



Pell Frischmann

Garn Fach Wind Farm

Transport Management Plan
Appendix 13.2

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1 Introduction

1.1 Purpose of the Report

Pell Frischmann (PF) has been commissioned by Dulas, on behalf of EDF Renewables, to undertake a Transport Management Plan (TMP) for the proposed Garn Fach Wind Farm, located north west of Llanbadarn Fynydd, Powys.

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The TMP identifies the key points, issues and management proposals associated with the route that may require remedial works to accommodate the predicted loads. The designs of these remedial works, however, are beyond the agreed scope of works. It is the responsibility of the turbine supplier to ensure that the access route from the Port of Entry (POE) to the site is fit for purpose and that appropriate consideration for all road users has been made in accordance with the relevant health and safety legislation and ruling transport requirements.

Where references are made to work by third parties, Pell Frischmann do not accept any liabilities for these items or issues based upon them.

Whilst this report primarily features the requirements of those loads classed as abnormal under current legislation, it also contains elements relevant for the transport of other non-abnormal turbine components and materials.

This TMP is a draft document and if the development is approved, will be used in the development of the operational TMP and the TMP issued to Abnormal Indivisible Load (AIL) and non-AIL contractors. As such, it is important that continuity is provided in this approach to future proof road safety and to discharge Construction Design and Management (CDM) Regulation requirements to the client team and those authorities that influence the design of traffic management measures.

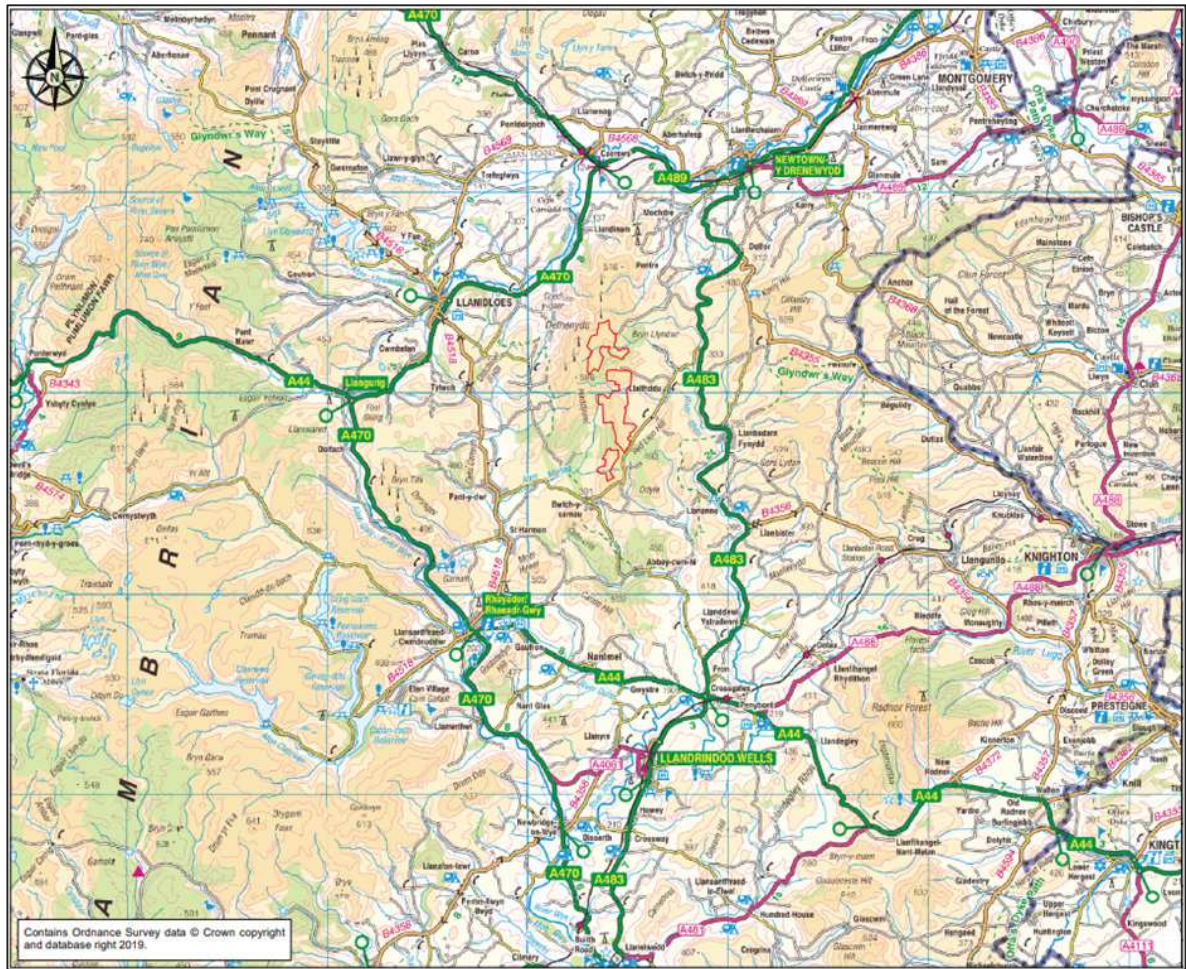
2 Site Background

2.1 Site Location

The location of the proposed wind farm site is illustrated in Figure 1. The site is located to the south of Newtown, Powys and consists of three parcels of land within the development area. It is proposed that turbines will be sited in the northern and middle parcels and not in the southern parcel of land.

Access to the site is via the C2025 and the U2835 roads leading from the A483. The access from the A483 is the same as that used to access the operational P&L Wind Farm.

Figure 1: Site Location



In summary, the proposed Development will comprise:

- 17 wind turbines (maximum blade tip height of 149.9 m) with associated turbine foundations and hardstanding areas;
- A network of underground cables linking the turbines to a grid connection point (please note that the off-site grid connection is subject of a separate planning application and as such is not covered in this assessment);
- Onsite access tracks connecting the turbine locations with the public road network;
- An upgraded access junction onto the A483;
- A substation and control building;
- Energy Storage facility; and

- Temporary works including construction compounds and borrow pit search areas.

A complete description of the proposed Development for the purposes of the EIA regulations is provided in the Environmental Statement (ES) Volume 1, Chapter 5.

2.2 Candidate Turbines

EDF have indicated that they wish to consider worst case loads for turbines with a rotor diameter up to 136m, up to a tip height of 149.9m. The candidate turbines that are considered to be the worst case loads that have been used in this assessment are the Vestas V136 and Nordex N133.

The V136 blade and the worst case Nordex N113 tower have been used in the assessment as these are the loads with the largest kinematic envelope and therefore represent the worst case assessment loads. The details of the components are summarised in Table 1.

Table 1: Turbine Size Summary

Component	Length (m)	Width (m)	Height (m)	Weight (t)
Vestas V136 Blade	66.500	4.265	2.750	15.701
Nordex N133 Tower	24.03	4.02	4.02	47.800

A Route Survey Report detailing the turbine components and the proposed access route is provided in Appendix 13.1, Transport Assessment in Annex A. Full vehicle and load details will be provided once the finalised turbine has been selected.

The selection of the final turbine model and specification will be subject to a commercial procurement process following consent of the application. The actual dimensions may therefore vary slightly from those assumed as part of this assessment, although any differences will result in a smaller component.

The Transport Management Plan would be finalised once the turbine selection process had been completed, expected in 2026 / 2027. To ensure that this is undertaken, a planning condition requiring the production of a TMP will be required and all works noted in it, approved by the various road authorities along the route.

This report therefore should be treated as a draft only. The full technical details will be provided in the finalised plan, produced post consent.

To provide a robust assessment scenario based upon the known issues along the access route, it has been assumed that all blades would be carried on a Super Wing Carrier to reduce the need for mitigation in constrained sections of the route.

Where constraints are extreme, loads would be transferred onto a Goldhofer blade lifting trailer. This trailer has the ability to lift blades up to a maximum angle of 60 degrees, lifting blades over potential constraints and shortening the plan view length.

Towers would be carried in a 4+7 clamp adaptor style trailer, whereas loads such as the hub, nacelle housing and top towers would be carried on a six axle step frame trailer.

Examples of the vehicles and trailers are shown in Figures 2, 3 and 4.

All the trailers used in the transport process are specifically designed for the transport of components or feature custom modifications to suit loads. All feature rear wheel steering and the nacelle and tower load adaptor trailers feature hydraulic lift capabilities to adjust ground clearances.

When not transporting components, the trailers are collapsed so that they do not exceed normal HGV dimensions.

The trailers are built to a high standard and the tractor units are designed for heavy haulage. Regular checks are undertaken on the vehicles on a daily basis as outlined in later sections of the report. As such, the mechanical state of vehicles is kept at a very high level and breakdowns or malfunctions are very rare.

Figure 2: Super Wing Carrier with Loaded Turbine Blade



Figure 3: Blade Lifter Trailer



Figure 4: Typical Tower Transport Trailer



2.3 Legislative Background

The UK Government describes an Abnormal Indivisible Load (AIL) as “any load that cannot be broken down into smaller loads without undue expense or risk of damage”. AIL movements remain a reserved matter for the UK parliament.

There are four main pieces of legislation that cover AIL movements as defined by the WG.

- The Road Vehicles (Construction & Use) Regulation 1986. This covers all aspects of the vehicles setup from the weights and dimensions through to the braking system and environmental standards.
- The Road Vehicles (Authorised Weight) Regulations 1998. This regulation sets the limited maximum weight of the vehicle and axle loading of different vehicle categories.
- The Road Vehicles (Authorisation of Special Types) (General) Order 2003. The STGO is for vehicles not covered by either of the above Regulations and covers wind turbine component delivery vehicles which are categorised as N3 for the tractor units and O4 for the specifically designed trailers. It states that the Police, the relevant highway and bridge authorities or the Secretary of State may need to be notified of vehicle movement, dependent on the size of the load.
Notifications can be made online through the ‘Highway Agency’s Electronic Service Delivery for Abnormal Loads (ESDAL) System’ or in paper form using the BE16 form for Special Orders.
- The Road Vehicles Lighting Regulation 1989 (Authorisation of Special Types) (General) Order 2003. This regulation defines whether front, side and rear lamps and reflectors are mandatory and which ones are permitted and which are not permitted.

Applications for a ‘Vehicle Special Order’ (VSO) should be made to the Vehicle Certification Agency (VCA) and it is recommended that applications are applied for at least 8 weeks prior to planned vehicle movements.

To support the movement of abnormal loads the Police may be required to stop other traffic. In order to bolster existing powers, a Temporary Traffic Regulation Order (TTRO) will be required to cover the delivery period to allow the Police to stop and redirect where necessary.

2.4 sTMP

A strategic Transport Management Plan (sTMP) was prepared in 2012 by Renewables UK Cymru (RUK) to support AIL deliveries into the TAN 8 search areas. This document was accepted by both the Welsh Government and Powys County Council as the agreed strategy for turbine delivery from the north into Mid Wales via the A483 and A470.

Sections of the sTMP have now been realised with the recent construction of Tir Gwynt and Garreg Lwyd wind farms, both using longer bladed turbines.

Historic test runs associated with the sTMP have been undertaken along the whole of the proposed access route through to Garreg Lwyd. The sTMP has been proven for deliveries for Bryn Blaen, Tir Gwynt and Garreg Lwyd wind farms, with no adverse issues noted on the A483 and A5 sections that are common to this site.

2.5 General Construction Traffic

An estimate of the traffic associated with the construction phase of the development has been included in the Transport Chapter 13 of the ES.

Construction of the scheme is likely to take approximately 18 months with works expected to commence in late 2028. Estimates have been made of the likely number and type of heavy vehicle movements including abnormal loads requiring access to the site to deliver plant, equipment and materials for the various activities and stages of construction (two-wheel vehicle access is not included).

Heavy goods vehicles (HGVs) are required during the construction process for:

- Mobilisation – the initial delivery of plant and equipment to the site;
- Daily service and deliveries – for example the delivery of concrete;
- Delivery of components; and
- Demobilisation (the reverse of mobilisation).

The largest numbers of movements to and from site would coincide with the final stages of track construction and concrete pours for the turbine foundations. Further details of the construction traffic can be found in the supporting transport chapter 13 in the ES.

An assessment of the likely significance of effects of the traffic associated with the proposed wind farm during construction and operation has been undertaken. Based on existing traffic data, the estimated volume of construction traffic, the implementation of mitigation measures such as an appropriate traffic management plan and suitable liaison with the relevant authorities, an assessment of the residual effect has been made. The residual traffic and transport effects are temporary and have been assessed as having no significant or lasting impact.

3 Access Route

3.1 Port of Entry

The closest feasible Port of Entry (POE) is Birkenhead Docks, located approximately 60 miles to the north of the proposed site entrance.

Birkenhead was used for deliveries by Bryn Blaen Wind Farm. Other recent sites have used ports nearby (Clocaenog was required to use Ellesmere, however this port is not suitable for large blade deliveries and Garreg Lywd used Liverpool for vessel efficiency reasons).

The port facilities at Birkenhead have suitable marine access and storage areas and is used to accommodating abnormal load requirements.

Access from the port is via the A5139 and M53. Minor street furniture works may be required to enable access from the port onto the A5139 and onto the M53 junction.

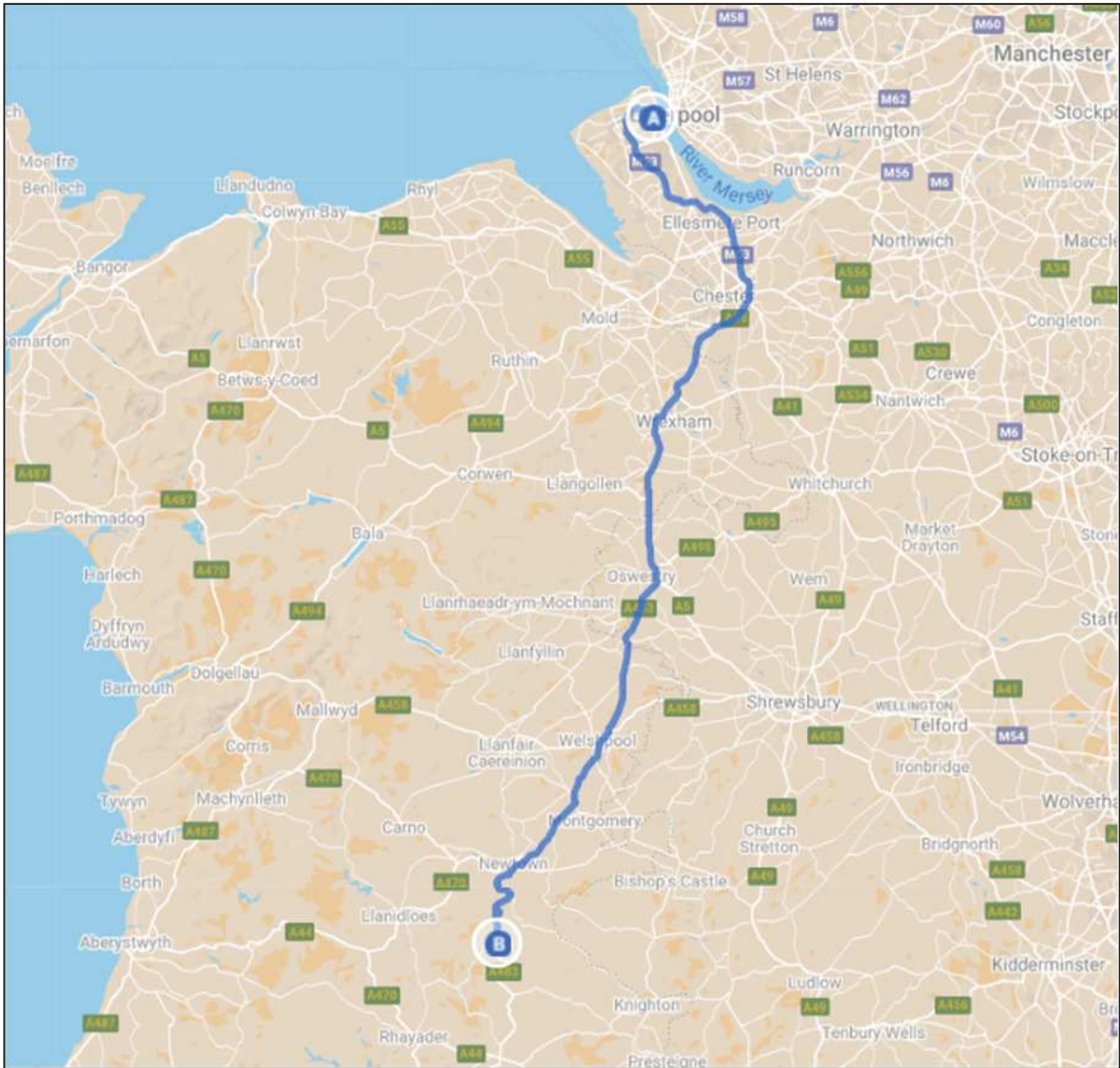
3.2 Proposed Route to Site

The proposed access route to site is as follows:

- Loads would depart the port and would enter Dock Road proceeding westbound;
- At the A5139 Roundabout, loads would take the second exit and would join the A5139 westbound;
- Loads would join the M53 at Junction 1 and would then proceed southbound, continuing onto the A55;
- At Junction 38 loads will take the A483 southbound and will continue on the A483 / A5 / A483 through to Newtown;
- Loads will proceed onto the Newtown Bypass, before turning south onto the A483 proceeding towards Dolfor;
- Loads will pass through Dolfor on the A483; and
- Loads will then turn right onto the C2025 and U2385, proceeding to the site access. Loads will access the wind farm site on the unsurfaced road, located to the east of the existing P&L wind farm control building.

The proposed route is illustrated in Figure 5.

Figure 5: Proposed Access Route



4 Access Constraints

4.1 Route Review

The route was surveyed from the port access gate through to the site entrance junction location. The locations of constraint points noted are illustrated in Appendix A.

Where physical constraints have been noted, these have been the subject to a swept path assessment for the critical loads outlined previously. The swept path drawings are provided in the Route Survey Report.

Where operational constraints have been noted, appropriate traffic management measures have been noted.

The location and description of constraints noted on the site visit are detailed in Table 2. It is proposed that infrastructure created as part of the sTMP will be reused for these AIL deliveries wherever possible and where the Police deem it necessary.

Table 2: Turbine Size Summary

Reference Point	Image	Details
1	Birkenhead Harbour, Dock Road 	Loads will head north-west after leaving the port. Loads will overrun and oversail the footway on exit from the quay where a load bearing surface should be laid. Pedestrians should be held back from the footway and traffic on all arms of the junction held. Loads will then join the carriageway and turn left at the junction. Loads will oversail the southern edge of the splitter island along with the southern footway and verge. Pedestrians and other road users will need to be held back during these manoeuvres.
2	Birkenhead, Dock Road Roundabout 	Loads will undertake a contraflow manoeuvre of the junction to access the A5139 westbound. Oncoming traffic should be held 70m in advance of the junction. Other road users at the junction should be held back from entering the junction to allow loads to pass in safety. Trailing traffic should also be held out of the junction until loads return to the correct lane.
3	A55 / A483 Junction 	Loads will take the first exit of the roundabout, onto the A483 southbound. The lead escort should hold circulating traffic at the entry and the rear escorts must prevent trailing traffic from trying to overtake or undertake at the slip road.

Reference Point	Image	Details
4	A483 River Dee Viaduct 	Loads should cross the bridge at caution as there is a crosswind warning for the structure. A weather review must be undertaken on each day of deliveries and updates provided during the tool box talks.
5	A5 / A483 Halton Roundabout 	Loads will proceed ahead onto the A483 cutting across the central island of the roundabout. The lead escort must ensure that circulating traffic is held at the entry to the junction and that other road users do not enter from other arms of the junction.
6	A5 Gledrid Roundabout 	Loads will take the second exit at the junction and will continue south on the A5 cutting across the edge of the central island of the roundabout. The lead escort must ensure that circulating traffic is held at the entry to the junction and that other road users do not enter from other arms of the junction.
7	A5 Five Crosses Roundabout 	Loads will take the third exit at the roundabout using a contraflow manoeuvre and continue south on the A5. Oncoming traffic should be held 70m in advance of the junction. Other road users at the junction should be held back from entering the junction to allow loads to pass in safety. Trailing traffic should also be held out of the junction until loads return to the correct lane.
8	A5 Level Crossing West of Parkhall 	Loads will cross a Network Rail Level Crossing. Network Rail should be informed of all planned movements in advance, even though the crossing is mothballed.

Reference Point	Image	Details
9	A5 Whittington Roundabout 	Loads will take the second exit at the roundabout using a contraflow manoeuvre and continue south on the A5. Oncoming traffic should be held 70m in advance of the junction. Other road users at the junction should be held back from entering the junction to allow loads to pass in safety. Trailing traffic should also be held out of the junction until loads return to the correct lane.
10	A5 Mile End Roundabout 	Loads will use a contraflow manoeuvre of both roundabouts and continue south on the A483. Oncoming traffic should be held 70m in advance of the southern junction. Other road users at both junctions should be held back from entering the junctions to allow loads to pass in safety. Trailing traffic should also be held out of the junction until loads return to the correct lane.
11	A483 Weston Level Crossing 	Loads will cross a Level Crossing. Network Rail should be informed of all planned movements in advance even though the crossing is mothballed.
12	A483 North of Sweeney 	Loads will continue south on the A483. The lead escorts should hold oncoming traffic 70m in advance of the bend.

Reference Point	Image	Details
13	A483 Sweeney  	Loads will continue south on the A483 near Sweeney. The lead escorts should hold oncoming traffic 70m in advance of the bend.
14	A483 Llynclys Rail Bridge 	Loads will continue south along the A483 crossing over a narrow rail underpass. The lead escorts should hold oncoming traffic 70m in advance of the bend.
15	A483 Pant / Llanymynech 	Loads will continue south along the A483 through the village of Pant. The lead escorts should hold oncoming traffic in advance of POI 17 to ensure that they have access to both lanes of the road at this location.
16	A483 Pant / Llanymynech 	Loads will continue south on the A483 The lead escorts should hold oncoming traffic in advance of POI 17 to ensure that they have access to both lanes of the road at this location. Pedestrians should be held back at this location to allow loads to oversail the footway. The traffic management contractor will provide suitable banksmen to allow this to occur in safety.

Reference Point	Image	Details
17	A483 Pant / Llanymynech 	Loads will continue south on the A483. The lead escorts should hold oncoming traffic in advance of this section, using the long straight section of road in the middle of Llanymynech.
18	A483 Bends South of Llanymynech 	Loads will proceed south on the A483. The lead escorts should hold oncoming traffic 70m in advance of the bend.
19	A483 Four Crosses Roundabout 	Loads will take the second exit of the roundabout to continue south along the A483. The lead escort must ensure that circulating traffic is held at the entry to the junction and that other road users do not enter from other arms of the junction.
20	A483 Wren 	A potential layover point is available to the right of the A483 at this location and could be used for traffic management purposes to allow trailing traffic to overtake the convoy

Reference Point	Image	Details
21	A483 Pool Quay 	Loads will pass over the humped section of road at caution. The nearby former roads depot can be used for traffic management purposes to allow trailing traffic to overtake the convoy.
22	A483 / A458 Roundabout 	Loads will undertake a contraflow manoeuvre through the roundabout and continue south. Oncoming traffic should be held 70m in advance of the junction. Other road users at the junction should be held back from entering the junction to allow loads to pass in safety. Trailing traffic should also be held out of the junction until loads return to the correct lane.
23	A483 / B4381 Welshpool Roundabout 	Loads will take the first exit and will continue on the A483 southbound. The lead escort must ensure that circulating traffic is held at the entry to the junction and that other road users do not enter from other arms of the junction.
24	A483 Sarn Bryn Caed Roundabout 	Loads will take the second exit and continue on the A483 westbound. The lead escort must ensure that circulating traffic is held at the entry to the junction and that other road users do not enter from other arms of the junction.
25	A483 Garthmyl 	Two bollards should be removed from the splitter island to allow for oversail by wider loads. Loads will pass the crossing at caution. The lead escorts should hold oncoming traffic 70m in advance of the bend.

Reference Point	Image	Details
26	A483 Abermule 	The former road depot at this location would be suitable for use as a traffic management hold area and would be used to allow police force change over and for drivers to undertake a break to allow compliance with driving time legislation. The depot area could be used to transfer the blades from the Superwing Carrier into the lifting trailer. The area would require two crane pads to lift blades from one trailer to the other. Alternatively, a third party field could be temporarily used where more space is available. Blade transport from this point onwards would be transported using the blade lifting trailer.
27	A483 North of Newtown 	Load will occupy the entire carriageway through the bend section however no physical mitigation is required. The lead escorts should hold oncoming traffic 70m in advance of the bend.
28	A483 Penarth Vineyard 	Load will occupy the entire carriageway through the bend section however no physical mitigation is required. The blade should be carried in the lowered position at this location. The lead escorts should hold oncoming traffic 70m in advance of the bend.
29	A483 Newtown Bypass Roundabout 1 	Loads will continue west through the new bypass roundabout. The lead escort must ensure that circulating traffic is held at the entry to the junction and that other road users do not enter from other arms of the junction. Trailing traffic can be released from behind the convoy using the climbing lane.

Reference Point	Image	Details
30	A483 Newtown Bypass Roundabout 2 	Loads will undertake a contraflow manoeuvre through the new bypass roundabout. Oncoming traffic should be held 70m in advance of the junction. Other road users at the junction should be held back from entering the junction to allow loads to pass in safety. Trailing traffic should also be held out of the junction until loads return to the correct lane.
31	A483 Newtown Bypass Roundabout 3 	Loads will take the first exit at the roundabout heading south. Prior to turning left, the convoy will stop to allow trailing traffic to pass in safety at the overtaking lane. On advancing to the junction, the lead escort must ensure that circulating traffic is held at the entry to the junction and that other road users do not enter from other arms of the junction.
32	sTMP Hold Point 1 	Oncoming traffic will be held in advance of the hold point constructed as part of the wider sTMP works on the A483. The convoy will pull onto the hold point to allow oncoming traffic and trailing traffic to be released under police control.
33	sTMP Hold Point 2 	Oncoming traffic will be held in advance of the hold point constructed as part of the wider sTMP works on the A483. The convoy will pull onto the hold point to allow oncoming traffic and trailing traffic to be released under police control.

Reference Point	Image	Details
34	sTMP Hold Point 3 	Oncoming traffic will be held in advance of the hold point. This area of wide road was specified in the sTMP as being suitable for abnormal loads and was successfully used for deliveries for Garreg Lwyd Wind Farm. The convoy will pull up to the road edge to allow oncoming traffic and trailing traffic to be released under police control.
35	sTMP Hold Point 4 	Oncoming traffic will be held in advance of the hold point. This area of wide road was specified in the sTMP as being suitable for abnormal loads and was successfully used for deliveries for Garreg Lwyd Wind Farm. The convoy will pull up to the road edge to allow oncoming traffic and trailing traffic to be released under police control.
36	sTMP Hold Point 5 	Oncoming traffic will be held in advance of the hold point constructed as part of the wider sTMP works on the A483. The convoy will pull onto the hold point to allow oncoming traffic and trailing traffic to be released under police control. The advance escorts will proceed to POI 38 to hold oncoming traffic at the junction and to allow the convoy a clear run to the site access.
37	A483 / C2025 Junction 	Loads will turn right onto the C2025. The lead escort will hold oncoming traffic back at the junction to allow loads to turn in safety.

Reference Point	Image	Details
38	C2025 / U2835 Junction 	Loads will turn left onto the U2835. Oncoming traffic on the C2025 will be held in advance of the junction. The lead escort will hold oncoming U2835 traffic at the bypass section proposed on the road so that loads can travel around any oncoming traffic. The advance escort will hold any oncoming traffic at POI 39.
39	Site Access Junction 	Loads would continue ahead onto the BOAT section of the access track. Traffic from the right would be held by the lead escort. Loads would continue onto the site through to the turbine sites.

4.2 Structures Review

An Electronic Service Delivery for Abnormal Loads (ESDAL) consultation will be undertaken following consent and once the turbine selected for the site has been selected. Given that deliveries will not commence until at least 2028, the condition of roads and structures are likely to have changed and potentially new infrastructure introduced. As such, undertaking a detailed weight review at this point in time is premature.

4.3 Ancillary Measures

To support movements, banksmen and a Movement Co-ordinator will be appointed. The Movement Co-ordinator will act as the main point of contact for the developer, turbine supplier, haulier, the Balance of Plant (BoP) contractors, Welsh Government, Highways England, planning authorities and the Police. The Co-ordinator will be in place two months prior to loads moving and will be responsible for the implementation of the TMP and for any changes and or updates.

A traffic management contractor will also be appointed to support the movement of loads along the access route. The contractor will be approved by the North & Mid Wales Trunk Roads Agent (NMWTRA) and will be responsible for assisting loads at specific locations, removal and replacing street furniture, opening and closing depot gates and for temporary warning signs along the access route.

4.4 Condition Review

A before and after condition review of the trunk road infrastructure changed or altered following use by abnormal loads will be undertaken before and after deliveries. Any damage caused will be repaired at the developer's cost following the post-delivery inspection.

5 Convoy Movement Strategy & Proposed Mitigation

5.1 Convoy Management Strategy

The abnormal loads would be transported in a convoy with Police escorts. The convoy would be made up of the following vehicles:

- 3-4 Police outrider motorcyclists, providing close and advance escort protection;
- 1 police command vehicle, proving a control point for the outriders, located at either the front or rear of the convoy, depending upon movement instructions;
- 1 traffic management vehicle (operating in specific sections such as those in urban areas to provide additional traffic management support to the Police) providing traffic management support to the convoy. Please note that this vehicle would be manned by specifically trained personnel to assist with close convoy traffic management. Other traffic management teams could be stationed along the route to assist at specific points where socket signage, etc are required;
- 2 – 3 abnormal loads. The Welsh Police have previously allowed 3 loads per convoy during deliveries for other projects. It is proposed that convoys would not exceed two blade deliveries, but that two tower sections and a shorter load such as a hub or drive train may be able to travel in convoy, depending upon the views of the Police at the time of delivery; and
- 1 civilian escort. This vehicle is located behind the last abnormal load and provides steersman support to the AIL drivers.

The convoy is controlled by the Police when on the public highway. All movements made would be done so under their instruction.

The Police have indicated that they wish to keep AIL convoys moving as much as possible and will operate a “rolling roadblock”, by continuing ahead of the convoy and halting oncoming traffic where and when required. To be clear, it is only in highly constrained sections of the route (south of Newtown and the C2025 and U2835) that oncoming traffic will have to be managed in this way.

In unconstrained sections, where oncoming traffic will be able to pass safely whilst the convoy is moving are referred to as “free running”. Sections where at specified points oncoming traffic will be held by Police to enable the convoy to navigate a constrained length of carriageway are referred to as “held running”.

Oncoming traffic at junctions will be held back by Police escorts for a distance of at least 70m to allow the safe passage where loads are manoeuvring. The motorway and dual carriageway sections of the route will not present significant issues for other road users. The loads will remain in Lane 1 or crawler lanes where available. Other road users will be able to safely pass the loads.

Where loads project outwith dual carriageway lanes, the Police have previously advised that they would not wish passing traffic to pass. To overcome this, the Police have indicated that over-sail of hard shoulders / verges is permitted, or that the convoy would stop to allow overtaking where the office in charge deems it prudent.

5.2 Traffic Management

The hold points are predominantly required at locations where there is a potential for the wider loads to come into potential conflict with oncoming HGV traffic. The Freight Transit Association (FTA) advises that an average HGV is 2.55m wide in the body. The driver side wing mirror would account for a further 0.1m, requiring a minimum clear passage of 2.65m, assuming the offside mirror can over-sail the verge.

The hold points have been selected at locations where sufficient space is available to allow Loads to pass stationary traffic (assumed traffic width of 2.65m plus a safety margin of 0.450m as required by the Welsh Government).

All of the existing sTMP hold points (between Oswestry and the A483 / C2025 junction will be reused) and their operation would be as set out in the approved sTMP. In all circumstances, the convoy can pass stationary traffic, either moving entirely on the road, or by over-sailing the verge where there are no obstructions/footway.

No new layby or hold point works are proposed on the trunk road network..

Depending upon following traffic volumes, the police convoy commander may elect to use unidentified on-road hold points to allow the passing of trailing traffic. This would be undertaken by police officers on the ground.

The operation of the hold point would be as follows:

- The advance police outrider would move ahead of the convoy to the hold point location;
- At the hold point, the outrider would stop oncoming traffic under existing Police powers and the TTRO powers;
- The convoy would progress to the hold point where it would either pass or stop, depending upon the need to release following traffic;
- The held oncoming traffic would then be released under Police control;
- If required, oncoming traffic would be held to allow the release of trailing traffic; and
- The convoy would continue.

Traffic conditions on the day may not require the use of all hold points. The number of hold points provided represents a worst case example and officers on the day would be free to reduce the points using their judgement of traffic flows.

Strategic layover points to take the entire convoy off the road have also been proposed to allow for driver breaks, and strategic traffic management at Abermule and Pool Quay. Should loads need to be parked up should the police need to move away for emergency duties, or for other emergency uses, a series of existing laybys or hold points have been identified for this use.

5.3 Delivery Timings

The timings of deliveries have been estimated for non-blade and blade loads. This is due to the change over from the Superwing Carrier trailers to the blade lifting trailer.

Further detail on timings would be confirmed post consent once the turbine selection had been confirmed.

Table 3: Indicative Timing (Non Blade Loads)

Time	Location	Comment
Depart at 0930	Birkenhead Docks	Loads will depart the port at 0930 under escort by Cheshire / Mersey Police.
Depart 1040	Wrexham	
Arrive 1140	Pant	
Arrive 1210		
Depart 1225	Pool Quay	Allow 15-minute break for drivers and police
Arrive 1245	Welshpool	
Arrive 1315 Depart 1405	Abermule	Allow 50-minute break from drivers to comply with working time directives and for Police force change to Dyfed-Powys officers.
Arrive 1415	Newtown	Northern Outskirts
Arrive 1420	Newtown Bypass / A483 Junction	
Arrive 1430	Dolfor	Village Center
Arrive 1440	A483 / C2025 Junction	

Time	Location	Comment
Arrive 1500	Site Access Junction	Enters the unsurfaced road and proceeds to the turbine locations on private access tracks.

The blade lifter operates at a slower speed than the tower deliveries due to the higher centre of gravity. As such, a separate set of journey timings has been undertaken and is presented in Table 4. Given the speeds estimated, it is suggested that these movements are undertaken in the early morning, allowing deliveries to be made whilst affecting as few other road users as possible.

Further discussion with the Police will be undertaken to review timings for the blade lifter, with travelling at night also being considered.

The blade transit times from the blade transfer area located at Abermule depot or a location in close proximity are provided in Table 4.

Table 4: Indicative Timing (Blade Loads)

Time	Location	Comment
Depart 0500	Abermule	Depart in the early morning to gain early civilian daylight but avoiding other road users
Arrive 0525	Newtown	Northern Outskirts. Blade elevated
Arrive 0530	Newtown Bypass / A483 Junction	Blade elevated
Arrive 0555	Dolfor	Village Centre. Blade elevated
Arrive 0615	A483 / C2025 Junction	Blade elevated
Arrive 0655	Site Access Junction	Enters the unsurfaced road and proceeds to the turbine locations on private access tracks.

5.4 Queue Delays

Queue delays from AIL movements in Birkenhead to the M53 will be minimal given the short distance involved (circa 2 miles). Whilst on the M53, no significant queues are estimated given the type of road available.

Queues from the A55 to the A483 / C2025 junction will be similar to those predicted and accepted as part of the sTMP. As such, these are not repeated in this document. Given that blades in the upright position will be travelling outwith normal traffic hours, queues will be reduced when compared to travel times in afternoons.

The impact of the convoys with all the mitigation measures already delivered on the A483 in place, is considered to be no worse than the imposition of agricultural traffic during moderate to heavy traffic flows. The temporary inconvenience that could be caused by delivery vehicles must be viewed in the context that the delivery period is restricted to no greater than 6 weeks and is a 1 in 25 year event.

During actual deliveries, a careful monitoring of trailing traffic will be made by the Police escort who will judge when the convoy is to pull over to allow following traffic to pass. The police will also review the likely conflicts between the convoy and oncoming traffic where constraints exist. It is suggested that the convoys operate outwith the peak times, preferably in the morning to reduce potential conflicts with other road users. Given that the police will have the final say on convoy movements, it is difficult to further estimate with any degree of certainty the level of delay to other road users at this stage, save to say that any such delay will clearly be limited and well within guidance.

Further theoretical queue estimations cannot be wholly accurate as they are dependent upon journey time, seasonality, events, traffic composition, etc. A more developed timing review would be undertaken in the finalised TMP produced post consent.

5.5 Advance Warning Signs

Advance warning signs would be installed on the approaches to the affected roads network. Temporary signage advising drivers that abnormal loads will be operating could be erected on the non-dual carriageway sections of the route and the roads leading from the harbour. Signs such as the examples shown in Figure 6 could be installed to help assist drivers and pedestrians. Separate bilingual signs could be provided if the dual language ones are considered inappropriate.

Figure 6: Indicative Information Signs (Left Vehicular / Right Pedestrian)



The purpose of this type of the vehicular signage is to help improve driver information and allow drivers of oncoming traffic to consider proceeding to the nearest convenient passing bay (when directed to by the Police or escorts), or breaking their journey until the convoy has moved on.

The temporary pedestrian warning signs would be erected within urban areas to alert pedestrians of the proposed loads. The time and date section of the sign could be written in marker pen so to allow re-use of the sign during the life of the project. The signs would be fixed by means of cable ties (or similar) to existing street furniture.

5.6 Public Information

Information on the movement of abnormal load convoys should be provided to local media outlets to help assist the public. Information could be provided to local newspapers and radio stations, which may include:

- BBC Radio Wales;
- BBC Radio Cymru;
- Heart North West and Wales; and
- The County Times.

It is hoped that this level of information will make residents aware of convoy movements and help reduce any potential conflicts.

EDF will also produce a local newsletter for distribution to properties along the most affected sections of the proposed access routes, advising of convoy movements and the measures put in place to ensure the safe and efficient operation of the road network.

It may be possible, Police permitting, to provide convoy movement updates on the Police Twitter feed. Consultation with the Police will be held on other forms of communication that could also be utilised.

6 Traffic Management Plan

The Transport Management Plan by its definition is a live document and should be updated on a regular basis to reflect changes in road, load and operational conditions that may develop over the delivery period.

The safe and efficient transport of all loads associated with the wind farm is vital and experience gained on the project must and will be presented in the report as it develops. As such, following planning consent, this document should be considered a controlled document and updates made and logged as and when required. All those developing this plan and influencing it, may be liable under CDM regulations and as such, it is important to document any changes.

In addition to the finalised TMP, a condensed version known as a Driver Information Pack (DIP) will be provided to AIL drivers that sets out all the operational requirements such as:

- Welfare arrangements;
- Incident plans;
- Requirements for Tool Box Talks;
- Weather and road condition checks;
- Safety equipment requirements; and
- Other pertinent safety briefing material.

6.1 Daily Initial Checks

Before the convoys depart the POE, the lead convoy driver will check weather and traffic conditions and advise colleagues through a “Tool Box Talk”. The following websites provide relevant weather and traffic updates:

- www.traffic-wales.com
- www.theaa.com/traffic-news/index
- www.bbc.co.uk/travelnews
- ww.transportdirect.com
- www.rac.co.uk
- www.metoffice.gov.uk
- www.bbc.co.uk/weather
- www.uk.weather.com
- www.weatheronline.co.uk

6.2 Potential Urban / Built Up Area Conflict Points

The urban areas along the route pose different challenges for the abnormal loads. Whilst the vehicle speeds will be less than those in the rural or motorway sections of the route, there are more potential conflicts with other road users to be aware of. These include:

- Pedestrians and cyclists;
- Local vehicular traffic;
- Parked vehicles;
- Side junctions; and
- Street furniture.

Within the urban / built up areas, the convoy escorts and other loads will need to be aware of all road and footway users at turn sections within the route.

6.3 Daily Management Updates

Daily updates to the general convoy management will be provided at the daily Tool Box Talks, where drivers and escorts will be fully briefed on the specific requirements of the convoys on that day. During these sessions, the following checks will be made:

- That staff are aware of the TMP and have a copy of the latest version of the Driver Information Pack (DIP) in the cab;
- That all staff have the appropriate licences, safety equipment and clothing;
- That all radios and mobile telephones are fully charged and that the correct channels are known;
- That the convoy is aware of its legal responsibilities for the country of operation;
- That drivers are briefed on welfare issues, including provisions for sleep and rest during the day;
- That the convoy is aware of client, haulier and turbine supplier health and safety requirements and method statements; and
- That all staff have been inducted on site rules before entering the site boundary and that induction is undertaken immediately upon arrival. Details of induction process are to be provided by the main contractor to the haulier before loads commence.

6.4 Communications Strategy

In order to ensure effective communications during transit, all vehicles within the convoy will be fitted with Citizens Band (CB) radio equipment. The CB units on the transporters will be hard-wired to reduce the risk of power failure during transit. All escort vehicles will be fitted with hand held battery powered CB radio sets. Spare sets should be carried to allow communications with the Police during transit, if the Police request it only. In addition to the CB sets, all vehicles will be fitted with hands free mobile phones, to allow contact with third parties without CB devices and that would also act as an alternative form of communication in an emergency. Mobile phones will only be used when stationary.

A communication protocol, between the escorting Police officers and the emergency services so that in the case of a blue light emergency, the convoys would be diverted to the nearest lay-by / hold point area.

In the case of emergency vehicles that need to pass the convoy en-route to a third party emergency, the escorting police will be informed by radio of the incident and the requirement for vehicles to pass unhindered. At that time, a police escort vehicle, which is likely to comprise a motorbike, will travel ahead of the convoy to the next convenient holding point(s) at which the convoy could be manoeuvred such that clear passage can be afforded to the emergency vehicle. In the unlikely event that such an area is a considerable distance away, the emergency services will be informed of this and a decision taken concerning the necessity to reroute the emergency vehicle(s). Alternatively, once the wide area has been reached, the police escort will marshal the AIL convoy such that safe and speedy passage is afforded to the emergency vehicle.

This entire process will be controlled by the escorting police officers, in contact with the emergency services control centre.

6.5 Contingency and Incident Plans

Contingency details for incidents such as tyre punctures, breakdowns and accidents are described below and should be observed. In all situations the safety of personnel and the public is paramount and reasonable steps to ensure safety at a site should be undertaken. In the event of an incident, it should be reported to the appropriate person immediately.

These items are relevant for both abnormal and non-abnormal loads. Where the police are escorting, their instructions will take precedence and the lead Police officer must be informed should an issue on transit occur.

In the event of vehicle breakdown or incident the following details from The Highway Code must be observed:

- Try to remove the vehicles off the road if possible. On the motorway / dual carriageway, if possible, depart at the nearest exit or service area. If it is not possible to depart the motorway, pull onto the hard shoulder as far left as possible;
- If on a dual carriageway, try to stop near to an emergency telephone;
- When stopped, close the convoy up to reduce the length where possible;
- Warn other traffic by using hazard warning lights if the vehicles are causing an obstruction;
- Drivers should depart using the left-hand side door. Unless staff are threatened by their situation, all staff should depart the vehicles;

- Use PPE at all times when outside the vehicle;
- Place a warning triangle on the road at least 100 metres behind the last convoy vehicle on the same side of the road. Use the warning cones and flares carried in the escorts to protect the end of the convoy by creating a diagonal around the back of the last vehicle. Always take great care when placing or retrieving them. The Highway Code indicates that warning triangle should not be used on motorways;
- Consult with the Police escorts to identify what additional warning devices should be deployed;
- Keep sidelights and beacons on;
- No staff should stand between the convoy vehicles and oncoming traffic. Staff should not stand between vehicles in the convoy. Staff should be located at locations where all road users can see them;
- Staff should wait on the verge and where barriers are provided, stay behind them;
- In the event of injuries, do not move injured people unless they are in immediate danger from fire or explosion. Staff must not remove a motorcyclist's helmet unless it is essential to do so and should be prepared to give first aid if appropriately trained;
- In the case of injuries, all staff must stay at the scene until the emergency services arrive;
- In the event if a collision which causes damage or injury to any other person, vehicle, animal or property, the convoy must stop, provide contact details and addresses, provide vehicle registration details to third parties. The police escort should be informed and the incident reported within 24 hours to the local police station;
- In the event of a collision, all staff should obey directions from the escort Police Officers or attending officers;
- In the event of a breakdown, the nature of the breakdown should be reported to the indicated assistance provider. Obtain advice from the haulier Project Manager; and
- In the event of a burst tyre the appropriate repair provider should be contacted to come and replace the damaged item. Staff should not attempt to replace any HGV tyres themselves although if possible, the HGV should continue to the next lay-by if safe to do so in order to reduce delays. A spare wheel can be carried in the escort vehicles to be fitted by a specialist technician to help speed up the process.

These items are relevant for both abnormal and non-abnormal loads. Where the police are escorting, their instructions will take precedence and the lead Police officer must be informed should an issue on transit occur. To ensure the minimum delay and inconvenience, the turbine supplier has recovery agreements set up with suitable contractors along the route.

Should an issue develop, the following areas are considered suitable for addressing vehicle faults or for allowing the police escort to attend an emergency:

- Depot area at Abermule;
- Depot area at Pool Quay; and
- Overtaking lanes on the Newtown Bypass (in severe emergencies only).

For minor vehicle faults, repairs could be made at the roadside or existing laybys as per any other road user, with the police escort helping divert traffic around the temporary restriction. The traffic management team supporting the convoy would provide further support should an issue occur at the road side, rather than at a layby. This provision is far in excess of what other road users would be able to deploy in an emergency.

In the event of the police being required for an emergency, the convoy would be stopped at the nearest safe location and the civilian and traffic management contractor deployed to allow traffic to pass in safety using stop / go boards until the Police returned. Such occurrences where all Police officers depart a convoy are exceptionally rare, if not unheard of. It is more likely that the Police escort numbers would reduce and the convoy continue with a smaller escort.

In the event of an incident along the route, the contact information for breakdowns or medical assistance is provided in Table 5.

Table 5: Emergency Contacts

Service	Number
Emergency	999
Scania Assistance	0800 800 660
Volvo	0800 898 892
Police – Non-Emergency	101
NHS Direct Health Support – Non-Emergency (England)	111
NHS Direct Wales Health Support – Non-Emergency (Wales)	0845 46 47
A&E	01244 365000
The Countess of Chester Health Park, Liverpool Rd, Chester CH2 1UL	01978 291100
A&E, Wrexham Maelor Hospital, Croesnewydd Road, Wrexham LL13 7TD	01597 822951
Minor Injuries Unit, Llandrindod Wells War Memorial Hospital	999

6.6 Third Party Accident/Breakdown on the Route

In the eventuality of a third-party accident or breakdown on the delivery route, ahead of the AIL convoy, it may be necessary for the convoy to be slowed or temporarily halted until safe passage can be assured. The police escort would take control of the convoy and monitor manoeuvring of the convoy into a safe location, which would generally comprise of the nearest contingency lay over point. The convoy would be held at this location until the highway ahead was judged by the police to be sufficiently clear to enable safe passage of the convoy.

Should it be required for Loads to be temporarily halted, traffic in the vicinity of the convoy will be marshalled by a combination of the police and civilian escorts.

If it becomes necessary to halt an AIL convoy overnight, the convoy will be moved to occupy a nearby lay-by, or number of lay-bys. Security staff will be present to ensure security of Loads overnight and temporary signage will be erected, where necessary, to warn advancing motorists of the presence of the AIL or convoy. Where necessary on safety grounds, traffic will be controlled by means of police escort staff.

It is assumed for the purpose of this Transport Management Plan that any road closure is likely to be only temporary. However, in the case of a catastrophic failure of the highway, for example a collapsed culvert, which would lead to longer term closures, alternative nearby routes would be identified as emergency diversions. These would be agreed with appropriate highway authority officers and marshalled by the attending police escort. It is not possible to plan in advance for the implications of such catastrophic failures.

6.7 Equipment Requirements

Each of the convoy vehicles must be suitably equipped with hazard warning devices to warn all other road users. All the tractor, trailer and escort vehicles operating on the project must have the following:

- Tractor units to have beacon bars on the roof and 3M reflective markings on both sides;
- All vehicle warning signage to be in English;
- Trailer units to have amber beacons on the rear with 3M reflective markings on both sides;
- All escort vehicles will have beacon bars on the roof, with 360 degree motion for all round visibility, and 3M reflective markings; and
- Certified cargo lashing straps are to be used at all times. Certification must be carried and made available for inspection, kept within the cab.

All hazard warning equipment must be checked and cleaned at the start of each day. Additional cleaning of the warning equipment may be required throughout the day and must be undertaken when required.

All escort vehicles will carry the following equipment:

- 8 x Reflective Road Cones
- 8 x Flare Alert Beacons
- 2 x Warning Triangles
- 1 x Spill Kit
- 1 x Emergency Hammer
- 1 x Flash Light
- 1 x Auxiliary Rechargeable CB Radio
- 1 x Fire Extinguisher (dry powder)
- 1 x Van/Truck First Aid Kit
- 1 x Roll of Barrier Tape
- 1 x Spare High-Vis Waistcoat
- 1 x Spare Hard Hat.
- 1 x pack of disposable dust masks
- 1 x safety spectacles

All relevant personnel must have the appropriate Personal Protective Equipment (PPE). All PPE clothing must be 'CE' marked to show it meets the European standards and should be appropriate for use in Motorway situations (i.e. must be full coats with reflective bands on the arms). Drivers must be issued with:

- Hard hat (within certification date);
- High-Vis (jacket / coat and trousers);
- Lace up steel toe capped safety boots; and
- Gloves

7 Summary

Pell Frischmann were commissioned by Dulas (on behalf of EDF Renewables) to produce a Transport Management Plan for the delivery of abnormal loads associated with the proposed Garn Fach Wind Farm.

This report outlines the key points and issues associated with the route. It is the responsibility of the wind farm turbine supplier to ensure that the access route from the port of entry to the sites are fit for purpose and that appropriate consideration for all road users has been made in accordance with the relevant health and safety legislation and ruling transport requirements.

The access review has been undertaken from Birkenhead through to the site access junction, using an access route approved as part of the RUK Strategic Transport Management Plan that has been agreed by both Powys County Council and the Welsh Government. The route is suitable for the movement of the anticipated loads, although careful manoeuvring will be required through a small number of sections along the route and into the site access.

A series of operational measures have also been detailed to further aid the delivery of equipment and to minimise the impact of convoys on the network. These include the provision of warning signs and incident contingency plans.

The temporary inconvenience that could be caused by delivery vehicles must be viewed in the context that the delivery period is restricted to 1 in 25 year event. Police escorts, assisted by civilian escorts will also ensure road user safety.

