



**Technical Appendix 10.1: Mynydd Maen Wind Farm
Outline Traffic Management Plan**

Revision History

Issue	Date	Author	Nature and Location of Change
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1 INTRODUCTION & SCOPE

1.1 *Introduction*

The principal objective of this document is to provide details of the proposed traffic management arrangements during the construction of the proposed Mynydd Maen Wind Farm (DNS Planning ref: DNS/3276725).

This report provides a more detailed assessment of the proposed routes for the delivery of turbine components illustrated within the Traffic & Transport Chapter (Chapter 10) of the Environmental Statement (ES). The suitability of the access route is reviewed, any necessary improvement works required on the existing road network are identified, and traffic management measures required for the transport of Abnormal Indivisible Loads (AILs) and Heavy Goods Vehicles (HGV)

1.2 *Description of the Site*

The Mynydd Maen project is a proposed 13-turbine wind farm located approximately 11 km north of Newport in the south of Wales and is being developed by RES Ltd (RES).

The approximate co-ordinates at the centre of the site are OSGB grid reference E325643, N197926. Vehicular access to the site will be provided via an upgraded existing access on the west of the site from the Abercarn Mountain Road, at approximate location E323634, N198047.

The nearest trunk road confirmed to be capable of accommodating abnormal loads are the A467 and A472.

The Point of Entry (PoE) of turbine components is yet to be determined and will be chosen by the turbine supplier, however the Port of Swansea is the preferred option. Please see **Section 3** for more details.

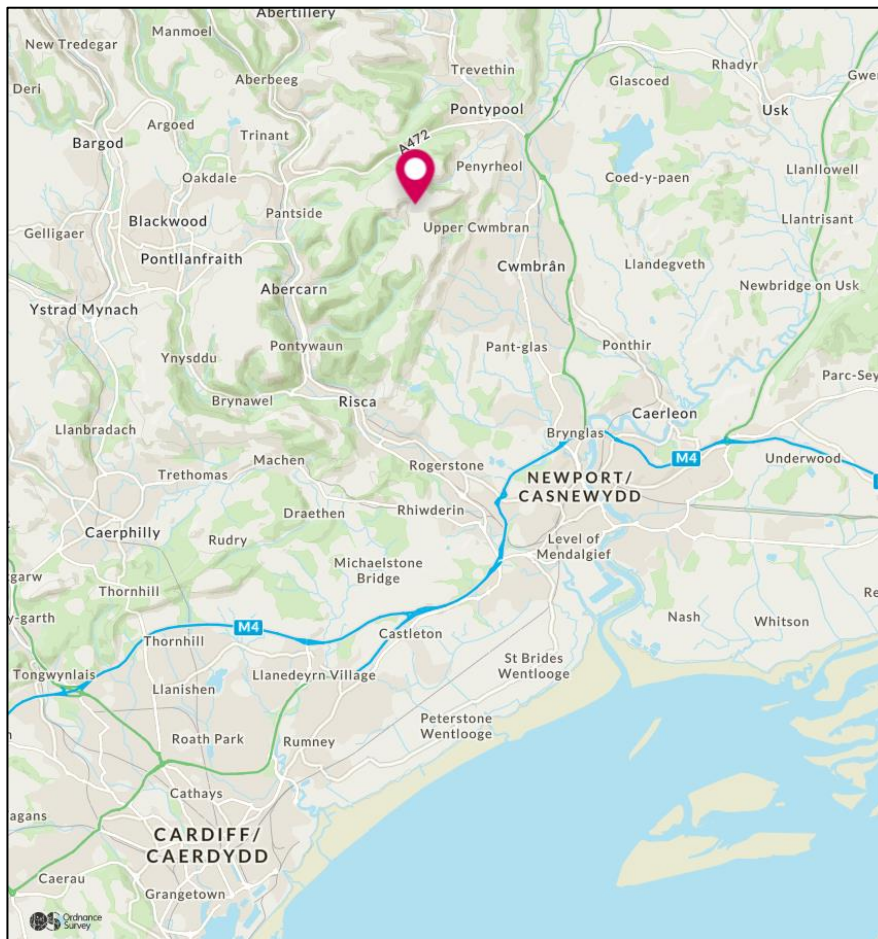


Figure 1: Location of Mynydd Maen Wind Farm

1.3 Scope

A general description of necessary enabling public road works and the site access together with an estimate of regular and AIL traffic generation and details of any enabling works are included in **Section 2**. Arrangements that are to be made in conjunction with the proposed wind farm construction and delivery route, namely with the AIL transport, are summarised in **Section 3**.

As traffic movements during the operation stage of the proposed wind farm have been assessed as generally negligible, these are not considered further as part of this outline Traffic Management Plan. In the unlikely circumstances where a major component on any of the wind turbines or other part of the development requires replacement and associated AIL deliveries, these would be discussed with the relevant authorities and all necessary permits and agreements secured prior to these taking place.

2 CONSTRUCTION ACTIVITY

2.1 Public Highway Interface

2.1.1 Highway Upgrading Works

A range of highway upgrading works will be carried out under the 'New Roads and Street Works Act 1991' agreement along the delivery route to facilitate a successful AIL.

Detail	Easting, Northing	Description of Modification
Details from Figure 10.2		
5	325412, 188991	Traffic furniture relocation likely required, and small section of hardstanding to be laid.
6	324376, 189618	Lit road sign to be relocated or socketed.
7	321452, 191405	Central reservation requires reprofiling and hardstanding laid, and two lit road sign to be relocated or socketed.
8	321873, 193163	Contraflow manoeuvre. Potential central reservation vegetation trimming, signage relocation and traffic furniture relocation likely required. Hardstanding likely required for overrun areas.
9	321766, 195795	Potential contraflow manoeuvre required. Hardstanding to be laid, traffic furniture to be temporarily relocated or socketed and vegetation trimming required.
10	321364, 196545	Contraflow manoeuvre. Traffic furniture to be temporarily relocated or socketed.
11	321306, 196785	Lampposts to be relocated or socketed. Four lit and one unlit road signs to be socketed. Sections of railing will likely require temporary removal. Traffic island bollards to be removed. Load bearing surface to be laid.
14	321611, 197323	Hardstanding to be laid on central reservation. Vegetation to be removed and trees potentially to be trimmed. Lit road sign to be relocated or socketed, and one marker to be removed.
16	322194, 198038	Four lampposts to be relocated or socketed. Trees to be felled. Ground profiling and hardstanding required. Fencing to be dropped temporarily, and vegetation to be removed.
17	322289, 198277	Vegetation trimming likely required.
Details from Figure 10.3		
1	322380, 198355	Ground reprofiling and hardstanding required. Tree to be felled.
2	322506, 198344	Passing bay to be extended.
3	322759, 198401	Trees to be potentially felled, some ground profiling to tie in new track with existing carriageway.
4	322843, 198345	Vegetation trimming, hardstanding to be laid where overrun expected.
5	322968, 198319	Hardstanding to be laid for road widening and passing bay installed.
6	323063, 198316	Vegetation to be trimmed and potential ground profiling. Hardstanding to be laid where overrun expected.
7	323234, 198235	Vegetation to be trimmed, hardstanding to be laid where overrun expected and potential ground profiling.
8	323399, 198151	Hardstanding to be laid for road widening and passing bay inclusion.
9	323516, 198094	Hardstanding to be laid for road widening.

Table 1: Public Highway Modification Works

Signage for the construction of the highways upgrading works shall be in accordance with the Great Britain Department of Transport Traffic Signs Manual Chapter 8 - Traffic Safety Measures and Signs for Road Works and Temporary Situations and the 'New Roads and Street Works Act 1991'.

2.1.2 Site Entrances

The site entrance location was identified as part of the route selection and chosen to minimise disruption, maximise safety and help facilitate delivery.

The site entrance is off Abercarn Mountain Road at E323634, N198047, though it will require to be upgraded to accommodate construction traffic and turbine delivery.

A plan showing the proposed arrangement is contained within **Appendix A**.

2.2 Wind Farm Construction

A detailed breakdown of components and materials that will be delivered to the proposed Mynydd Maen Wind Farm Site has been provided in Chapter 10 of the Environmental Statement, and is briefly summarised below.

2.2.1 Road and Hardstanding Construction

On-site tracks and hard standings will be constructed of site-won or imported stone, and geogrid (if applicable). The majority of deliveries at this stage would use tipper lorries and flatbed trucks. Plant required for the works will be delivered on low loaders.

2.2.2 Reinforced Concrete Foundation Construction

Deliveries for reinforced steel are anticipated to be 1 flatbed lorry per turbine, and therefore negligible.

Ready mix concrete is due to be delivered from a local batching plant on 6 or 8 wheeled 'ready-mix' concrete trucks, carrying 6 or 8 cubic meters respectively. Due to technological reasons, the turbine foundation must be cast in one day in order to prevent crack formation in the concrete. Consequently, there will be 13 No. days when the number of deliveries to the site may be significantly higher than usual.

See **Table 2**, showing Traffic Generation Breakdown for further details.

2.2.3 Wind Turbine Erection

The wind turbines will be broken down into the following components: upper, middle and lower tower sections, blades, rotor hub, drive train and nacelle, 10 of which are classified as AILs. These abnormal loads are transported by specialist hauliers with custom built trailers, either individually or in short convoys of typically two to three abnormal loads, accompanied by escort vehicles. Escort vehicles come before and after the transporter and where necessary, police may be used for additional safety for road users and to control traffic at holding points. There will be at least 43 AIL delivery events in the latter stages of the wind farm construction programme.

Associated goods such as smaller components, tools and other equipment will be delivered on flatbed trucks and low loaders.

A high-capacity truck mounted crane will be required to erect the turbines.

2.2.4 Staff and Miscellaneous Equipment

Electrical and communications cables will be delivered to site on reels mounted on flatbed trucks or low loaders and laid in trenches.

The daily commute of workers in cars, vans and small trucks will form a large proportion of the site traffic.

Occasional deliveries of small packages will also take place with vans and other light goods vehicles.

Site offices, welfare facilities and equipment storage containers will be delivered on flatbeds and low loaders, and will be maintained on an ad-hoc basis.

Regular deliveries of fuel for the site plant will be made using a mini tanker.

2.3 Estimated Delivery Traffic Volumes

Table 2 summarises the likely traffic mix to be generated by the proposed wind farm project during the construction phase. For each given type of vehicle, an estimate is given of the total number of trips to be made throughout the construction phase, and the number of journeys that might conceivably be made in any one day by that type of vehicle. A journey is considered to be a round trip, where a vehicle travels from its origin to the site and then back to its origin.

The figures are based on the current best available source, and may be therefore subject to some changes due to later modifications to design and / or construction methodology, or in order to comply with Health & Safety requirements.

Figures showing the more likely scenario, using site won stone (S/W) from an on-site borrow pit(s), are included in red below the 'Total' journey figures in **Table 2**.

Phase	Purpose	Vehicle	Approximate No of journeys for project duration	Estimated No of daily journeys	Approximate Period of Delivery (assumes 15-month programme)
Site Set-Up	Portacabin delivery	Low loader	5	5	1-3
	Skip delivery	Low loader	5	5	1-2
	Generator delivery	Low loader	2	2	1-2
	Water and fuel tank delivery	Low loader	1	1	1-2
	Excavator delivery	Low loader	2	2	1-3
	Tool container delivery	Low loader	2	2	2-3
	Roller-compact	Low loader	1	1	2-3
Site tracks & hard standings	Articulated dumper truck	Low loader	1	1	2-3
	Stone for site tracks	Tipper lorry	3,713	65	1-7
	Stone for control building and substation compounds	Tipper lorry	411	65	1-7
	Stone for construction compound and gatehouse	Tipper lorry	132	65	1-7
	Stone for turning heads	Tipper lorry	29	29	1-7
	Stone for pathways	Tipper lorry	53	53	6-13
Foundati on	Stone for crane hardstanding	Tipper lorry	4,498	65	1-7
	Excavator delivery	Low loader	2	2	3-4
	Misc works	Backhoe loader	2	2	3-4

construction	Concrete for turbine foundations, piles & transformer plinths	Mixer truck	954	65	3-7
	Steel delivery	Flat bed	26	20	3-7
	Foundation bolts or steel insert delivery	Flat bed	13	13	6-7
	Place foundation bolt cage or steel insert	30t to 50t crane	1	1	6-7
Turbine erection	Tower section delivery	Clamp lift trailer	52	8	11-12
	Blade delivery	Extendible trailer	39	6	11-12
	Nacelle	Low loader	13	2	11-12
	Hub and rotor	Low loader	13	2	11-12
	Drive Train	Low loader	13	3	11-12
	Large crane delivery and removal	1000t to 1200t crane	2	1	11-12
	Crane associated equipment delivery and removal	Low loader	20	10	11-12
	Smaller crane delivery and removal	150t to 200t crane	2	1	11-12
Cable Installation	Cable delivery	Flat bed	7	7	7-8
	Sand delivery	Tipper lorry	175	20	7-8
	Excavator delivery	Low loader	2	1	7-8
	Cable laying	Tele handler	2	1	7-8
Sub-Station and Control Building	Concrete delivery	Mixer truck	36	36	7-8
	Brick delivery	Flat bed	3	3	7-8
	Roofing & Cladding	Flat bed	3	3	9-10
	Switchgear	Flat bed	2	2	9-10
	Misc electrical equipment	Flat bed	3	3	9-10
Reinstatement	Removal of temporary tracks	Tipper lorry	484	65	13-15
	Removal of temporary compound & gate house stone	Tipper lorry	132	65	13-15
	Removal of temporary turning head stone	Tipper lorry	29	29	13-15
	Removal of temporary hardstanding stone	Tipper lorry	1,161	65	13-15
Misc	Waste removal	Skip lorry	130	1	1-15
	Water/fuel deliveries	Small tanker	130	1	1-15
Site Demobilisation	Portacabin removal	Low loader	5	5	14-15
	Skip removal	Low loader	5	5	14-15
	Generator removal	Low loader	2	2	14-15
	Water and fuel tank removal	Low loader	1	1	14-15
	Roller-compact	Low loader	1	1	11-12
	Dumper truck	Low loader	1	1	14-15
	Excavator removal	Low loader	2	2	7-15

	Misc works	Backhoe loader	2	2	14-15
TOTAL Heavy Good Vehicles			12,325		
TOTAL Heavy Good Vehicles (S/W Stone)			2,074		
Site Staff and Deliveries	Staff	Cars & minivans	9,750	25	1-15
	Miscellaneous deliveries	Vans	1,560	4	1-15
TOTAL Cars & Light Good Vehicles			11,310		
TOTAL Cars & Light Good Vehicles (S/W Stone)			9,802		
TOTAL VEHICLES			23,635		
TOTAL VEHICLES (S/W Stone)			11,876		

Table 2: Traffic Generation Breakdown

The number of daily deliveries will vary throughout the construction of the proposed wind farm depending on the character of works that will be taking place on site.

These numbers have been derived from RES experience in previous wind farm construction. In reality, the daily journeys tend to be lower, but these numbers have been included as a likely worst-case scenario.

3 TRAFFIC MANAGEMENT

3.1 General Deliveries

3.1.1 Delivery Times

Movement of heavy goods vehicles onto and off the site itself shall be restricted to avoid peak school drop off and pick up times. There will be no working permitted on Sunday or public holidays although component delivery and turbine erection may take place outside these times, however this would be agreed with the planning authority in advance.

3.1.2 Pollution Control

The following measures will be implemented to minimise pollution due to construction traffic:

- all vehicles transporting soil and other dusty materials will be fully sheeted,
- adequate sheeting of vehicles carrying waste materials,
- a dry wheel washing facility will be provided at the exit from the site.

3.2 HGV Deliveries

All concrete, aggregate and steel deliveries were assumed to be delivered to the site via the A467 and/or the A472. Once a main contractor has been appointed and they advise of any changes to the above delivery route, an updated CTMP will be prepared and submitted for further approval.

An alternative route is being considered which would likely be for HGV deliveries only. This would require HGVs to travel along the A472 before exiting onto Pant Road at approximate location E322731, N198888 and proceeding southwest. This access option is pending structural and integrity assessment to ensure it is a safe option for the volume of HGVs associated with the construction phase.

The routes will be strictly enforced, unless further notification is given. All main and sub-contracting companies involved in the proposed wind farm will be monitored to ensure they follow the correct routes and do not use other 'shortcuts.' The routes will be clearly defined in all sub-contracts and clearly signposted for all drivers to see. Any contractor not adhering to the relevant route guidance will be disciplined or removed from the project.

3.3 AIL Deliveries

3.3.1 Pollution Control

Turbines shall be delivered to site in sufficient time to meet the agreed erection programme, and in accordance with the requirements of the relevant authorities. A detailed delivery plan will be prepared prior to the actual delivery and sufficient notice will be given to all relevant parties.

Turbines will be sourced from outside the UK; they shall be delivered to the UK by ship, and stored at the Port of Swansea. It will be the turbine supplier's responsibility to identify a suitable storage location and obtain any necessary permits. The proposed AIL delivery route is shown on **Figure 2**, and a route summary is included below:

The AILs will depart from the Port of Swansea via Baldwin Crescent and joining the A483 heading east before exiting onto the M4 continuing in an easterly direction. The vehicles will exit the M4 at junction 28 and continue north on the A467 and exiting onto Central Ave and continuing north to site via Old Plant Rd.

AIL Return Trip

Unladen AIL transport vehicles will have their trailers shortened prior to their departure from the site and will thus not be considered abnormal.

As part of the detailed delivery plan the appointed haulier will submit a Risk Assessment for review and approval. This will include a contingency plan for potential road closures or restrictions as a result of vehicle breakdowns or accidents on the route.

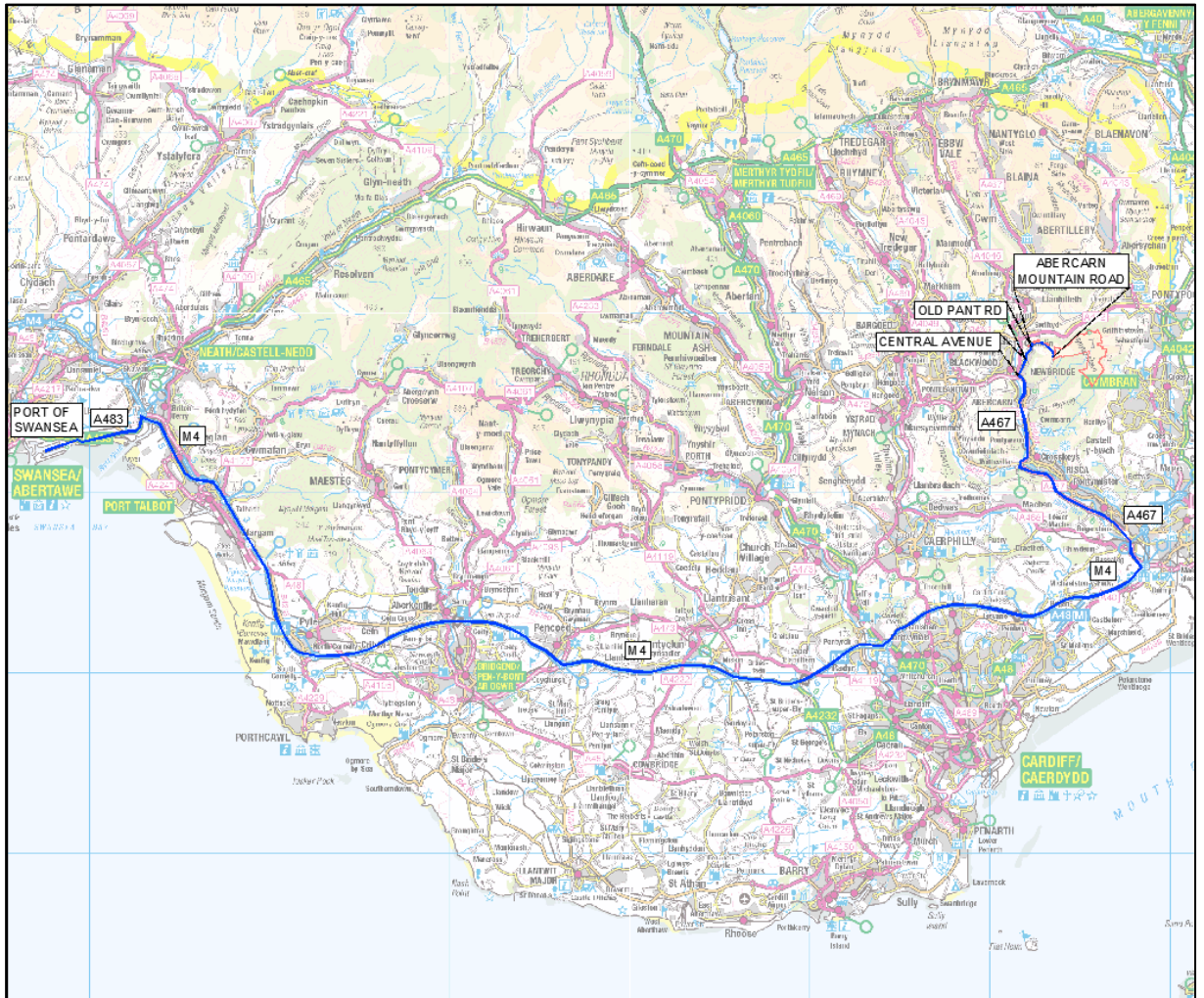


Figure 2: All Access Route

3.3.2 Abnormal Loads Convoy Size & Timing

Deliveries shall only take place during the hours agreed with the relevant authorities, and in accordance with any time restrictions specified in planning conditions. Deliveries will be timed to avoid predictable peak traffic periods wherever possible. Convoys would typically comprise no more than two to three abnormal vehicles.

3.3.3 Escorts for Abnormal Loads

Abnormal loads shall be escorted in accordance with 'Self-Escorting of Abnormal Loads and Abnormal Vehicles' Code of Practice. The escorting may be undertaken by haulage contractor and the police as required by South Wales Police along the delivery route.

3.3.4 Road Clearance Scheme

Clear roadways might be required to allow the transporters passage along narrow streets (At times, road parking may be restricted to allow for this). RES will liaise with the local community, businesses and key delivery services to ensure they are fully informed in advance should a road clearance scheme be required.

3.4 Notification to Stakeholders

The Highways Authority, relevant Councils and local communities will be given written notice of the turbine deliveries, and regular updates will be available as the delivery timetable is finalised with the supplier during the delivery period.

3.4.1 Emergency Services

The Police, Fire and Ambulance service will be given written notice of the turbine deliveries and kept fully informed throughout the delivery period.

3.4.2 Local Residents

RES will engage with the local community councils and residents prior to construction starting. RES will ensure that local residents and community representatives are kept fully informed of all the road mitigation and traffic management requirements for the development.

3.4.3 Local Services

RES will make every effort to ensure disruption caused by deliveries is avoided. Services of particular relevance include, but are not limited to;

- Local schools and nurseries.
- Local buses, including school buses.
- Local doctors, surgeries or health providers.

Information will be provided to make service providers aware of the programme of planned works.

3.4.4 Planned Engineering Works

RES will work with the local councils and transport authorities to identify any planned engineering works that conflict with the delivery route times. Discussions will be had to identify a means to minimise disruption to the local community and the planned engineering works.

3.4.5 School Run and Community Events

RES will identify any conflicts with school and nursery drop off and pick up locations and times. Construction deliveries will, where possible, be scheduled to avoid these busy periods as well as scheduled local authority bin collections or where possible be rerouted to avoid potential pinch points.

Planned and notified community events will also be considered by RES when scheduling/routing deliveries.

3.5 Road Condition Survey

Any damage arising that is directly attributable to these works will be reviewed with the relevant authorities and appropriate remediation.

3.6 Temporary Road Signage

Temporary road signage informing drivers about the ongoing construction on site, as well as routing works traffic to and from the development will be installed in the vicinity of the site and agreed with the relevant councils. All new signage will be in accordance with current guidance and statutes including the *Great Britain Department of Transport Traffic Signs Manual Chapter 8 - Traffic Safety Measures and Signs for Road Works and Temporary Situations and the New Roads and Street Works Act 1991*.

APPENDIX A - DRAWINGS

ES Reference	Drawing Name	Drawing Number
Figure 3.7	Site Entrance Layout	04412-RES-ACC-DR-LO-005
Figure 10.2	Abnormal Load Route from Port to Abercarn Mountain Road	04412-RES-ACC-DR-LO-008
Figure 10.3	Abnormal Load Route Abercarn Mountain Road	04412-RES-ACC-DR-LO-009

DEFINITIONS

AIL	Abnormal Indivisible Load
DfT	Department for Transport
ES	Environmental Statement
HA	Highway Agency
HGV	Heavy Goods Vehicle
LHA	Local Highway Authority
OS Map	Ordnance Survey Map
PoE	Port of Entry