TECHNICAL APPENDIX A11.1: ABNORMAL LOADS SWEPT PATH ASSESSMENT REPORT
A11.1
Gorpley Wind Farm

Abnormal Load Route Access Report

Report
A11.1
Gorpley Wind Farm

Abnormal Load Route Access Report

Report

Contents Amendments Record

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1 **Introduction**

1.1 JMP has been commissioned by Arcus Renewable Energy Consulting Ltd to undertake an abnormal load assessment for a proposed Wind Farm development between Bacup and Todmorden, Rossendale, Lancashire.

1.2 The proposed development consists of 5 wind turbines (with a maximum 92 m rotor diameter) and associated infrastructure.

1.3 Turbine components will be manufactured off site and transferred to the site for assembly. This is described in more detail in Section 2 of this report. The largest component parts are the turbine blades which are approximately 45 metres in length. The assessment therefore will be based on a vehicle size capable of accommodating these components.

1.4 The assessment will utilise the computer programme AutoTrack 2009. AutoTrack is a swept path analysis tool that allows the modelling of steered vehicles and is used in combination with ordnance survey landline mapping. The assessment will use a rigid vehicle without the capacity for secondary rear steering. This will ensure a worst case assessment and will allow margin for error in the results.

1.5 Nonetheless when the component dimensions have been agreed, a ‘Test run’ will be undertaken from the commencement point of the route to site entrance. The test run will be completed with an empty trailer, so if required, the trailer can be ‘closed’ until it is past the hazard.

1.6 At this stage it is unclear from which Port the haul route will originate. Due to the location of the site, and its relative proximity to a number of Motorways, a large selection of ports would seem feasible. The most likely options would be from the west, the ports associated with Liverpool, or from the east, the port at Hull. Therefore it is intended to undertake the assessment from the Strategic Road Network (SRN) within the vicinity of the site. It is assumed that the road network from the port to the SRN will be suitable to accommodate abnormal loads given the nature of the roads purpose.

1.7 An extensive process has been undertaken to identify the most suitable route to the site. A high level assessment identified various routes that could be used to access the site. Through detailed swept path assessment and discussions with the relevant authorities this has been narrowed down to two potential routes. The routes to be assessed are:

<table>
<thead>
<tr>
<th>Table 1.1 Routes to be Assessed</th>
</tr>
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<tbody>
<tr>
<td><strong>ROUTE 1</strong></td>
</tr>
<tr>
<td>Leave M66 at end of Motorway joining A56</td>
</tr>
<tr>
<td>A56 northbound until junction with A682</td>
</tr>
<tr>
<td>A682 eastbound until junction with A681</td>
</tr>
<tr>
<td>A681 eastbound to the site access</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
1.8 Route 1 has been selected as it was used during the assessment for the consented Reaps Moss Wind Farm which lies adjacent to the proposed site. It is understood that the route has yet to be agreed by Lancashire County Council (LCC), the highway authority for the area.

1.9 Route 2 has been selected as it was identified during consultation with LCC. Two routes were identified by LCC, however during the initial swept path assessment, one was shown not to be feasible. The full consultation response can be seen in Appendix A.
2 Transport requirements

2.1 Indicative component dimensions and weights can be found below:

Table 2.1 Blades

<table>
<thead>
<tr>
<th>Blades</th>
<th>On Trailer Dimensions</th>
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<tbody>
<tr>
<td>Vehicle Length</td>
<td>48.6 metres</td>
</tr>
<tr>
<td>Rigid Length</td>
<td>45.0 metres</td>
</tr>
<tr>
<td>Height</td>
<td>4.0 metres</td>
</tr>
<tr>
<td>Width</td>
<td>3.0 metres</td>
</tr>
<tr>
<td>Gross Vehicle Weight</td>
<td>37.0 tonnes</td>
</tr>
<tr>
<td>Max Axle Weight</td>
<td>7.0 tonnes</td>
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Table 2.2 Nacelle

<table>
<thead>
<tr>
<th>Nacelles</th>
<th>On Trailer Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Length</td>
<td>20.0 metres</td>
</tr>
<tr>
<td>Rigid Length</td>
<td>15.0 metres</td>
</tr>
<tr>
<td>Height</td>
<td>3.8 metres</td>
</tr>
<tr>
<td>Width</td>
<td>4.5 metres</td>
</tr>
<tr>
<td>Gross Vehicle Weight</td>
<td>96.0 tonnes</td>
</tr>
<tr>
<td>Max Axle Weight</td>
<td>11.0 tonnes</td>
</tr>
</tbody>
</table>

Table 2.3 Hub

<table>
<thead>
<tr>
<th>Hubs</th>
<th>On Trailer Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Length</td>
<td>16.5 metres</td>
</tr>
<tr>
<td>Rigid Length</td>
<td>15.0 metres</td>
</tr>
<tr>
<td>Height</td>
<td>4.5 metres</td>
</tr>
<tr>
<td>Width</td>
<td>4.3 metres</td>
</tr>
<tr>
<td>Gross Vehicle Weight</td>
<td>45.0 tonnes</td>
</tr>
<tr>
<td>Max Axle Weight</td>
<td>10.0 tonnes</td>
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Table 2.4 Tower Sections

<table>
<thead>
<tr>
<th>Tower Sections</th>
<th>On Trailer Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Length</td>
<td>35.0 metres</td>
</tr>
<tr>
<td>Rigid Length</td>
<td>28.0 metres</td>
</tr>
<tr>
<td>Height</td>
<td>5.0 metres</td>
</tr>
<tr>
<td>Width</td>
<td>4.3 metres</td>
</tr>
<tr>
<td>Gross Vehicle Weight</td>
<td>110.0 tonnes</td>
</tr>
<tr>
<td>Max Axle Weight</td>
<td>12.0 tonnes</td>
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</table>
3 Route Description

3.1 At this stage it is unclear from which Port the haul route will originate. Therefore it is intended to undertake the assessment from the Strategic Road Network (SRN) within the vicinity of the site. It is assumed that the road network from the port to the SRN will be suitable to accommodate abnormal loads given the nature of the roads purpose.

Route 1

3.2 Route 1 will be assessed from the northern end of the M66 where it is reclassified to the A56. The A56 is an all purpose dual carriageway that runs northbound for approximately 2 km until the bifurcation to the A682.

3.3 The A682 is an all purpose dual carriageway that runs eastbound for approximately 1 km until the junction with the A681.

3.4 The A681 is single carriageway that runs eastbound for approximately 12 km to the site access. The A681 passes through a number of roundabout junctions and via the communities of Rawtenstall, Cloughfield, Stocksteads and Bacup.

3.5 Access to the site would be via a right turn from the A681.

3.6 Route 1 can be seen on Figure 3.1.

Figure 3.1 Route 1
Route 2

3.7 Route 2 will be assessed from the M65 at Junction 9 where it joins the A679. The A679 is an all purpose single carriageway that runs east for approximately 1 km until the traffic signal controlled junction with the A646.

3.8 The A646 is an all purpose single carriageway that runs south-eastbound for approximately 4 km until the junction with the A671. The A646 passes through a number of signalised junction and via the urban fringe of Burnley.

3.9 The A671 is single carriageway that runs southbound for approximately 8 km until the junction with the A681. The A671 predominantly runs through rural areas.

3.10 The A681 is single carriageway that runs eastbound for approximately 3 km to the site access.

3.11 Access to the site would be via a right turn from the A681.

Figure 3.2 Route 2
4 Route Assessment

4.1 This section of the report analyses in detail any potential pinch points that may hinder delivery of wind turbine components to the proposed site entrance of Gorpley Wind Farm. For each pinch point a desktop study was performed along with a modelled analysis. Where possible third party land, street furniture and off carriageway routes were avoided but, where unavoidable, consideration was taken as to what would be the most sensible solution in light of safety and budgetary issues.

4.2 A detailed discussion for each of the locations was carried out including a description of the path taken, itemisation of any street furniture that will require temporary removal, a description of any areas which will require temporary surfacing and areas of third party ownership. The information in this assessment is correct to the time writing.

4.3 Due to the vehicles length, escort vehicles will be required. It is therefore assumed that the full width of the carriageway would be permitted along the route, including movements against the traffic flow where necessary.

4.4 Drawings showing the detailed swept path analysis for each location can be found in Appendix B. For this the computer programme AutoTrack 2009, a plug-in to AutoCAD, has been used. AutoTrack is a swept path analysis tool that allows the modelling of all types of steered vehicles and is used in combination with ordnance survey landline mapping. In this way the abnormal load can be driven on the map in order to show any possible points of conflict. The accuracy of the mapping data has been checked through site inspection.

4.5 For each pinch point the worst case has been analysed, that is the transport of one blade at 45 m long on a 44.6 m long vehicle. The total length of the vehicle, with overhang, will be 48.6 m long. The specifications of the vehicle used in the swept path analysis can be found in Appendix D.

4.6 As stated in Section 1.4, the assessment will use a rigid vehicle without the capacity for secondary rear steering. This will ensure a worst case assessment and will allow margin for error in the results.

Route 1 - Pinch Points

1. A682 / New Hall Hey Road Roundabout

4.7 This junction is a three-arm at-grade roundabout with an inscribed circle diameter of 43 m. A map showing the swept path of the vehicle, location of street furniture and any conflict between the two is shown on Drawing Ref: NEA1173/J/001 in Appendix B.

Description of Path

4.8 The vehicle will approach the roundabout via the dual carriageway A682 and travel straight over the roundabout to leave via the first exit. The A682 either side of the junction is approximately 8.0 m wide and the circulatory carriageway is approximately 10 m wide. In order to negotiate the roundabout, the wheels of the vehicle will need to travel over the nearside verge at the entry point to the roundabout.

Street Furniture requiring temporary removal

4.9 No street furniture will require removal.
Temporary surfacing required

4.10 The wheels of the vehicle will overrun the nearside verge at the entry point to the roundabout and therefore temporary surfacing will be required. Measures to assist the vehicle negotiating the kerbed change in level will also be required.

Infringement on 3rd party land

4.11 The swept path will not infringe on any 3rd party land.

2. A682 / A681 Roundabout

4.12 This junction is a ‘tear drop’ shaped five-arm at-grade roundabout with an inscribed circle diameter of 130 m. The roundabout is the meeting point of the A682 dual carriageway and the A681 single carriageway. The A682 approaches from the southwest and exits to the northeast and the A681 approaches via the northwest and exits to the southeast.

4.13 A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Refs: NEA1173/J/002

Description of Path

4.14 The vehicle will approach the roundabout via the A682 and travel against the flow of traffic across the roundabout circulatory to the A681. The A682 is 10 m wide, the circulatory carriageway is approximately 11 m wide and the A682 is approximately 8.5 m wide. The vehicle will travel over the central reserve on to the opposing carriageway. This could be done in the vicinity of the roundabout or at the previous junction. The vehicle will then travel on the circulatory carriageway marginally over sailing the roundabout central island. The vehicle then exits the roundabout onto the A681 against the flow of traffic.

Street Furniture requiring temporary removal

4.15 The vehicle will travel over the central reserve to the opposing carriageway. This will impact on a considerable length of safety barrier. The alternative would be to cross to the opposing carriageway at the previous junction by travelling over the roundabout central island. On the circulatory carriageway the vehicle over sails the central island and will require the temporary removal of chevron signage. On the exit from the roundabout the vehicle will impact on a bollard.

Temporary surfacing required

4.16 To access the opposing carriageway the vehicle will either need to straddle the central reserve of cross the previous roundabout central island. Temporary surfacing and measures to assist the vehicle negotiating the kerbed change in level will also be required.

Infringement on 3rd party land

4.17 The swept path will not infringe on any 3rd party land.

3. A681 / Bacup Road Roundabout

4.18 This junction is a three-arm at-grade roundabout with an inscribed circle diameter of 27 m. The roundabout has the A681 running southwest to northeast, and provides access to Rawtenstall via Bacup Road which is located to the northwest of the roundabout. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/J/003 in Appendix B.
Description of Path

4.19 The vehicle will approach the roundabout via the A681 and continue on the A681 via the second exit. The A681 is approximately 8 m wide either side of the roundabout with substantial splitter islands at the junction mouths. Due to the shape of the junction, the vehicle will negotiate the roundabout travelling against the flow of traffic.

Street Furniture requiring temporary removal

4.20 The vehicle will over sail the splitter island and verge on entry to the roundabout and therefore a sign and bollard will require removal. On the circulatory carriageway the vehicle is anticipated to overhang the nearside footway and therefore a length of pedestrian guardrail will require temporary removal. A bollard will also require removal from the exit to the roundabout.

Temporary surfacing required

4.21 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

Infringement on 3rd party land

4.22 The swept path will not infringe on any 3rd party land.

4. A681 / Burnley Road East Roundabout

4.23 This junction is a three-arm at-grade mini roundabout with an inscribed circle diameter of 16 m. The roundabout has the A681 running east to west with Burnley Road East connecting from the north. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/J/004 in Appendix B.

Description of Path

4.24 The vehicle will approach the roundabout via the A681 and travel straight over the roundabout continuing on the A681. The A681 is approximately 8.5 m wide on entry and exit from the roundabout. The vehicle and load will remain within the carriageway whilst negotiating this junction.

Street Furniture requiring temporary removal

4.25 The vehicle will pass over the mini roundabout however this will only impact upon the road marking and therefore no street furniture will require removal.

Temporary surfacing required

4.26 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

Infringement on 3rd party land

4.27 The swept path will not infringe on any 3rd party land.

5. A681 Bacup Road East of Townsend Street Junction

4.28 This A681 east of the Townsend Street junction has an ‘S’ bend that is considered to require assessment. The carriageway width is constrained by the presence of a steep gradient located to the north and a river to the south. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/J/005 in Appendix B.
Description of Path

4.29 The vehicle will pass through the ‘S’ bend travelling east to west. The A681 is approximately 8.5 m wide throughout this stretch. To vehicle is able to pass through the ‘S’ bend but requires the entire carriageway to undertake this manoeuvre.

Street Furniture requiring temporary removal

4.30 No street furniture will require removal.

Temporary surfacing required

4.31 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

Infringement on 3rd party land

4.32 The swept path will not infringe on any 3rd party land.

6. A681 / Booth Road Roundabout

4.33 This junction is a three-arm at-grade mini roundabout with an inscribed circle diameter of 16 m. The roundabout has the A681 running east to west with Booth Road connecting from the north. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/J/006 in Appendix B.

Description of Path

4.34 The vehicle will approach the roundabout via the A681 and travel straight over the roundabout continuing on the A681. The A681 is approximately 8.5 m wide on entry and exit from the roundabout. The vehicle and load will remain within the carriageway whilst negotiating this junction.

Street Furniture requiring temporary removal

4.35 The vehicle will pass over the mini roundabout however this will only impact upon the road marking and therefore no street furniture will require removal.

Temporary surfacing required

4.36 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

Infringement on 3rd party land

4.37 The swept path will not infringe on any 3rd party land.

7. A681 / A671 Junction

4.38 Due to the road layout, this junction has an irregular layout. The A681 from the southwest becoming the A671 to the southeast is effectively a through road. This has a number of side roads, namely the A671 from the north and the A681 from the east joining the through road at priority junctions. However due to the alignment of the roads the junction appears to take the form of a roundabout. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/J/007 in Appendix B.

Description of Path

4.39 The vehicle will approach the junction via the A681 and travel straight across the junction rejoining the A681 via the priority junction. The A681 is approximately 8 m wide on the approach to the
roundabout but is reduced at the entry point to approximately 7 m. Similarly the exit from the roundabout is approximately 7 m wide, increasing to 8 m wide further from the junction. The vehicle will over sail the nearside footway on entry to the roundabout and will be in close proximity to buildings. In addition the splitter island delineating movements on the roundabout.

**Street Furniture requiring temporary removal**

4.40 The body of the vehicle will over sail a splitter island delineating movements on the roundabout and therefore a bollard will need to be removed.

**Temporary surfacing required**

4.41 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

**Infringement on 3rd party land**

4.42 The swept path will not infringe on any 3rd party land.

8. A681 Todmorden Road at Flower Scar Road Junction

4.43 The A681 at Flower Scar Road is a tight right bend that is considered to require assessment. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/J/008 in Appendix B.

**Description of Path**

4.44 The vehicle will pass through the bend travelling east to west. The A681 is approximately 8 m wide throughout this stretch. The vehicle is able to pass through the bend but requires the entire carriageway to undertake this manoeuvre.

**Street Furniture requiring temporary removal**

4.45 No street furniture will require removal.

**Temporary surfacing required**

4.46 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

**Infringement on 3rd party land**

4.47 The swept path will not infringe on any 3rd party land.

9. A181 / Abnormal Load Site Access

4.48 This proposed site access for abnormal loads is via a new junction located approximately 30 m west of the existing Limers Gate field access. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/J/009 in Appendix B.

**Description of Path**

4.49 The vehicle will turn right at this location and enter the site via a new site access.

**Street Furniture requiring temporary removal**

4.50 The new access will require the removal of the existing fencing.
Temporary surfacing required

4.51 New surfacing will be required to provide suitable access.

Infringement on 3rd party land

4.52 The swept path will not infringe on any 3rd party land.

Route 2 - Pinch Points

1. M65 Junction Eastbound Diverge to the A679

4.53 This junction is the eastbound Type C Lane Drop Taper Diverge from the M65. The diverge lane leads to the dumbbell roundabout junction with the A679. The roundabout has an inscribed circle diameter of approximately 45m wide.

4.54 A map showing the swept path of the vehicle and location of street furniture are shown on Drawing Refs: NEA1173/N/001 in Appendix C.

Description of Path

4.55 The vehicle will approach the diverge lane from the west and travel to the dumbbell roundabout junction. The vehicle will turn right at the roundabout joining the A679. The diverge lane is approximately 8 m wide with the roundabout circulatory being approximately 9 m wide. The vehicle will travel on the A679 to the roundabout to the south of the M65. The A679 over the M65 is approximately 7.7 m wide, and widens to approximately 12 m on the approach to the roundabout. The vehicle will take the first exit from the roundabout and head east on the A679. The roundabout circulatory is approximately 9 m wide. The vehicle will travel over the northern roundabouts central island and over sail the nearside verge on the roundabout exit. It will over sail the entry splitter island of the southern roundabout.

Street Furniture requiring temporary removal

4.56 At the entry point to the roundabout the vehicle will impact upon a road sign. The vehicle will travel over the central island and will therefore impact on the associated roundabout signage. On the exit from the roundabout the vehicle will over sail the nearside verge and will therefore impact upon a road sign. The vehicle will over sail the entry splitter island of the southern roundabout but is not anticipated to impact on any street furniture.

Temporary surfacing required

4.57 The vehicle will travel over the central island and therefore temporary paving will be required to facilitate this movement. In addition the vehicle may impact upon kerbs at the entry and exit points to the roundabouts and therefore measures to protect the kerbs and assist the vehicle negotiating a change in level may be required.

Infringement on 3rd party land

4.58 The swept path will not infringe on any 3rd party land.

2. A679 / A646 Signalised Junction

4.59 This is the signalised crossroads junction of the A679 / A646. There is a dedicated left filter lane from the northbound A646 to the westbound A679 that operates outside the signals. A map showing the swept path of the vehicle, location of street furniture and any conflict between the two is shown on Drawing Ref: NEA1173/N/002 in Appendix C.
**Description of Path**

4.60 The vehicle will approach the junction via the A679 from the west and will effectively turn right to the A646 heading southeast via the dedicated left filter lane. This will involve the vehicle travelling against the flow of traffic. The A679 is approximately 8 m wide on the approach to the signals. The A646 is approximately 10 m wide. The filter lane is approximately 4.5 m wide. The vehicle will over sail the nearside footway on approach to the signalised junction and will over sail or overrun both the near and offside whilst travelling through the left filter lane.

**Street Furniture requiring temporary removal**

4.61 The body of the vehicle will over sail the nearside footway on approach to the signalised junction and therefore a lamp column will need to be removed. To negotiate the filter lane will impact on the footway and therefore a lamp column and road sign will require temporary removal. The vehicle is also considered to over sail the filter lane island and a road sign and bollard will require temporary removal.

**Temporary surfacing required**

4.62 The wheels of the vehicle will impact on the footway whilst passing through the filter lane. This has an existing flexible surface and therefore should be able to accommodate temporary heavy loads. No temporary surfacing is therefore considered necessary. However measures to assist the vehicle negotiating the kerbed change in level will be required.

**Infringement on 3rd party land**

4.63 The swept path will not infringe on any 3rd party land.

3. A646 / A682 Signalised Junction

4.64 This junction is a signalised crossroads junction of the A646 / A682. The A646 runs east to west and the A682 north to south. A map showing the swept path of the vehicle and location of street furniture is shown on **Drawing Ref: NEA1173/N/003 in Appendix C.**

**Description of Path**

4.65 The vehicle will approach the junction via the A646 and travel straight through the junction to continue on the A646. The A681 is approximately 13 m wide on approach to the signals and approximately 10 m wide on the exit. The vehicle and load will remain within the carriageway whilst negotiating this junction.

**Street Furniture requiring temporary removal**

4.66 The vehicle will pass through the signals without impacting upon the street furniture.

**Temporary surfacing required**

4.67 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

**Infringement on 3rd party land**

4.68 The swept path will not infringe on any 3rd party land.
4. A646 / A671 Signalised Junction

This junction is a staggered signalised junction of the A646 / A671. The A646 runs east to west and the A671 north to south. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/N/004 in Appendix C.

Description of Path

The vehicle will approach the junction via the A646 and will turn right to travel south on the A671. The A646 is approximately 9 m wide on approach to the signals and approximately 7.5 m wide on the exit to the A671. The vehicle will need to travel against the flow of traffic to negotiate the junction, but the vehicle and load will remain within the carriageway.

Street Furniture requiring temporary removal

The vehicle will pass through the signals without impacting upon the street furniture.

Temporary surfacing required

The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

Infringement on 3rd party land

The swept path will not infringe on any 3rd party land.

5. A671 Bacup Road north of Easden Wood

The A671 north of Easden Wood is a tight right bend that is considered to require assessment. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/N/005 in Appendix C.

Description of Path

The vehicle will pass through the bend travelling north to south. The A671 is approximately 7.5 m wide throughout this stretch. The vehicle is able to pass through the bend but requires the entire carriageway to undertake this manoeuvre.

Street Furniture requiring temporary removal

No street furniture will require removal.

Temporary surfacing required

The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

Infringement on 3rd party land

The swept path will not infringe on any 3rd party land.

6. A671 Bacup/Burnley Road in vicinity of Clough Bottom Reservoir

The A671 in the vicinity of Clough Bottom Reservoir has a series of bends that are considered to require assessment. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/N/006 in Appendix C.
**Description of Path**

4.80 The vehicle will pass through the bends travelling north to south. The A671 is approximately 7.5 m wide throughout this stretch. The vehicle is able to pass through the bends but requires the entire carriageway to undertake the manoeuvres.

**Street Furniture requiring temporary removal**

4.81 No street furniture will require removal.

**Temporary surfacing required**

4.82 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

**7. A671 Burnley Road north of Weir**

4.83 The A671 north of Weir is a tight right bend that is considered to require assessment. A map showing the swept path of the vehicle and location of street furniture is shown on **Drawing Ref: NEA1173/N/007** in Appendix C.

**Description of Path**

4.84 The vehicle will pass through the bend travelling north to south. The A671 is approximately 7.5 m wide throughout this stretch. The vehicle is able to pass through the bend but requires the entire carriageway to undertake this manoeuvre.

**Street Furniture requiring temporary removal**

4.85 No street furniture will require removal.

**Temporary surfacing required**

4.86 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

**8. A671 Burnley Road south of Woodland Terrace Junction**

4.87 This A671 in the vicinity of Woodland Terrace has an ‘S’ bend that is considered to require assessment. The carriageway width is constrained by the presence of a stone wall to the west of the carriageway and a river to the east of the carriageway. A map showing the swept path of the vehicle and location of street furniture is shown on **Drawing Ref: NEA1173/J/005** in Appendix C.

**Description of Path**

4.88 The vehicle will pass through the ‘S’ bend travelling north to south. The A671 is approximately 7.5 m wide throughout this stretch. The vehicle is able to pass through the ‘S’ bend but requires the entire carriageway to undertake this manoeuvre.

**Street Furniture requiring temporary removal**

4.89 No street furniture will require removal.

**Temporary surfacing required**

4.90 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.
Infringement on 3rd party land

4.91 The swept path will not infringe on any 3rd party land.

9. A671 / A681 Junction

4.92 Due to the road layout, this junction has an irregular layout. The A681 from the southwest becoming the A671 to the southeast is effectively a through road. This has a number of side roads, including the A671 from the north and the A681 from the east joining the through road at priority junctions. However due to the alignment of the roads the junction appears to take the form of a roundabout. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/N/007 in Appendix C.

Description of Path

4.93 The vehicle will approach the junction via the A671 and will turn left to access the A681 via a priority junction. The A671 is approximately 11 m on approach to the junction and is approximately 8m wide on the exit to the A681. The vehicle will over sail the nearside and offside footway on entry to the roundabout. In addition the splitter island and central roundabout within the junction will need to be removed.

Street Furniture requiring temporary removal

4.94 The body of the vehicle will over sail the near and offside footways at the entrance to the junction, but is not anticipated to impact upon street furniture at those locations. The body of the vehicle will need to pass over the splitter island and central roundabout within the junction and therefore a number of signs and bollards will require removal. In addition the stone fountain that is contained within the central roundabout will require temporary removal.

Temporary surfacing required

4.95 The wheels of the vehicle will need to pass over the splitter island and central roundabout within the junction. The splitter island has an existing flexible surface and therefore should be able to accommodate temporary heavy loads. However measures to assist the vehicle negotiating the kerbed change in level will be required.

4.96 The central roundabout has a substantial level change and therefore it is considered necessary to remove the entire roundabout and provide a temporary road surface.

Infringement on 3rd party land

4.97 The swept path will not infringe on any 3rd party land.

10. A681 Todmorden Road at Flower Scar Road Junction

4.98 This A681 at Flower Scar Road is a tight right bend that is considered to require assessment. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/N/0010 in Appendix C.

Description of Path

4.99 The vehicle will pass through the bend travelling east to west. The A681 is approximately 8.0 m wide throughout this stretch. To vehicle is able to pass through the bend but requires the entire carriageway to undertake this manoeuvre.

Street Furniture requiring temporary removal

4.100 No street furniture will require removal.
Temporary surfacing required

4.101 The wheels of the vehicle stay within the existing carriageway therefore no temporary surfacing is required.

Infringement on 3rd party land

4.102 The swept path will not infringe on any 3rd party land.

11. A681 / Abnormal Load Site Access

4.103 This proposed site access for abnormal loads is via a new junction located approximately 30 m west of the existing Limers Gate field access. A map showing the swept path of the vehicle and location of street furniture is shown on Drawing Ref: NEA1173/N/011 in Appendix C.

Description of Path

4.104 The vehicle will turn right at this location and enter the site via a new site access.

Street Furniture requiring temporary removal

4.105 The new access will require the removal of the existing fencing.

Temporary surfacing required

4.106 New surfacing will be required to provide suitable access.

Infringement on 3rd party land

4.107 The swept path will not infringe on any 3rd party land.
## 5 Summary

5.1 The table below summarises the issues that have been highlighted within this report. The assessment utilises a rigid vehicle without the capacity for secondary rear steering. This allows for margin for error within the results. The results are therefore considered to be a worst case assessment.

**Table 5.1 Route 1 Summary**

<table>
<thead>
<tr>
<th>Pinch Point Location</th>
<th>Issues Highlighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A682 / New Hall Hey Road Roundabout</td>
<td>• Temporary surfacing required on nearside entry to roundabout.</td>
</tr>
<tr>
<td>2. A682 / A681 Roundabout</td>
<td>• Vehicle movement against the traffic flow;</td>
</tr>
<tr>
<td></td>
<td>• Safety barrier and 3 x signage will require temporary removal on approach to roundabout;</td>
</tr>
<tr>
<td></td>
<td>• 2 x chevron signs require temporary removal from central island of roundabout;</td>
</tr>
<tr>
<td></td>
<td>• 1 x bollard requires temporary removal from roundabout exit;</td>
</tr>
<tr>
<td></td>
<td>• Several panels of pedestrian guardrail require temporary removal from A179 /roundabout entrance.</td>
</tr>
<tr>
<td>3. A681 / Bacup Road Roundabout</td>
<td>• Vehicle movement against the traffic flow;</td>
</tr>
<tr>
<td></td>
<td>• 1 x sign requires temporary removal from approach to roundabout;</td>
</tr>
<tr>
<td></td>
<td>• Length of pedestrian guardrail south of the roundabout circulatory carriageway requires temporary removal;</td>
</tr>
<tr>
<td></td>
<td>• 1 x bollard requires temporary removal from roundabout exit.</td>
</tr>
<tr>
<td>4. A681 / Burnley Road East Roundabout</td>
<td>• No action required.</td>
</tr>
<tr>
<td>5. A681 Bacup Road East of Townsend Street Junction</td>
<td>• No action required.</td>
</tr>
<tr>
<td>6. A681 / Booth Road Roundabout</td>
<td>• No action required.</td>
</tr>
<tr>
<td>7. A681 / A671 Junction</td>
<td>• Vehicle over sails footway at roundabout entry;</td>
</tr>
<tr>
<td></td>
<td>• 1 x bollard on splitter island will require temporary removal.</td>
</tr>
<tr>
<td>8. A681 Todmorden Road at Flower Scar Road Junction</td>
<td>• No action required.</td>
</tr>
<tr>
<td>9. A181 / Abnormal Load Site Access</td>
<td>• New site access to be provided. Removal of existing fencing and new surfacing required.</td>
</tr>
</tbody>
</table>
### Table 5.2  Route 2 Summary

<table>
<thead>
<tr>
<th>Pinch Point Location</th>
<th>Issues Highlighted</th>
</tr>
</thead>
</table>
| 1. M65 Junction Eastbound Diverge to the A679 | • 1 x sign will require temporary removal on entry to roundabout;  
• 2 x chevron signs require temporary removal on the central island;  
• 1 x sign requires temporary removal from roundabout exit;  
• Temporary surfacing required to central island. |
| 2. A679 / A646 Signalised Junction | • 1 x lamp column will require temporary removal on approach to junction;  
• 1 x lamp column, 2 x signs and 1 bollard require temporary removal from filter lane splitter island; |
| 3. A646 / A682 Signalised Junction | • No action required. |
| 4. A646 / A671 Signalised Junction | • Vehicle movement against the traffic flow. |
| 5. A671 Bacup Road north of Easden Wood | • No action required. |
| 6. A671 Bacup/Burnley Road in vicinity of Clough Bottom | • No action required. |
| 7. A671 Burnley Road north of Weir | • No action required. |
| 8. A671 Burnley Road south of Woodland Terrace Junction | • No action required. |
| 9. A671 / A681 Junction | • 2 x bollards and 2 x signs to splitter island will require temporary removal.  
• Central roundabout will require removal and temporary surface provided. |
| 10. A681 Todmorden Road at Flower Scar Road Junction | • No action required. |
| 11. A181 / Abnormal Load Site Access | • New site access to be provided. Removal of existing fencing and new surfacing required. |
Recommendations

- If the necessary amendments are made then the routes can be navigated by vehicles carrying wind turbine components to the proposed Wind Farm.

- The routes will be required to undergo a structural assessment utilising an appropriate computer model. This will be undertaken by the local authority prior to approval of use.

- Police escort or Pilot car will be required for Blades, Nacelle and Tower component trailers to negotiate the route, in order to assist with traffic control and control oncoming traffic flow.

- It is recommended to have adequate warning signs implemented to warn other road users at critical points along the route.

- All hedges, shrubs, bushes, trees and overhanging branches along the nominated routes must be trimmed to allow a minimum envelope on the road of 5.0 Metres wide by 5.0 Metres high.

- All street furniture as required along the nominated route must be removed to allow a minimum envelope on the road of 5.0 Metres by 5.0 Metres. Other specific street furniture has been nominated in this report to facilitate ‘over sailed’ and ‘swept’ areas.

- Full carriageway widths must be available along the entirety of the route. Measures to remove parked vehicles must therefore be in place.

- Measures to assist the vehicle negotiating kerbed changes in level at roundabouts, pedestrian refuges etc will be required.

- Steel road plates may be required at locations where the vehicle overruns utility boxes or unprotected verge areas.

- When the Tower dimensions have been agreed, a ‘Test run’ should be undertaken from the commencement point of the route to the site entrance. The test run should be completed with an empty trailer, so if required, the trailer can be ‘closed’ until it is past the hazard. The test run should be attended by Turbine manufacturers, project managers, Police, Highways & Council representatives and other interested parties with responsibility for road alterations.
<table>
<thead>
<tr>
<th>Page</th>
<th>Job No</th>
<th>Report No</th>
<th>Issue no</th>
<th>Report Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>A20</td>
<td>NEA1173</td>
<td>1</td>
<td>3</td>
<td>A11.1</td>
</tr>
</tbody>
</table>
James Quigley

From: Wood, Tony [Tony.Wood@lancashire.gov.uk]
Sent: 28 February 2012 15:38
To: James Quigley
Cc: Coombe, Andrew; Bell, Peter
Subject: Wind Farm Proposal

James,

To reiterate the substance of my phone call of today. The route referred to in the previous Calderdale planning approval, as far as it can be established, had no input from either Lancashire County Council or Lancashire Constabulary and due to the nature of the road and that there are two problematic bridges on the route; it is unlikely to approved other than for use on a Sunday morning.

I would suggest that alternatives are pursued and the two that come mind are via A671 entering the County Network at boundary between the County and Rochdale MBC then following the A671 to Bacup and onto A681 to the site entrance. The other alternative is to travel to the M65 Junction 9 then via the A679, A646 and the A671 southbound to Bacup and onward via the A681 to site.

As stated we do not normally approve routes until planning has been granted as the blades normally require a DfT Special Order to allow the movement and this has to marry-up with other authorities along the route from the place of entry into the United Kingdom. As explained we computer model each movement of our structures and this we believe gives a more accurate assessment than just giving a structure a weight limit that must not be exceeded.

I have copied this e-mail to our Mr Andrew Coombe (Principal Engineer - Traffic & Development) in our Area East Office with whom enquiries of this nature should be submitted in the first instance.

Anthony G Wood
Abnormal Loads Officer
Network Management Team, Transport & Strategic Highways, Lancashire County Council

(01772 5) 34477 (01772 5) 34467

From: Lancashire County Council Abnormal Loads [mailto:abloads@lancashire.gov.uk]
Sent: 28 February 2012 14:59
To: Wood, Tony
Subject: Forwarded message from Lancashire County Council Abnormal Loads

Dear Sir/Madam,

JMP Consultants has been commissioned by Arcus Renewable Energy Consulting Ltd to undertake an abnormal load assessment for a proposed Wind Farm development located to the east of Bacup.

The component parts will be manufactured off site and transferred to the site for assembly. At this stage it is unclear from which Port the haul route will originate. Therefore it is our intention to assess from Junction 18 of the M60/M62 onto the M66, A56, A682, A681 to the site access. This proposed haul route can be seen on the attached plan. It is understood that the proposed route is the same as that agreed for the consented Reaps Moss Wind Farm.

The largest components are the turbine blades which are approximately 44 metres in length and our swept path assessment will be based on a vehicle size capable of accommodating these. The heaviest components are likely to be the nacelles. Indicative information regarding vehicle lengths and axle weights can be seen on the attached data sheets.

As the proposed route passes through areas of your control, could you please provide confirmation that this route is suitable. Upon receipt of your comments, we will undertake a swept path assessment to assess the requirement for any highway alterations to facilitate the proposed route.

In addition, I would appreciate if you could advise of other parties you feel I should consult on these proposals.
Please feel free to contact me if you wish to discuss this matter.

Thanks

Regards,

James

James Quigley
Principal Engineer
JMP Consultants Ltd, Rotterdam House, 116 Quayside, Newcastle NE1 3DY

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Registered office: Mercantile Chambers, 53 Bothwell Street, Glasgow, G2 6TS
Registration number: SC88006

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James Quigley

From: Bridges Abloads [Bridges.Abloads@leeds.gov.uk]  
Sent: 28 February 2012 08:31  
To: James Quigley  
Subject: Reaps Moss Wind Farm proposal

James

Thank you for this early consultation. The route will only just enter West Yorkshire area and as such will have no implications with regard to abnormal loads.

regards

Ian Melrose
West Yorkshire Highways/ Bridges
Abnormal Loads Officer
Bridges Section
Middleton Ring Road
Leeds
LS10 4AX

Tel: 0113 247 6174
Fax: 0113 247 6357

Movement Notifications: abnormalloads@leeds.gov.uk

(Acting on behalf of Leeds CC, Bradford MDC, Kirklees MC, Calderdale MBC & Wakefield MDC)

From: Leeds City Council/Abnormal Loads [mailto:abnormalloads@leeds.gov.uk]
Sent: 28 February 2012 07:43
To: Bridges Abloads
Subject: Forwarded message from Leeds City Council/Abnormal Loads

Dear Sir/Madam,

JMP has been commissioned by Arcus Renewable Energy Consulting Ltd to undertake an abnormal load assessment for a proposed Wind Farm development located to the west of Todmorden in Calderdale.

The component parts will be manufactured off site and transferred to the site for assembly. At this stage it is unclear from which Port the haul route will originate. Therefore it is our intention to assess from Junction 18 of the M60/M62 onto the M66, A56, A682, A681 to the site access. This proposed haul route can be seen on the attached plan. The proposed route is the same as that agreed for the consented Reaps Moss Wind Farm.

The largest components are the turbine blades which are approximately 44 metres in length and our swept path assessment will be based on a vehicle size capable of accommodating these. The heaviest components are likely to be the nacelles. Indicative information regarding vehicle lengths and axle weights can be seen on the attached data sheets.

As the proposed route passes through areas of your control, could you please provide confirmation that this route is suitable. Upon receipt of your comments, we will undertake a detailed route investigation and swept path assessment to assess the requirement for any highway alterations to facilitate the proposed route.

In addition, I would appreciate if you could advise of other parties you feel I should consult on these proposals.

Please feel free to contact me if you wish to discuss this matter.

Thanks
James

Regards,
James Quigley
Principal Engineer
JMP Consultants Ltd, Rotterdam House, 116 Quayside, Newcastle NE1 3DY

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Registration number: SC88006

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************************************************************************************************************************
Route 1 - Swept Path Analysis Drawings
Appendix C

Route 2 - Swept Path Analysis Drawings
From the A646 Rosendale Road eastbound at the sliproad junction towards the A682 Manchester Road continue eastbound on the A646.
A671 Burnley Road

A681 Todmorden Road

A681 Market Street

A671 St James Square

Key
- Outline of area being overlaid by road and projections
- Outline of area being overlaid by island
- Outline of area being overlaid by traffic and cycle walks

From the A671 Burnley Road turn left and north-east bound on the A681 Todmorden Road.

**Design:**
- Potential change in level
- Street furniture removed
- Reproduction of existing traffic signs required. Transit vehicle approaches upon opposite carriageway.
This drawing is based upon the Ordnance Survey Map with the permission of The Controller of Her Majesty's Stationery Office Crown Copyright reserved.
Appendix D

Vehicle Specifications
## AutoTrack Vehicle Details

| Vehicle Name: | 44.65 Extendible platform vehicle (fully extended) |
| Type: | Articulated vehicle |
| Category | Savoy |
| Classification | Savoy |
| Source: | Broshuis |
| Description: | Extendible flatbed vehicle |
| Notes: | The wheelbase of the trailer can extend from 10.35m to 32.25m. |
| Unit 1 Name: | 44.65 Extendible platform vehicle (fully extended) Tractor |
| Unit 2 Name: | 44.65 Extendible platform vehicle (fully extended) Trailer 1 |

### Vehicle Measurements

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Length</td>
<td>44.860m</td>
</tr>
<tr>
<td>Overall Width</td>
<td>2.550m</td>
</tr>
<tr>
<td>Overall Body Height</td>
<td>3.402m</td>
</tr>
<tr>
<td>Min Body Ground Clearance</td>
<td>0.326m</td>
</tr>
<tr>
<td>Max Track Width</td>
<td>2.479m</td>
</tr>
<tr>
<td>Lock to Lock Time</td>
<td>6.00 sec</td>
</tr>
<tr>
<td>Wall to Wall Turning Radius</td>
<td>16.500m</td>
</tr>
</tbody>
</table>

---

Every Effort Has Been Made To Ensure The Accuracy Of This Information
Please Check Data From Your Own Sources
### AutoTrack Vehicle Details

<table>
<thead>
<tr>
<th>Unit Name:</th>
<th>44.65 Extendible platform vehicle (fully extended) Tractor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>Tractor (with driver controlled steering)</td>
</tr>
<tr>
<td>Body style:</td>
<td>Articulated Vehicle Tractor (Medium)</td>
</tr>
<tr>
<td>Classification</td>
<td>Savoy</td>
</tr>
</tbody>
</table>

**Source:**
No data

**Description:**
No data

**Notes:**
No data

**Datum:**
Front Primary Axle

#### Front Axle(s):
- **Primary Front Axle Offset:** 0.000m
- **Effective Front Axle Offset:** 0.000m (Auto Calculated)
- **Maximum Wheel Angle:** Unlimited
- **Status:** Active Non Self-Steered
- **Track Width:** 2.438m
- **Total Wheels:** 2 (positioned at the ends of the axle)
- **Tyre Width:** 0.244m (Auto Calculated - proportion of Track Width)
- **Tyre Diameter:** 0.853m (Auto Calculated - proportion of Track Width)

#### Rear Axle(s):
- **Primary Rear Axle Offset:** 3.400m (Innermost Axle behind Front Primary Axle)
- **Effective Rear Axle Offset:** 4.100m (Auto Calculated)
- **Maximum Wheel Angle:** Unlimited
- **Rear Axle Spacing:** 1.400m
- **Status:** Active Non Self-Steered
- **Track Width:** 2.479m
- **Total Wheels:** 4 (positioned at the ends of the axle)
- **Tyre Width:** 0.248m (Auto Calculated - proportion of Track Width)
- **Tyre Diameter:** 0.868m (Auto Calculated - proportion of Track Width)

#### Steering:
- **Min. Wall / Wall Turning Radius:** 16.500m (based upon body only)
- **Calculated Maximum Wheel Angle:** 17.000deg
- **Lock to Lock Time (Fwd/Rev):** 6.0sec / 6.0sec
- **Driver / Pilot**
  - **Driver Offset Longitudinally:** -0.100m (in front of Front Primary Axle)
  - **Driver / Pilot Offset Laterally:** 0.600m (Right of Centreline)
  - **Driver Height:** 1.000m (Above ground level)
- **Front coupling:** None

- **Rear coupling:** Generic
  - **Coupling Offset:** 3.600m (behind Front Primary Axle)
  - **Coupling Height:** 0.868m (Auto Calculated - proportion of Tyre Diameter)
  - **Capability:** Can tow or be towed
  - **Max. Horizontal Articulation Angle:** 90.000deg
  - **Max. Vertical Articulation Angle:** 10.000deg

#### Body outline (plan):
- **Outline Type:** Rectangle
- **Offset (X,Y):** -1.400m, 0.000m
- **Length / Width:** 6.900m / 2.490m

---

Every Effort Has Been Made To Ensure The Accuracy Of This Information
Please Check Data From Your Own Sources
AutoTrack Vehicle Details

Unit Name: 44.65 Extendible platform vehicle (fully extended) Trailer 1
Type: Trailer (no driver controlled steering)
Body style: (Unspecified)
Classification: (Unspecified)

Source: No data
Description: No data
Notes: No data

Datum: Front coupling
Maximum Articulation Angle:
Front Axle(s): 90deg (to previous unit)
None

Rear Axle(s): 3 Tandem bogies (multiple pivots) (All axles identical)
Primary Rear Axle Offset: 29.150m (Innermost Axle behind Front coupling)
Effective Rear Axle Offset: 32.750m (Auto Calculated)
Maximum Wheel Angle: Unlimited
Rear Axle Spacing: 1.800m
Linkage:
  Basis: Rear axles linked to front axles
  Rule 1: Angle of rear wheels
Status: Forward and reverse from 0.00deg, 100.00 based upon Tangents
  Active Non Self-Steered
Track Width: 2.438m
Total Wheels: 4 (positioned at the ends of the axle)
Tyre Width: 0.244m (Auto Calculated - proportion of Track Width)
Tyre Diameter: 0.853m (Auto Calculated - proportion of Track Width)

Front coupling: Generic
  Coupling Offset: 0.000m (in front of Front coupling)
  Coupling Height: 0.427m (Auto Calculated - proportion of Tyre Diameter)
Capacity: Can tow or be towed
Max. Horizontal Articulation Angle: 90.000deg
Max. Vertical Articulation Angle: 10.000deg

Rear coupling: None

Body outline (plan):
  Outline Type: Rectangle
  Offset (X,Y): -1.362m, 0.000m
  Length / Width: 41.012m / 2.550m

Load outline (plan):
  Outline Type: Jet blast contour