



Construction Transport Management Plan

Bears Down Wind Farm

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1. Introduction

This document presents an initial Construction Traffic Management Plan (CTMP) for the proposed repowering of 16 existing wind turbines on Land at Bears Down with four wind turbines, up to 150m to blade tip, in Cornwall.

The aim of the initial CTMP is to identify the high-level philosophy for the management of construction traffic and abnormal load deliveries associated with the construction of the proposed development. It is intended to be a working document that can be developed further and agreed with Cornwall Council prior to construction.

This report, in conjunction with the annexed Pell Frischmann Abnormal Indivisible Load Route Survey, will document the movements of the wind turbine components from Avonmouth Port to Bears Down Wind Farm, Trevilledor Cross, Newquay, Cornwall, TR8 4HQ, providing supplementary information to support the Environmental Statement.

The CTMP will assess the impacts associated with the construction and erection of the proposed five turbine scheme at Bears Down. A significant impact is only expected to occur during the movement of Heavy Goods Vehicles (HGV's) during the construction phase. In view of this, the impact of this four-turbine scheme is expected to be modest in scale and duration.

Once the wind farm is operational, traffic to the site will be minimal. On occasion a visit to the site by maintenance personnel, using light vehicles such as a light van or a 4x4 may be required. There may be a requirement for abnormal loads to access the site during operation in the unlikely event that a repair or major replacement is required during the lifetime of the wind turbines – but this eventuality, while possible, is not expected.

Upon decommissioning of the wind turbines, there may be a further impact on road traffic during the removal of equipment and building materials from the site.

Each Abnormal Load Movement will be planned and notified to every local council, road, and police authority according to the requirements of the Abnormal Indivisible Loads (AIL) – Roads Vehicles (Authorisation of Special Types) (General) Order 2003.

This report aims to assess the measurements and weights of all the AIL's that will be required to make the deliveries and will establish the related impacts that may occur on the local road network during their movements.

2. The Proposed Development

The proposed development comprises four wind turbines with a maximum height of up to 150m, located approximately 1.3km east of St Eval, in Cornwall. The site will be accessed via a modified junction near Trevilledor Cross.

The site location is shown in **Figure 1**:

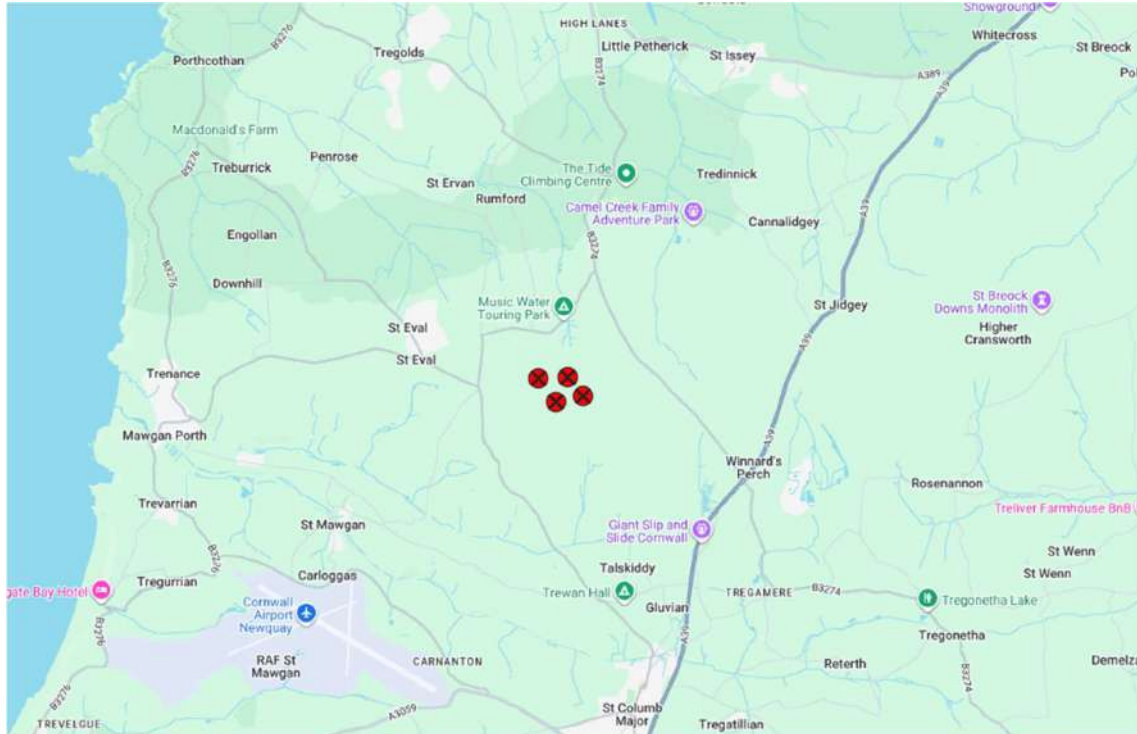


Figure 1: The Proposed Development Location.

The proposed development includes the construction of internal access tracks, crane hardstanding's, turbine foundations, a substation, buried power cables, and a modified site entrance.

3. Construction Phase Traffic Generation

3.1. Vehicle Movements

The turbine components: generators, nacelles, hubs, turbine blades, and tower sections will contribute to an estimated 112 HGV movements.

Two cranes are required for the construction of each turbine.

Table 1: Turbine Equipment.

Turbine Equipment		
Component	Frequency	HGV Movements
Steel Tower Anchors	4	8
Main Crane	1	2
Support Crane	1	2
Support Vehicle	6	12
Converters/Cabinets/Accessories	4	8
Turbine Components		
Generators	4	8
Nacelles	4	8
Hubs	4	8
Drivetrains	4	8
Turbine Blades	12	24
Tower Sections	12	24
Total	56	112

Table 2: Turbine Component Specification.

Turbine 150 (tip height), 82m (hub height)					
Building Block Section	Quantity	Length (m)	Width (m)	Height (m)	Maximum Weight (kg)
Foundation Anchor	4	4.449	4.449	3.995	22,000
Tower Section 1	4	20.76	4.28	4.28	68,500
Tower Section 2	4	28.84	3.92	3.92	55,000
Tower Section 3	4	30.000	3.667	3.667	47,500
Nacelle	4	12.940	3.981	4.19	68,065
Drivetrain Variant 1	4	7.23	3.516	3.171	65,817
Blades (each)	12	66.650	4.05	3.124	14,125
Hub	4	5.469	3.773	3.964	32,233
	The converter, other small parts, components, and tools will have to be packaged and transported to the site. These will likely all be loaded onto one or two HGVs.				

3.2. Other Construction Activities

The other construction activities associated with the development include:

- Delivery of steel reinforcement bars for the foundations.
- Delivery of “ready-mix” concrete for the foundations.
- Delivery of Glass Fibre-Reinforced Plastic (GRP) transformer housings.
- Daily movements of construction staff.

It is to be noted that these ancillary movements will take place in normal construction vehicles and the resultant impact on the road network is considered **insignificant** and as a reason, will not be assessed further.

3.3. Breakdown of Work

Tables 3-9 highlight the estimated material related vehicle movements. Concrete (**Table 4**) and imported stone (**Table 6**) contribute to the largest portion of these movements with 838 and 2,952, respectively. In total, 3,902 movements will be completed. The data produced is modelled on previous development experience.

Table 3: Site Establishment.

Material	Vehicle Type	Number of lorries	Number of movements
Site Establishment	Flatbeds, low loaders, tankers	30	60

Table 4: Concrete Delivery.

Material	Total volume (m ³)	Lorry capacity (m ³)	Number of lorries	Number of movements
Concrete	2,512	6	419	838

Table 5: Steel Reinforcement Delivery.

Material	Total weight (Tonnes)	Lorry capacity (Tonnes)	Number of lorries	Number of movements
Steel Reinforcement	429	30	14	28

Table 6: Stone, all assumed imported.

Material	Total volume (m ³)	Lorry capacity (m ³)	Number of lorries	Number of movements
Imported stone	14,760	10	1,476	2,952

Table 7: Electrical Cabling.

Material	Total length (m)	Number of drums	Number of lorries	Number of movements
Cable	6,060	12	2	4

Table 8: Electrical Equipment.

Material	Vehicle Type	Total equipment (ud)	Number of lorries	Number of movements
Electrical equipment	Various	10	10	20

Table 9: Miscellanea.

Material	Vehicle Type	Number of lorries	Number of movements
Miscellanea	Various	50	100

3.4. Outline Construction Programme

- **Month 1 to 3** - Preliminary items such as CDM documentation, design, procurement, and mobilisation.
- **Month 4** – Site and compound area set up, commencement of access track:
 - 10% (estimated - 295) stone movements.
 - 100% (estimated – 60) site establishment.
- **Month 5** - Access track, cable trench/lay, and foundation 1 groundworks and reinforcement:
 - 15% (estimated – 443) stone movements.
 - 15% (estimated – 4) steel movements.
 - 15% (estimated – 126) concrete movements.
 - 100% (estimated – 4) cable movements.
- **Month 6** - Access track, cable trench/lay, and foundation 2 groundworks and reinforcement:
 - 15% (estimated – 443) stone movements.
 - 15% (estimated – 4) steel movements.
 - 15% (estimated – 126) concrete movements.
- **Month 7** - Access track, cable trench/lay, and foundation 3 groundworks and reinforcement:
 - 15% (estimated – 443) stone movements.
 - 15% (estimated – 4) steel movements.
 - 15% (estimated – 126) concrete movements.
- **Month 8** - Access track, cable trench/lay, and foundation 4 groundworks and reinforcement:
 - 15% (estimated – 443) stone movements.
 - 15% (estimated – 4) steel movements.
- 15% (estimated – 126) concrete movements

- **Month 9** - Access track, cable trench/lay, and foundation 5 groundworks and reinforcement:
 - 10% (estimated – 295) stone movements.
 - 10% (estimated – 3) steel movements.
 - 10% (estimated – 84) concrete movements.
- **Month 10** - Foundations ready for erection and civil/electrical contractor partial demobilisation.
- **Month 11 to 12** - Turbine supplier mobilisation and turbine component delivery:
 - 100% (estimated – 80) turbine component movements.
 - 50% (estimated – 2) crane and support vehicle movements.
- **Month 13** - Turbine erection.
 - 50% (estimated – 2) crane and support vehicle movements.
- **Month 14** - Commissioning and reinstatement.

3.5. Transporting Construction Material

Vehicles utilised for construction material will travel to site via the B3274 turning onto the unnamed road leading to Music Water Touring Park turning left at the junction and then onto the site. Ready mix concrete will be sourced locally where possible.

Imported stone will be sourced from local quarries using the same access as above via the B3274 and two unnamed roads.

Further clarification of the exact origination location of these materials will be completed and submitted upon request – subject to planning conditions.

All other materials are expected to originate from the main port areas which include the Avonmouth Port, as seen within **Figure 2**.

3.6. Surplus Arisings Vehicle Movements

Due to the nature and size of the existing site location, it is expected that all surplus spoil generated, during the construction phase, will be reused and lost onsite. As a result of this, **no** additional HGV movements will be necessary.

Important Note:

The information above is only an indication of the requirements and it is the crane and haulage contractor's responsibility to engage in an appropriate site survey before the commencement of the transportation and building works.

4. Abnormal Load Route – Main Routes and Management

Avonmouth Port, in Bristol, England, is the proposed port of delivery. The route for vehicle movements which includes all abnormal loads will start from the Port and end at Bears Down Wind Farm, Trevilledor Cross, Newquay, Cornwall, TR8 4HQ, as seen below in **Figure 2**.

The route will begin by exiting Avonmouth Dock onto King Road, then taking the second exit at the St Andrews roundabout onto Crawley Way. The route will continue along Crawley Way for 0.35km, reaching the St Brendan's Roundabout, taking the second exit, and continuing west for 0.78km. The route will then take the M5 slip lane and head south on the M5. The route continues along the M5 for 120km.

The route will take Junction 31 of the M5 onto the A30 and continue along the A30 for 119km, after which the route will take the A39/B3279 slip, taking the 3rd exit onto the A39. The route continues along the A39 for 8.4km, and during this section of the route three roundabouts are identified – the following exits will be taken at each roundabout:

- First roundabout (Halloon roundabout) – 4th exit
- Second roundabout (Trekenning roundabout) – 3rd exit
- Third roundabout (Winnard's Perch roundabout) – 1st exit

Upon exiting the third roundabout, the route joins the B3274 for 3.4km before turning left off the B3274 onto an unnamed road signed for Music Water Theme Park. The route continues along this road for 1.9km, then turns left travelling south for 0.65km before turning into the Bears Down Wind Farm access junction.

CE has assessed the route from Avonmouth Port to the site entrance, as seen in **Figure 2**. The assessment identified 15 points of interest (POI) between Avonmouth Port and the site entrance – swept path analysis has been completed for the POI identified along the route. The POI are described in **Section 5**, with swept paths shown in **Appendix A**.

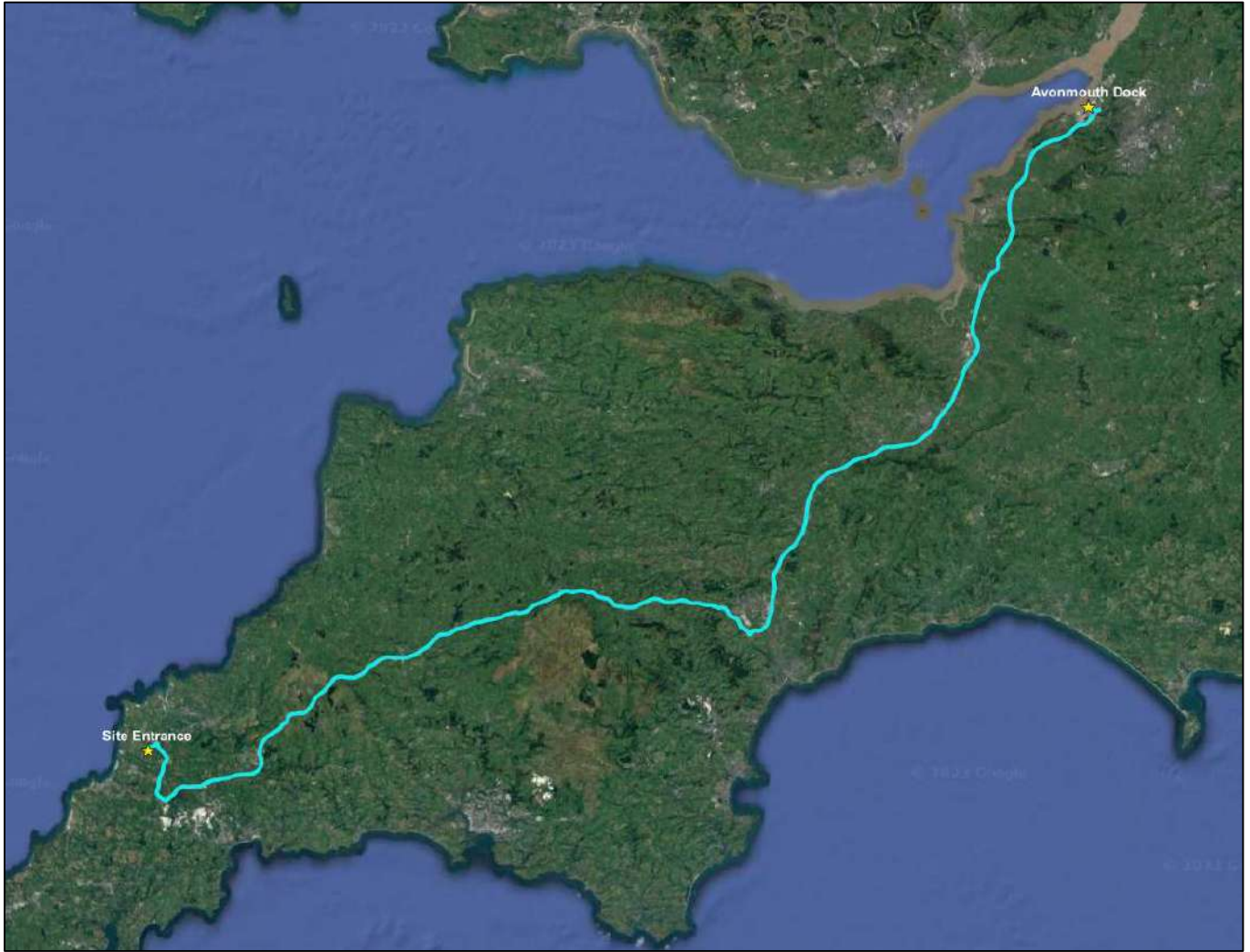


Figure 2: Route from Avonmouth Port to Site Entrance.

5. Swept Path Analysis (SPA)

A swept path analysis for abnormal loads has been completed from Avonmouth Port to the site entrance. The drawings highlight any potential mediation works which may be required for transportation. For this analysis, a 68m blade component has been modelled.

5.1. Swept Path Analysis from the Port to Site

15 points of interest (POI) were identified from the port to the site. POI locations are identified in **Figures 3, 4, and 5** and described in detail in **Section 5.2**.



Figure 3: Points of Interest 1-4.



Figure 4: Point of Interest 5.



Figure 5: Points of Interest 6-15.

Table 10: Summary of Abnormal Turbine Movement Points of Interest and Mitigation.

POI No.	POI Name	Drawing (Appendix A)	Detail	Mitigation
1	Avonmouth Port Access Gate	N/A	Loads will depart the port using the access gate onto King Road. Loads will be under police escort from this point through to the site access.	N/A
2	St Andrew's Roundabout	SK01 and SK01A	Loads will take the second exit at this roundabout.	• One road sign on the entry arm to be removed. • Over-run surface will be required on the exit lane. • Loads will require access to all lanes at the junction and the lead escorts will need to hold back oncoming traffic.
3	St Brendan's Roundabout	SK02	Loads will take the second exit at the roundabout. Loads will require access to all of the entry, circulation, and exit lanes of the junction.	N/A
4	M5 Slip Road	SK03 and SK03A	Loads will proceed ahead onto the slip road, joining the M5 westbound at Junction 18.	• Loads will oversail the inside of the slip road, vegetation may be trimmed back to accommodate this. • Three lighting columns on the outside of the slip road to be removed.
5	M5/A30 Slip Road	N/A	Loads will join the A30 at Junction 31.	N/A
6	A30/A39 Roundabout	SK04 and SK04A	Loads will take the second exit at this roundabout. Loads will require access to all lanes at this junction and the lead escorts will need to hold back traffic.	• Two lighting columns and two road signs to be removed, and a section of vegetation to be trimmed on approach to the roundabout. • Passing the first exit, one road sign and one lighting column to be removed. • Two sets of chevron signs and one road sign to be removed from southern verge of the central island. • One lighting column to be removed on the exit arm. • A section of vehicle restraint barrier to be removed on exit, and vegetation to be trimmed on exit. • Over-run surface required on the approach, central island, exit arm, and the section of the central

				reservation where the vehicle restraint barrier will be removed.
7	A39 Roundabout	SK05 and SK05A	Loads will contraflow this roundabout. Loads will require access to all lanes at the junction and the lead escorts will need to hold back oncoming traffic.	• A section of vehicle restraint barrier on approach to the roundabout to be removed and vegetation to be cleared. • Two chevron road signs and a left turn sign on the central island to be lowered. • A bollard on the exit arm to be removed. • Over-run surface required on the approach, central island and exit arm.
8	A39/Trekenning Roundabout	SK06 and SK06A	Loads will contraflow this roundabout. Loads will require access to all lanes at the junction and the lead escorts will need to hold back oncoming traffic.	• Sections of vegetation to be trimmed on approach, centre, and exit of all the roundabout. • One road sign on central island to be removed. • One road sign to be removed on exit.
9	A39 Winnard's Perch Roundabout	SK07 and SK07A	Loads will take the first exit at the roundabout. Loads will require access to all lanes at the junction and the lead escorts will need to hold back oncoming traffic.	• Use of third party land on the inside of bend. • One bollard to be oversailed. And one lighting column and one road sign to be removed on approach. • Section of vegetation to be trimmed and a lighting column to be removed on exit of the roundabout. • Over-run surface required on the approach.
10	B3274/Music Water Theme Park Junction	SK08 and SK08A	Loads will turn left off the B3274 onto an unnamed road. Loads will require access to all lanes at the junction and the lead escorts will need to hold back oncoming traffic.	• Use of third party land on the inside of the bend. • Vegetation to be cleared and one utility pole to be removed on the inside of the bend. • Over-run surface required on the approach. • One utility pole to be removed after the bend. • Check on the clearances of public utilities to be carried out along full length of road.
11	West of Lower Bogee Common	SK09 and SK09A	Loads will continue along the unnamed road heading south east. Loads will require access to all lanes and the lead escorts will need to hold back oncoming traffic.	• Vegetation to be trimmed. • Over-run surface required. • Check on the clearances of public utilities to be carried out along full length of this road, as per POI 10.

12	South West of Music Water	SK10 and SK10A	Loads will continue along the unnamed road heading east. Loads will require access to all lanes and the lead escorts will need to hold back oncoming traffic.	• Vegetation to be trimmed. • Over-run surface to be created. • One utility pole to be removed. • A check on the clearances of public utilities to be carried out along the full length of the road, as per POI 10.
13	South of Eddystone	SK11 and SK11A	Loads will continue along the unnamed road heading east. Loads will require access to all lanes and the lead escorts will need to hold back oncoming traffic.	• Vegetation to be trimmed. • Over-run surface to be created. • One utility pole to be removed.
14	South West of Eddystone Junction	SK12 and SK12A	Loads will turn left at this junction. Loads will require access to all lanes and the lead escorts will need to hold back oncoming traffic.	• Vegetation to be cleared. • Third party land to be used. • Over-run surface to be created. • Two road signs to be removed.
15	Bears Down Access Junction	SK13 and SK13A	Loads will turn left at this junction. Loads will require access to all lanes and the lead escorts will need to hold back oncoming traffic.	• Vegetation to be cleared. • Third party land to be used. • Over-run surface to be created.

6. Mitigation Measures

There are a number of traffic mitigation measures proposed to minimise the effect of general construction traffic on the road network. Many of these measures can also be applied to the movement of abnormal loads. The measures are described in the below section.

6.1. Measures to Reduce Dust and Debris

Mitigation measures will be implemented as follows:

- On site wheel washing facilities located near the site entrance to remove dirt and mud from the wheels of delivery vehicles, as seen in **Appendix B**.
- As far as reasonably practicable, HGVs carrying aggregate to and from site will be covered during transport.
- Mechanical road sweeping will be carried out as necessary to remove mud and debris from the surface of the local road network.
- An onsite drainage system will prevent runoff from newly constructed access tracks and hardstanding's from reaching the local road network.

6.2. Traffic Signage and Markings

Temporary construction site signage will be positioned on the local road network on the approach to the proposed development site to direct construction traffic and warn road users of construction activities and associated construction vehicles. The exact nature and location of the signage will be agreed with Cornwall Council prior to construction activity on site.

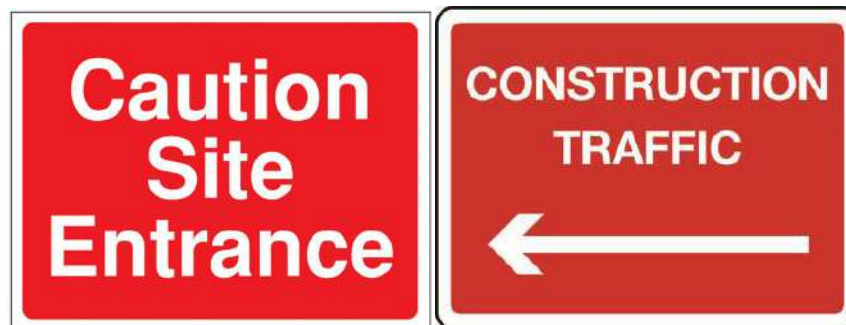


Figure 6: Examples of Construction Traffic Signage.

6.3. Working Hours

The proposed working hours during the construction phase of the development are 0700-1900 hours Monday to Friday and 0700-1300 on Saturday. Although out of hours (1900-0700) working will not normally be required, certain works may have to be undertaken during this period.

Abnormal load deliveries will be scheduled to avoid peak travel hours in order to minimise disruption.

6.4. Contractor Parking

Appendix B highlights the compound area and designated parking area for contractor vehicles. It is expected that after completion of the turbine hardstanding areas, these will also be used as contractor parking where necessary. The parking area is therefore determined to be more than adequate, and no vehicles will be parking at or close to the site entrance. Parking beyond the site boundary, on the local road network will be prohibited.

6.5. Notifications to Local Authorities and Police Forces

The appointed haulage contractor will be responsible for obtaining the required permits and publishing the details of abnormal load movements in line with the minimum required notice period, as stated in the regulations for construction and use and the Road Vehicles (Authorisation of Special Types) (General) Order 2003 for indivisible loads.

VR1 permits will be obtained by the turbine manufacturer, or their chosen haulier where required, prior to delivery and construction.

6.6. Measures to Minimise the Need to Road Modifications

Superwing carrier trailers will be used to transport turbine blades, with a wheelbase and platform height that can be modified during transport, again reducing the requirement for corner modifications and the removal of low-level street furniture.

7. Conclusion

This report details the proposed travel routes for construction traffic associated with the proposed wind farm at Bears Down, Trevilledor Cross, Newquay, Cornwall, TR8 4HQ. Further information on abnormal load transports is contained within **Appendix A**.

Based on the scale and duration of the construction phase, the potential impact relating to the HGV traffic would be minimal, causing minor disruption to other road users along the route and in the local area. The removal of street furniture would only be temporary and any proposed modification works would have been minimised where possible.

For the installation of the turbines, there will be a total estimated number of 112 abnormal load movements for the main components and an additional 3,902 movements related to site materials.

Adequate visibility splays have been provided (**Appendix C**), as well as the proposition of any required signage and traffic management procedures to ensure any potential impact to existing road users is minimised.

On the basis of the above, it is not deemed that the potential impact relating to the construction traffic over the construction period would be significant. Any minor impacts would only have effect over a localised time period.

8. Appendices

Appendix A – Swept Path Analysis & Abnormal Indivisible Load Route Survey – provided separately.

Appendix B – Site Compound, Contractor Parking Area, and Wheel Washing Area.



Appendix C – Visibility Splays on Approach to Site Entrance.

