

10 ACCESS, TRAFFIC AND TRANSPORT

10.1 Introduction

10.1.1 This chapter considers the likely significant effects on receptors along the transport routes as a result of vehicle movements associated with the construction, operation and decommissioning of the proposed Pen March Wind Farm ('the Proposed Scheme').

10.1.2 The specific objectives of the chapter are to:

- Describe the assessment methodology and significance criteria used in completing the impact assessment;
- Describe the access, traffic, and transport baseline conditions (including future baseline);
- Describe any likely impacts and effects of the Proposed Scheme on the receptors identified through the baseline assessment;
- Describe the mitigation measures proposed to address any likely significant adverse effects;
- Assess the residual effects remaining following the implementation of mitigation; and
- Describe any likely cumulative effects of the Proposed Scheme combining and interacting with the residual environmental effects of committed development/s.

10.1.3 The chapter is supported by:

- **Technical Appendix 10.1: Transport Assessment.**

10.1.4 The assessment has been informed by the embedded mitigation measures which form part of the Proposed Scheme. Please refer to **Chapter 3: Proposed Scheme** for further details.

10.2 Statutory and planning context

10.2.1 A high-level overview of the effect of traffic movements has been considered in accordance with Institute of Environmental Assessment (now Institute of Environmental Management and Assessment (IEMA)) (1993) Guidelines for the Environmental Assessment of Road Traffic [**Ref 15.1**]. The document is referred to below as the IEMA Guidelines.

10.2.2 An overview of relevant transport planning policies has been undertaken and is summarised below in **Table 10.1** for national and local government policies.

Table 10.1: Policy and guidance relevant to access and transport

Document	Summary
Planning Policy	
Future Wales – The National Plan 2040	Future Wales is the Welsh Government's National Development Framework. It applies the key principles of Planning Policy Wales (PPW) and establishes where in Wales development should take place and how these places should grow and change. Future Wales is the highest tier of development plan. The Welsh government strongly supports the principles of developing renewable and low carbon energy to meet future demands. Decision makers must give significant weight to the need to meet Wales international commitments to generate 70% of consumed electricity by renewable means by 2030. There is a presumption in favour of large-scale wind energy developments in areas that have been pre-assessed for wind energy by the Welsh Government. Applications for Developments of National Significance (DNS) must be determined in accordance with Future Wales.
Planning Policy Wales (PPW)	PPW establishes the key principles for the planning system. It establishes what development plans and decisions taken by the planning system must achieve and how developments should be shaped to deliver the best possible outcomes. PPW informs the preparation of development plans and development management decisions.
Caerphilly County Borough Local Development Plan (LDP) (2010 – 2021)	The Caerphilly County Borough Local Development Plan (LDP) was adopted in November 2010. In relation to Transport Infrastructure Improvement outlined in Section A: The Development Strategy, policy number SP19 of the LDP notes: <i>The Council will seek to implement improvements to the existing transport infrastructure that:</i> <i>A. Address social exclusion by increasing accessibility to employment, services and facilities throughout the County Borough; and/or</i> <i>B. Assist in regenerating the Head of the Valleys Regeneration Area through creating and improving transport links to the settlements in the Northern and Southern Connections Corridors; and/or</i> <i>C. Reinforce the role and function of settlements; and/or</i> <i>D. Reduce the level of traffic movements and/or congestion, within any identified air quality management area; and/or</i> <i>E. Promote the most efficient use of the transport network.</i> The LDP is currently under review and Caerphilly County Borough is seeking to update the Local Development Plan until 2035.

Document	Summary
The Adopted Merthyr Tydfil Replacement LDP (2016 - 2031)	Merthyr Tydfil County Borough Council Replacement LDP 2016 – 2031 was adopted in January 2020. In relation to improving the transport network, Policy SW12 states that: <i>Development that encourages a modal shift towards sustainable transport will be supported, including the enhancement of pedestrian, cycle, rail and bus facilities, in addition to any necessary road improvements. Development proposals will be expected to demonstrate how they reduce the need to travel and encourage the use of sustainable transport.</i> With regard to renewable energy, Policy EcW8 notes that: <i>We will support the use of renewable energy as a tangible means of reducing our local carbon footprint, where appropriate to do so. Development proposals for renewable energy will be permitted where:</i> <i>• They do not have an unacceptable landscape and visual impact, including on the setting of the Brecon Beacons National Park.</i> <i>• There would be no unacceptable cumulative impacts in combination with existing or consented development.</i> <i>• Satisfactory mitigation can be put in place to minimise the impacts of the renewable energy proposal and its associated infrastructure.</i> <i>• Proposals make provision for the appropriate restoration and after-care of the land for its beneficial future re-use.</i>
Guidance	
Technical Advice Note (TAN) 18 Transport	TAN 18 was published in March 2007 and reinforces the principle aims of PPW. It describes how to integrate land use and transport planning and explains how transport impacts should be assessed and mitigated. Key requirements of TAN18 that are applicable to the Proposed Scheme include: • Ensuring that transport infrastructure or service improvements necessary to serve new development allow existing transport networks to continue to perform their identified functions (para 2.3, page 3); • Submission of Transport Assessments to accompany planning applications for developments that are likely to result in significant trip generation (para 9.2, page 36); • Access to be provided that reflects the nature and type of road and the volume and character of traffic likely to use the access and the road (para 9.16, para 39); • Any works to the trunk road resulting from the development to be constructed to the standards applied to its own schemes (para 9.17, page 39); • Where transport improvements are required in the vicinity of the scheme and beyond to accommodate trips associated with the development, conditions may be imposed to make its commencement / occupation subject to the completion of those works or a developer may be invited to conclude an agreement under section 278 of the Highways Act 1980 for the provision of highway works (para 9.18, page 40).

Document	Summary
Welsh Transport Appraisal Guidance (WeITAG) (2017)	WeITAG was published in 2017 and aims to provide a framework for thinking about proposed changes to the transport system and it contains best practice for the development, appraisal and evaluation of proposed transport interventions in Wales. The document notes that a TA will be required where planning applications for development, including changes of use, fall into the categories identified in TAN 18.

10.3 Consultation undertaken

- 10.3.1 A request for a Scoping Opinion was submitted to the Planning Inspectorate (the Inspectorate) on 22 May 2020, to which a response was provided in July 2020.
- 10.3.2 The Scoping Opinion responses relevant to this assessment are summarised in **Table 10.2**. The table also includes statutory consultation responses noted during the PAC process.
- 10.3.3 Consultation with road authority stakeholders has also taken place with regards to the reviewing access for abnormal loads on the road network. Consultation on the access arrangement from the trunk road has also taken place. No updates to the wider scoping opinion was required and the assessment has been undertaken in line with the Scoping Opinion.

Table 10.2: Summary of Consultation Responses

Consultee	Key issues raised	Actions in response to consultee comments
Scoping		
The Planning Inspectorate	<i>"The Planning Inspectorate agrees that the operational effects of the Development on access, traffic and transport can be scoped out of this assessment."</i>	Noted, the operational effects are scoped out of the assessment.

Consultee	Key issues raised	Actions in response to consultee comments
The Planning Inspectorate	<i>“As highlighted in paragraph 2.8 of the SR, decommissioning will involve the removal of all above ground infrastructure, including the turbines, and therefore there will be some effects associated with this phase. As the decommissioning effects would be expected to be no greater than those associated with construction, the Inspectorate agrees that a separate detailed assessment of decommissioning effects can be scoped out of the ES, but expects to see a statement setting out the similarities and differences between construction and decommissioning effects associated with the Development.”</i>	Noted, it is estimated that all ground infrastructure will be removed during decommissioning but it is likely that access tracks will be left in-situ.
Merthyr Tydfil County Borough Council	<i>“The proposed approach to the access and transport assessment is deemed to be acceptable. There is no objection to the scoping out of operational and decommissioning effects.”</i>	Noted.
Caerphilly County Borough Council	<i>“The site and associated works will involve an increase in traffic on the local highway, such as construction and maintenance. In order to quantify these effects the applicant should consider submitting a Transport Statement so that the Local Authority can understand the likely impact upon the highway.”</i>	A TA is provided in Technical Appendix 10.1 . Within the TA, Table 11 2025 Peak Monthly Daily Traffic Data details the percentage increases for each class vehicle within the study area (this information is also presented in Table 10.13 of this chapter).

Consultee	Key issues raised	Actions in response to consultee comments
Caerphilly County Borough Council	<i>“A Construction Traffic Management Plan (CTMP) should also be submitted, this is in the interest of further understanding the likely impact upon the highway and its users and also in the interests of health and safety. The CTMP should also illustrate how mitigation would be used in order to lessen any construction traffic upon the highway, such as designated routes in/out of site and also mitigation of environmental impacts deriving from the development.”</i>	A Traffic Management Plan which includes a mitigation review has been included as a framework within the TA (Technical Appendix 10.1) and in the Mitigation section of this chapter.
Caerphilly County Borough Council	<i>“The EIA mentions a desktop study of potential pinch points for abnormal loads; given the maximum blade tip height of 180m will be employed, tracking should be utilised in order provide confidence vehicles bearing these loads can safely manoeuvre along the highway. Moreover, consideration should also be given to a ‘trial run’ of HGVs that would bear an abnormal load to ascertain if it is safe to manoeuvre along the highway and not have a detrimental impact upon all users of the highway.”</i>	Swept path assessments of pinch points along the delivery route are provided as part of the Abnormal Indivisible Load Route Survey Report (RSR) which is presented as part of the TA (Technical Appendix 10.1). A trial run would be undertaken prior to turbine deliveries once suitable mitigation measures are in place which will accommodate the delivery vehicles and components.
PAC Process Responses		
Welsh Government Transport	<i>Swept path assessment drawings and details of ALL loads are required</i>	A Route Survey Report detailing all of the swept path drawings and load details was provided in the PAC process and details are included in the planning submission.
	<i>Suggested standard planning conditions are noted covering Structural Assessments, Road Condition Surveys, Liability for Incidental Damages, Traffic Management Plans, Highway Works, Road Safety Audits and Section 278 Agreements.</i>	The proposed planning conditions are generally acceptable, however minor adjustments and improvements are required and these will be agreed through the formal consultation process.

Consultee	Key issues raised	Actions in response to consultee comments
Caerphilly County Borough Council	<i>A Transport Assessment could not be found in the PAC submission.</i>	A Transport Assessment (TA) was included in the technical appendices of the PAC. A copy of the TA is included in the planning submission.
Caerphilly Ramblers	<i>The development should include clear signposting of alternative access routes throughout all stages of the development.</i>	A Right of Way Management Plan is proposed to assist access across the site.

10.4 Approach to the assessment

10.4.1 The scope of the assessment has been informed by consultation responses, guidance documents, and policy documents summarised in **Table 10.1**. In addition, the following guidelines have been considered:

- IEMA Guidelines for the Environmental Assessment of Road Traffic (1993) [Ref. 10-1];
- IEMA Guidelines for Environmental Impact Assessment (2005) [Ref. 10-2]; and
- Design Manual for Roads and Bridges (DMRB) LA 104 Environmental Assessment and Monitoring (Revision 1) [Ref. 10-3].

10.4.2 This chapter reports on the following:

- The existing baseline transport conditions of the study area surrounding the Proposed Scheme;
- The likely infrastructure requirements necessary to enable the Proposed Scheme;
- The likely effects and changes associated with the imposition of construction traffic on the local road network; and
- The measures that would be required to mitigate against any potential significant effects of the temporary construction traffic.

Baseline Studies

10.4.3 To inform the baseline assessment and to establish the nature of the surrounding road and footway infrastructure, the following desktop reviews and survey work have been undertaken:

- Site visits;
- Review of relevant transport planning policy;
- Consideration of potential origin locations of construction staff and potential supply locations for construction materials to inform extent of local area roads network to be considered in the assessment;
- Collection of traffic flow and speed data;
- Review of the relevant roads hierarchy;
- Review of sensitive locations;

- Review of accident data;
- Review of any other traffic sensitive receptors in the area (routes, communities, buildings etc); and
- Review of Ordnance Survey (OS) plans to derive a study area roads network.

Potential Effects Scoped Out

Operational Phase Effects

- 10.4.4 The traffic effects during the operational phase of the Proposed Scheme are not considered to give rise to significant effects. The expected traffic flows would be less than two vehicle movements per week, far below the recognised thresholds for triggering a formal TA. As such, the effects during the operational phase are scoped out of the assessment as agreed in the scoping opinion.

Decommissioning Phase Effects

- 10.4.5 As elements of the Proposed Scheme are likely to remain in-situ (such as access tracks), the traffic flows associated with the decommissioning works would be lower than those associated with the construction phase. The construction phase therefore represents a worst-case assessment and as such, no further assessment of the decommissioning phase has been considered and has been scoped out of the assessment.

Value of receptors

- 10.4.6 The IEMA 'Guidelines for Environmental Impact Assessment' (2005) [Ref. 10-2] notes that the separate IEMA Guidelines (1993) [Ref. 10-1] document should be used to characterise the environmental traffic and transport effects (off-site effects) and the assessment of significance of major new developments. The guidelines intend to complement professional judgement and the experience of trained assessors.
- 10.4.7 In terms of traffic and transport impacts, the receptors are the users of the roads within the study area and the locations through which those roads pass.
- 10.4.8 The IEMA Guidelines includes guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for users based on the characteristics of roads and locations. This is summarised in **Table 10.3**.

Table 10.3: Receptor value and sensitivity

Value and sensitivity	Description
High	Users of Roads – Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs. Includes roads with traffic control signals, waiting and loading. Users / Residents of Locations – Where a location is a large rural settlement containing a high number of community and public services and facilities.

Medium	Users of Roads – Where the road is a local A or B class road, capable of regular use by HGV traffic. Includes roads where there is some traffic calming or restrictions, traffic calming measures traffic management measures. Users / Residents of Locations – Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Low	Users of Roads – Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures. Users / Residents of Locations – Where a location is a small rural settlement, few community or public facilities or services.
Negligible	Users of Roads – Where roads have no adjacent settlements. Includes new strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads and new strategic trunk road junctions capable of accommodating Abnormal Loads. Users / Residents of Locations – Where a location includes individual dwellings or scattered settlements with no facilities.

10.4.9 Where a road passes through a location, users are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

Magnitude of impact (change)

10.4.10 The following rules, also taken from the IEMA Guidelines (1993), were used to determine which links within the study area should be considered for detailed assessment:

- Rule 1 – include highway links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles (HGV) is predicted to increase by more than 30%); and
- Rule 2 – include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

10.4.11 Examples of sensitive areas include locations where there are hospitals, churches, schools and historical buildings.

10.4.12 The IEMA Guidelines identify the key impacts that are most important when assessing the magnitude of traffic impacts from an individual development: the impacts and levels of magnitude are discussed below:

- Severance – the IEMA Guidance states that, “*severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery.*” Further, “*Changes in traffic of 30%, 60%, and 90% are regarded as producing ‘slight’, ‘moderate’, and ‘substantial’ [or minor, moderate, and major] changes in severance respectively*”. However, the Guidelines acknowledge that “*the measurement and prediction of severance is extremely difficult*”. (Para 4.28).
- Driver delay – the IEMA Guidelines note that these delays are only likely to be “*significant [or major] when the traffic on the network surrounding the development is already at, or close to, the capacity of the system*” (Para 4.32).
- Pedestrian delay – the delay to pedestrians, as with driver delay, is likely only to be major when the traffic on the network surrounding the development is

already at, or close to, the capacity of the system. An increase in total traffic of approximately 30% can double the delay experienced by pedestrians attempting to cross the road and would be considered major.

- Pedestrian amenity – the IEMA Guidelines suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its lorry component) is halved or doubled (Para 4.39). It is therefore considered that a change in the traffic flow of -50% or +100% would produce a major change in pedestrian amenity.
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is considered to be sensitive to traffic flow, changes in traffic flow of 30%, 60% and 90% are regarded as producing minor, moderate and major changes respectively in the guidelines.
- Accidents and safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents.

10.4.13 While not specifically identified as more vulnerable road users, cyclists are considered in similar terms to pedestrians.

10.4.14 It should be noted that the significance of noise and vibration will be assessed as part of **Chapter 9: Noise and Vibration**. To reduce the noise and vibration disturbance, deliveries will be restricted to Site working hours, where possible.

10.4.15 In terms of air pollution, the IEMA Guidelines note that *“the volume of traffic, its speed and operating characteristics, and distance from the source are major factors influencing kerbside air pollutions levels.”* This chapter will include outline mitigation measures to address the effects of air pollution associated with construction traffic within the study area.

10.4.16 With regards to dust and dirt, the IEMA Guidelines note that *“there are no simple formulas to predict the level of dust and dirt which might arise from vehicles movements (Para. 4.55)”*. The impacts of dust and dirt will be addressed in the CEMP. To reduce dust and dirt from construction vehicles, it is proposed that all material delivery lorries (dry materials) will be sheeted, training and disciplinary measures are introduced to prevent construction vehicles from carrying mud and debris onto the carriageway and wheel cleaning facilities may be established, depending on the views of the roads authorities.

10.4.17 It is not anticipated that any vehicle movements will be carrying hazardous loads (with the exception of small amounts of fuel for the construction plant and compound generators) will be transported to or from the Site during the construction phase.

Nature of effect

10.4.18 In addition to determining the significance of the effect, the assessment process also includes a qualitative description regarding the nature of the effect. These terms add additional information about how the effect would affect receptors.

Table 10.4: Assessment descriptors

Term	Nature of effect descriptors
Adverse	An effect which has the potential to decrease receptor value or status relative to baseline conditions.
Beneficial	An effect which has the potential to increase receptor value or status relative to baseline conditions.
Short-term	Effects that persist only for a short time, e.g. during the construction (or decommissioning) phase only; includes reversible effects.
Medium-term	Effects that may persist until additional mitigation measures have been implemented and become effective.
Long-term	Effects that persist for a much longer time, e.g. for the duration of the operational phase (essentially until the development ceases or is removed/ reinstated); includes effects which are permanent (irreversible) or which may decline over longer timescales.
Temporary	A reversible effect where recovery is possible and for which effects would persist only for a short or medium-term.
Frequent	Refers to a recurring effect that occurs repeatedly; in some cases a lower level of impact may occur with sufficient frequency to reduce the ability of a receptor to recover effectively.

Determination of significance

10.4.19 The approach to determine the significance of effects has been as follows:

- Identify the relevant receptors;
- Derive their value (sensitivity) based on the criteria set out in **Table 10.3**;
- Identify and consider the likely impacts from each activity as set out in paragraph 10.4.12;
- Determine the magnitude of impact (change) based on the criteria identified in paragraph 10.4.12;
- Assess the significance of any effects. Where likely significant effects are identified, develop secondary mitigation measures to reduce effects such that they are no longer significant;
- Assess the significance of any residual effects following the implementation of secondary mitigation measures.

Significance Criteria

10.4.20 To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of impact (change) assessments are correlated and classified using a scale set out in DMRB LA 104 Environmental Assessment and Monitoring (Revision 1) Table 3.8.1 and summarised in **Table 10.5**.

10.4.21 The DMRB defines the potential changes in effect as follows:

- Large: These effects are considered to be material in the decision-making process;
- Medium: These effects may be important but are not likely to be material factors in decision making. The cumulative effects of such factors may

influence decision-making if they lead to an increase in the overall adverse effect on a receptor;

- Small: These effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in improving the subsequent design of the project; and
- Negligible: No effects or those that are imperceptible.

Table 10.5: Classification of Significance

Sensitivity	Magnitude			
	Large	Medium	Small	Negligible
High	Major	Major	Moderate	Negligible/Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Negligible/Minor	Negligible	Negligible	Negligible

10.4.22 In line with the EIA Regulations, effects are considered to be significant where they are assessed to be Moderate or above.

Limitations of the assessment

10.4.23 The assessment is based upon average traffic flows in one month periods. During the month, activities at the site may fluctuate between one day and another and it is not possible to fully develop a day by day traffic flow estimate as no Balance of Plant (BoP) contractor has been appointed and external factors can impact upon activities on a day by day basis (weather conditions, availability of materials, time of year, etc).

Design basis and assumptions

10.4.24 As presented in **Chapter 3: Proposed Scheme**, the proposed vehicular access to the wind turbines, construction compound, and substation will be via access tracks which are to be constructed of a graded stone and will be 5.5m in width.

10.4.25 The access junction is to be located along the Common Road and will take the form of a priority junction which is designed to accommodate all predicted loads and traffic for both the construction and operational phases of the Proposed Scheme.

10.5 Existing environment

Study Area Determination

10.5.1 Strategic access to the Common Road is available from the A465 (T) and A470 (T) which are part of the trunk road network.

10.5.2 Access for construction traffic would be from routes which are to include A4060 (T), A470 (T), A465 (T) and the Common Road.

10.5.3 Abnormal loads associated with the wind turbines will travel from the port of entry at Swansea to the site via the A483, M4, A465 (T) and the Common Road. A full

description of the route is described in later sections (Para 10.5.27) with details of the constraints.

10.5.4 The study area for this assessment is as follows:

- The Common Road, near the site access;
- A465 (T) (T) Heads of the Valleys Road, section between A465 (T) / A470 (T) and A465 (T) / Llwyn Helyg / A4048 roundabout junctions;
- A4060 (T) Trunk Road; and
- A470 (T) Trunk Road, section between Abercanaid and Abercynon Roundabouts.

10.5.5 The study area network is illustrated in **Figure 10.1 (Volume 3)**.

Existing Traffic Conditions

10.5.6 In order to assess the impact of construction traffic on the study area, one Automatic Traffic Count (ATC) site was established in November 2021 at the following location:

- Common Road, west of the proposed Site access.

10.5.7 Further traffic flow information was obtained from the UK Department for Transport (DfT) traffic database. The DfT count sites which were used are as follows:

- A465 (T), Heads of the Valleys Road, (north of Gurnos Ring Road) (DfT count site 10537);
- A4060 (T), to the east of Goat Mill Road (DfT count site 30574);
- A4060 (T), south of A4060 (T) / Merthyr Road / A4054 roundabout (DfT count site 99585);
- A470 (T), south of Merthyr Vale (DfT count site 99588);
- A465 (T), Heads of the Valleys Road (south of Common Road) (DfT count site 99664); and
- A465 (T), Heads of the Valleys Road (Tafarnaubach) (DfT count site 99665).

10.5.8 A National Road Traffic Forecast (NRTF) low growth factor was applied to the 2019 flows obtained from the DfT database in order to estimate future year flows. It should be noted that 2019 flows were retrieved from the DfT as these flows were not subject to COVID-19 travel restrictions.

10.5.9 The NRTF low growth from 2019 to 2022 is 1.022. This factor was applied to the 2019 traffic flows retrieved from the DfT database in order to estimate 2022 flows.

10.5.10 In order to achieve a common base year, a NRTF low growth was applied to the ATC survey flows to factor the 2021 observed flows to 2022 flows. The NRTF low growth from 2021 to 2022 is 1.005.

10.5.11 The count site locations are shown in **Figure 10.2 (Volume 3)**.

10.5.12 The traffic counters allowed the traffic flows to be split into vehicle classes and the data has been summarised into cars / light goods vehicles (LGVs) and HGVs (buses and all goods vehicles > 3.5 tonnes gross maximum weight).

10.5.13 **Table 10.6** summarises the 24-hour average daily traffic data collected at the count sites.

Table 10.6: 24-hour Average Traffic Data (2022)

No.	Survey Location	Cars & LGV	HGV	Total
1	The Common Road, west of the Site access	2,475	347	2,822
2	A465 (T), Heads of the Valleys Road (north of Gurnos Ring Road)	16,246	1,069	17,315
3	A4060 (T), to the east of Goat Mill Road	13,694	670	14,364
4	A4060 (T), south of A4060 (T) / Merthyr Road / A4054 roundabout	15,553	919	16,472
5	A470 (T), south of Merthyr Vale	24,785	890	25,675
6	A465 (T), Heads of the Valleys Road (south of Common Road)	27,918	1,655	29,573
7	A465 (T), Heads of the Valleys Road (Tafarnaubach)	26,008	1,363	27,371

10.5.14 The ATC survey undertaken along the Common Road, near the site access was also used to collect traffic speed data. It should be noted that speed data was not available for the DfT count points. The two-way five-day average and 85th percentile speeds observed at the ATC location are summarised in **Table 10.7**.

Table 10.7: Speed Summary (2021 / 2022)

No.	Survey Location	Mean Speed (mph)	85 th percentile (mph)	Speed Limit (mph)
1	The Common Road, west of the Site access	41.0	47.5	60.0
2	A465 (T), Heads of the Valleys Road (north of Gurnos Ring Road)	No Available Data		60.0
3	A4060 (T), to the east of Goat Mill Road			60.0
4	A4060 (T), south of A4060 (T) / Merthyr Road / A4054 roundabout			40.0
5	A470 (T), south of Merthyr Vale			60.0
6	A465 (T), Heads of the Valleys Road (south of Common Road)			60.0
7	A465 (T), Heads of the Valleys Road (Tafarnaubach)			60.0

10.5.15 The results of the ATC survey indicates that there is compliance with the posted speed limit along the Common Road.

Accident Review

10.5.16 Road traffic accident data for the three-year period commencing 01 January 2018 through to 31 December 2020 was obtained from the online resource crashmap.co.uk

which uses data collected by the police about road traffic crashes occurring on British roads.

- 10.5.17 The statistics are categorised into three categories, namely “Slight” for damage only incidents, “Serious” for injury accidents and “Fatal” for accidents that result in a death. **Table 10.8**, **Table 10.9** and **Table 10.10** summarise the accidents noted in the study area and the locations are presented in **Figure 10.3 (Volume 3)**.

Table 10.8: Accident History Summary

Accident Severity	Number of Recorded Incidents				
	Common Road	A465 (T) (west of Dowlais Top)	A465 (T) (east of Dowlais Top)	A4060 (T)	A470 (T)
Slight	1	16	6	12	27
Serious	1	2	1	1	2
Fatal	0	0	1	0	0

- 10.5.18 A total of 70 accidents were recorded within the study area roads during the study period. Of those 70 accidents, 62 were classed as slight, seven as serious and one fatality was recorded. A summary of the casualty types are presented in **Table 10.9** and the types of vehicles involved in the accidents are presented in **Table 10.10**.

Table 10.9: Accident Casualty Type Summary

Accident Severity	Pedal Cycle	Child	Motorcycle	Pedestrian	Car Driver / Passenger
Common Road					
Slight	0	0	0	0	1
Serious	0	0	0	0	1
Fatal	0	0	0	0	0
A465 (T), Heads of the Valleys Road (west of Dowlais Top)					
Slight	0	2	1	0	14
Serious	0	1	1	0	2
Fatal	0	0	0	0	0
A465 (T), Heads of the Valleys Road (east of Dowlais Top)					
Slight	1	0	0	0	6
Serious	0	0	0	0	1
Fatal	0	0	0	0	1
A4060 (T), to the east of Goat Mill Road					
Slight	0	0	2	0	8
Serious	0	0	1	0	0
Fatal	0	0	0	0	0

Accident Severity	Pedal Cycle	Child	Motorcycle	Pedestrian	Car Driver / Passenger
A470 (T), south of Merthyr Vale					
Slight	0	2	3	0	26
Serious	0	0	1	0	1
Fatal	0	0	0	0	0

Table 10.10: Vehicles Involved in Accidents Summary

Accident Severity	Cyclist	M-cycle	Car	HGV	Bus	Young Driver
Common Road						
Slight	0	0	1	0	0	0
Serious	0	0	1	0	1	0
Fatal	0	0	0	0	0	0
A465 (T), (Heads of the Valleys Road) (west of Dowlais Top)						
Slight	0	1	14	7	0	8
Serious	0	1	2	0	0	0
Fatal	0	0	0	0	0	0
A465 (T), Heads of the Valleys Road (east of Dowlais Top)						
Slight	1	0	6	0	0	3
Serious	0	0	1	0	0	1
Fatal	0	0	1	0	0	1
A4060 (T), to the east of Goat Mill Road						
Slight	0	2	8	3	0	3
Serious	0	1	0	0	0	0
Fatal	0	0	0	0	0	0
A470 (T), south of Merthyr Vale						
Slight	0	3	26	2	0	5
Serious	0	1	1	0	0	1
Fatal	0	0	0	0	0	0

10.5.19 The analysis indicates that the majority of recorded accidents are categorised as being slight. A review of the accident information suggests that there are no specific accident patterns or trends within the study area.

Common Land

10.5.20 The majority of the Site is registered as Common Land (Urban) and makes up part of Common Land Unit 38 (Gelligaer and Merthyr Common), which also

extends to the south of the A465. Members of the public have rights to access the Common for air and exercise under Section 193 of the Law of Property Act 1925.

Pedestrian and Cyclist Networks

- 10.5.21 There are two Public Footpaths, RHYM/FP101/1 and RHYM/FP101/2 located within the Site boundary.
- 10.5.22 There is a Bridleway (RHYM/BR103/1) located adjacent to the southern edge of the Site boundary. The Bridleway is approximately 400m in length and connects into Common Road at its most northerly point.
- 10.5.23 Part of National Cycle Network route number (NCR) 46 follows a section of the Common Road, located along the southern edge of the Site Boundary. NCR 46 comprises a combination of on-road and traffic-free sections which connects Bromsgrove to Neath. Along the Common Road an on-road section of the route is present, and this connects to a traffic-free route to the west providing a link to Pant. To the east, NCR 46 connects to a predominantly traffic-free route which can subsequently connect to NCR468 which provides a connection to Rhymney. NCR 468 is made up of a combination of on-road and traffic-free sections which provides a connection between Pengam and Rhymney.

Abnormal Indivisible Load (AIL) Routing

- 10.5.24 Loads relating to the turbine components would be delivered on the proposed route illustrated in **Figure 10.4 (Volume 3)**. The closest port to the site is Port of Swansea. The proposed access route from Swansea to site is as follows:
 - Loads will depart the port and access the A483 Fabian Way (Eastbound) using a contraflow manoeuvre;
 - Loads would proceed eastbound and would join the M4 at Junction 42;
 - Loads would then continue to Junction 43, where they would depart the motorway and would subsequently join the A465 (T) through to Merthyr Tydfil; and
 - Loads would leave the A465 (T) using a new slip track for AIL traffic only based upon the old road alignment located to the east of the Pengarnddu Business Park access roundabout. This would be reopened for AIL only traffic.
 - They would then proceed directly onto the Common Road where the loads will then continue to the Site access junction. This removes the need for complex turning manoeuvres at the Asda roundabout and bends located to the west end of the Common Road.
- 10.5.25 An Indicative Route Survey Report (RSR), including swept path analysis, was undertaken of the route and is presented in **Technical Appendix 10.1**. The RSR identifies a number of constraint points which are discussed in **Section 10.7**.
- 10.5.26 Works are currently underway on the A465 (T) section 5 and 6 Dowlais Top to Hirwaun which involves converting the A465 (T) to two lanes in each direction. These works are anticipated to be completed in 2025.

Do Nothing Scenario

- 10.5.27 In the absence of the Proposed Scheme, it is anticipated that there will be continuous traffic growth along the A465 (T), A4060 (T) and A470 (T). These links will experience increased traffic flows from other development pressures, tourism traffic and population flows.

Future Baseline Traffic Conditions

- 10.5.28 It is anticipated that construction of the Proposed Scheme will commence in 2025. As presented in **Chapter 3: Proposed Scheme**, construction of the Proposed Scheme will take approximately 12 months.
- 10.5.29 To assess the likely effects during the construction phase, base year traffic flows were determined by applying a NRTF low growth factor to the surveyed traffic flows. The NRTF low growth factor for 2022 to 2025 is 1.016. These factors were applied to the 2022 traffic data to estimate the 2025 baseline traffic flows. The access, traffic and transport assessment considers committed developments as consented schemes whose development traffic trips will be permanent on the road network and cumulative developments as consented schemes whose development trips will be transitory on the network i.e. wind farm developments construction traffic trips.
- 10.5.30 The inclusion of transitory development trips as committed development will dilute the impact of the Proposed Scheme's construction traffic trips. It is considered that the approach taken is a robust assessment.
- 10.5.31 A review of the Caerphilly County Borough Council and Merthyr Tydfil County Borough Council planning portals was undertaken to determine any significant development which has been granted planning permission and should be considered as committed development. Planning permission was granted for the provision of 36 camping pods and five chalets, as well as on-site facilities at the existing Bike Park Wales, Abercanaid site. Trip information was obtained from the Bike Park's Transport Assessment to estimate daily trips associated with the development to be included as committed development trips in the future baseline traffic flows.
- 10.5.32 It should be noted that the use of low NRTF growth factors for background traffic is considered robust for addressing smaller, non-significant traffic generation caused by smaller developments within the study area. As such, a robust assessment case has been provided in this report.
- 10.5.33 The 2025 Future Baseline Flows, which include the committed development trips, are presented in **Table 10.11**. This will be used in the Construction Peak Traffic Impact Assessment

Table 10.11: Baseline 2025 Daily Traffic Flows (including Committed Development Trips)

No.	Survey Location	Cars & LGV	HGV	Total
1	Common Road, to the west of the Site access	2,515	353	2,867
2	A465 (T), Heads of the Valleys Road (north of Gurnos Ring Road)	16,506	1,086	17,592

No.	Survey Location	Cars & LGV	HGV	Total
3	A4060 (T), to the east of Goat Mill Road	13,960	681	14,641
4	A4060 (T), south of A4060 (T) / Merthyr Road / A4054 roundabout	15,888	933	16,822
5	A470 (T), south of Merthyr Vale	25,228	904	26,133
6	A465 (T), Heads of the Valleys Road (south of Common Road)	28,412	1,681	30,093
7	A465 (T), Heads of the Valleys Road (Tafarnaubach)	26,471	1,385	27,856

Receptor Sensitivity Summary

10.5.34 A review of potential receptors has been undertaken and a summary of receptor sensitivities based upon the various criteria noted in **Table 10.3** This summary is illustrated in **Table 10.12**.

Table 10.12: Summary of Sensitive Receptors in the study area

Receptor	Receptor Sensitivity	
Common Road Users	Medium	Road capable of regular use by HGV traffic.
A465 (T) Users	Negligible	Where roads have no adjacent settlements. Includes new strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads and new strategic trunk road junctions capable of accommodating Abnormal Loads.
A4060 (T) Users	Negligible	Where roads have no adjacent settlements.
A470 (T) Users	Negligible	Where roads have no adjacent settlements.
Pengarnddu Industrial Estate	High	Where a location is a large rural settlement containing a high number of community and public services and facilities.
Right of Way Users	High	Path used by walkers, cyclists and horse riders, not constructed to accommodate HGV traffic flows
Common Land Users	High	Land used by walkers, not constructed to accommodate HGV traffic flows

10.6 Predicted effects

10.6.1 During the construction phase, the following traffic will require access to the Site:

- Staff transport, either cars or staff minibuses;
- Construction equipment and materials, deliveries of machinery and supplies such as concrete raw materials;
- AILs consisting of the wind turbines sections and also a heavy lift crane(s); and

- Escort vehicles for AIL deliveries.
- 10.6.2 Except for the turbine components, most traffic would be normal construction plant and would include grading tractors, excavators, high capacity cranes, forklifts and dumper trucks. Most would arrive at the site on low loaders.
- 10.6.3 The turbines are delivered in component sections for transport and would be assembled at the site. The nacelle, hub, drive train, blade, tower sections are classified as AIL due to their weight and/or length, width and height when loaded.
- 10.6.4 The components can be delivered on a variety of transport platforms with typical examples illustrated in **Technical Appendix 10.1**.
- 10.6.5 In addition to the turbine deliveries, one high capacity erection crane would be needed to offload some components and erect the turbines. The crane is likely to be a mobile crane with a capacity up to 1,000 tonnes that would be escorted by boom and ballast trucks to allow full mobilisation on Site. A smaller erector / assist crane will also be present to allow the assembly of the main cranes and to ease overall erection of the turbines.
- 10.6.6 The resulting traffic generation profile is attached in **Technical Appendix 10.1 (Table 10 Construction Traffic Profile)** for review. The peak of construction occurs in Month 7 with 147 HGV movements per day (74 inbound and 74 outbound) and 24 Car / LGV movements (12 inbound trips and 12 outbound trips). These figures on average indicate approximately an additional 13 two-way HGV movements per hour on the network at the peak of construction activities.
- 10.6.7 The distribution of construction traffic on the highway network will vary depending on the types of loads being transported. As part of the assessment, the assumptions for the distribution of construction traffic during the peak months is as follows:
- All construction traffic enters the Site via the newly provided access junction leading from the Common Road;
 - Deliveries associated with ready-mix concrete deliveries are assumed to arrive via from a concrete plant located to the east of the Site, via the A465 (T);
 - It is assumed that 100% of aggregate material requirements will be imported to the Site and will be delivered from the quarries to the south of the Site, via the A470 (T). The BoP contractor will confirm final quarry and material sourcing with Caerphilly County Borough Council and Merthyr Tydfil County Borough Council;
 - HGV deliveries associated with the High Voltage electrical installation, control buildings, batteries and cables will arrive via the A470 (T), and subsequently by the A4060 (T) and Common Road to the Site;
 - Staff working at the site are likely to be based locally. It is assumed that 40% will be based to the west of the Site, 40% to the east and 20% to the south; and
 - General site deliveries are assumed to arrive from Pant and will arrive via the A465 (T) to the Site. These are generally smaller rigid HGV vehicles.
- 10.6.8 Loads relating to the turbine components would be delivered on the route illustrated in **Figure 10.4 (Volume 3)**. The proposed Port of Entry (PoE) is Swansea. The port

is the closest suitable port to the site and as such is in line with Welsh Government's "Water Preferred" policy [Ref – 10.4] towards AIL movements.

Potential Construction Effects

- 10.6.9** To estimate the total trips through the study area during the peak of the construction phase, traffic was distributed through the network and combined with the 2025 Baseline traffic data. **Table 10.13** shows the percentage change in movements compared with the weekday 2025 Baseline traffic flows.

Table 10.13: 2025 Future Baseline + Peak Construction Development Trips – Flows and Impact

No.	Survey Location	2025 Baseline + Development Trips			% Increase		
		Cars / LGV	HGV	Total	Cars / LGV	HGV	Total
1	Common Road, west of the Site access	2,526	434	2,961	0.47%	23.13 %	3.26%
2	A465 (T), Heads of the Valleys Road (north of Gurnos Ring Road)	16,512	1,086	17,598	0.04%	0.00%	0.03%
3	A4060 (T), to the east of Goat Mill Road	13,966	759	14,725	0.04%	11.45 %	0.57%
4	A4060 (T), south of A4060 (T) / Merthyr Road / A4054 roundabout	15,894	1,011	16,906	0.04%	8.36%	0.50%
5	A470 (T), south of Merthyr Vale	25,228	982	26,211	0.00%	8.63%	0.30%
6	A465 (T), Heads of the Valleys Road (south of Common Road)	28,412	1,681	30,093	0.00%	0.00%	0.00%
7	A465 (T), Heads of the Valleys Road (Tafarnaubach)	26,483	1,450	27,933	0.04%	4.71%	0.28%

- 10.6.10** The total traffic movements are not predicted to increase by more than 10% on all of the study area.
- 10.6.11** **Table 10.13** shows that HGV traffic movements will increase by more than 10% at the Common Road (23.13%), to the west of the Site access and along the A4060 (T), to the east of Goat Mill Road (11.45%). Whilst these increases are statistically significant, it is generally caused by relatively low HGV flows on these two links which will see an increase of 82 and 79 daily HGV movements, respectively. This represents approximately seven HGV movements per hour on each of the respective

links during construction activities, which is not considered significant in terms of overall traffic flows.

- 10.6.12** A review of the existing road capacity has been undertaken using the Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESAs Manual”. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the study area. The results are summarised in **Table 10.14**.

Table 10.14: 2025 Daily Traffic (12hr) Capacity Review Summary

No.	Survey Location	2025 Baseline	Base + Development	Theoretical Capacity (12h)	% Spare Capacity
1	Common Road, to the west of the Site access	2,867	2,961	19,200	84.58%
2	A465 (T), Heads of the Valleys Road (north of Gurnos Ring Road)	17,592	17,598	36,000	51.12%
3	A4060 (T), to the east of Goat Mill Road	14,641	14,725	81,600	81.95%
4	A4060 (T), south of A4060 (T) / Merthyr Road / A4054 roundabout	16,822	16,906	28,800	41.30%
5	A470 (T), south of Merthyr Vale	26,133	26,211	81,600	67.88%
6	A465 (T), Heads of the Valleys Road (south of Common Road)	30,093	30,093	81,600	63.12%
7	A465 (T), Heads of the Valleys Road (Tafarnaubach)	27,856	27,933	81,600	65.77%

- 10.6.13** The results indicate that there are no road capacity issues with the Proposed Scheme and that ample spare capacity exists within the study area.
- 10.6.14** With regards to Rule 2 of the IEMA Guidelines (**Table 10.3**), the impact will exceed 10% increases in HGV flows on Common Road; to the west of the Site access and A4060 (T), to the east of Goat Mill Road.
- 10.6.15** For the purpose of this assessment, these locations are considered sensitive locations due to the proximity of the count points to Pengarnddu Industrial Estate. It should also be noted that the users of PRoW RHYM/FP101/1 and RHYM/FP101/2 and Common Land are considered sensitive locations due to the proximity to the Site. It is not anticipated that users of the PRoW and Common Land come into contact with construction vehicles under normal circumstances, outside of the construction of the Proposed Scheme. For this reason, and in order to provide a robust assessment, it is assumed that the percentage increase in total vehicles and HGVs equates to 100%. The users of PRoW and Common Land will therefore be included in the Assessment of Impact Significance (Pre-Secondary Mitigation) in **Table 10.15**.

10.6.16 **Table 10.15** summarises the significance on the receptors for the construction phase.

Table 10.15: Assessment of Impact Significance (Pre-Secondary Mitigation)

Receptors	Severance	Driver Delay	Pedestrian Delay	Amenity	Fear	Accidents & Safety
Common Road Users	Negligible	Negligible	Negligible	Minor	Minor	Minor
A4060 (T) Users	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Pengarnddu Industrial Estate	Negligible/minor	Negligible/minor	Negligible/minor	Negligible/minor	Negligible/minor	Moderate
Right of Way Users	Major	Negligible/minor	Moderate	Major	Major	Major
Common Land Users	Major	Negligible/minor	Moderate	Major	Major	Major

- 10.6.17 The assessment of significance suggests that the presence of construction traffic in the vicinity of PRow paths and Common Land Users are considered significant effects during the construction phase, prior to the application of mitigation measures. Although the impact on Common Land Users is deemed to be significant, it should be noted that the use of Common Land in this area appears to be limited.
- 10.6.18 In relation to the receptor of Pengarnddu Industrial Estate, while the effects of accidents & safety are assessed to be moderate, overall the effects of construction traffic are not considered significant.

10.7 Mitigation

Outline Construction Environmental Management Plan (CEMP)

- 10.7.1 A CEMP will be provided and will set out the principles that will be adhered to during design and construction (including temporary works) to ensure that the potential construction phase effects on geology, hydrogeology, soils and hydrology are fully controlled. The CEMP will contain good practice construction measures, such as dust and dirt control measures and pollution prevention controls, over the construction of the development.
- 10.7.2 The CEMP will be submitted to CCBC for approval prior to the commencement of the Proposed Scheme.

Traffic Management Plan (TMP)

- 10.7.3 The TMP will be agreed with Caerphilly County Borough Council and Merthyr Tydfil County Borough Council prior to the commencement of construction works.
- 10.7.4 The following measures will be agreed and implemented as part of the TMP:
- Deliveries will be managed and co-ordinated so that vehicles will not be idle on-site. In instances where vehicles are required to wait on-site to undertake deliveries, the engines of stationary vehicles will be turned off in order to reduce emissions;
 - A communications plan and strategy to advise local residents and stakeholders of construction works and activities that may affect travel in the area;
 - A site worker transport and travel arrangement plan, including transport modes to and from the worksite (including pick up and drop off times);
 - All materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads;
 - Specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
 - Wheel cleaning facilities may be established at the site entrance, depending on the views of Caerphilly County Borough Council and Merthyr Tydfil County Borough Council;
 - Normal site working hours would be limited to between 0700 and 1900 Monday to Friday and between 0900 and 1300 on Saturday;

- Appropriate traffic management measures would be put in place on the unclassified road to avoid conflict with general traffic, subject to the agreement of the roads authority. Typical measures would include HGV turning and crossing signs and / or banksmen at the site access and warning signs;
- Provision of construction information to be distributed to residents within an agreed distance of the site.
- All drivers would be required to attend an induction to include:
 - A toolbox talk safety briefing;
 - The need for appropriate care and speed control;
 - A briefing on driver speed reduction agreements (to slow site traffic at sensitive locations through villages);
 - A briefing on users of the common; and
 - Identification of the required access routes and the controls to ensure no departure from these routes.

- 10.7.5 It is anticipated that an agreement to cover the cost of abnormal wear and tear on Common Road will be requested. Video footage of the pre-construction phase condition of the abnormal loads access route and the construction vehicles route would be recorded to provide a baseline of the state of the road prior to any construction work commencing. This baseline would inform any change in road condition during the construction stage of the Proposed Scheme, during the construction period that would be hazardous to public traffic, would be repaired immediately.
- 10.7.6 Any damage to road infrastructure caused directly by construction traffic would be made good, and street furniture that is removed on a temporary basis would be fully reinstated.

Abnormal Indivisible Loads (AIL)

Route Survey Report

- 10.7.7 An access route review was undertaken which highlighted a number of constraint points which were assessed using swept path assessment software. The Indicative Route Survey Report (RSR) is included within **Technical Appendix 10.1**.
- 10.7.8 The RSR identifies the key points associated with the route that require remedial works to accommodate the predicted loads. The results and recommendations contained in the report are summarised below and would be delivered through a separate minor works consenting and technical approval process prior to load movements commencing. A summary of the required accommodation measures outlined in the RSR are as follows:
- Newly constructed site access junction;
 - Reopening of old road formation to allow direct AIL only access from the A465 to the Common Road to avoid complex manoeuvring at the Asda junction and nearby bends;
 - Vegetation to be cleared or trimmed;
 - Temporary removal of obstacles such as road signs, lighting columns, guardrails, bollards and traffic signal poles;

- Placing of load bearing surfaces to extend the load bearing surfaces available to abnormal load vehicles;
- Introduction of contraflow manoeuvres under Police control; and
- Recommendation of structural review of cattle grid along Common Road.

10.7.9 AIL mitigation works can be designed to be temporary in nature to enable the restoration to their original condition (if required by the local transport authority).

AIL Convoy System

10.7.10 A police escort would be required to facilitate the delivery of the predicted loads. The police escort would be further supplemented by a civilian pilot car to assist with the escort duty. It is proposed that an advance escort would warn oncoming vehicles ahead of the convoy, with one escort staying with the convoy at all times. The escorts and convoy would remain in radio contact at all times where possible.

10.7.11 The abnormal loads convoys would be no more than three AILs long, or as advised by the police, to permit safe transit along the delivery route and to allow limited overtaking opportunities for following traffic where it is safe to do so.

10.7.12 The times in which the convoys would travel will need to be agreed with South Wales Police who have sole discretion on when loads can be moved.

Onsite Measure delivered using a Right of Way Management Plan

10.7.13 Within the site, consideration has been given to pedestrians due to potential interactions between construction traffic and users of the Common. These measures will be formulated into a Right of Way Management Plan.

10.7.14 The principal contractor will ensure that speed limits are always adhered to by their drivers and associated subcontractors. Advisory speed limit signage will also be installed on approaches to areas where Common users may interact with construction traffic.

10.7.15 Signage will be installed on the Site exit that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians in the area. This will also be emphasised in the weekly tool box talks.

10.7.16 The British Horse Society (BHS) has made recommendations on the interactions between HGV traffic and horses on the public road. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and will run away in panic if really frightened. Riders will do all they can to prevent this but, should it happen, it could cause a serious accident for other road users, as well as for the horse and rider.

10.7.17 The main factors causing fear in horses in this situation are:

- Something approaching them, which is unfamiliar and intimidating;
- A large moving object, especially if it is noisy;
- Lack of space between the horse and the vehicle;
- The sound of air brakes; and
- Anxiety on the part of the rider.

10.7.18 The BHS recommends the following actions that will be included in the site training for all HGV staff:

- On seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, if possible;
- If the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);
- The vehicle should not move off until the riders are well clear of the back of the HGV;
- If drivers are wishing to overtake riders, they will approach slowly or even stop in order to give riders time to find a gateway, verge or layby where they can take refuge and create sufficient space between the horse and the vehicle. Because of the position of their eyes, horses are very aware of things coming up behind them; and
- All drivers delivering to the site must be patient. Riders will be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

Public Information

- 10.7.19 Information on the turbine convoys would be provided to help assist the public.
- 10.7.20 Information would relate to expected vehicle movements from the port of entry through to the site access junction. This will assist residents in becoming aware of the convoy movements and may help reduce any potential conflicts.
- 10.7.21 The applicant would also ensure information was distributed through its communication team via the project website, local newsletters and social media.

Operational Phase Mitigation

- 10.7.22 Site entrance roads will be well maintained and monitored during the operational life of the development. Regular maintenance will be undertaken to keep the site access track drainage systems fully operation and to ensure there are no run-off issues onto the public road network.

10.8 Summary of residual effects

- 10.8.1 The Proposed Scheme would lead to increased traffic volumes on the trunk and local highway network during the construction phase. However, traffic volumes would fall off considerably outside the peak period of construction (Month 7).
- 10.8.2 The maximum traffic impact associated with construction is predicted to occur in month 7 of the indicative construction programme. During month 7, it is estimated that an average of 147 HGV movements (or 13 per hour) is predicted per day with a further 24 car and LGV movements to transport construction workers to and from the site.
- 10.8.3 The greatest impact would be on users of the Public Right of Ways and Common Land in the vicinity of the Site, which would experience significant effects, prior to the application of mitigation measures.
- 10.8.4 A review of the local road network was undertaken to assess the feasibility of transporting turbines to the development site and this has been concluded that

access for the candidate turbine is feasible, subject to the provision of mitigation works.

- 10.8.5 Traffic levels during the construction phase is presented as a worst-case assessment. It is expected that traffic levels associated with the decommissioning phase of the Proposed Scheme will be less than those estimated during the construction phase, as it is likely that access tracks will be left in-situ.
- 10.8.6 A series of mitigation measures and management plans have been proposed to help mitigate and offset the impacts of the construction phase traffic flows.
- 10.8.7 No link capacity issues are expected on any of the roads assessed due to the additional movements associated with the Proposed Scheme.
- 10.8.8 An evaluation of the potential effects of the increase in construction traffic on the study area roads used for construction traffic was undertaken. The summary of this assessment is provided in **Table 10.16**.
- 10.8.9 With the implementation of appropriate mitigation, no significant residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be slight or insignificant but as they will occur during the construction phase only, they are temporary and reversible.

Table 10.16: Summary of Potential Significant Effects of the Proposed Scheme

Description Effect	Significance of Potential Effects	Mitigation Proposed	Means of Implementation	Outcome / Predicted Residual Effect
Construction				
Right of Way Users and Common Land Users				
Severance	Significant	Improved signage, temporary signage and public information provision.	TMP and Right of Way Management Plan	Not significant
Driver delay	Not significant	Improved signage, temporary signage and public information provision.	TMP	Not significant
Pedestrian Delay	Significant	Improved signage, temporary signage and public information provision.	TMP and Right of Way Management Plan	Not significant
Pedestrian Amenity	Significant	Improved signage, temporary signage and public information provision.	TMP and Right of Way Management Plan	Not significant
Fear and intimidation	Significant	Improved signage, temporary signage and public information provision.	TMP and Right of Way Management Plan	Not significant
Accidents and Safety	Significant	Improved signage, temporary signage and public information provision.	TMP, Right of Way Management Plan and approved junction design	Not significant

10.9 References

Ref. 10-1: Institute of Environmental Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic

Ref 10-2: Institute of Environmental Management and Assessment (IEMA) (2005) Guidelines for Environmental Impact Assessments

Ref. 10-3: Highways Agency (2008) Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges

Ref. 10-4: Welsh Government Procedure & Advice Guidance (PAG) Welsh Government Motorway and Trunk Road Network 'Pulling Together' Best Practice for Transporting Abnormal Loads in Wales