 | A421 / A43 / B4031 | Roundabout junction |
| 19 | A421 / Sandpit Hill | Roundabout junction |
| 20 | A421 / Main Street | Roundabout junction |
| 21 | A421 / New College / Radclive Road | Roundabout junction |
| 22 | A421 / Tingewick Road | Roundabout junction |
| 23 | A421 / Gawcott Road / Embleton Way | Roundabout junction |
| 24 | A421 / Osier Way / Embleton Way | Roundabout junction |
| 25 | A421 / A413 London Road | Roundabout junction |
| 26 | A413 London Road / Needlepin Way | Roundabout junction |
| 27 | A413 London Road / Needlepin Way | Roundabout junction |
| 28 | High Street / Vicarage Road | Priority junction |
| 29 | Verney Road / Vicarage Road / Burleys Road | Roundabout junction |
| 30 | Burleys Road / Granborough Road | Priority junction |
| 31 | Granborough Road / East Claydon Road | Priority junction |

5.5.4. As can be seen in **Table 5-1** there are a number of different types of junctions along the proposed construction route including grade separated roundabout junctions and grade separated signalised roundabout junctions, and roundabout and priority junctions. It should be noted that the majority of the grade separated are located on the M40 and M25. Of the key junctions identified along the proposed construction route that will be used by AIL vehicles, the constraints and restrictions that could prevent AIL movements are outlined as follows:

- **M25 (between junction of the A13 / M25 Junction 30 and the junction of the M25 Junction 21A / A405 North Orbital Road) –** There are a number of grade separated junctions located on the M25, and although the proposed construction route will remain on the motorway the proximity of these junctions could have an impact on height clearance and lane width. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these junctions with mitigation being provided where appropriate;
- **A41 and A405 (between junction of the M25 Junction 21A / A405 North Orbital Road and junction of the M25 Junction 20 / A41 Watford Road)** – There is a roundabout junction on the

A41 and grade separated junction at the junction of the M25 Junction 21A / A405 North Orbital Road which may present a constraint and restriction due to the horizontal alignment and turning radius at these junctions. Consultation with the relevant highway authorities (as outlined in Section 6) will be undertaken to ensure that AIL vehicles can navigate these junctions with mitigation being provided where appropriate;

- **M25 (between junction of the M25 Junction 20 / A41 Watford Road and junction of the M40 Junction 1A / M25 Junction 16) –** There are a number of grade separated junctions located on the M25, and although the proposed construction route will remain on the motorway the proximity of these junctions could have an impact on height clearance and lane width. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these junctions with mitigation being provided where appropriate;
- **M40 (between junction of the M40 Junction 1A / M25 Junction 16 and junction of the A43 / M40 Junction 10) –** There are a number of grade separated junctions located on the M40, and although the proposed construction route will remain on the motorway the proximity of these junctions could have an impact on height clearance and lane width. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these junctions with mitigation being provided where appropriate;
- **A43 (between junction of the A43 / M40 Junction 10 and junction of the A421 / A43 / B4031) –** There are a number of roundabout junctions located on the A43 which may represent a constraint or restriction due to the horizontal alignment and turning radius at these junctions. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these roundabouts with mitigation being provided where appropriate; and
- **A421 (between the junction of the A421 / A43 / B4031 and the junction of the A421 / A413 London Road) –** There are a number of roundabout junctions located on the A421 which may represent a constraint or restriction due to the horizontal alignment and turning radius at these junctions. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these roundabouts with mitigation being provided where appropriate.

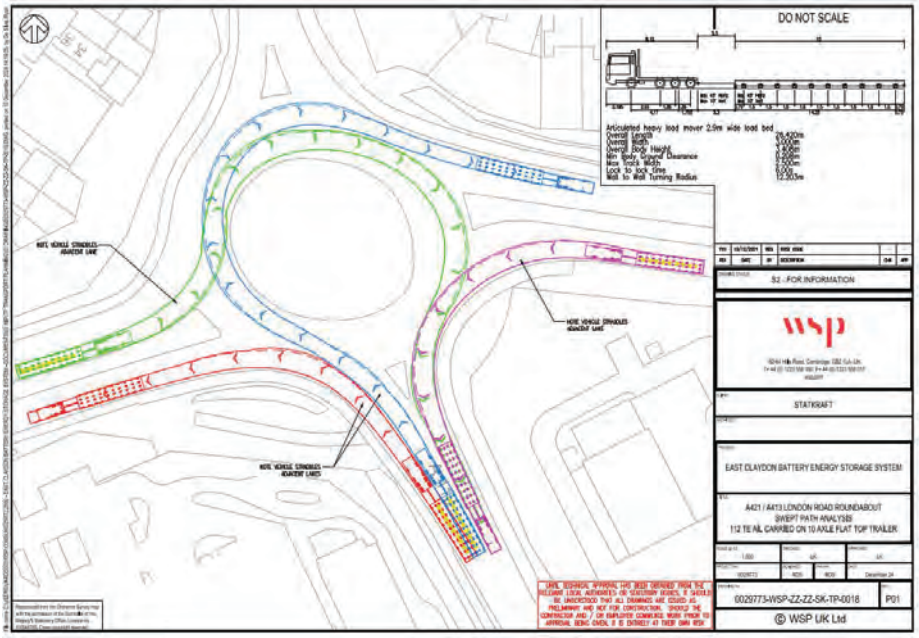
## 5.6 SWEPT PATH ANALYSIS

5.6.1. It should be noted that a detailed assessment has been undertaken of the proposed construction route along the A413 London Road between the junction of the A421 / A413 London Road and the proposed development on East Claydon Road, the results of which are outlined in the CTMP that has been prepared separately for the proposed development. As part of this detailed assessment swept path analysis was undertaken at key junctions along this section of proposed construction route, with proposed mitigation and management measures set out at specific junctions where appropriate, as outlined below.

**Junction of the A421 / A413 London Road**

5.6.2. Swept path analysis was undertaken at the junction of the A421 / A413 London Road for a 26.5m articulated heavy load vehicle, as shown in **Figure 5-4** below.

**Figure 5-4 – Junction of the A421 / A413 London Road**

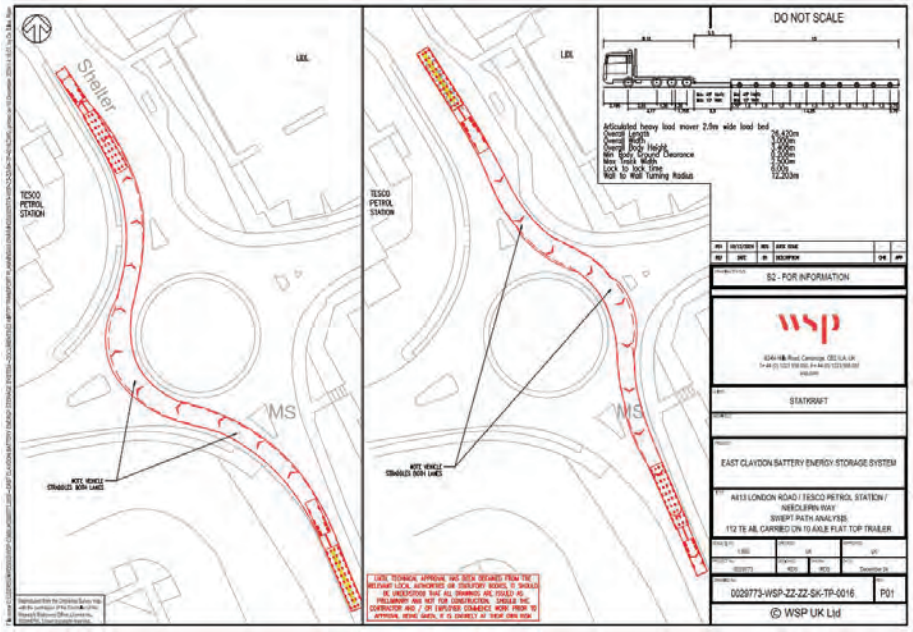



5.6.3. As can be seen in **Figure 5-4** in the 26.5m heavy load articulated vehicle encroaches on the adjacent lanes on east, west and south arms of the junction, although this is only minor and will not have an adverse impact on the safe movements of vehicles, pedestrians and cyclists at this location.

**Junction of the A413 London Road / Needlepin Way (Tesco Petrol Station)**

5.6.4. Swept path analysis was undertaken at the junction of the A413 London Road / Needlepin Way for a 26.5m articulated heavy load vehicle, as shown in **Figure 5-5** below.

**Figure 5-5 – Junction of A413 London Road / Needlepin Way (Tesco Petrol Station)**

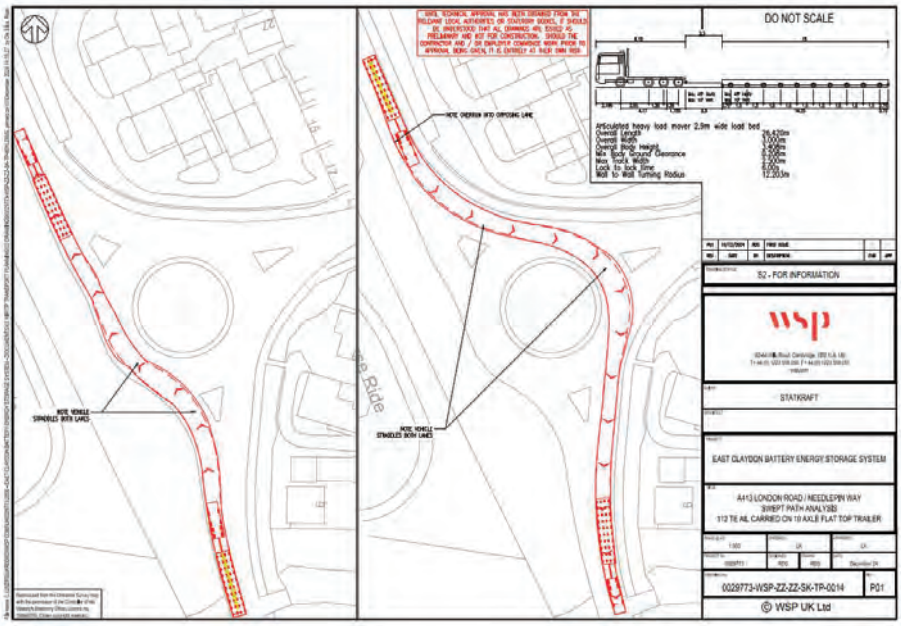


5.6.5. As can be seen in **Figure 5-5** in the 26.5m heavy load articulated vehicle encroaches on both lanes on the north and south arms of the junction, although this will not have an adverse impact on the safe movements of vehicles, pedestrians and cyclists at this location.

**Junction of the A413 London Road / Needlepin Way**

5.6.6. Swept path analysis was undertaken at the junction of the A413 London Road / Needlepin Way for a 26.5m articulated heavy load vehicle, as shown in **Figure 5-6** below.

**Figure 5-6 – Junction of A413 London Road / Needlepin Way**

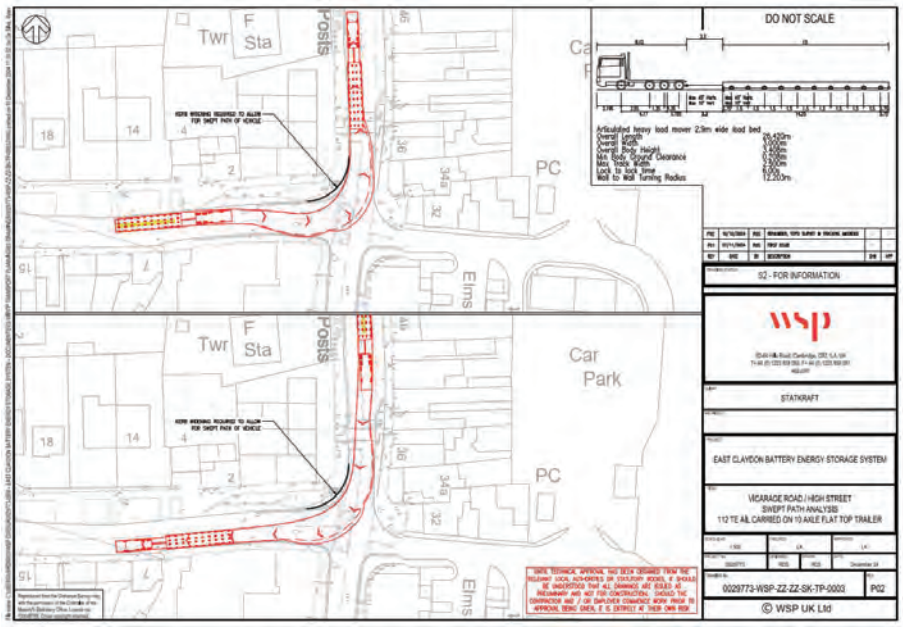



5.6.7. As can be seen in **Figure 5-6** in the 26.5m heavy load articulated vehicle encroaches on both lanes on the north and south arms of the junction, although this will not have an adverse impact on the safe movements of vehicles, pedestrians and cyclists at this location.

**Junction of High Street / Vicarage Road**

5.6.8. Swept path analysis was undertaken at the junction of High Street / Vicarage Road for a 26.5m articulated heavy load vehicle, as shown in **Figure 5-5** below.

**Figure 5-7 – Junction of High Street / Vicarage Road**

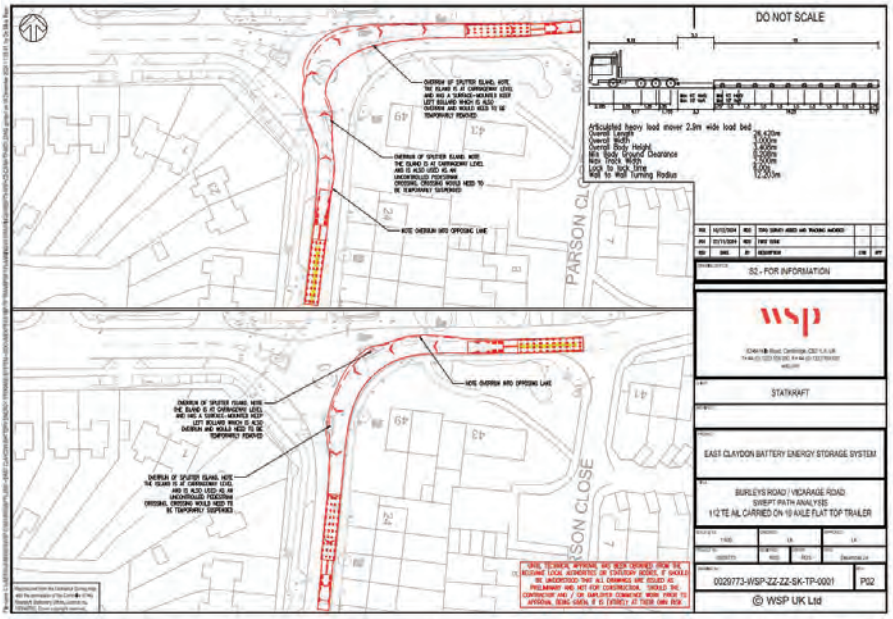



5.6.9. As can be seen in **Figure 5-7** in order to cater for the movement of a 26.5m heavy load articulated vehicle the kerb on the north east corner of the junction will need to be widened to cater for the safe movements of vehicles, pedestrians and cyclists at this location.

**Junction of Verney Road / Vicarage Road / Burleys Road**

5.6.10. Swept path analysis was undertaken at the junction of Verney Road / Vicarage Road / Burleys Road for a 26.5m articulated heavy load vehicle, as shown in **Figure 5-8** below.

**Figure 5-8 – Junction of High Street / Vicarage Road**

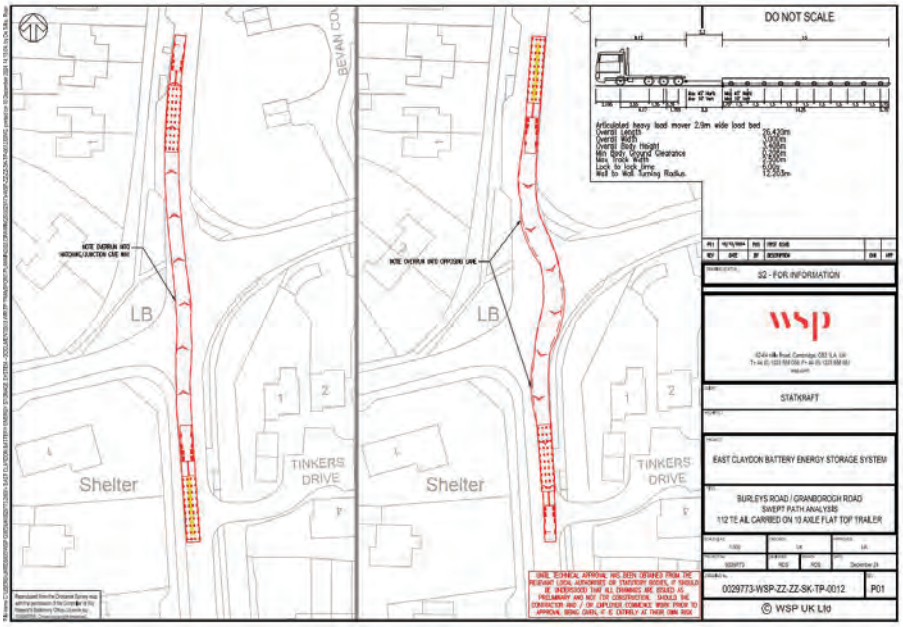


5.6.11. As can be seen in **Figure 5-8** in order to cater for the movement of a 26.5m heavy load articulated vehicle the keep left bollard on the east arm of the junction will need to be temporarily removed, and the uncontrolled pedestrian crossing on the south arm of the junction will also need to be temporary suspended to cater for the safe movements of vehicles, pedestrians and cyclists at this location.

**Junction of Burleys Road / Granborough Road**

5.6.12. Swept path analysis was undertaken at the junction of Burleys Road / Granborough Road for a 26.5m articulated heavy load vehicle, as shown in **Figure 5-9** below.

**Figure 5-9 – Junction of Burleys Road / Granborough Road**

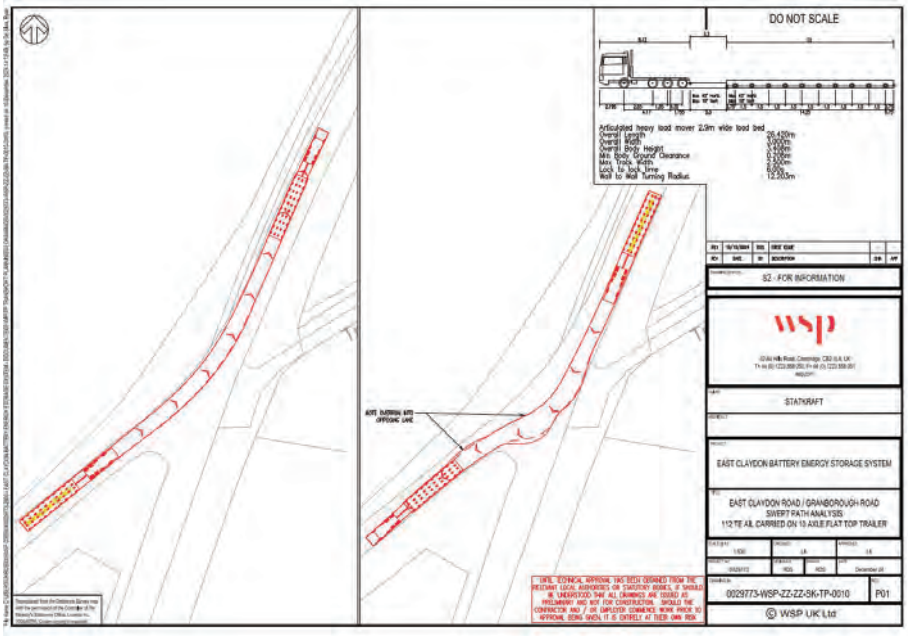



5.6.13. As can be seen in **Figure 5-9** in order to cater for the movement of a 26.5m heavy load articulated vehicle encroaches on both lanes at the junction, although this will not have an adverse impact on the safe movements of vehicles, pedestrians and cyclists at this location.

**Junction of Granborough Road / East Claydon Road**

5.6.14. Swept path analysis was undertaken at the junction of Burleys Road / Granborough Road for a 26.5m articulated heavy load vehicle, as shown in **Figure 5-10** below.

**Figure 5-10 – Junction of Granborough Road / East Claydon Road**




5.6.15. As can be seen in **Figure 5-10** in order to cater for the movement of a 26.5m heavy load articulated vehicle encroaches on both lanes at the junction, although this will not have an adverse impact on the safe movements of vehicles, pedestrians and cyclists at this location.

**Bridge Assessment**

5.6.16. As part of the desktop assessment a bridge assessment was undertaken to identify the key links along the proposed construction route from Tilbury Docks to the proposed development along the relevant highway networks where constraints and restrictions could prevent AIL movement. The key links identified along the proposed construction route that will be used by AIL vehicles and where constraints and restrictions could prevent AIL movements are shown in **Figures 5-11 – 5-13**, and are summarised in **Table 5-2** below.

**Figure 5-11 – Key Links along the Proposed Construction Route used by AIL Vehicles (Section 1)**

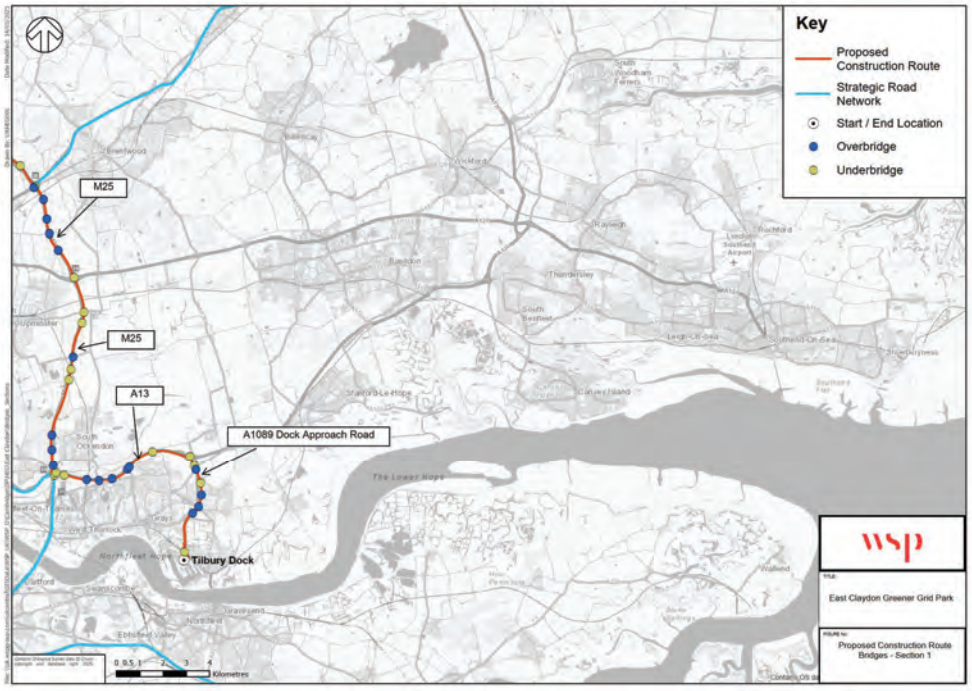



**Figure 5-12 – Key Links along the Proposed Construction Route used by AIL Vehicles (Section 2)**

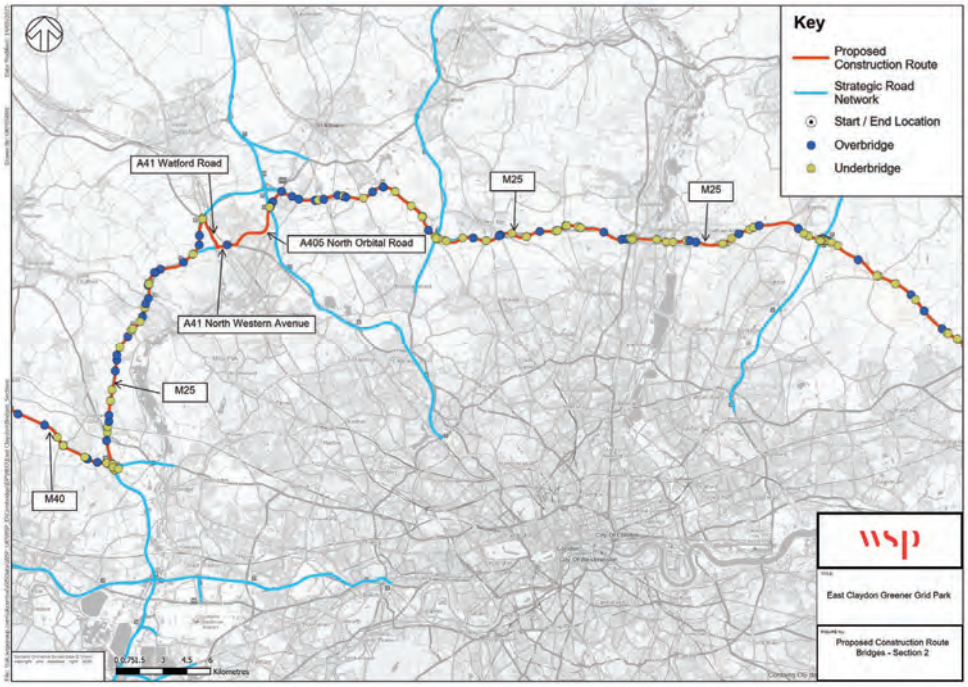


**Figure 5-13 – Key Links along the Proposed Construction Route used by AIL Vehicles (Section 3)**

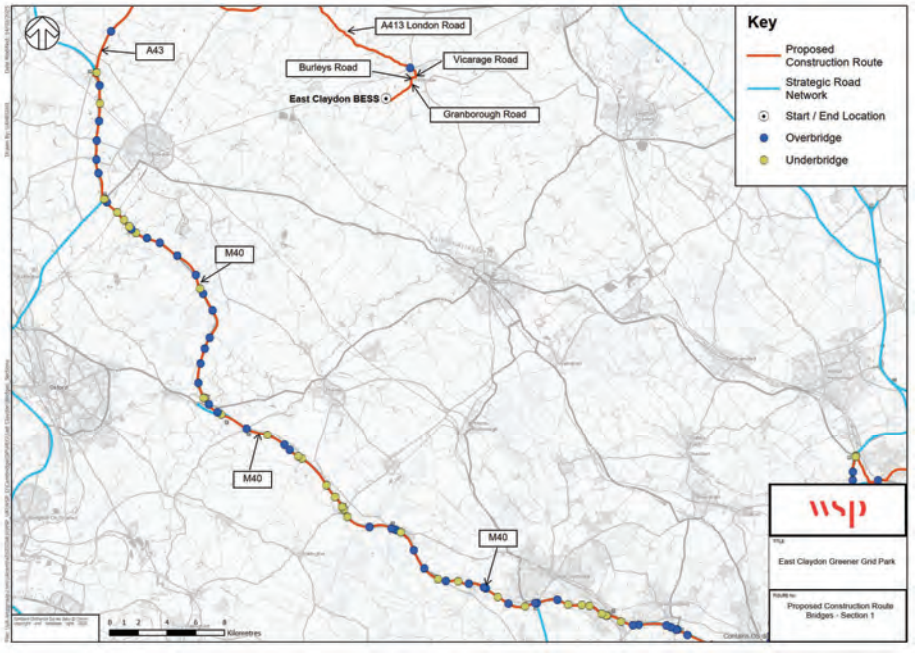



**Table 5-2 – Key Links along the Construction Route used by AIL Vehicles**

| Number | Links | Type |
|---|---|---|
| 1 | A1089 Dock Approach Road (between A1089 Dock Approach Road / Tilbury Docks and junction of the A13 / A1089 Dock Approach Road / A13) | 4 underbridges and 4 overbridges |
| 2 | A13 (between junction of A1089 Dock Approach Road / A13 and junction of the A13 / M25 Junction 30) | 4 underbridges and 6 overbridges |
| 3 | M25 (between junction of the A13 / M25 Junction 30 and the junction of the M25 Junction 21A / A405 North Orbital Road) | 35 overbridges and 56 overbridges |
| 4 | A41 and A405 (between junction of the M25 Junction 21A / A405 North Orbital Road and junction of the M25 Junction 20 / A41 Watford Road) | 3 overbridges and 2 underbridges |
| 5 | M25 (between junction of the M25 Junction 20 / A41 Watford Road and junction of the M40 Junction 1A / M25 Junction 16) | 16 overbridges and 14 underbridges |
| 6 | M40 (between junction of the M40 Junction 1A / M25 Junction 16 and junction of the A43 / M40 Junction 10) | 46 overbridges and 35 underbridges |
| 7 | A43 (between junction of the A43 / M40 Junction 10 and junction of the A421 / A43 / B4031) | 1 overbridge and 0 underbridge |
| 8 | A413 Buckingham Road (between the junction of the A421 / A413 London Road and the proposed development on East Claydon Road) | 1 overbridge and 0 underbridge |

5.6.17. As can be seen in **Table 5-2** there are a number of underbridges and overbridges along the proposed construction route, with the majority of them being located on the M40 and M25. Of the links identified along the proposed construction route that will be used by AIL vehicles the constraints and restrictions are summarised as follows:

- **A1090 Dock Approach Road (between A1089 Dock Approach Road / Tilbury Docks and junction of the A13 / A1089 Dock Approach Road / A13) –** There are a number of underbridges and overbridges located on the A1090 which may present a constraint and restriction due to the height clearance and weight limits. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these underbridges and overbridges with mitigation being provided where appropriate;
- **A13 (between junction of A1089 Dock Approach Road / A13 and junction of the A13 / M25 Junction 30) –** There are a number of underbridges and overbridges located on the A13 which may present a constraint and restriction due to the height clearance and weight limits. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these underbridges and overbridges with mitigation being provided where appropriate;
- **M25 (between junction of the A13 / M25 Junction 30 and the junction of the M25 Junction 21A / A405 North Orbital Road) –** There are a number of underbridges and overbridges located on the M25 which may present a constraint and restriction due to the height clearance and weight limits. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these underbridges and overbridges with mitigation being provided where appropriate;
- **A41 and A405 (between junction of the M25 Junction 21A / A405 North Orbital Road and junction of the M25 Junction 20 / A41 Watford Road)** – There are a number of underbridges and overbridges located on the A41 and A405 which may present a constraint and restriction due to the height clearance and weight limits. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these underbridges and overbridges with mitigation being provided where appropriate;
- **M25 (between junction of the M25 Junction 20 / A41 Watford Road and junction of the M40 Junction 1A / M25 Junction 16) –** There are a number of underbridges and overbridges located on the M25 which may present a constraint and restriction due to the height clearance and weight limits. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these underbridges and overbridges with mitigation being provided where appropriate;
- **M40 (between junction of the M40 Junction 1A / M25 Junction 16 and junction of the A43 / M40 Junction 10) –** There are a number of underbridges and overbridges located on the M40 which may present a constraint and restriction due to the height clearance and weight limits. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these underbridges and overbridges with mitigation being provided where appropriate;
- **A43 (between junction of the A43 / M40 Junction 10 and junction of the A421 / A43 / B4031) –** There are a number of underbridges and overbridges located on the A43 which may present a constraint and restriction due to the height clearance and weight limits. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL

vehicles can navigate these underbridges and overbridges with mitigation being provided where appropriate;

- **A413 London Road (between the junction of the A421 / A413 London Road and the proposed development on East Claydon Road) –** There is overbridge located on the A413 Buckingham Road between Great Horwood Road and Highfield Road which may present a constraint and restriction due to the height clearance and weight limits. Consultation with the relevant highway authorities (as outlined in **Section 6**) will be undertaken to ensure that AIL vehicles can navigate these under bridges and overbridges with mitigation being provided where appropriate.

# 6 AIL CONSULTATION

## 6.1 INTRODUCTION

6.1.1. This section of the AIL assessment outlines the consultation that has been undertaken with the relevant authorities including Connect Plus Services, National Highways and Network Rail to obtain feedback on the proposed construction route for AIL vehicles.

## 6.2 CONNECT PLUS SERVICES

6.2.1. Feedback was obtained from Connect Plus Services, who are responsible for operating and maintaining the M25, on behalf of National Highways and Connect Plus. As part of this consultation feedback was requested on the proposed construction route along the strategic road network via the M25 (as outlined in **Section 5**). In particular feedback was requested in relation to any current potential infrastructure constraints along the proposed construction route including potential width, weight and height constraints along the route that could impact on the movement of AIL vehicles, and if any mitigation would be required. All relevant correspondence with Connect Plus Services are enclosed in **Appendix A.**

6.2.2. Connect Plus Services stated that there are currently no potential width, weight and height constraints along the proposed construction route that would impact on the movement of AIL vehicles. However, they have recommended that a full assessment is undertaken closer to the time of proposed construction so that any potential changes to the SRN are taken into account at that time. The following summarises the key considerations that will need to be taken into account:

- **Undertake Full Assessment –** It was recommended that a full assessment will need to be undertaken closer to the time of the proposed construction before the movement of the AIL vehicles on the SRN so that any potential changes/ road works are taken into account;
- **Timing of Movements –** It was recommended that the movement of AIL vehicles should take place during daytime to avoid any potential disruption from potential night time lane or road closures. It was highlighted that night time lane closures on the M25 are frequent due to scheduled maintenance and infrastructure improvements, which could have an impact on the feasibility of the selected route; and
- **Submission of Final Details –** It was requested that a formal submission of detailed information is made once the AIL vehicle movement dates are finalised, which will detail the specific journey timings and scheduling of the AIL vehicle movements. It was stated that this will allow to undertake a final assessment and provide the necessary guidance or approvals where necessary.

## 6.3 NATIONAL HIGHWAYS

6.3.1. Feedback was obtained directly from National Highways who are responsible for operating and maintaining the M40 and A43. As part of this consultation, feedback was requested on the proposed construction route along the SRN via the M40 and A43 (as outlined in **Section 5**). In particular feedback was requested in relation to any current potential infrastructure constraints along the proposed construction route including potential width, weight and height constraints that would impact on the movement of AIL vehicles. All relevant correspondence with National Highways are enclosed in **Appendix A.**

6.3.2. National Highways stated that there are currently no potential width, weight and height constraints along the proposed construction route that could impact on the movement of AIL vehicles. They confirmed that transformers have been successfully transported from Tilbury Docks to the existing East Claydon substation in the past. However, they have recommended that a haulage contractor is appointed at the earliest opportunity as relevant permissions and permits may take time to sort out due the complexity of the proposed construction route. The following summarises the key considerations to be taken into account:

- **Appoint Haulage Contractor –** While transformers have been successfully transported from Tilbury Docks to the existing East Claydon substation in the past, it was recommended that a haulage contractor is appointed as early as possible due to the complexity of the proposed construction route and the potential time required to obtain the necessary permissions and permits; and
- **Preliminary Route Assessment (Pre-Check) –** It was recommended that a pre-check should be undertaken to determine the suitability of the proposed construction route before initiating an ESDAL booking. They have stated that this would provide early guidance of the AIL vehicles and any potential constraints along the proposed construction route.

## 6.4 NETWORK RAIL

6.4.1. Feedback was obtained from Network Rail who are responsible for operating and maintaining bridges over the railway network. As part of this consultation, feedback was requested on the proposed construction route (as outlined in **Section 5**). In particular feedback was requested in relation to any current potential infrastructure constraints along the proposed construction route including potential width, weight and height constraints along the route that would impact on the movement of AIL vehicles, and if any mitigation would be required. All relevant correspondence with Network Rail are enclosed in **Appendix A.**

6.4.2. Network Rail reviewed the proposed transport route and identified two rail-over-road structures that may be affected by the movement of the transformers. It was stated that the proposed construction route will cross an overbridge over the railway network on the A41 North Western Avenue (between the A405 Northern Orbital Road and the A41 North Western Avenue) and an overbridge on the A413 Buckingham Road (between Great Horwood Road and Highfield Road).

6.4.3. Network Rail requested full AIL vehicle specifications, including axle weights and spacings, to be provided when available so that a full structural assessment can be undertaken to determine the potential width, weight and height constraints along the proposed construction route that could impact on the movement of AIL vehicles, and if any mitigation would be required.

# 7 AIL PROPOSED TRAFFIC MITIGATION AND MANAGEMENT

## 7.1 INTRODUCTION

7.1.1. This section of the AIL assessment sets out the package of proposed mitigation and management measures that will be implemented to ensure that AIL vehicles can access and egress the site in a safe manner, and that road safety is maintained at all times along the proposed construction route. It should be noted that there are a number of proposed mitigation and management measures that are outlined in the CTMP which are related to the local highway network. These should be considered alongside the measures outlined below, which specifically address AIL movements on the strategic highway network, as there is significant overlap between the two.

## 7.2 CONSTRUCTION ROUTE ENFORCEMENT

7.2.1. The proposed construction route for AIL movements that is outlined in **Section 5** will be strictly adhered to. In order to ensure compliance with the proposed construction route, the following measures will be implemented:

- **Communication –** The proposed construction route will be clearly communicated to contractors involved in the construction of the proposed development. Direction and access point maps, along with information on the proposed construction route and proposed mitigation measures along with site delivery rules and times will be sent out with each order, so that drivers are aware of the protocols as they access and egress the site;
- **Monitoring and Compliance –** Regular monitoring will be undertaken with random spot checks being carried out to ensure that the proposed construction route is used at all times for all AIL vehicles;
- **Disciplinary Action –** Any contractors found not following the proposed construction route will face disciplinary action, which will include financial penalties or removal from the construction of the proposed development; and
- **Direction Signage –** Direction signage will be installed to guide the AIL vehicles along the proposed construction route, ensuring the planned route is adhered to.

## 7.3 TIMING OF MOVEMENTS

7.3.1. The timing of AIL vehicle movements is critical to ensure safe access to and from the site while maintaining road safety along the proposed construction route, and as such the following measures will be implemented:

- **Agreed Hours –** The movement of AIL vehicles will take place between 08:00 – 17:00 Monday to Friday and between 08:00 – 13:00 on Saturdays with specific times and approvals being agreed with British Transport Police and National Highways before proceeding. This will ensure that the movement of AIL vehicles will be properly coordinated with the appropriate traffic management authorities; and
- **Avoiding Peak Traffic Times –** The movement of AIL vehicles will be planned to avoid peak traffic times, such as the morning and afternoon school runs etc. This will help to reduce the impact of the movement of AIL vehicles on normal traffic flows at these times.

## 7.4 SUPPORT VEHICLES

7.4.1. Support vehicles will play an important role in ensuring that AIL vehicles can access and egress the site in a safe manner, and that road safety is maintained at all times along the proposed construction route, and as such the following measures will be implemented:

- **Support Vehicles –** These will accompany all AIL vehicles in order to assist with movements at key locations along the proposed construction route;
- **Coordination –** The support vehicle team will be in constant communication with the contractor to coordinate the AIL movements and respond to any issues that may arise during transport; and
- **Safety Measures –** The support vehicles will be equipped with appropriate safety measures including high intensity front and rear lighting as well as flashing beacons and signage, to increase visibility and alert other road users to the presence of an AIL vehicle.

## 7.5 LIGHTING, SIGNING AND MARKING

7.5.1. In order to ensure that AIL vehicles can access and egress the site in a safe manner, and that road safety is maintained at all times along the proposed construction route, specific measures in relation to lighting, signing and marking will be implemented in compliance with National Highways regulations and industry best practices as follows:

- **Lighting –** AIL vehicles will be equipped with appropriate lighting, including high intensity front and rear lighting as well as flashing beacons, to increase visibility and alert other road users of the presence of an AIL vehicle, which will be especially important during low light conditions;
- **Signage –** Signage will be placed on the AIL vehicle to alert other road users of the presence of an AIL vehicle. Direction signage will also be provided to assist in guiding AIL vehicles along the proposed construction route; and
- **Marking –** AIL vehicles will be clearly marked to alert other road users of the presence of an AIL vehicle, which will include the use of reflective materials and other measures to enhance visibility.

7.5.2. It should be noted that prior to each delivery, all lighting arrangements will be tested to prevent any failures during AIL vehicle movements. In addition, AIL vehicles will be equipped with directional marker lights to outline their extremities, ensuring visibility if movements occur in low-light conditions.

## 7.6 TEMPORARY CLOSURES AND TRAFFIC REGULATION ORDER

7.6.1. If Temporary Traffic Regulation Orders (TTRO) are required to facilitate the safe access and egress of AIL vehicles and maintain road safety along the proposed construction route these, they will be obtained before any movements take place. The following steps will be undertaken in order to secure a TTRO:

- **Liaison with Stakeholders –** The haulage contractor will liaise with the local community and businesses to ensure they are fully informed in advance if a road closure is required;
- **Obtaining TTRO –** Any required TTRO will be obtained prior to the movement of the AIL vehicles, and will be coordinated with the appropriate authorities to minimise disruption and ensure the safety of all road users; and
- **Advance Notice –** Advance notice of any planned road closure will be provided to stakeholders to allow for planning and changes to normal traffic patterns.

## 7.7 NOTIFICATION

7.7.1. In order to ensure that AIL vehicles can access and egress the site in a safe manner, and that road safety is maintained at all times it is essential that effective communication is undertaken with stakeholders, and as such the following measures will be implemented:

- **Stakeholder Identification –** All stakeholders, including highway authorities, local councils, and emergency services, will be identified and notified prior to the movement of the AIL vehicles;
- **Responsibility –** The appointed haulage contractor will be responsible for notifying the relevant stakeholders, which will ensure a single point of contact and consistent communication with stakeholders;
- **ESDAL Booking –** Notifications will be made using the ESDAL system, which provides a standardised method for notifying stakeholders and ensures that they are all aware of when AIL movements will be taking place and any potential impacts on the highway network.

# 8 SUMMARY AND CONCLUSION

## 8.1 SUMMARY

8.1.1. WSP has been commissioned by Statkraft UK Limited to prepare an AIL assessment in relation to a full planning application for the construction of a Greener Grid Park comprising energy storage and grid balancing equipment and associated infrastructure including access, drainage, landscaping and other incidental works on East Claydon Road, East Claydon, Buckinghamshire.

8.1.2. It should be noted that this AIL assessment takes into account discussions that have been undertaken with Connect Plus Services, National Highways and Network Rail in relation to AIL movements on the highway networks associated with the construction of the proposed development.

8.1.3. The aim of this AIL assessment is to outline the legislative framework, the proposed construction route, potential constraints, and any proposed mitigation and management measures related to AIL movements, in accordance with UK legislation and relevant transport regulations and policies.

### ABNORMAL INDIVISIBLE LOADS

8.1.4. According to the Road Vehicles (Authorisation of Special Types) (General) Order 2003 (STGO) and guidance from National Highways, AILs typically have a gross weight that exceeds 44T, a load width at exceeds 2.9m, and a load length that exceeds 18.65m for a rigid vehicle or 25.9m for a combination vehicle. AILs require special permission to be moved on public highways, as their size and weight can affect road infrastructure, traffic flow, and public safety.

### LEGISLATION

8.1.5. The movement of AILs in the UK is subject to strict legislative controls to ensure that road infrastructure is protected, minimise traffic disruption, and ensure public safety. These laws set out the requirements for transporting oversized and overweight loads, specifying the responsibilities of those involved in the movement of AILs, as well as the permissions and notifications required before any AIL movements can take place.

### CONSTRUCTION VEHICULAR ACCESS

8.1.6. It is proposed that a construction vehicular access will be provided on the north side of East Claydon road approximately 260m west of the existing vehicular access to the East Claydon substation opposite an existing field access on the south side of the road. This will be the subject of minor works and laying of consolidated material to ensure it is suitable for construction and AIL vehicle movements. It should be noted that access for emergency services during construction will be provided via the temporary construction vehicular access on East Claydon Road, with emergency services being notified of the location of the emergency access to the proposed development before construction work commences.

### TRANSFORMERS

8.1.7. It is anticipated that the principal requirement for AILs for the proposed development will arise due to the delivery of the transformers. Transformers are used to increase or decrease voltage levels in power systems, making them essential for efficient power transmission and distribution. They play a crucial role in ensuring that electricity can be safely and efficiently delivered from power plants to homes and businesses.

## AIL VEHICLE CONFIGURATION

8.1.8. The delivery of transformers requires the use of a specialised abnormal vehicle which will have the capability to transport abnormal loads. A typical AIL vehicle configuration for transporting the transformers to the proposed development will consist of one tractor unit with an axle frame trailer which will accommodate the abnormal load. It is proposed that for transporting the transformers to the proposed development a 14 axle tractor and trailer transport arrangement will be used, with the tractor having 4 axles, and the trailer having 10 axles.

8.1.9. The dimensions of the proposed AIL vehicle that will be used in the delivery of the transformers to the proposed development will have length of 26.4m, a width of 3.0m and a body height of 3.40m. This will allow the vehicle to handle gross weights over 80 tonnes, up to a maximum of 150 tonnes, assuming proper weight distribution across the axles. Each axle can carry up to 16500kg under STGO Category 3.

## PROPOSED CONSTRUCTION ROUTE

8.1.10. A number of proposed construction routes were assessed to transport the transformers from Tilbury Docks to the proposed development via a desktop analysis of the relevant highway networks. This analysis assessed the proposed construction routes against a number of parameters including road type, horizontal and vertical alignment constraints as well as height and weight restrictions to identify constraints to AIL movements along the relevant highway networks.

8.1.11. The selected construction route was identified through the analysis undertaken as the option with the fewest constraints and restrictions affecting AIL movements, and will follow the A1089 Dock Approach Road, the A13, the M25, the A41 North Western Avenue / Watford Road, the M25, the M40, the A43, the A421, the A413 London Road, Vicarage Road, Burleys Road, Granborough Road and East Claydon Road.

## PROPOSED CONSTRUCTION ROUTE CONSTRAINTS

8.1.12. As part of the desktop analysis a junction and bridge assessments were undertaken to identify the key junctions and links along the proposed construction route from Tilbury Docks to the proposed development where constraints and restrictions could prevent AIL movements. These include height clearance, lane width, weight limits, horizontal alignment and turning radius

8.1.13. It should be noted that a detailed assessment has been undertaken of the proposed construction route along the A413 London Road between the junction of the A421 / A413 London Road and the proposed development on East Claydon Road, the results of which are outlined in the CTMP that has been prepared separately for the proposed development. As part of this detailed assessment swept path analysis was undertaken at key junctions along this section of proposed construction route, with proposed mitigation and management measures set out at specific junctions where appropriate, as outlined below.

- **Junction of High Street / Vicarage Road –** In order to cater for the movement of a 26.5m heavy load articulated vehicle the kerb on the north east corner of the junction will need to be widened to cater for the safe movements of vehicles, pedestrians and cyclists; and.
- **Junction of Verney Road / Vicarage Road / Burleys Road –** In order to cater for the movement of a 26.5m heavy load articulated vehicle the keep left bollard on the east arm of the junction will need to be temporary removed, and the uncontrolled pedestrian crossing on the south arm of the

junction will also need to be temporary suspended to cater for the safe movements of vehicles, pedestrians and cyclists.

### AIL CONSULTATION

8.1.14. Consultation has been undertaken with the relevant authorities including Connect Plus Services, National Highways and Network Rail to obtain feedback on the proposed construction route for AIL vehicles, which is outlined as follows:

- **Connect Plus Services –** They stated that there are currently no potential width, weight and height constraints along the proposed construction route that would impact on the movement of AIL vehicles. However, they have recommended that a full assessment is undertaken closer to the time of proposed construction so that any potential changes to the strategic road network are taken into account at that time;
- **National Highways –** They stated that there are currently no potential width, weight and height constraints along the proposed construction route that could impact on the movement of AIL vehicle. They confirmed that transformers have been successfully transported from Tilbury Docks to the existing East Claydon substation in the past. However, they have recommended that a haulage contractor is appointed at the earliest opportunity as relevant permissions and permits may take time to sort out due the complexity of the proposed construction route; and
- **Network Rail –** They stated that the proposed construction route will cross an overbridge over the railway network on the A41 North Western Avenue (between the A405 Northern Orbital Road and the A41 North Western Avenue) and an overbridge on the A413 Buckingham Road (between Great Horwood Road and Highfield Road). They also requested additional information to be provided when available on the AIL vehicles so that a full assessment can be undertaken to determine the potential width, weight and height constraints along the proposed construction route.

### AIL PROPOSED TRAFFIC MITIGATION AND MANAGEMENT

8.1.15. A package of proposed mitigation and management measures will be implemented to ensure that AIL vehicles can access and egress the site in a safe manner, and that road safety is maintained at all times along the proposed construction route. It should be noted that there are a number of proposed mitigation and management measures that are outlined in the CTMP which are related to the local highway network. These should be considered alongside the measures outlined below, which specifically address AIL movements on the strategic highway network, as there is significant overlap between the two.

- **Construction Route Enforcement –** The proposed construction route for AIL movements will be strictly adhered to, with communication, monitoring and compliance, disciplinary action and direction signage playing an important part in achieving this;
- **Timing of Movements –** The timing of the movement of AIL vehicles will be critical to ensuring that AIL vehicles can access and egress the site in a safe manner, and that road safety is maintained at all times along the proposed construction route, with agreed hours and avoiding peak traffic times playing an important part in achieving this;
- **Support Vehicles –** Support vehicles will play an important role in ensuring that AIL vehicles can access and egress the site in a safe manner, and that road safety is maintained at all times along the proposed construction route, with coordination and safety measures playing an important part in achieving this;

- **Lighting, signing and marking –** In order to ensure that AIL vehicles can access and egress the site in a safe manner, and that road safety is maintained at all times along the proposed construction route specific measures in relation to lighting, signing and marking will be implemented in compliance with National Highways regulations and industry best practices;
- **Temporary Closures and Traffic Regulation Order –** If required to ensure that AIL vehicles can access and egress the site in a safe manner, and that road safety is maintained at all times along the proposed construction route, these will be obtained prior to the movement of the AIL vehicles; and
- **Notification –** In order to ensure that AIL vehicles can access and egress the site in a safe manner, and that road safety is maintained at all times, it is essential that effective communication is undertaken with stakeholders; with stakeholder identification, responsibility and the ESDAL booking system playing an important part in achieving this.

## 8.2 CONCLUSION

8.2.1. Following a detailed assessment to determine the proposed construction route from Tilbury Docks to the proposed development, along with consultation with relevant authorities and the implementation of a comprehensive package of proposed mitigation and management measures, it can be concluded that the proposed construction route is suitable for the movement of AIL vehicles that will be transporting the transformers to the proposed development. It should be noted that additional information will be provided when available on the AIL vehicles so that a full assessment can be undertaken to determine the potential width, weight and height constraints along the proposed construction route.

8.2.2. Based on the information outlined above and subject to the mitigation measures being secured through compliance with a suitably worded planning condition, there should be no unacceptable impact on highway safety as a result of the proposed development on East Claydon Road, East Claydon. The proposed development will therefore be compliant with the requirements of National Planning Policy Framework (NPPF) Paragraph 116 in that there will not be an unacceptable impact on highway safety. It will also be compliant with requirements of Policies T4 and T5 of the Vale of Aylesbury Local Plan, and Policy 3 of BC's Local Transport Plan (LTP4) which will ensure that the impacts of new developments are mitigated against, and as such limit the impact of the proposed development on the surrounding highway network.

62-64 Hills Road
Cambridge
CB2 1LA

**wsp.com**

# Appendices

# Appendix A – Correspondence

## Kirby, Lee

**From:** Sunil Maniraj <Sunil.Maniraj@networkrail.co.uk> on behalf of Abnormal Loads Enquiries <AbnormalLoadsEnquiries@networkrail.co.uk>
**Sent:** 14 February 2025 16:09
**To:** Kaddoussi, Aida
**Subject:** RE: AB-66569/SM Consultation request - AIL route assessment

OFFICIAL

Hi Aida

The intended route appears to affect the following structures, In order for the Engineers to complete this assessment we require the full vehicle configuration including axle weights and spacings.

**Bridge:** LEC1/B/67S-4
**Address:** North Western Avenue
**City:** Watford
**Easting/Northing:** 509192 199619
View on map

**Bridge:** OXD/B/18
**Address:** Buckingham Road
**City:** Winslow
**Easting/Northing:** 476690 228346
View on map

**Many Thanks**

**Sunil Maniraj**
Abnormal Loads Clerk
Abnormal Loads Help Desk: 07395 391628
Abnormal Loads Team – Part of the National Records Group

**From:** Kaddoussi, Aida <Aida.Kaddoussi@wsp.com>
**Sent:** Thursday, February 6, 2025 4:32 PM
**To:** Abnormal Loads Enquiries <AbnormalLoadsEnquiries@networkrail.co.uk>
**Subject:** AB-66569/SM Consultation request - AIL route assessment

Dear all,

I hope you are well. I am Aida Kaddoussi, I'm part of WSP's Freight and Logistics team.

We have been commissioned by Statkraft UK Limited to prepare an Abnormal Indivisible Load assessment as part of a full planning application for a proposed 'Greener Grid Park' on East Claydon Road, East Claydon, Buckinghamshire. The development includes a 500MW Battery Energy Storage System (BESS), located adjacent to the existing East Claydon substation. We are consulting with your office regarding a planned movement of four large-scale transformers to the site, each with a net weight of 117.5 tonnes. The transformers will be transported on a 14-axle vehicle (tractor + trailer configuration) under STGO Category 3. The AIL deliveries are scheduled for June and July 2029.

The proposed route details are below:

- The route begins at Tilbury Docks, exiting onto the A1089, merging onto the A13, and continuing to the M25.
- M25 (Junctions 25, 28, 27, and 26), including Waltham Cross Interchange and Potters Bar Interchange, until Junction 23, where we turn onto the A405.
- A41, passing Leavesden Green Roundabout, with a turn at Hempstead Roundabout.
- Continue on the A41, rejoining the M25 at Junction 20, and then onto the M40.
- From the M40, travel through Junctions 10 (Baynards Green) and continue on the A43, heading toward A421 and A413.
- Final route includes local roads through Tingewick, Radclive, Gawcott, Osier, Needlepin Way, Vicarage Road, Burleys Road, Granborough Road, and East Claydon Road to the site.

The vehicle configuration includes:

- 14-axle articulated system with a GVW of approximately 150 tonnes.
- Dimensions: Length – 26.420m, Width – 3.0m, Height – 3.408m.
- Load: 4 x 185 MVA transformers, each 117.5 tonnes net weight.

We kindly request your feedback/comments on the suitability of the rail-over-road structures along this route for the proposed vehicle configuration and load, particularly in terms of any height clearance constraints, and whether any mitigation/traffic management measures are recommended/needed for safe passage.

Please let me know if you require additional details. Happy to set up a call to discuss further if easier.

Thanks for your assistance, and I look forward to hearing from you.

Kind regards,

Aida

**Aida Kaddoussi**
PhD MRes MSc in Engineering
Associate, Freight & Logistics
+447413965284

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70 Chancery Lane, London
WC2A 1AF
+44 (0)20 7314 5000
wsp.com

## Kirby, Lee

**From:** Lott, Matthew
**Sent:** 11 December 2024 13:16
**To:** Nicolas Hyde
**Cc:** Kaddoussi, Aida; Mary Stanton
**Subject:** RE: Abnormal loads movement advisory

Hi Nick

All good thanks

The weight of the transformer is 117.5 tonne, with the expected vehicle being an articulated heavy load mover 26m (4 axles tractor + 10 axles trailer) – with the unladen weight being around 30 tonnes.
It should just fall withing STGO3

That would be great, would you be free on Tuesday morning?

**Kind Regards**
**Matthew Lott MSc. BSc. (Hons) CMILT**
**(+44) 07557 324200**
Associate, Freight and Logistics team
8 First Street
Manchester
M15 4RP

wsp.com



**Chair of the ITS UK Freight Forum** **Co-Chair of the CILT's Northwest Committee**

---

**From:** Nicolas Hyde <Nicolas.Hyde@nationalhighways.co.uk>
**Sent:** 11 December 2024 12:35
**To:** Lott, Matthew <Matthew.Lott@wsp.com>

**Cc:** Kaddoussi, Aida <Aida.Kaddoussi@wsp.com>; Mary Stanton <Mary.Stanton@nationalhighways.co.uk>
**Subject:** RE: Abnormal loads movement advisory

Hi Matt

All good thanks and hope you are well.

It would be useful to understand the weight of the proposed transformer please. We have had transformers go to East Claydon substation in the recent past so not an unknown route.

Happy to have a call though to go through some details.

Many thanks,
Nick

**Nicolas Hyde** – Team Leader
Operations Customer Service Division - Abnormal Indivisible Loads
National Highways | The Cube | 199 Wharfside Street | Birmingham | B1 1RN
**Tel**: 0300 470 3102 **Mobile:** 07523 931812 **Abnormal Loads Team Tel:** 0300 470 3004
Web: nationalhighways.co.uk

---

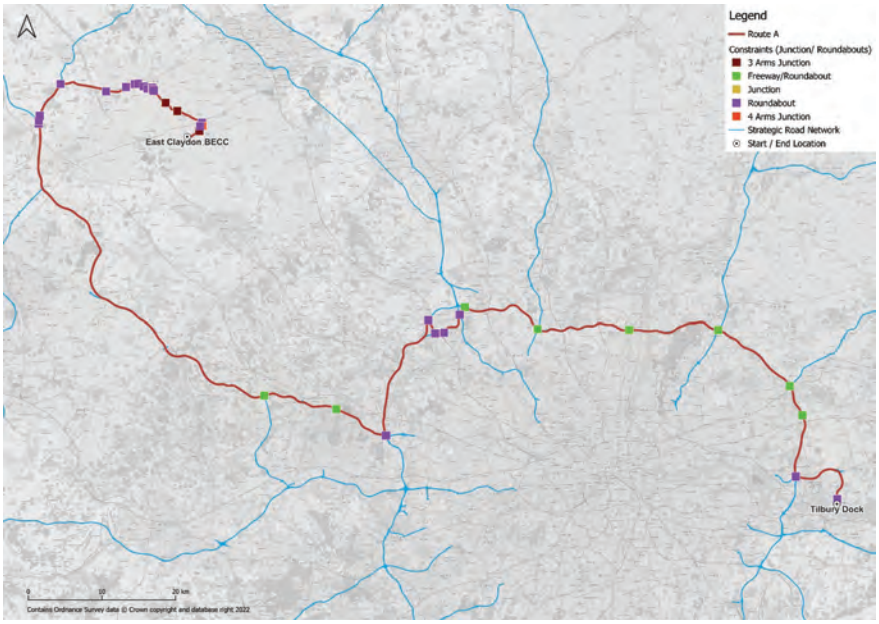
**From:** Lott, Matthew <Matthew.Lott@wsp.com>
**Sent:** 11 December 2024 12:07
**To:** Nicolas Hyde <Nicolas.Hyde@nationalhighways.co.uk>; Mary Stanton <Mary.Stanton@nationalhighways.co.uk>
**Cc:** Kaddoussi, Aida <Aida.Kaddoussi@wsp.com>
**Subject:** Abnormal loads movement advisory

Hi Nick and Mary

How are you both?

My colleague Aida is working on a project that looks at moving Transformers from Tilbury dock to XXXX

We were wondering if a “Pre-check” could be done for the route below? (rather than create a phantom ESDEL booking).




Exit Tilbury Docks, connecting to the **A1089**.
From the A1089, merge onto the **A13** in an anticlockwise direction.
Continue along the A13, then take a right turn at the Mardyke Junction to join the **M25**.
On the M25, continue through several junctions, crossing Junctions 25, 28, 27, and 26, including the Waltham Cro Interchange, until you reach Junction 23.
Continue **M25** until you reach **Junction 21A**, where you'll take a left turn onto the **A405**.
Proceed past Junction 6 and take a right turn at the Leavesden Green Roundabout onto the A41.
Stay on the **A41**, and upon reaching Hempstead Roundabout, take a right turn to continue on the A41.
At Junction 20, turn left to rejoin the **M25**. Continue on the M25 and then take a right turn at **Junction 16** to join the
On the M40, pass the Beaconsfield Interchange and Handy Cross. Continue further to cross Junction 10 and Bayn
At Barleymow, take a right turn to enter the **A421**. Follow the A421, crossing Tingewick, Radclive, Gawcott, and Os
Roundabout, take a right turn to enter the **A413**.
Stay on the **A413**, passing Needlepin Way, then take a right turn from High Street/A413 onto **Vicarage Road**. From **Road**, which leads to **Granborough Road**.
Continue along **Granborough** Road until you reach at the East Claydon Rd and Granborough Rd intersection. Fron **Claydon Rd**, to arrive at the destination East Claydon BECC, opposite the existing East Claydon Substation.

The movement itself won't be till Late spring/summer 2025, but wanted to be able to advise them to them the most appropriate route/method to moving the Transformer

Would we be able to have a quick call to discuss?

**Kind Regards**
**Matthew Lott MSc. BSc. (Hons) CMILT**
**(+44) 07557 324200**
Associate, Freight and Logistics team
8 First Street
Manchester
M15 4RP

wsp.com

**Chair of the ITS UK Freight Forum**

**Co-Chair of the CILT's Northwest Committee**



***National Highways Limited | General enquiries: 0300 123 5000 |National Traffic Operations Centre, 3 Ridgeway, Quinton Business Park, Birmingham B32 1AF*** |
https://nationalhighways.co.uk | info@nationalhighways.co.uk

*Registered in England and Wales no 9346363 | Registered Office: Bridge House, 1 Walnut Tree Close, Guildford, Surrey GU1 4LZ*

**Kirby, Lee**

**From:** Abloads <Abloads.Contact@connectplusm25.co.uk>
**Sent:** 28 January 2025 06:56
**To:** Kaddoussi, Aida
**Cc:** Mark Coomber; Mary Ajala; Abloads
**Subject:** RE: Consultation request - AIL route assessment

Hi Aida

At the present time there are no structures or constraints that would affect your move but as you are planning so far in advance we would need to reassess nearer the time.

We would request this is a daytime move as during nighttime hours there could be lane or complete closures which could affect your move.

We suggest once the date has been agreed please submit your move details with your journey time and date and we will assess and respond.

Regards

Shelly

Electronic service delivery for abnormal loads

esdal²

Area 5 M25 portal of choice

https://www.gov.uk/esdal-abnormal-load-notification


Connect Plus Services

**Shelly Newnham**
Network Occupancy and Abnormal Load Coordinator

Working hours Mon – Fri 8am until 4pm

**Mobile number 07436303365**

Connect Plus Services Direct line: 020 3386 8963
**Network Occupancy and Abnormal Load Coordinator**
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***"Through teamwork and collaboration, with better planning of our works, we will reduce roadspace use by maximising the shared use of all closures on the Network"***

---

**From:** Kaddoussi, Aida <Aida.Kaddoussi@wsp.com>
**Sent:** 27 January 2025 16:44
**To:** Abloads <Abloads.Contact@connectplusm25.co.uk>
**Subject:** Consultation request - AIL route assessment

Dear all,

I hope you are well. I am Aida Kaddoussi, I'm part of WSP's Freight and Logistics team.

We have been commissioned by Statkraft UK Limited to prepare an Abnormal Indivisible Load assessment as part of a full planning application for a proposed 'Greener Grid Park' on East Claydon Road, East Claydon, Buckinghamshire. The development includes a 500MW Battery Energy Storage System (BESS), located adjacent to the existing East Claydon substation. We are consulting with your office regarding a planned movement of four large-scale transformers to the site, each with a net weight of 117.5 tonnes. The transformers will be transported on a 14-axle vehicle (tractor + trailer configuration) under STGO Category 3. The AIL deliveries are scheduled for June and July 2029.

The route involves traveling on the M25 through Area 5, beginning at the Mardyke Junction (A13/M25) and proceeding anticlockwise through key sections, including Junctions 25, 28, 27, and 26, before exiting at Junction 23.

The vehicle configuration includes:

- 14-axle articulated system with a GVW of approximately 150 tonnes.
- Dimensions: Length – 26.420m, Width – 3.0m, Height – 3.408m.
- Load: 4 x 185 MVA transformers, each 117.5 tonnes net weight.

We kindly request your feedback/comments on the suitability of this section of the M25 for the proposed vehicle configuration and load, particularly in terms of any infrastructure constraints, or restrictions that could affect the transport, and whether any mitigation/traffic management measures are recommended/needed for safe passage.

Please let me know if you require additional details. Happy to set up a call to discuss further if easier.

Thanks for your assistance, and I look forward to hearing from you.

Kind regards,

Aida

**Aida Kaddoussi**
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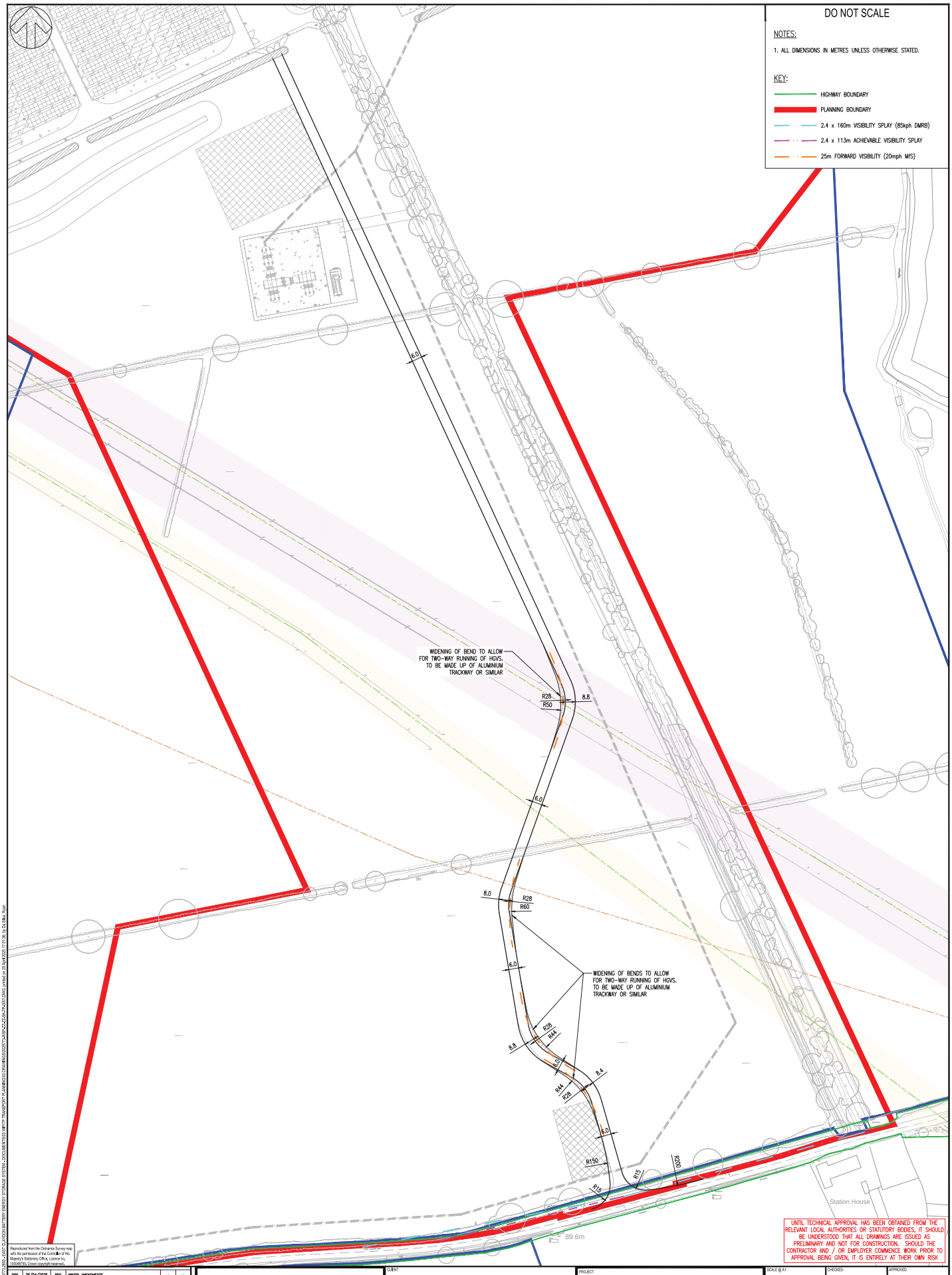
# Appendix B – Construction Vehicular Access and Swept Path Analysis




UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES OR STATUTORY BODIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR AND / OR EMPLOYER COMMENCE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT THEIR OWN RISK



| REV | DATE | BY | DESCRIPTION | CHK | APP |
|---|---|---|---|---|---|
| P06 | 25/04/2025 | RDS | MINOR AMENDMENTS | LK | LK |
| P05 | 23/04/2025 | RDS | ARCHITECT'S LAYOUT UPDATED | LK | LK |
| P04 | 07/04/2025 | RDS | BACKGROUND UPDATED | LK | LK |
| P03 | 16/12/2024 | RDS | LAYOUT AND TRACKING AMENDED | LK | LK |
| P02 | 11/12/2024 | RDS | ADDITIONAL TOPOGRAPHICAL SURVEY ADDED | LK | LK |

DRAWING STATUS: S2 - FOR INFORMATION

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62-64 Hills Road
Cambridge
CB2 1LA, UK
T+ 44 (0) 1223 558 050
F+ 44 (0) 1223 558 051
wsp.com

CLIENT: STATKRAFT

PROJECT: EAST CLAYDON BATTERY ENERGY STORAGE SYSTEM

ARCHITECT:

TITLE: CONSTRUCTION ACCESS GENERAL ARRANGMENT

| SCALE @ A1: | CHECKED: | APPROVED: |
|---|---|---|
| 1:1000 | LK | LK |

| PROJECT No: | DESIGNED: | DRAWN: | DATE: |
|---|---|---|---|
| 0029733 | RDS | RDS | April 25 |

DRAWING No: 0029773-WSP-ZZ-ZZ-SK-TP-0007 REV: P06