# Abnormal Indivisible Load Access to Proposed Battery Energy Storage System (BESS) Site at East Claydon

Prepared for Statera Energy Limited

Shaftesbury House, High Street, Eccleshall, Staffordshire ST21 6BZ, UK
Tel: +44 (0)1785 850411

wynnslimited.com
Registered in England & Wales No. 3162297

| NAME | | SIGNATURE | DATE |
|---|---|---|---|
| Prepared by: | Emily Key | [redacted] | 03.04.23 |
| Checked by: | Peter Wynn | | 04.04.23 |
| Approved by: | Peter Wynn | | 04.04.23 |

## DISCLAIMER

Any conclusions, calculations or findings presented here should not be changed or altered.

## COPYRIGHT AND NON-DISCLOSURE NOTICE



## THIRD PARTY DISCLAIMER

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by Wynns Ltd at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. Wynns Ltd excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

## DOCUMENT REVISIONS

| Issue | Date | Details |
|---|---|---|
| 0 | 04.04.23 | AIL Report |
| 1 | 08.09.23 | Addition of Vertical Negotiability Information |
| 2 | | |

## Contents

## Executive Summary

Statera Energy has requested a report into the heavy load access requirements to a proposed Battery Energy Storage Site (BESS) at East Claydon. The delivery requirements will be for 1 transformer at a transport weight of 112te nett. As the Transformer weight is 112te nett, it will be able to be carried under STGO Category 3 regulations which allow movement from any UK port, subject to the standard STGO notification procedure. Therefore, no Specific marine investigations have been undertaken in terms of delivery requirements.

During consultations with National Highways, when the weight of the transformer was advised initially as 150 tonnes nett, the National Highways (NH) Abnormal Loads Team provided an Agreement in Principle (AiP) dated 01.03.23 which confirms that the preferred port of delivery is Tilbury Docks (AIP Reference 849).

Notwithstanding the above, Wynns have a Special Order Agreed Route from National Highways detailing the route from M25 Junction 21a, Anti-clockwise direction to East Claydon Battery Storage Site, Hogshaw Road, Buckinghamshire. This route has been cleared by all affected structural authorities and is the most suitable route in terms of negotiability to the proposed East Claydon Battery Energy Storage Site.

The preferred route from Tilbury Docks to East Claydon BESS is detailed below.
Exit Tilbury Docks
Turn Left A126, St Andrews/ A1089 Dock Approach Road
Turn Left A13 and join M25 at Junction 20
Turn Right, M25 anti-clockwise.
Continue M25 anti-clockwise using exit and re-entry slip roads at Junction 29 and 28
Continue M25 to Junction 21A.
Turn Left A405
Continue A41
Continue M25 anticlockwise.
Continue M25 to Junction 16
Turn right and continue M40.
Continue M40 to Junction 10
Turn Right A43.
Continue A43.
Turn right A421.
Continue A421
Turn Right A413.
Continue A413
Turn right, Vicarage Road
Turn left, Burleys Road
Continue Granborough Road
Caution: Restrictive bridge over Claydon Brook to the north of Granborough
Continue Winslow Road
Turn right Hogshaw Road

Onsite access requirements are not discussed within this report which ends at the proposed access point for the new site.

This report is intended to be a summary of the Abnormal Indivisible Load (AIL) route access at the current time and is not a guarantee that the route will be cleared in the future.

## 1. Introduction

1.1. The contents of this report include land transport feasibility investigations into achieving access to the proposed Battery Energy Storage Site (BESS) at East Claydon for Special Order movements of above 150te gross loads associated with the future upgrade scheme.

1.2. The weight considered in these investigations is 150te nett which was initially advised by Statera Energy to be the anticipated weight of the transformer required and the following dimensions:

| | |
|---|---|
| Length | 10000mm |
| Width | 3400mm |
| Height | 4500mm |
| Weight | 150te nett |

1.3. Statera have since advised in March 2023 that the weight of the transformer has been reduced to 112 tonnes nett. Therefore, subject to the nett height of the transformer it would be able to be delivered within STGO Category 3 Regulations, which allow movement from any UK port, subject to the standard STGO notification procedure.

1.4. This report is a summary of the status of the current AIL access investigations to the proposed new site at East Claydon and seeks to present the situation as it currently stands. The issues highlighted in this report as risks to achieving AIL access in the future will need to be revisited and progressed as the scheme develops.

1.5. This investigation considers the possible land transport routes, initially from Tilbury Docks and the M40. Formal movement applications will be necessary upon appointment of a haulage contractor by the transformer manufacturer.

1.6. A detailed appraisal of the technical requirements for handling transformers on site will be required as the scheme develops in the future. No site walkover has been undertaken as part of this specific work and the survey detailed ends at the proposed site entrance.

1.7. The report is intended to be a summary of the AIL route access at the current time and is not a guarantee that the route will be cleared in the future. Specific movements will need to be assessed at the time on an individual basis. If any further information is required, it is available on request.

1.8. The report considers access to the proposed Battery Energy Storage Site (BESS) at East Claydon in terms of AIL transportation only.

## 2. National Highways Agreement in Principle and Legislative Requirements

### 2.1. *Definition of Abnormal Indivisible Load (AIL)*

2.1.1. The Department for Transport, of which National Highways (NH) is a government-owned company with responsibility for managing the core road network in England, state that the strict definition of an AIL refers to a load which cannot, without undue expense or risk of damage, be divided into two or more loads for the purpose of carriage on roads and which, owing to its dimensions or weight, cannot be carried on a vehicle which complies in all respects with the 'standard vehicle regulations' these are:

- The Road Vehicles (Construction and Use) Regulations 1986 (as amended)
- The Road Vehicles (Authorised Weight) Regulations 1998 (as amended)
- The Road Vehicles Lighting Regulations 1989 (as amended).

2.1.2. All equipment should be stripped of their ancillaries before they are transported. HE will only accept that further dismantling is not required where it cannot be economically achieved due to the requirement for its construction within specific factory environments or where extremely high tolerances have to be maintained.

### 2.2. *Legislation*

2.2.1. Conventional heavy goods vehicles have an operating weight limit of 44 tonnes. The category known as abnormal indivisible loads (AIL) covers those vehicles where the gross weight exceeds 44 tonnes. An Abnormal Load is defined as that which cannot be carried under Construction and Use (C&U) Regulations. Items which, when loaded on the load carrying vehicle exceed the weights encompassed by the C&U Regulations, but do not exceed Special Order Permission Limits, are governed by Special Types General Order (STGO) categories 1 to 3 depending on size.

2.2.2. Where dimensions exceed 6.1m in width, 30m in rigid length or 150 tonnes gross weight, Special Order from NH is required.

2.2.3. Special Order category AIL movements are authorised by NH Abnormal Loads team based in Birmingham.

2.2.4. STGO loads orders grant consent for loads that satisfy the following criteria:

| | |
|---|---|
| Category 1 weight | 44 – 50 tonnes and 11.5te axle weights |
| Category 2 weight | 50 – 80 tonnes and 12.5te axle weights |
| Category 3 weight | 80 – 150 tonnes and 16.5te axle weights |
| Width Restriction | 3.0m (C&U) –5m (VR1 Required)– 6.1m (SO required) |
| Length Restriction | 18.65m (C&U) – 30.0m (SO required) |

### 2.3. *Water Preferred Policy Requirements*

2.3.1. The Department for Transport has adopted a 'water-preferred' policy for the transport of AILs. This means that, where an application is sought for the movement of a Special Order or VR1 category load (more than 5.0m width) by road, the Department, via NH, will turn down the application where it is feasible for a coastal or inland waterway route to be used

instead of road. NH advise that this decision is based on a number of factors including whether the load is divisible, the availability of a suitable route, the amount of traffic congestion that is likely to be caused and the justification for the load to be moved. The NH Abnormal Loads Team is the department responsible for the authorisation of Special Order AIL's and government policy is that the closest available port of access should be used for the delivery of such oversize items.

2.3.2. In consideration of the water-preferred policy to maximise the use of water for the movement of Special Order (Above 150te gross) AIL's wherever practicable, Wynns has sought confirmation from NH as to the port of access they would require to be utilised for the delivery of transformers to Proposed East Claydon BESS.

2.3.3. NH have advised (letter dated 01.03.23, AIP reference 849) that Special Order deliveries to Proposed East Claydon BESS should be considerate of access from Tilbury Docks.

## 3. Abnormal Indivisible Load Movements - Highways Act 1980

### 3.1. *Recovery of Excessive Maintenance Costs - Section 59 Agreements*

3.1.1. Section 59 of the Highways Act 1980 allows the highways authority to raise a charge against a user of the highway to cover repair works necessitated by excessively heavy or unusual loads being carried on the road by that user. This provision is typically used where the passage of heavy lorries to and from industrial premises or building sites causes excessive damage to the road, requiring expensive remedial works by the Council. Under Section 59, the Council may charge on such costs to the organisation responsible for the damage, the amount payable being calculated as the excess cost of repair compared to normal maintenance costs for the road. Rather than wait to be charged such excessive repair costs, the Council and the third party may enter into an agreement under Section 59 whereby the third party accepts liability and makes payment of an agreed sum to the Council to cover the excessive repair costs.

3.1.2. The removal and replacement of street furniture required for the mobilisation of out of gauge vehicles into existing sites then these are generally managed under Temporary Traffic Regulation Order (TTRO) and Street Works Legislation. These are normally, but not necessarily, organised by the haulage contractor. These requirements are generally to ensure that the supervisors and operatives are competent and that the works will be carried out to a prescribe standard with the appropriate traffic management in place. In some circumstance the Highway Authority or Local Authority will insist that their preferred contractors will carry out such work.

## 4. Vertical Negotiability Considerations

4.1.1. Vertical Negotiability: The trailers can be raised/lowered at individual axles lines, of approximately 0.3m in both directions from nominal carry height. As the vertical negotiability is taken across the full wheelbase of the trailer, and the trailer having a wheelbase of 13.5m. In the case of Granborough Road Bridge (OS Grid Reference SP 76461 26412) having a span of 11m; this puts the wheelbase of the trailer at a greater length than the bridge, therefore taking the worst case point of entry/exit and height of the peak on the bridges curve, for the worst case side; the difference in height between worst case points sits around 0.57m (90.08 – 89.51 = 0.57) which puts you within the effective 0.6m available across the trailer.

4.1.2. Refer to Appendix 2 – Drawings, which includes a full Swept Path Assessment and Summary, inclusive of the drawings carried confirming negotiability. Within the summary, Refer to Image 1 – Survey Data which shows the elevations of the bridge which were used to confirm the trailer suitability.

4.1.3. Refer to Appendix 2 – Drawings, which includes the survey drawings provided by MK Surveys, sheet number 5-1 shows the full survey data for Granborough Road Bridge (OS Grid Reference SP 76461 26412).

## 5. Transport Configurations

5.1. Based on the information available at the start of investigations the nett weight of the transformer considered for delivery to Statera Energy's East Claydon BESS, and therefore included within this report is 150te. We have however since been updated in March 2023 with the weight of the transformer being 112te nett.

5.2. Due to the size of the transformer initially advised, it is not possible to transport them under the regulations governing Construction and Use (C&U) vehicles (44 tonne gross, 18.65m long and 2.9m wide).

5.3. As stated, the movement of abnormal indivisible loads is controlled by the requirements of the Department for Transport (DfT) who stipulate varying notice procedures and notice period's dependent upon overall dimensions.

5.4. Based on information available at the time of structural investigations it was assumed that the road transport configuration required for routes to the site at East Claydon would consist of 2 ballast tractors, a 14-16 axle girder frame trailer with axle loads in the region of 15.11te – 17.26te over a track width of a minimum of 3m.

5.5. With the reduction of the transformer nett weight to 112te and assumed at a height that can transported on a multi axle flat-top trailer, it would therefore technically possible to be transported on a 10-axle flattop trailer with 1 ballast tractor required. This would also therefore allow for the transformer to be carried under STGO Category 3 Regulations, following the transporting vehicles gross weight being below 150te as per Indicative Transport Drawing Number 22-1121.TC02 in Appendix 2.

5.6. There are numerous haulage contractors currently operating trailers of sufficient capacity for the proposed 112te unit in the UK electricity supply industry with equipment able to carry a transformer of this weight and with the knowledge and previous experience to position the unit correctly on the plinth.

5.7. The specific trailer details used in the structural investigations are not included in this report due to the information being commercially sensitive to each haulage contractor and thus it is recommended it is not forwarded to other parties. However, specific trailer information can be made available under separate cover if required.

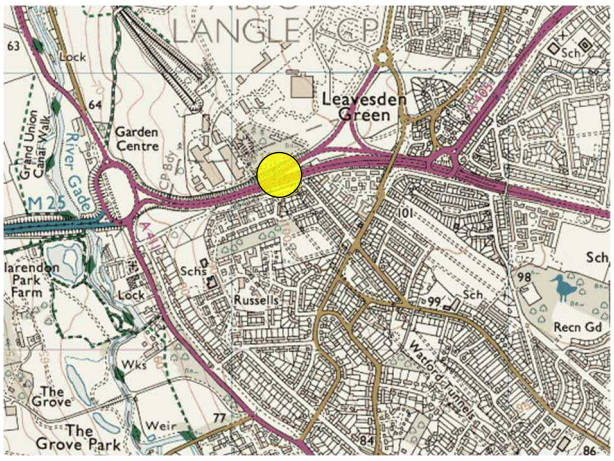
## 6. Structural Route Information

6.1. The route considered in the structural checks to East Claydon from Tilbury Docks is shown below. It is assumed for the purposes of the current study that the well-established AIL route from Tilbury to the M25 at junction 21A is acceptable as it is regularly used for AILs to National Grid substations. The route is also illustrated in the map appended to this report. Structural Investigations were therefore conducted starting from M25 Anti-Clockwise Junction 21A (OS Grid Reference: TL 13076 02841)

Exit Tilbury Docks
Turn Left A126, St Andrews/ A1089 Dock Approach Road
Turn Left A13 and join M25 at Junction 20
Turn Right, M25 anti-clockwise.
Continue M25 anti-clockwise using exit and re-entry slip roads at Junction 29 and 28
Continue M25 to Junction 21A.
Turn Left A405
Continue A41
Continue M25 anticlockwise.
Continue M25 to Junction 16
Turn right and continue M40.
Continue M40 to Junction 10
Turn Right A43.
Continue A43.
Turn right A421.
Continue A421
Turn Right A413.
Continue A413
Turn right, Vicarage Road
Turn left, Burleys Road
Continue Granborough Road
Caution: Restrictive bridge over Claydon Brook to the north of Granborough
Continue Winslow Road
Turn right Hogshaw Road

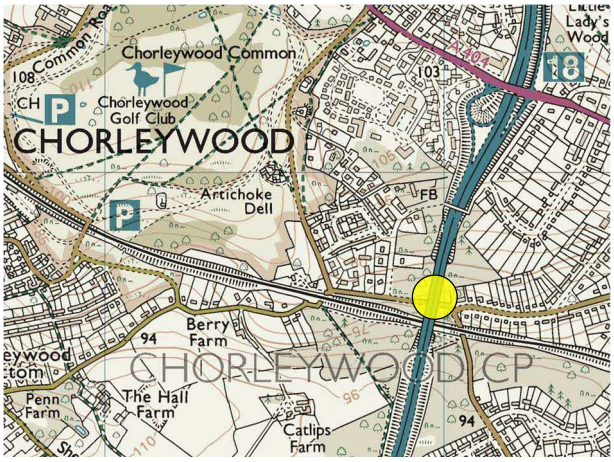
The Following Structural Authorities were contacted for comment.

- Buckinghamshire Council
- Area 5, Connect Plus
- Hertfordshire County Council
- M40 Denham to Warwick DBFO
- National highways Area 7
- Network Rail
- Network Rail LC & Rail over Road
- North & West Northants
- Oxfordshire County Council




Location Plan 1
LEC1/B/67S-4 & LEC1/B/67F-4, North Western Avenue – Network Rail
OS Grid Reference: TQ 09182 99616

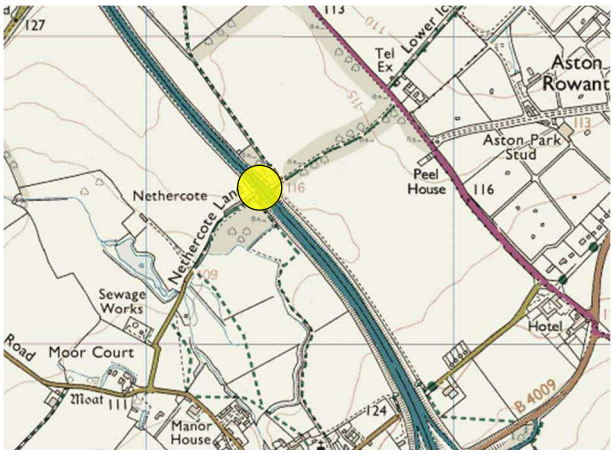
6.1.1. Network Rail advise the vehicle is required to travel at a FULL CAUTION whilst crossing the North Western Avenue Structure shown above in Location Plan 1 and advise that a Police Escort is required.




Location Plan 2
M25 – SK 12129 – Berry Lane Viaduct – Area 5 Connect Plus
OS Grid Reference: TQ 03968 95636

6.1.2. Area 5 Connect Plus advised the vehicle must travel at a crawl speed whilst crossing Berry Lane Viaduct, between Junction 18 and 17 of the M25, as shown above in Location Plan 2. The weight of the transport vehicle requires independent certification for the axle weights to be issued prior to the movement.

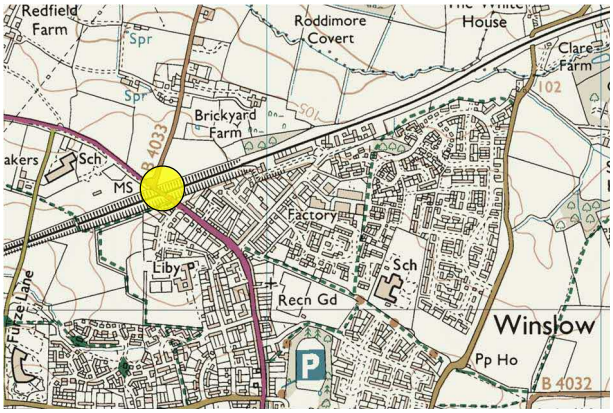
6.1.3. Hertfordshire County Council authority stipulate the transporting vehicle will proceed at a reduced height when passing under structures along the route, where appropriate and request that the load is not moved within the areas road network during morning and evening peak periods of Monday - Friday.




Location Plan 3
3571 Nethercote Lane U/B - M40 Denham to Warwick DBFO
OS Grid Reference: SU 71378 98489

6.1.4. M40 Denham to Warwick DBFO advised Nethercote Lane underbridge is currently rated at 120te. They did however advise that so long as axle weights are below 15.1te per axle, it will pass the weight constraints for all the structures on the M40, however the height of the vehicle must be reduced to lower than 4.87m for the entire movement on the M40 DBFO network.

6.1.5. North and West Northants Council authority stipulate the transporting vehicle will proceed at a reduced height when passing under structures along the route, where appropriate and request that the load is not moved within the area's road network during morning and evening peak periods of Monday - Friday.




Location Plan 4
OXD/B/18 Buckingham Road – Network Rail
OS Reference: SP 76689 28348

6.1.6. Network Rail initially advised the vehicles were unable to cross their bridge at Winslow as shown in Location Plan 4, however following further assessment their engineers advised with axle weights in the region of 14.5te would be able to pass with FULL CAUTION applied. The transporting vehicle will therefore be required to travel down the centre line of the road, with no changing of gears or sudden breaking whilst crossing the structure.

6.1.7. As per the agreed route in Appendix 3, the 16-axle girder frame vehicle was accepted with axle weights of 15.11te.

6.1.8. However, the 14-axle girder frame vehicle submitted for consideration was rejected with axle weights of 17.26te.

6.1.9. Appendix 2 flattop trailer indicative transport drawing - 22-1121.TC02 – as shown in Appendix 2, shows that the axle weights with the 112te transformer would be in the region of 14.44te and we therefore do not foresee any issues arising for the vehicle configuration.

6.1.10. Buckinghamshire Council authority stipulate the transporting vehicle will proceed at a reduced height when passing under structures along the route, where appropriate and request that the load is not moved within the area's road network during morning and evening peak periods of Monday - Friday.

6.1.11. Oxfordshire County Council stipulate the transporting vehicle will proceed at a reduced height when passing under structures along the route, where appropriate and request that the load is not moved within the area's road network during morning and evening peak periods of Monday - Friday.

6.1.12. Network Rail LC and Rail over Road have no objections to the proposed route with respect to Network Rail owned Rail over Road bridges or Level Crossings, however it should be noted that Network Rail only checks the load carrying capacity of Road over Rail bridges but do not check anything else including the load carrying capacity of level crossings, clearance to overhead wires at level crossing, clearance to bridge parapets and clearance under a rail bridge.

6.1.13. With the reduced transformer weight to 112te nett, Wynns do not foresee any issues arising following the structural checks conducted with the girder frame trailers due to the reduction in overall weight and axle weights.

## 7. Route Negotiability Information


Photograph 1

A43 northbound. Single carriageway road in both directions. The vehicle will have left the M40 at junction 10 and negotiated the three roundabouts prior to joining the A43, all of which are negotiable.


Photograph 2

A43 & A421 Roundabout. Vehicle enters from behind the camera and turns right. Negotiable for 16 and 20 axle frame trailers.


Photograph 3

A421 heading east. Single carriageway road in each direction. Vehicle will occupy part of the oncoming traffic lane. Liaison with the police and appropriate escorts required.

Photograph 4

A421. New HST works crossing the A421 near Finmere. The bridge is not signed so will be of sufficient height to allow passage of the loaded vehicle. Bridges under 5100mm should all be signed as such.

Photograph 5

A421 & A4421 roundabout at Finmere. Negotiable.

Photograph 6

The A421 becomes a dual carriageway from the Finmere roundabout for approximately 1 mile.

Photograph 7
A421 roundabout east of Tingewick. Vehicle enters from behind the camera. Negotiable.

Photograph 8
A421. One of a further 5 roundabouts towards Buckingham. All are negotiable with street furniture removal limited, and subject to the final transportation length and width.

Photograph 9
Roundabout of the A421 & A413 towards Winslow. Vehicle enters from behind the camera. Negotiable.

Photograph 10

Needlepin way roundabout, A413. The chevrons on the roundabout will require removal, particularly for girder frame trailers. OS Grid Reference: SP 70267 32719

Photograph 11

Second roundabout leaving Buckingham on the A413. Surveyor recommends taking this roundabout in contraflow under appropriate escort. OS Grid Reference: SP 70373 32539

Photograph 12

A413 south from Buckingham and towards Winslow. Single carriageway in either direction. Vehicle will occupy the majority of the highway and appropriate police liason and escorting will be required.

Photograph 13
A413 Padbury Bridge. Vehicle approaches from behind the camera.

Photograph 14
A413 Padbury. Vehicle will occupy the majority of the highway and careful liaison with the local and police authorities will be necessary to ensure parked vehicles do not hinder passage.

Photograph 15
Photographs 15,16 & 17 – A413 south of Padbury. Vehicle will occupy the majority of the two-lane carriageway.

Photograph 16

Photograph 17


Photograph 18

A413 entering Winslow Rail Bridge on Buckingham Road into Winslow
OXD/B/18 Buckingham Road – Network Rail bridge as per Location Plan 1 in Section 5.

Photograph 19
A413 entering Winslow. Vehicle enters from behind the camera. Note centre island street furniture which will require removal subject the final overall load width.
OS Grid Reference: SP 76940 28133

Photograph 20
High Street Winslow. Police and local authority liaison will be required to manage on road parking of vehicles.

Photograph 21
Winslow High Street. Comments as per photo 20.

Photograph 22
A413 Winslow High Street junction with Verney Road. Vehicle enters from behind the camera and turns right, exiting to the right of the picture. OS Grid Reference: SP 76988 27738

Photograph 23
View in reverse direction looking back towards Winslow High Street. Note the street furniture which can be seen on the left. OS Grid Reference: SP 76988 27738

Photograph 24
Verney Road. Note centre island furniture.

Photograph 25
Junction of Verney Road and Burley's Road. Vehicle enters from behind the camera and turns left, exiting to the left of the picture. OS Grid Reference: SP 76673 27690

Photograph 26
View looking back toward Verney road from Burley's Road. It may be found that it is better for the vehicle to go past the entrance to Burley's Road and reverse into Burley's Road although and as can be seen, this may require the removal of the lamp post seen on the left of the picture. OS Grid Reference: SP 76673 27690

Photograph 27
Granborough Road. The vehicle will occupy the complete carriageway and liaison will be needed to ensure parked vehicles do not impede movement.

Photograph 28

Granborough Road. The vehicle will be occupying the complete carriageway all though to Granborough and beyond and careful liaison will be needed with the police and local authorities for traffic management purposes.

Photograph 29

Unclassified Granborough road. The right turn for National Grid East Claydon substation can be seen in the middle distance.

Photograph 30

Granborough road bridge over Claydon Brook. Road narrows to single carriageway and is: 3.6 metres wall to wall. 3.2 metres kerb to kerb with a wall height of 1.1 metres. SPA completed (Appendix 2). Refer to Section 4 on vertical negotiability for the hump in the road.
OS Grid Reference: SP 76461 26412

Photograph 31
Granborough road bridge over Claydon Brook. Road narrows to single carriageway and is: 3.6 metres wall to wall. 3.2 metres kerb to kerb with a wall height of 1.1 metres. SPA completed (Appendix 2). Refer to Section 4 on vertical negotiability for the hump in the road.
OS Grid Reference: SP 76461 26412

Photograph 32
Granborough road bridge over Claydon Brook. Road narrows to single carriageway and is: 3.6 metres wall to wall. 3.2 metres kerb to kerb with a wall height of 1.1 metres. SPA completed (Appendix 2). Refer to Section 4 on vertical negotiability for the hump in the road.
OS Grid Reference: SP 76461 26412

Photograph 33
Granborough road entering Granborough village. Vehicle continues to occupy the complete carriageway.

Photograph 34
Right hand bend on Winslow Road, Granborough. Negotiable but with full carriageway occupation.

Photograph 35
Granborough just before the right turn for Hogshaw Road. Vehicle occupies full carriageway.


Photograph 36
Junction of Winslow Road and Hogshaw Road, Granborough. Vehicle enters from behind the camera and turns right. SPA completed (Appendix 2). OS Grid Reference: SP 76656 25209


Photograph 37

View in the opposite direction. Note overhanging foliage, the telegraph pole and street furniture which will require cutting back / removal.


Photograph 38

Hogshaw road heading west. There are two bends (pictures 38 & 39) which will require hedge cutting, subject to the time of movement. SPA completed (Appendix 2).
OS Grid Reference: SP 76412 25171


Photograph 39

Hogshaw Road. Comment as picture 38. SPA completed (Appendix 2).

Site access is off this road to the right.