

SPICER HILL WIND FARM,
BARNESLEY

Abnormal Loads

Access Study

Client: Arcus Renewable
Energy Consulting Ltd.

Tarmesar Traffic Consultants Limited

16 Mulberry Close
Charlton Park Road
Charlton
London
SE7 8UB

Tel: 07951 958 118

Ref: 0636/02
10th March 2009

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SECTION 1: INTRODUCTION

- 1.1 Tarmesar Traffic Consultants Ltd. has been commissioned by Arcus Renewable Energy Consulting Limited to undertake an abnormal loads route access study to assess the transportation of wind turbine components to the proposed Spicer Hill Wind Farm, near to Thurlstone. The site is located approximately 2 kilometres northwest of Thurlstone and the A628. It is proposed to construct three Enercon E70 (70 metre rotor) wind turbines on the site.
- 1.2 This report assesses a delivery route from the M1 to the site. It also identifies and illustrates areas where widening, removal of street furniture, land take and other works would be required to enable the passage of the turbine delivery vehicles (TDVs).

Methodology

- 1.3 A review of Ordnance Survey Explorer (1:10,000) mapping was undertaken to determine the most feasible route from the M1. The following criteria were used as a general guide in selecting the route:
- i. Avoidance of horizontal deflections greater than 40 degrees;
 - ii. Avoidance of excessive gradients; and to a lesser extent; and
 - iii. Direct link to the motorways and trunk roads.
- 1.4 A detailed route inspection was undertaken during February 2009. This involved on-site measurements being undertaken. Vehicle swept path analysis has been undertaken to identify areas of widening or other road improvements to enable the passage of the expected abnormal loads. These vehicles have been modelled to assume a worst-case scenario by being modelled without being manually overridden.
- 1.5 Details pertaining to the highway boundary have not been obtained from Barnsley Metropolitan Borough Council (MBC), thus in order to determine the impact on third party land it has been assumed that fence lines, walls and hedgerows define this boundary.

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- 1.6 For the purposes of the assessment the following TDV configuration has been assumed and expects that the blades would be transported in HJ frames. The vehicle configuration for the blades is shown on drawing 0636/DET/01.

Blades

1 blade per load – 9 deliveries

- Blade length: 33m
- Load Weight: 6 tonnes
- Overall Weight: approximately 40 tonnes
- Overall length: approximately 37m

- 1.7 In addition to the turbine TDVs, at least one heavy lift (400-800T) crane and one smaller crane would require access to the site.

SECTION 2: TURBINE DELIVERY ROUTE

2.1 Government water-preferred transport policy advises that where possible, abnormal loads should be transported by water to the nearest suitable port. It is possible that the ports of Hull or Goole could be utilised. In any event, it is expected that the route from the port(s) would converge on the M1. The route from the M1 to the site is described below and illustrated in Figure 1.





M1 to Site (nr Thurlstone)




- (i) From Junction 36 of M1 proceed south along A61;
- (ii) Turn right (west) onto A616;
- (iii) Turn right (east) onto A628, Grid Ref. SE 198 014;
- (iv) Turn left (north) onto Royd Lane, Grid Ref. SE 221 032;
- (v) Proceed to site.

SECTION 3: DELIVERY ROUTE ASSESSMENT

- 3.1 This section reviews and assesses the constraints identified during the site visit.
- 3.2 Vehicle swept path analysis (SPA) for TDVs transporting 30 metre turbine blades has been produced at constrained locations along the delivery route, namely at junctions with a deflection greater than 40 degrees. Locations of these assessment locations are shown on Figure 2. SPA drawings are included at Appendix B. The TDVs have been modelled using information received from several vehicle operators and trailer manufacturers across the UK and Europe. The SPA allows an assessment to be made as to whether that particular section of the route is negotiable by the TDVs and identifies any potential land take or widening requirements to permit the vehicle movement.
- 3.3 The drawings illustrate vehicles using an automatic steering system that is linked between the tractor unit and trailer. The trailer's steering mechanism has the capability of being manually controlled as necessary on site to produce a less onerous path.
- 3.4 Where 'widening' is used within this report, it refers to land within the assumed highway boundary that would be required for levelling, resurfacing and strengthening. Details of the highway boundary have not been acquired at this stage.
- 3.5 Walls, fence lines, street furniture locations, and verges are recorded at the time of the site visit and Tarmesar Traffic Consultants Ltd. cannot be held responsible for any discrepancies relating to newly installed items or road alterations subsequent to the site visit undertaken in February 2009.
- 3.6 Due to the length of the expected TDVs, an escort or pilot vehicle would be required to accompany and precede the convoy. It has therefore been assumed that the full width of the carriageway or any contra-flow movements would be permitted along the route during the delivery of the blades.

Table 2: Route Assessment

Grid Ref.	View	Location / Comment
SE 349 001	 <p data-bbox="363 725 756 757">Northbound off-slip looking north</p>	<p data-bbox="810 398 1235 430"><u>Location 1: Junction 36 M1 / A61:</u></p> <p data-bbox="810 443 1104 474"><u>Proceed west onto A61</u></p> <p data-bbox="817 488 1378 748">i. This roundabout has a wide circulatory width while the M1 slip roads comprise of two lanes each. Widening or the removal of street furniture would not be required at this junction for the TDVs being considered.</p>
SK 337 990	 <p data-bbox="450 1115 670 1146">A61 looking south</p>	<p data-bbox="810 777 1104 808"><u>Location 2: A61 / A616:</u></p> <p data-bbox="810 822 1082 853"><u>Right Turn onto A616</u></p> <p data-bbox="810 866 1043 898"><u>Drawing 0636/T/01</u></p> <p data-bbox="817 911 1378 1077">i. SPA demonstrates that the TDVs could manoeuvre around this roundabout without the need of widening or the removal of street furniture.</p>
SE 198 014	 <p data-bbox="418 1507 702 1538">A616 looking northwest</p>	<p data-bbox="810 1169 1120 1200"><u>Location 3: A616 / A628:</u></p> <p data-bbox="810 1214 1082 1245"><u>Right Turn onto A628</u></p> <p data-bbox="810 1258 1043 1290"><u>Drawing 0636/T/02</u></p> <p data-bbox="817 1303 1378 1469">i. SPA demonstrates that the TDVs could manoeuvre around this roundabout without the need of widening or the removal of street furniture.</p>
SE 221 040	 <p data-bbox="450 1910 670 1942">A628 looking east</p>	<p data-bbox="810 1561 1193 1592"><u>Location 4: A628 / Royd Lane:</u></p> <p data-bbox="810 1606 1136 1637"><u>Left Turn onto Royd Lane</u></p> <p data-bbox="810 1650 1043 1682"><u>Drawing 0636/T/03</u></p> <p data-bbox="817 1695 1378 1951">i. SPA shows that widening would not be required at this junction. However, the TDV would overrun the central island along the A628, thereby requiring the temporary removal of two traffic sign bollards.</p>

Grid Ref.	View	Location / Comment
SE 202 047	 <p>Whitley Road looking west to access</p>  <p>Visibility east from access</p>  <p>Visibility west from access</p>	<p><u>Location 4: Whitley Road Site Access:</u> <u>Right Turn into Site</u> <u>Drawing 0636/T/04</u></p> <p>i. The location of the site access would maximise visibility to the east and west. The existing access would require upgrading in order to accommodate the TDVs and other construction vehicles.</p>

Route Assessment Overview

3.7 The Trunk Road network from the M1 Junction 36 to the site would be suitable in accommodating the lengths and weights of the TDVs. SPA demonstrates that all roundabouts along the A616 can be negotiated by the TDVs and would not require the removal of street furniture. The removal of street furniture would only be required at the junction of the A628 and Royd Lane at Thurlstone.

- 3.8 The site access would need to be upgraded and constructed to the local authority and turbine manufacturer specifications. Visibility from this location is unobstructed and should be acceptable to Barnsley MBC.
- 3.9 In summary, access by the TDVs would be possible and would require minor road widening at one location and street furniture removal at one location.

SECTION 4: SUMMARY & CONCLUSIONS

- 4.1 This report identifies that the transport of wind turbine components to the site is feasible along the routes assessed and would require further agreement with the Barnsley MBC and South Yorkshire Police.
- 4.2 The route assessment with SPA drawings demonstrates that the transport of the Enercon E70 turbine components along the delivery route is possible and would require the temporary removal of street furniture at one location. No major road improvements would be required along the A616 and A628.
- 4.3 There are a number of bends along the A628 and Royd Lane where the TDVs would be required to use the opposing lane, which would lead to some disruption to other road users. In order to minimise this impact, movements should be scheduled to avoid peak times. A police escort may need to manage oncoming traffic in these locations.

Recommendations

- 4.4 Ground preparation at the site access should be prepared for long-term usage due to the number of loads expected and the potential lengthy construction timescale. Barnsley MBC may require the site access points to be paved to their standards for the first 10-20 metres. Although unlikely at these locations, statutory undertakers whose equipment is in the vicinity of the site access should be consulted. This may identify that temporary protection measures are required. This is a standard procedure for access arrangements.
- 4.5 The swept path analysis has been conducted using modelled vehicles based on information received from several sources and modelled to assume a worse case scenario. It is recommended that a dry-run be undertaken prior to commencement of construction by the chosen haulier to ensure that their vehicles fall within the scope of the modelled vehicles. In addition, the vehicles modelled by the SPA could be manually overridden to produce a less onerous swept path once on site.

FIGURES

DRAWINGS