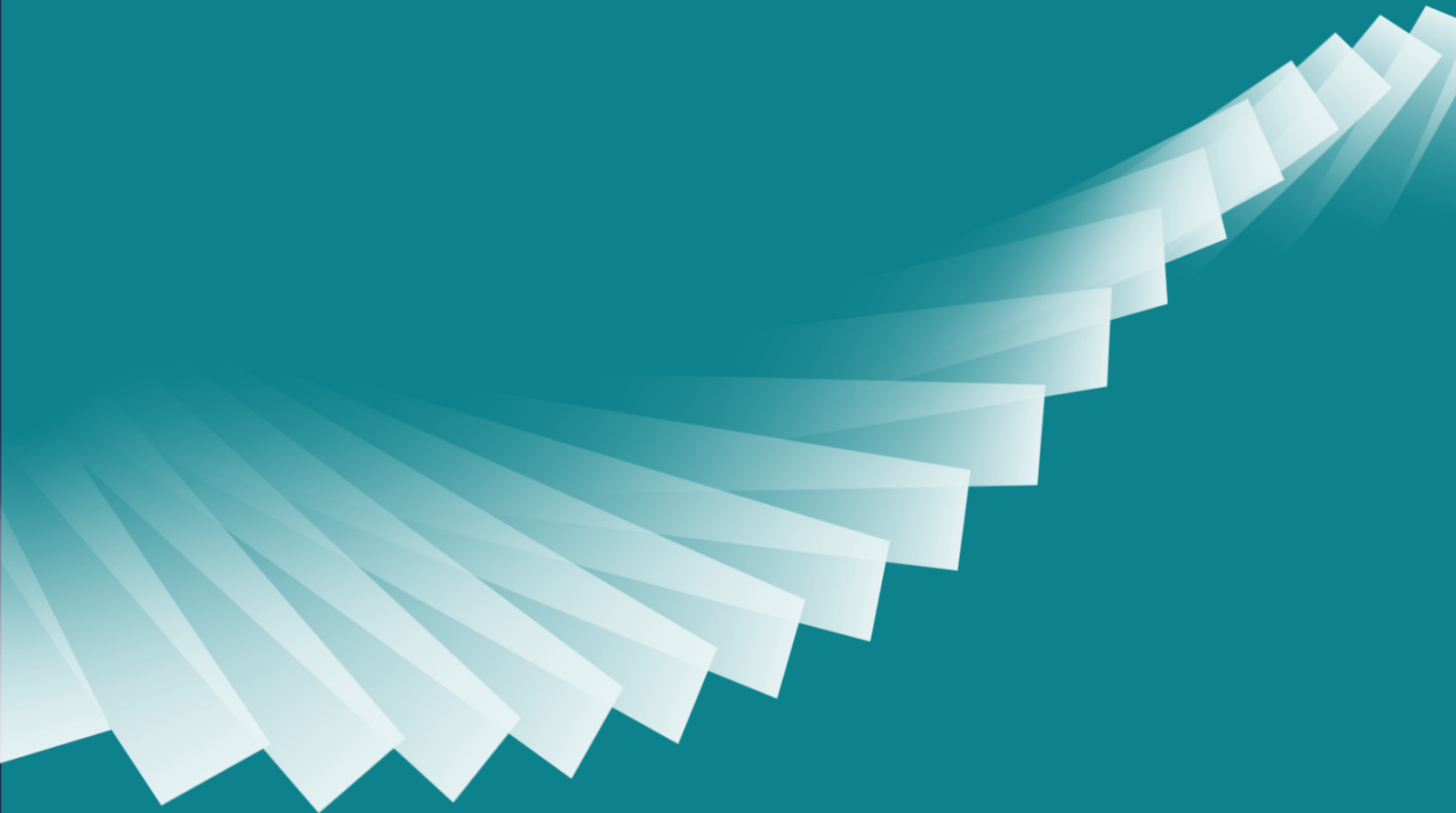




Bute Energy
Aberedw Energy Park

Appendix 11.1: **Transport Assessment**



P e l l F r i s c h m a n n

Aberedw Energy Park

Technical Appendix 11.1: Transport Assessment

June 2025

10100008

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Annex A Indicative Junction Layouts

1 Introduction

1.1 Purpose of the Report

Pell Frischmann Consultants Ltd (PF) has been commissioned by Land Use Consultants Ltd (LUC) on behalf of Aberedw Energy Park Ltd (the Applicant) to undertake a Transport Assessment (TA) for the proposed Aberedw Energy Park (the Proposed Development). The Application Site (the Site) is located approximately 3 kilometres (km) east of Builth Wells, within Powys County Council's (PCC) administrative area.

The report identifies the key transport and access issues associated with the Proposed Development.

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1.2 Report Structure

Following this introduction, the TA report is structured as follows:

- section two describes the Proposed Development;
- section three reviews the relevant transport and planning policies;
- section four sets out the methodology used within this assessment;
- section five describes the baseline transport conditions;
- section six describes the trip generation and distribution of traffic in the study area;
- section seven summarises the traffic impact assessment;
- section eight considers mitigation proposals for development related traffic within the study network; and,
- section nine summarises the findings of the TA and outlines the key conclusions.

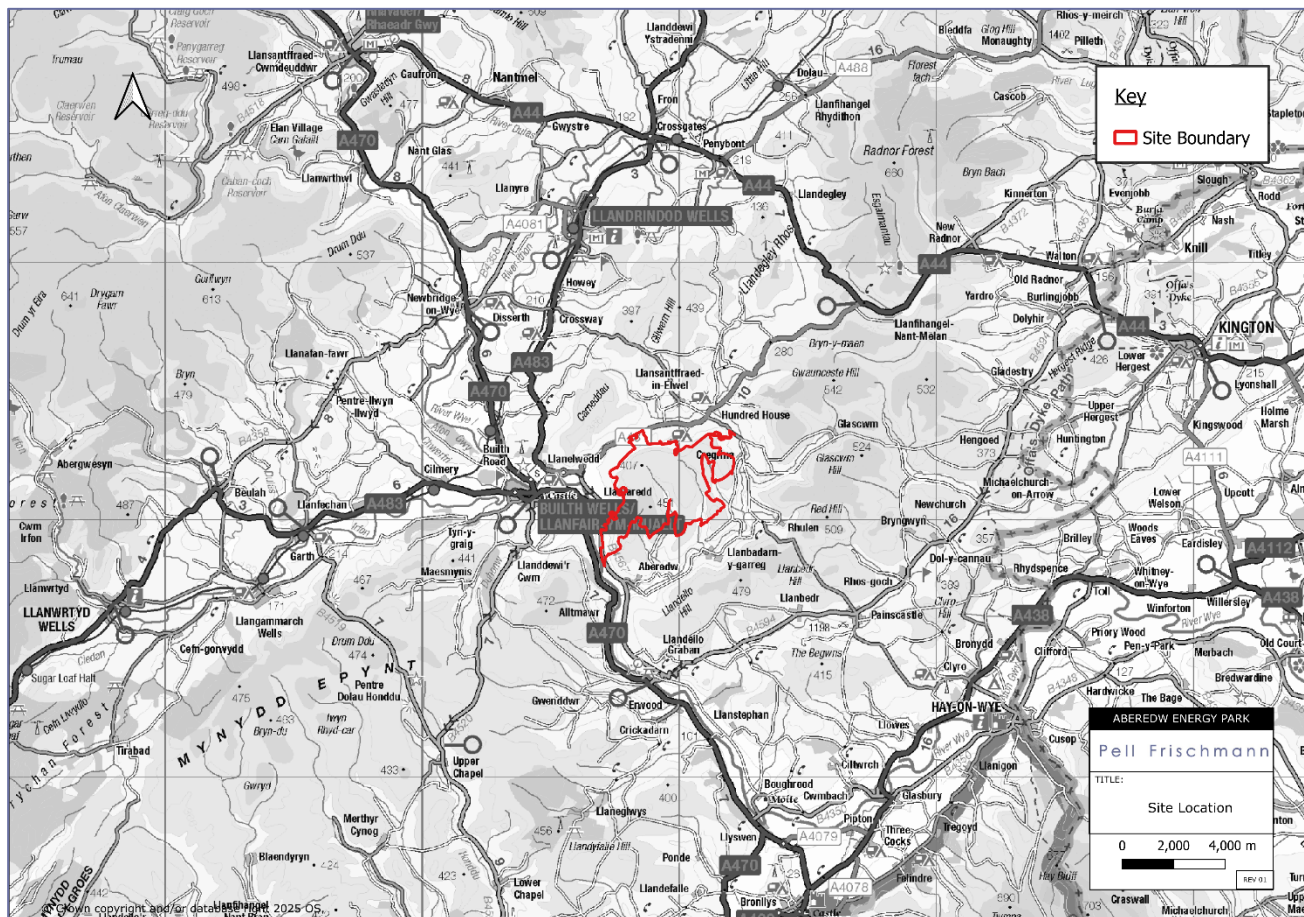
2 Proposed Development

2.1 Site Location

The Site is located approximately 3 km east of Builth Wells and mainly comprises undulating upland which is open moor common land, with a small number of access tracks and small parcels of scrub woodland.

The Site location is shown in **Figure 1**.

Figure 1 Site Location



2.2 The Proposed Development

The Proposed Development comprises up to 18 turbines with a blade tip height of up to 200 metres (m), as well as associated infrastructure. Its total generating capacity is anticipated to be approximately 120 MW.

The layout of the Proposed Development is shown in **Figure 2**.

Figure 2 Proposed Development



A full description of the Proposed Development is provided in **Environmental Statement (ES) Volume 1: Chapter 4: Development Description**.

3 Policy Context

3.1 Introduction

A review of relevant transport planning policies has been undertaken and is summarised below for national and local government policies.

3.2 National Policy and Guidance

3.2.1 Future Wales – The National Plan 2040 (2021)

Future Wales is the Welsh Government's National Development Framework. It applies the key principles of Planning Policy Wales 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 100% of consumed electricity by renewable means by 2035¹.

Applications for Developments of National Significance must be determined in accordance with Future Wales.

3.2.2 Planning Policy Wales Edition 12 (2024)

Planning Policy Wales Edition 12 (PPWE12) establishes the key principles for the planning system and is a material consideration to the assessment of the Proposed Development. 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. PPWE12 informs the preparation of development plans and development management decisions.

In relation to Transport Assessments, PPWE12 states that:

“Transport Assessments are an important mechanism for setting out the scale of anticipated impacts a proposed development, or redevelopment, is likely to have. They assist in helping to anticipate the impacts of development so that they can be understood and catered for appropriately.

They should cover the transport impacts during the construction phase of the development, as well as when built and in use. Transport Assessments also provide an important basis for the preparation of Travel Plans. Further guidance on Transport Assessments and Travel Plans is contained in TAN 18.”

3.2.3 Technical Advice Note 18 Transport (2007)

Technical Advice Note (TAN) 18 was published by the Welsh Government in March 2007. It describes how to integrate land use and transport planning and explains how transport impacts should be assessed and mitigated.

Key requirements of TAN 18 applicable to this development 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).

¹ The previous aim outlined in Future Wales – The National Plan 2040 was to generate 70% of consumed electricity by renewable means by 2030, however in 14 July 2023 the Cabinet Statement: Written Statement: Publication of Summary of Responses to the Consultation on Wales' Renewable Energy Targets stated that: *“Following the support we had for our proposal, I am adopting the target for Wales to meet the equivalent of 100% of our annual electricity consumption from renewable sources by 2035, and to continue to keep pace with consumption thereafter.”*

- 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, page 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).

3.2.4 Welsh Transport Appraisal Guidance (2017)

Welsh Transport Appraisal Guidance (WeTAG) 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.

3.3 Local Policy and Guidance

3.3.1 Powys Local Development Plan (LDP) (2011-2026)

The Powys Local Development Plan (2011-2026) was adopted by PCC on the 17 April 2018. It is applicable to all of Powys except the area of the Bannau Brycheiniog National Park within the county. Policy RE1 of the LDP states that proposals for renewable and low carbon energy development will be permitted subject to the following criteria:

- Within or close to the Strategic Search Areas (SSAs), proposals for wind energy greater than 25MW will be permitted subject to criteria 3 to 5;
- Proposals for all types of renewable and low carbon energy development and associated infrastructure either on their own, cumulatively or in combination with existing, approved or proposed development, shall comply with all other relevant policies in the LDP;
- Satisfactory mitigation shall be in place to reduce the impact of the proposal and its associated infrastructure. Proposals shall make provision for the restoration and after-care of the land for its beneficial re-use; and,
- Where necessary, additional compensatory benefits will be sought by agreement with applicants in accordance with Policy DM1 – Planning Obligations.

4 Study Methodology

There are three phases of the Proposed Development, which have been considered in this assessment and are as follows:

- the construction phase;
- the operational phase; and,
- the decommissioning phase.

4.1 Project Phases – Transport Overview

Of the three phases, the construction phase is considered to have the greatest impact in terms of transport and potential impacts on the road network and sensitive receptors. Construction plant, bulk materials and wind turbine components will be transported to Site, potentially resulting in a significant increase in traffic on the study network.

The operational phase is restricted to occasional maintenance operations which generate significantly lower volumes of traffic that are not considered to be in excess of daily traffic variation levels on the road network.

The decommissioning phase involves fewer trips on the road network than the construction phase, as minor elements of infrastructure are likely to be left in place, adding to local infrastructure that can potentially be used for further agricultural or leisure uses in the future.

4.2 Scoping Discussions

The Applicant submitted a request for Scoping Direction in December 2023 to the Welsh Ministers in respect of the ES which included a section considering traffic and transport. A full review of that Scoping Direction and other correspondence relating to the scope of the study is provided in the **ES Volume 1: Main Report** as **Chapter 11: Transport and Access**.

5 Baseline Conditions

5.1 Access Arrangement

The wind farm element of the Proposed Development will be accessed via the main Site access junction at the existing C1336 / U1377 priority junction, south of the A481 and to the east of the Site. The C1336, which routes from the A481 to Glascwm, currently serves as access to a number of farms and areas of agricultural land use, individual residential dwellings, and a burial ground. The U1377 is a single track road providing access to a farm and agricultural land which joins existing tracks within the Site boundary.

The main Site access junction will be upgraded to provide access to the Site for all Abnormal Indivisible Loads (ALLs) associated with the turbine deliveries, as well as access for heavy goods vehicles (HGVs) delivering construction materials and general Site traffic. Loads will then proceed to the proposed turbine locations using a combination of upgraded and new access tracks.

The substation element of the Proposed Development will be accessed via an existing gated access located on the A481, located approximately 2.90 km to the west of the A481 / C1336 junction, by way of the A481. The substation access will be upgraded and will only provide access to that element of the Proposed Development. There is no direct connection between the substation element of the Site and the wind farm element of the Site.

A visibility splay review has been undertaken for both of the proposed Site access junctions, which has identified limited visibility for vehicles approaching the Site accesses from certain directions, particularly due to existing roadside vegetation and alignment of the carriageway. To manage this during the construction phase, a Temporary Traffic Regulation Order (TTRO) will be required to reduce the speed limit for the entrance to the substation from the A481, and the entrance to the Site from the C1336.

With the TTRO in place, along both the A481 and the C1336, supported by appropriate signage, it is considered that the traffic at these locations can be managed accordingly, to allow for safe access and egress to and from the Site, during the construction works. The TTRO would be applied for post-consent and only implemented following the approval of PCC.

Plans showing the layouts of the proposed Site access junctions are provided in **Annex A**.

Two separate ports and access routes are considered in this assessment, one from the Port of Swansea and one from the Port of Birkenhead. A detailed Route Survey Report (RSR) examining the selected delivery route from the port through to the Site access junction will be undertaken as part of a separate application..

5.2 Study Area Determination

The Study Area has been based on those roads expected to experience increased traffic flows associated with the construction of the Proposed Development. The geographic scope was determined through a review of the other schemes in the area, Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

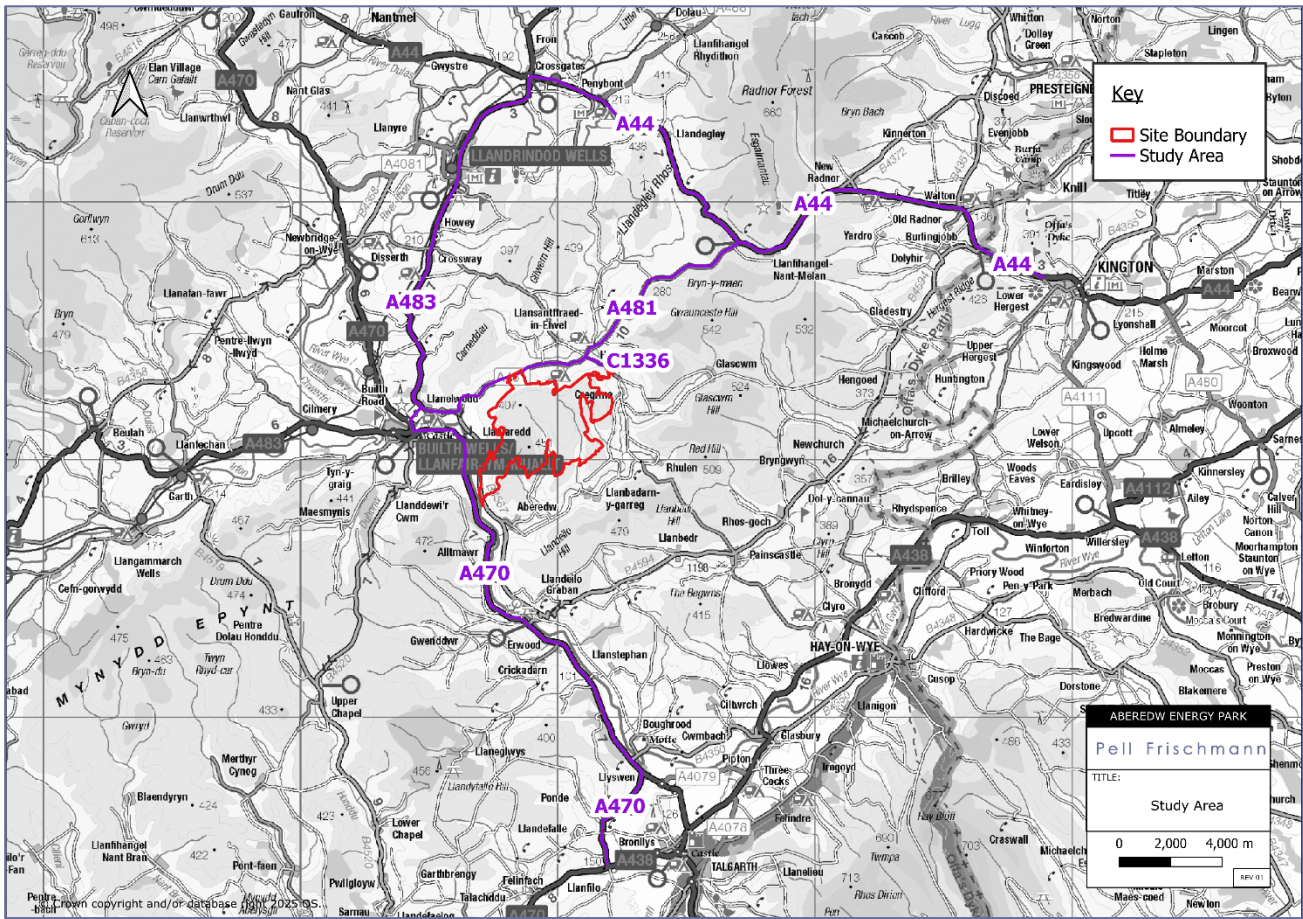
It is estimated that construction personnel will access the Site from the east and west on the A481 and route to the Site via the C1336 to the Site access. Strategic access to the Site will be taken from the A470 and the A483, both accessed to the west of the Site directly from the A481.

Based on the above, the study area for this assessment is as follows:

- C1336, from A481 to the Site access;
- A481, between Llanelwedd and Fforest Mill;
- A470, between Builth Wells and Bronllys;
- A483, between Builth Wells and Crossgates; and,
- A44, between Crossgates and Kington.

Effects associated with construction traffic generated by the Proposed Development would be most pronounced in close proximity to the Site access junctions and on the final approaches to the Site. As vehicles travel away from the Site, they would disperse across the wider road network, thus diluting any potential effects. It is therefore expected that the effects relating to construction traffic are unlikely to be significant beyond the study area identified above. The study area is shown in **Figure 3**.

Figure 3 Study Area



5.3 Pedestrian and Cyclist Networks

There are no dedicated pedestrian facilities in the immediate vicinity of the Wind Farm Site Access and the Substation Site Access, reflecting their rural setting. Further away from the Site in the wider Study Area, there are pedestrian facilities within local settlements, which are located in the Study Area.

The level of pedestrian infrastructure in the immediate vicinity of the Site is commensurate with the scale of the local settlements and their rural setting.

A review of the PCC Public Rights of Way (PRoW) Map² indicates a number of PRoW within the boundary of the Site, which are provided in **Table 1**.

Table 1 Public Rights of Way within the Boundary of the Site

Path Number	Route Code	Length (m)	Path Type
1758	113/1758/1	173	Bridleway
	113/1758/2	486	Bridleway
	113/1758/3	92	Bridleway
	113/1758/4	789	Bridleway

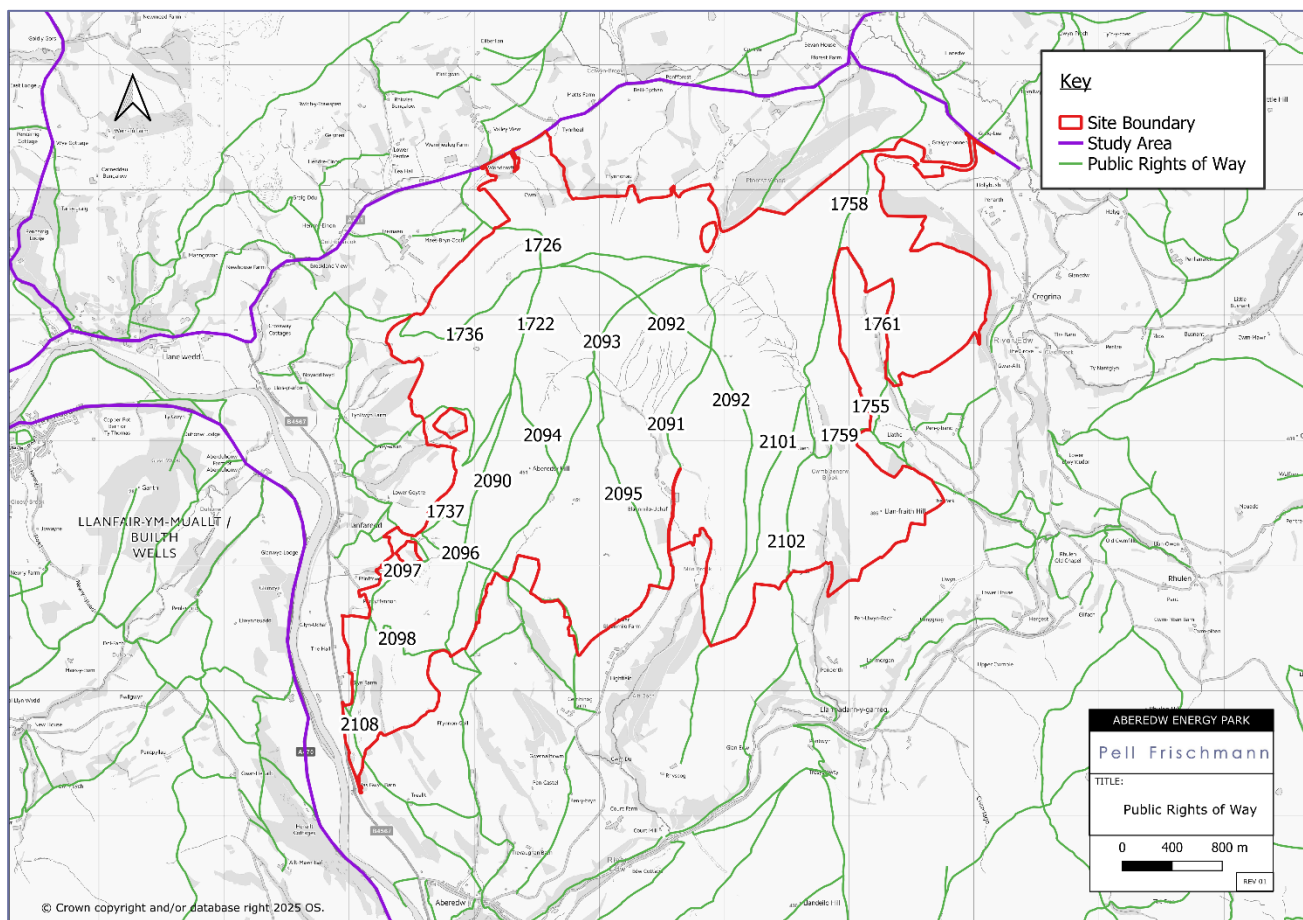
² <https://en.powys.gov.uk/article/13184/Public-Rights-of-Way-Map> [accessed March 2025]

Path Number	Route Code	Length (m)	Path Type
1761	113/1758/5	2040	Bridleway
	113/1761/2	668	Bridleway
	113/1761/1	596	Bridleway
1755	113/1755/1	618	Footpath
1759	113/1759/4	489	Bridleway
	113/1759/5	102	Bridleway
	113/1759/2	255	Bridleway
	113/1759/3	385	Bridleway
	113/1759/1	542	Bridleway
2101	102/2101/1	1696	Footpath
2092	102/2092/1	1514	Footpath
	102/2092/2	2014	Footpath
	102/2092/3	731	Footpath
	102/2092/4	679	Footpath
2091	102/2091/1	53	Footpath
	102/2091/2	19	Footpath
	102/2091/3	46	Footpath
	102/2091/4	664	Footpath
	102/2091/5	1088	Footpath
	102/2091/6	1090	Footpath
	102/2091/7	56	Footpath
2093	102/2093/1	533	Footpath
	102/2093/2	733	Footpath
	102/2093/3	919	Footpath
	102/2093/4	941	Footpath
	102/2093/5	752	Footpath
	102/2093/6	154	Footpath
2102	102/2102/2	1627	Footpath
2096	102/2096/1	459	Footpath
	102/2096/2	210	Footpath
	102/2096/3	139	Footpath
	102/2096/4	1275	Footpath
2094	102/2094/1	931	Footpath
1722	139/1722/1	744	Footpath
	139/1722/2	165	Footpath
	139/1722/3	2120	Footpath
	139/1722/4	332	Footpath
1736	139/1736/1	156	Bridleway
	139/1736/2	2112	Bridleway
	139/1736/3	213	Bridleway
2090	102/2090/2	759	Footpath
	102/2090/3	292	Footpath
	102/2090/4	1122	Footpath
2095	102/2095/1	1961	Footpath
2098	102/2098/1	985	Footpath
2097	102/2097/1	704	Footpath
	102/2097/2	805	Footpath

Path Number	Route Code	Length (m)	Path Type
2108	102/2097/3	251	Footpath
	102/2108/1	108	Footpath
	102/2108/2	881	Footpath
1726	138/1726/2	779	Footpath
1737	139/1737/5	431	Bridleway
1758	113/1758/1	173	Bridleway
	113/1758/2	486	Bridleway

The PRow Network within the boundary of the Site can be seen in **Figure 4**.

Figure 4 Public Rights of Way



A review of the Sustrans National Cycle Network (NCN) map³ indicates that there are two NCN Routes within the vicinity of the Proposed Development.

NCN Route 825 (Radnor Ring) is a mainly on-road, circular cycle route of approximately 107 km in length which routes around the old county of Radnorshire. NCN Route 825 begins at Rhayader and mainly runs through Powys, however, in the east, the route runs back and forth over the Welsh English border into Herefordshire passing through Kington, Presteigne and Knighton. Within the study area, NCN Route 825 runs along the C1336 and passes the Site access junction. It continues along a short section of the A481 of approximately 520 m between the A481 / C1336 priority junction and Hundred House. NCN Route 825 overlaps the study area again for a short section of the A483 of approximately 210 m in length within Llandrindod Wells.

NCN Route 8 (the Lôn Las Cymru) is a mainly on-road route which starts in Cardiff, routes through the Brecon Beacons and Snowdonia and ceases on the island of Anglesey. NCN Route 8 runs along the B4567, bordering

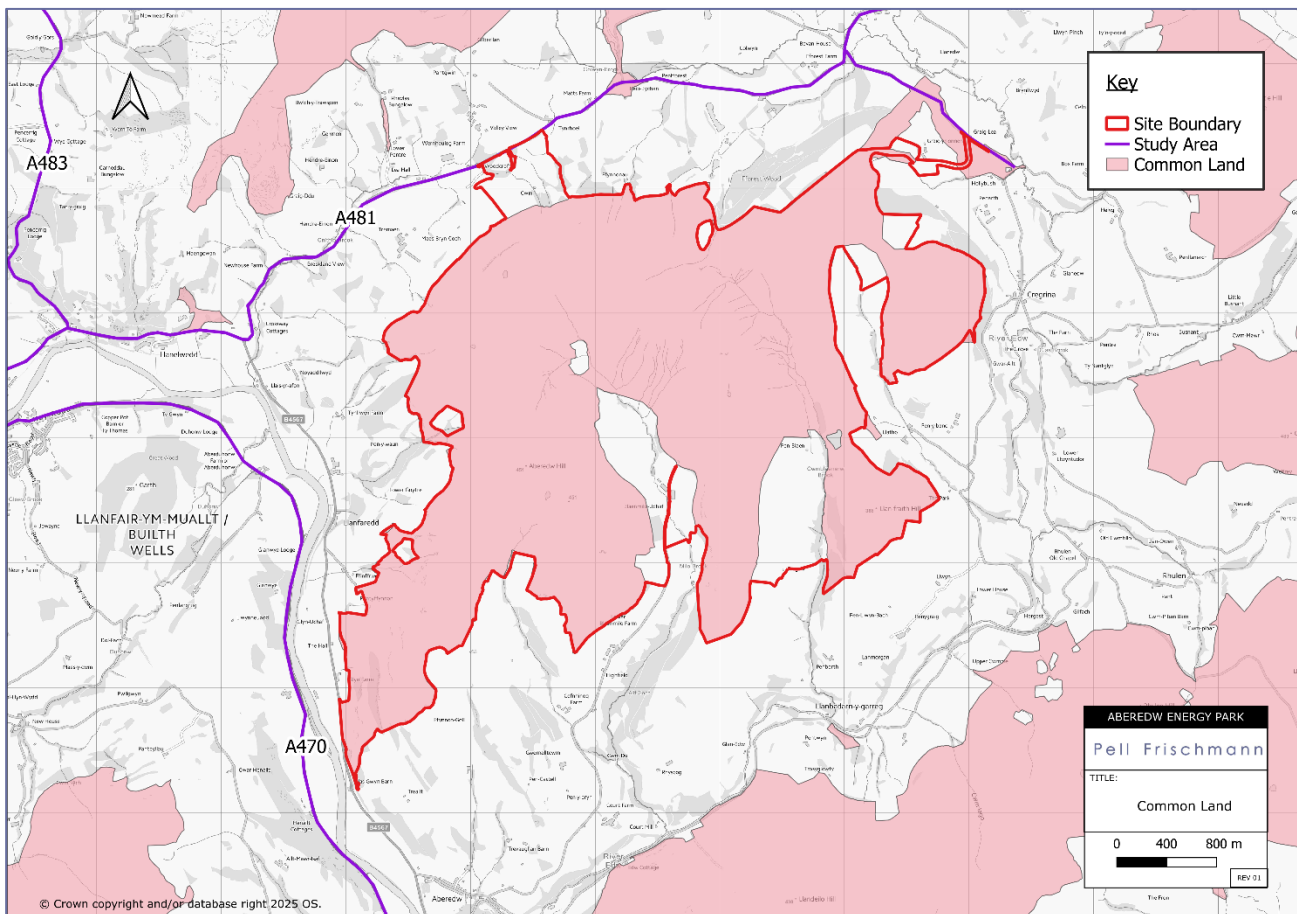
³ <https://www.sustrans.org.uk/national-cycle-network> [Accessed March 2025]

the Site to the west, and overlaps the study area for a small section of the A481 of approximately 150 m in length to the east of Llanelwedd, between the A483 / Parc Menter Wyese Enterprise Park roundabout and the A481 / B4567 priority junction.

5.4 Common Land

A review of the Common Land (CROW Act) Fully Attributed Dataset⁴ indicates that there are large areas of Common Land within and adjacent to the Site boundary. These can be seen in **Figure 5**.

Figure 5 Common Land



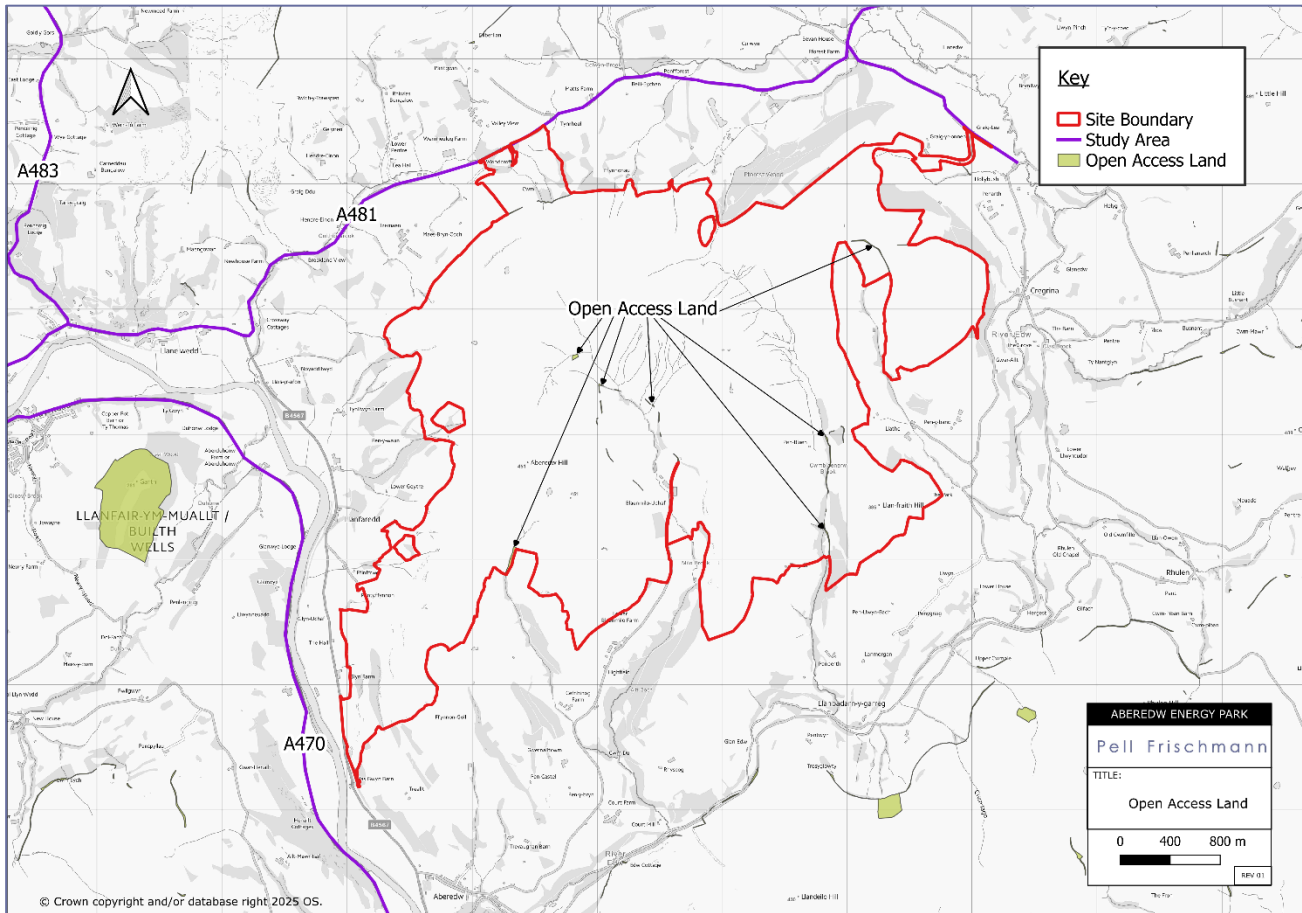
5.5 Open Access Land

A review of the CROW Act Fully Attributed Dataset⁵ indicates that there are small sections of Open Access Land within the Site boundary. These can be seen in **Figure 6**.

⁴ https://datamap.gov.wales/layers/inspire-nrw:NRW_COMMON_LAND_2014#download-metadata-section [Accessed March 2025]

⁵ https://datamap.gov.wales/layers/geonode:GWC21_Open_Access [Accessed March 2025]

Figure 6 Open Access Land



5.6 Road Access

C1336

The C1336 is a narrow two-way single carriageway road which connects Hundred House with Glascwm. Within the Study Area, the C1336 is initially subject to a 40 miles per hour (mph) speed limit for approximately 130 m south of its junction with the A481, increasing to 60 mph. The C1336 is maintained by PCC.

U1377

The U1377 is a single track road which leads from the C1336 to Graig-Yr-Onen, and tracks within the Site boundary. A cattle grid is located on the U1377 road, approximately 18 m from the junction with the C1336.

A481

The A481 is a two-way single carriageway road which connects the A483 with the A44. The A481 is generally subject to a 60 mph speed limit, reducing to 40 mph through Hundred House and on approach to Llanellwedd, and reducing further to 20 mph within Llanellwedd. The A481 is maintained by PCC.

A483

The A483 is a trunk road which runs from Swansea in the south of Wales to Manchester, England. Within the study area, the A483 is generally subject to a 60 mph speed limit, reducing to 50 mph within Crossway and Howey and to 20 mph and 30 mph in settlements such as Builth Wells, Llanellwedd, Llandrindod Wells, and Crossgates. The A483 is maintained by the North and Mid Wales Trunk Road Agent (NMWTRA).

A44

The A44 is a major road which runs from Oxford, England to Aberystwyth, Wales. Within the study area, the A44 is a two-way single carriageway road and is mainly subject to the national speed limit, 60 mph) however at some locations along the road, the speed limit is reduced and signposted accordingly. Within the study area, the A44 is maintained by PCC.

A470

The A470 is a trunk road which runs from Cardiff in the south to Llandudno in the north. Within the study area, the A470 is generally subject to a 60 mph speed limit, reducing to 20 mph and 30 mph in Erwood and reducing to 20 mph in Builth Wells. The A470 is maintained by NMWTRA

5.7 Existing Traffic Conditions

To assess the impact on the transport routes within the Study Area, a series of Automatic Traffic Count (ATC) sites were established between 21 and 27 October 2023.

To complement the ATC surveys, Annual Average Daily Traffic (AADT) flows were also obtained from the UK Department for Transport (DfT) traffic database. Available 2023 flow information was obtained for all locations, with the exception of two locations where 2018 and 2019 data utilised.

The traffic count sites used are as follows:

1. C1336, south of the Site access junction (Counter ID: 805096, 2023 data);
2. A481, west of access to Fforest Fields (Counter ID: 10590, 2018 data);
3. A481, west of A481 / A44 priority junction (ATC 2023 data);
4. A44, east of A481 / A44 priority junction (ATC 2023 data);
5. A44, southwest of New Radnor (Counter ID: 30519, 2023 data);
6. A44, north of A481 / A44 priority junction (ATC 2023 data);
7. A44, east of Crossgates (Counter ID: 40519, 2023 data);
8. A483, south of Crossgates (Counter ID 546: 2023 data);
9. A483, Llandrindod Wells (Counter ID 20555: 2023 data);
10. A483, Ridgebourne (Counter ID 40557: 2023 data);
11. A483, east of A483 / A470 roundabout (Counter ID 10556: 2023 data)
12. A483, north of Wye Bridge (Counter ID 10544; 2023 data);
13. A470, Aberduhonw (Counter ID 40544; 2023 data);
14. A470, south of Erwood (Counter ID 20543; 2023 data); and
15. A470, north of A470 / A438 priority junction (Counter ID 538; 2023 data).

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

A National Road Traffic Forecast (NRTF) growth factor was applied to the ATC and DfT survey data to bring the traffic data up to the base year of 2025. NRTF Low Growth factors have been applied to the surveyed traffic data. The NRTF Low Growth factor for 2018 to 2025 is 1.046, 2019 to 2025 is 1.038 and 2023 to 2025 is 1.011.

These sites were identified as being areas where sensitive receptors are located on the access routes. A full receptor sensitivity and effect review is provided in **ES Report Chapter 11**.

The locations of the traffic survey locations are illustrated in **Figure 7**.

Figure 7 Traffic Counter Locations



The 24-hour two-way average traffic flows for the baseline year of 2025 for each of the traffic count locations are presented in **Table 2**.

Table 2 24-hour Average Traffic Data (2025)

Count Ref.	Survey Location	Cars / LGV	HGV	Total	% HGV
1	C1336, near Site Access	151	6	157	4%
2	A481, west of access to Fforest Fields	951	79	1,030	8%
3	A481, west of A481 / A44 priority junction	559	215	774	28%
4	A44, east of A481 / A44 priority junction	1,885	680	2,565	27%
5	A44, southwest of New Radnor	2,452	175	2,627	7%
6	A44, north of A481 / A44 priority junction	1,477	461	1,938	24%
7	A44, east of Crossgates	3,999	293	4,292	7%
8	A483, south of Crossgates	7,070	248	7,318	3%
9	A483, Llandrindod Wells	6,225	153	6,377	2%
10	A483, Ridgebourne	6,747	212	6,960	3%
11	A483, east of A483 / A470 roundabout	5,942	330	6,271	5%
12	A483, north of Wye Bridge	8,959	542	9,501	6%
13	A470, Aberduhonw	4,878	384	5,262	7%
14	A470, south of Erwood	5,885	351	6,236	6%
15	A470, north of A470 / A438 priority junction	3,874	248	4,122	6%

Please note that variances may occur due to rounding.

5.8 Accident Review

Personal Injury Accident (PIA) data was obtained for the five-year period covering 2019 to 2023 (which is the latest information available) for the A481, as agreed in scoping, as well as the C1336 leading towards the main Site access. Data was obtained from the online resource CrashMap⁶ which uses data collected by the Police about road traffic crashes occurring on Welsh roads, where someone has been injured.

TA Guidance requires an analysis of the PIA on the road network in the vicinity of any development to be undertaken for at least the most recent 3-year period, or preferably a five-year period, particularly if the Site has been identified as being within a high accident area. Whilst the study area has not been identified as having a high accident rate, a five-year review has been undertaken to ensure a comprehensive assessment has been undertaken.

The statistics are categorised into three categories, namely “slight” for damage only incidents, “serious” for injury accidents and “fatal”, for those accidents that result in a death.

The locations and severity of the recorded accidents within the study area are summarised in **Table 3** while **Figure 8** shows their locations.

Table 3 PIA Summary

Road Link	Slight	Serious	Fatal	HGV
A481	8	4	0	1
C1336	1	0	0	0
Total	9	4	0	1
Percentage of total accidents	69%	31%	0%	8%

⁶ <https://www.crashmap.co.uk/> [Accessed March 2025]

Key

- Site Boundary
- Study Area
- Slight Accidents
- Serious Accidents

Scale: 0 800 1,600 m

Map Labels: A4081, BA358, River Llynon, Howey, Disserth, Crossway, A481, 397, 439, Llandegley Rhos, Llanfihangel-Nant-Melan, Bryn-y-maen, 280, Gwaunceste Hill, 542, 532, Glaschw, 524, Hengo, 37, Red Hill, Rhulen, 509, Llanbadarn-y-garreg, Llanbedr Hill, Rhos-goch, 389, Llanddewi'r Cwm, Llanfawredd, 451, Cregina, Hundred House, 10, Carneddau, 407, A48, A483, A470, Built Road, Llanellwedd, Castle, BUILT WELLS/LLANFAIR-YM-MUALLT, B567, Aberedw, 470, 441, n-y-raig, yn is, 441, n-y-raig, yn is, 441, n-y-raig, yn is.

A481

- C1336

- One accident occurred on the C1336 and was categorised as being “slight”.
- The accident occurred at the proposed wind farm Site access junction and involved two cars, resulting in two casualties.

PIA Summary

The analysis indicates that a total of 13 PIA accidents have been recorded along the assessed links within the most recent five-year period. Most recorded accidents were categorised as being “slight” (69%), with 31% of incidents recorded as “serious” and none resulting in a fatality. Only 8% of all accidents recorded involved an HGV. An accident occurred at the location of the main wind farm Site access junction which was recorded as being “slight” and involved two cars. While the closest accident recorded in the vicinity of the proposed substation Site access occurred approximately 270 m to the east and was classified as “slight” and was a single car accident.

Most accidents occurred on approach to a junction, where there is an increased interaction between vehicles.

Based on the information available, it has been established that there are no specific road safety issues within the immediate vicinity of the Proposed Development that currently require to be addressed or would be exacerbated by construction activities associated with the Proposed Development.

5.9 Future Baseline Traffic Conditions

2028 Traffic Flows

Construction of the Proposed Development could commence during 2028 if consent is granted and is anticipated to take approximately 15 months.

To assess the likely effects during the construction period, base year traffic flows were determined by applying a NRTF low growth factor to the surveyed traffic flows. The NRTF low growth factor for 2025 to 2028 is 1.015. This growth factor has been applied to the survey data to estimate the 2028 base traffic flows, as shown in **Table 4**. This is used in the Construction Peak Traffic Impact Assessment.

Table 4 24-hour Average Traffic Data (2028)

Count Ref.	Survey Location	Cars / LGV	HGV	Total	% HGV
1	C1336, near Site Access	153	6	159	4%
2	A481, west of access to Fforest Fields	965	81	1,046	8%
3	A481, west of A481 / A44 priority junction	567	218	786	28%
4	A44, east of A481 / A44 priority junction	1,913	690	2,603	27%
5	A44, southwest of New Radnor	2,488	178	2,666	7%
6	A44, north of A481 / A44 priority junction	1,499	468	1,967	24%
7	A44, east of Crossgates	4,058	298	4,356	7%
8	A483, south of Crossgates	7,176	251	7,427	3%
9	A483, Llandrindod Wells	6,318	155	6,473	2%
10	A483, Ridgebourne	6,849	215	7,064	3%
11	A483, east of A483 / A470 roundabout	6,031	335	6,365	5%
12	A483, north of Wye Bridge	9,094	550	9,644	6%
13	A470, Aberduhonw	4,951	390	5,341	7%
14	A470, south of Erwood	5,973	356	6,329	6%
15	A470, north of A470 / A438 priority junction	3,932	251	4,184	6%

Please note that variances may occur due to rounding.

5.10 Committed Developments

Onshore Wind Farm and Energy Related Planning Applications

A review of PCC's online planning portal⁷, in addition to the Welsh Government's Development of National Significance portal⁸ was undertaken to identify any consented developments within the vicinity of the Proposed Development which would generate significant traffic.

Projects in scoping or not yet determined cannot be included in the TA's cumulative assessments as they have yet to be determined. Traffic impacts are short lived for construction projects, the potential traffic impact is highly speculative and as such, cannot be included in the assessment.

The review did not identify any onshore wind farm or energy related consented developments which should be included within the assessment.

Should other sites be consented and constructed at the same time (such as Nant Mithil Energy Park for example), the effects would be mitigated through the use of an overarching Traffic Management and Monitoring Plan (oTMMP) and by introducing a phased delivery plan which would be agreed with local council roads department, NMWTRA and the Police.

5.10.1 Other Planning Applications

A further review of the PCC's online planning portal was undertaken for other major developments with planning consent or with planning pending determination, which should be considered within this assessment. The review examined consented developments whose trips are considered significant in scale (i.e., has associated traffic impact of over 10%).

The review did not identify any other significant traffic generating developments in the study area that may occur during the construction period associated with the Proposed Development.

It should be noted that the use of Low NRTF growth assumptions has provided a basis for general local development growth within the study area.

⁷ <https://pa.powys.gov.uk/online-applications/?lang=EN>

⁸ <https://www.gov.wales/developments-national-significance-dns-applications>

6 Trip Generation and Distribution

6.1 Construction Phase

6.1.1 Trip Derivation

During the 15-month construction period, the following traffic will require access to the Site:

- staff transport, in either cars or staff minibuses;
- construction equipment and materials, deliveries of machinery and supplies such as concrete and crushed rock; and,
- abnormal loads consisting of the wind turbine sections, a heavy lift crane and substation equipment.

Average monthly traffic flow data were used to establish the construction trips associated with the Proposed Development, based on the assumptions detailed in the following sections.

6.1.2 Construction Staff

Staff would arrive in non-HGV vehicles and where possible will be encouraged to car share. The workforce on Site will depend on the activities undertaken but based on previous wind farm construction site experience for a project of this scale, it is considered that up to three staff per turbine during the short peak period of construction is considered robust. Therefore the maximum number of staff expected onsite could be in the order of 54 per day.

For the purposes of estimating traffic movements, it was assumed that 40% of staff would be transported by minibus and 60% would arrive by car (single car occupancy was assumed as the worst case at this stage with potentially fewer movements achieved through car sharing).

Based on these assumptions, staff transport cars and light vehicles would account for a maximum of 72 vehicle movements (36 inbound trips and 36 outbound trips) per day during the peak period of construction.

6.1.3 Abnormal Indivisible Load and Turbine Component Deliveries

The turbines are broken down into components for transport to the Site. The nacelle, drive train, blade and tower sections are classified as AIL due to their weight, length, width and height when loaded. For the purposes of the report, the 'worst case' numbers of components requiring transport are illustrated in **Table 5**.

Table 5 Turbine Components

Components	Number of Components per turbine
Rotor Blades	3
Tower Sections	5
Nacelle	1
Hub	1
Drive Train	1
Nose Cone	1
Transformer	1
Ancillary	1
Site Parts	0.2

In addition to the turbine deliveries, up to two high-capacity erection cranes would be needed to offload a number of components and erect the turbines as well as two transformers for the substation. The cranes are likely to be mobile cranes with a capacity up to 1,000 tonnes that are escorted by boom and ballast trucks to allow full mobilisation onsite. Smaller erector cranes would also be present to allow the assembly of the main cranes and to ease the overall erection of the turbines.

Escort vehicles would accompany the AIL convoys to support the traffic management measures. Up to three vehicles would be deployed and it is proposed that up to three AIL turbine component loads would be delivered per convoy. This would result in 67 convoys on the network, with a total of approximately 400 escort journeys (200 inbound trips and 200 outbound trips). It is however acknowledged that the exact convoy configuration may be subject to change following discussions with the Police and relevant highway agencies. This will be confirmed and managed via the detailed Transport Management Plan (TMP).

Turbine components that do not classify as AILs, would be delivered in addition to these, resulting in a further 116 movements (58 inbound trips and 58 outbound trips). All these deliveries are expected to occur over a period of approximately five months.

The escort vehicles have been assumed to be police cars and light goods vehicles. Motorcycles may be deployed, depending upon Police resources.

6.1.4 General Deliveries

Throughout the construction phase, general deliveries will be made to Site via HGV. These would include fuel, Site office supplies and staff welfare etc. At the height of construction, it is assumed that up to 40 HGV movements to Site are made (20 inbound trips and 20 outbound trips) per month.

6.1.5 Material Deliveries

Various materials will need to be delivered to Site to construct the site-based infrastructure. At the outset of the construction works, HGV deliveries will deliver plant and initial material deliveries to the Site to enable the formation of the Site compound and to deliver construction machinery.

Sand and aggregate not sourced from onsite borrow pits will be delivered by tipper HGV and are expected to come from local quarries. For the purpose of this assessment, it is assumed that these deliveries will originate from the east. It should however be noted that The Balance of Plant (BoP) contractor will confirm final quarry and material sourcing post consent.

The estimated total volume of concrete required onsite is 28,622m³, based upon expected turbine foundation, substation foundation and miscellaneous uses across the Site. For the purposes of the assessment, it is anticipated that ready-mix concrete will be delivered to Site, which will result in approximately 9,540 two-way vehicle movements (4,770 inbound trips and 4,770 outbound trips).

Foundation calculations for the turbine bases and the substations are detailed in **Table 6** below.

Table 6 Steel Reinforcement Deliveries

Element	Weight/Installation (t)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Journeys
Turbine Foundation	331.2	5,961.6	30	199	398
Substation / Miscellaneous Foundation	40	40	30	2	4

The onsite access tracks, compounds and crane hardstands will be constructed from crushed rock and it is anticipated that 100% of the material would be obtained from the Site via the proposed borrow pits or when creating the cuttings and other earthworks. As a robust assessment however, this assessment assumes that 50% of crushed rock will be imported to the Site.

The access tracks will generally be 6 m in width and will be designed to accommodate 16 tonne axle loads. The total estimate of imported material for onsite access tracks, compounds and crane hardstands is anticipated to be 76,213 m³ which would result in 16,770 journeys (8,385 inbound trips and 8,385 outbound trips).

In addition to the roads, crane pads will be constructed to enable the turbine erection process. The tracks, crane pads and compounds will require geotextile in the foundations. Geotextile will be delivered to Site in rolls.

A total of 507 large rolls may be required at Site and would be delivered by HGV which will result in 52 journeys (26 inbound trips and 26 outbound trips).

Cables would connect the wind turbines to the internal substation and control building. Trip estimates for the cable materials and ducting are provided below in **Tables 7 to 9**. Cable trenches would be backfilled with cable sand. Geotextiles would be used to shield the trench and ducting would be used to protect the cable when it runs under roadways.

Table 7 Cable Trip Estimate

Element	Total Cable Length (m)	Length per Drum (m)	Number of Drums	Inbound Trips	Total Journeys
Cables	85,985	500	172	21	42

Table 8 Cable Sand Trip Estimate

Element	Volume (m ³)	Total Weight (t)	Lorry Capacity (t)	Inbound Trips	Total Journeys
Cable Sand	9,673	15,477	20	776	1,552

Table 9 Ducting Trip Estimate

Element	Total Cable Length (m)	Length per Drum (m)	Number of Drums	Inbound Trips	Total Journeys
Ducting	1,000	5	200	10	20

An electrical substation and control building will be constructed in the northern section of the Site. This will require deliveries of building materials and structural elements and would result in 240 journeys (120 inbound trips and 120 outbound trips).

The resulting traffic generation estimates have been plotted onto the indicative construction programme to illustrate the peak journeys on the network. **Table 10** illustrates the trip generation throughout the construction programme for each month, showing two-way construction vehicle movements, i.e. an inbound and outbound trip.

Table 10 Construction Traffic Profile

Activity	Class	Month														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Site mobilisation/setup and access	HGV	75	75													
General Site Deliveries	HGV	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Access Works	HGV		465	465	465	465	465	465	465	465	465	465				
Crane hardstandings	HGV			1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395					
Concrete Deliveries	HGV			1,363	1,363	1,363	1,363	1,363	1,363	1,363						
Reinforcement Deliveries	HGV			57	57	57	57	57	57	57						
Project control building	HGV							184	184	184	184	184				
Cabling & Ducting Deliveries	HGV								10	10	10	10	10	10		
Cabling Sand	HGV								259	259	259	259	259	259		
Geotextile Deliveries	HGV			26				26								
Compounds	HGV		69	69	69	69										
AIL Cranage	HGV										15				15	
AIL Deliveries	HGV										102	102	102	102	102	
AIL Escorts	Car & LGV										80	80	80	80	80	
Reinstatement	Car & LGV													50	50	
Demobilisation	Car & LGV														75	75
Staff	Car & LGV	792	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	792
Total HGV		115	649	3,416	3,390	3,390	3,321	3,531	3,774	3,774	2,470	1,060	411	411	157	40
Total Cars / LGV		792	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,584	1,664	1,664	1,664	1,714	1,789	867
Total Movements		907	2,233	5,000	4,974	4,974	4,905	5,115	5,358	5,358	4,134	2,724	2,075	2,125	1,946	907
Total HGV per Day		5	30	155	154	154	151	160	172	172	112	48	19	19	7	2
Total Cars / LGV per Day		36	72	72	72	72	72	72	72	72	76	76	76	78	81	39
Total per Day		41	102	227	226	226	223	232	244	244	188	124	94	97	88	41

Please note variances due to rounding may occur.

Daily trips are based on an assumed 22 working days per month.

The peak of construction in terms of vehicular movements is expected to occur in Month 8 and 9 and will comprise 244 two-way daily journeys (72 Car / Lights and 172 HGV journeys).

6.1.6 Distribution of Construction Trips

The distribution of Proposed Development construction traffic on the network would vary depending on the types of loads being transported. The assumptions for the distribution of construction traffic during the peak months are as follows:

- All construction traffic associated with the wind farm element will enter the main Site via the upgraded C1336 / U1377 priority junction, while all construction traffic associated with the substation element of the Proposed Development will enter the substation Site from the upgraded access junction on the A481;
- Deliveries associated with concrete materials will be sourced from local ready-mix concrete suppliers to the west of the Site;
- Whilst it is anticipated that onsite borrow pits will be able to meet up to 100% of the aggregate requirements, for the purpose of this assessment it is proposed that 50% of track and hardstanding aggregate requirements will be sourced from local quarries, which are assumed to originate from the east. The BoP contractor will confirm final quarry and material sourcing with PCC and NMWTRA in the final Construction Traffic Management Plan (CTMP);
- HGV deliveries associated with cabling and associated materials, etc. will arrive predominantly from the south and will travel to the Site via the A483 and A44;
- Staff working at the Site are likely to be based locally. It is assumed that 35% will come from Llandrindod Wells to the northwest via the A481 and the A483, 35% will come from Kington via the A481 and the A44, 15% will come from Rhayader to the northwest via the A481 and the A470 and 15% will come from Builth Wells and the south, and will travel via the A481 and A470; and,
- General Site deliveries are assumed to arrive predominantly from the west via the A481.

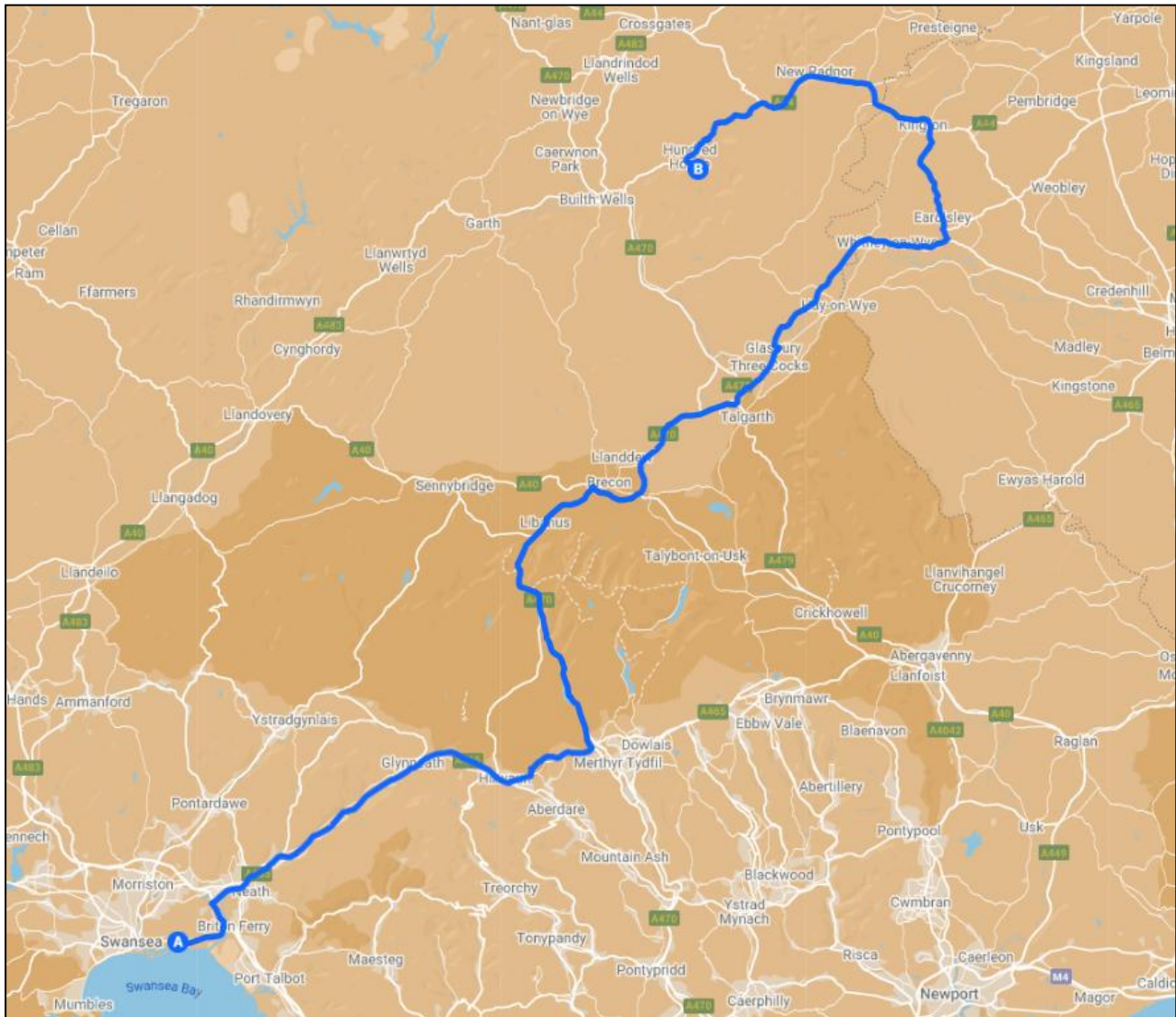
For the purposes of preparing **Volume 1: Chapter 11** and this TA, two possible delivery route options have been considered, one route originates from Port of Swansea and the other route originates from Port of Birkenhead. The two possible delivery routes are outlined in the subsequent subsections.

AIL Delivery Route from Port of Swansea

Loads relating to the turbine components will be delivered from the proposed PoE at the Port of Swansea. The access route from the PoE to Site access junction will therefore be as follows:

- Loads would 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. They would then continue to Junction 43, where they would depart the motorway and would then join the A465 through to Merthyr Tydfil;
- Loads would then turn left onto the A470 and would travel north towards Brecon;
- Loads would join the A40 heading east at Brecon;
- Loads will re-join the A470 heading northeast at Brynich Roundabout;
- Loads would continue onto the A438;
- Loads would turn left onto the A4111 heading north;
- Loads would join the A44 heading north at the A4111 / A44 roundabout;
- Loads would join the A481 heading southwest at the A44/A481 junction.
- Loads would turn left at the junction southwest of Hundred House onto the C1336; and,
- Loads would turn right into the proposed main Site access junction.

The proposed AIL delivery route originating from the Port of Swansea can be seen in **Figure 9**.

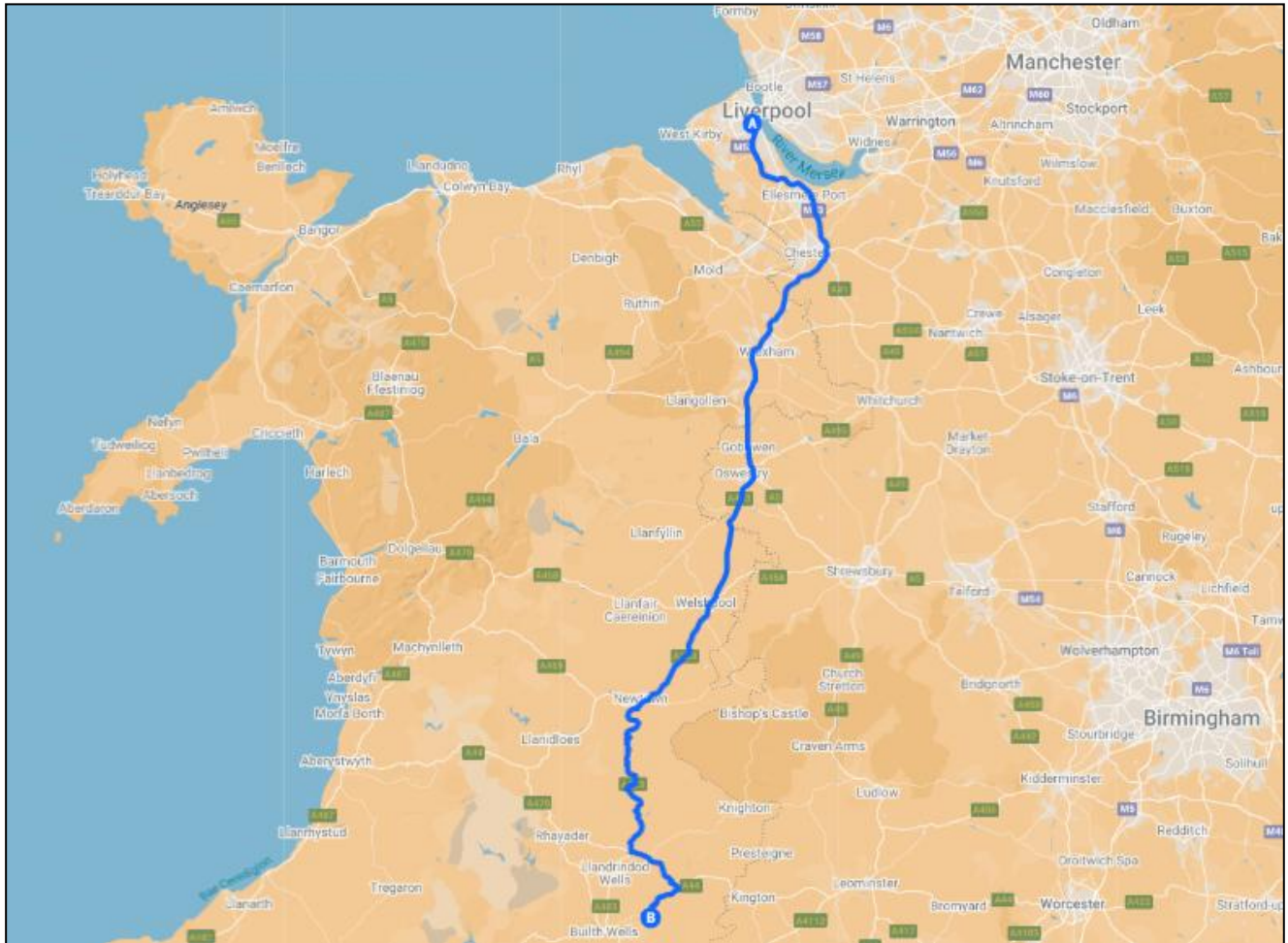
Figure 9 Proposed Access Route from the Port of Swansea – Route Option 1

AIL Route from the Port of Birkenhead

Loads relating to the turbine components will be delivered from the proposed PoE at Port of Birkenhead. The access route from the PoE to Site access junction will therefore be as follows:

- Loads would exit Birkenhead docks and proceed west on Dock Road and the A5139;
- Loads would enter the M53 at Bidston Junction to proceed southbound;
- Loads would exit the M53 at Hoole Island Junction and join the A55 southbound;
- Loads would exit the A55 at Wrexham Road Interchange and join the A483 southwest bound;
- Loads would take the second exit followed by the second exit at the Mile End Roundabout to continue on the A483 southbound;
- Loads would take the third exit at A483 / A458 Roundabout to proceed on the A483 southbound;
- Loads would take the first exit at the Welshpool Roundabout to proceed on the A483 southbound;
- Loads would take the second exit at the Sarn Bryn Caled Roundabout to proceed on the A483 westbound;
- Loads would exit the A483 at Newtown and join the Newtown Bypass;
- Loads would take the first exit at A483 / A489 roundabout to continue on the A483;
- Loads would exit the A483 at Crossgates Roundabout and join the A44 eastbound; and,
- Loads would turn right onto the A481 at the Fforest Inn and continue southbound along the A481; and
- Loads would turn left onto the C1336, leading to the Site access.

The proposed AIL delivery route originating from the Port of Birkenhead can be seen in **Figure 10**.

Figure 10 Proposed Access Route from the Port of Birkenhead – Route Option 2

6.1.7 Peak Construction Traffic

Following the distribution and assignment of traffic flows to the study area network, the resultant daily traffic during the peak of construction is summarised in **Table 11**.

Table 11 Peak Construction Traffic

Count Ref.	Survey Location	Cars/LGV	HGV	Total
1	C1336, near Site Access	72	172	244
2	A481, west of access to Fforest Fields	42	76	118
3	A481, west of A481 / A44 priority junction	32	98	130
4	A44, east of A481 / A44 priority junction	26	98	124
5	A44, southwest of New Radnor	26	98	124
6	A44, north of A481 / A44 priority junction	6	-	6
7	A44, east of Crossgates	6	-	6
8	A483, south of Crossgates	6	-	6
9	A483, Llandrindod Wells	32	-	32
10	A483, Ridgebourne	32	-	32
11	A483, east of A483 / A470 roundabout	12	14	26
12	A483, north of Wye Bridge	12	14	26
13	A470, Aberduhonw	12	-	12
14	A470, south of Erwood	12	-	12
15	A470, north of A470 / A438 priority junction	12	-	12

Please note that variances may occur due to rounding.

6.2 Decommissioning Phase

Prior to decommissioning of the Site, a traffic assessment would be undertaken, and appropriate traffic management procedures followed.

The decommissioning phase would result in fewer trips on the road network than the construction or operational phases as it is considered likely that elements of infrastructure such as access tracks would be left in place and structures may be broken up onsite to allow transport by a reduced number of HGVs.

7 Traffic Impact Assessment

7.1 Construction Impact

The peak month traffic data was combined with the future year (2028) traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is illustrated in percentage increases for each class of vehicle. This is illustrated in **Table 12**.

Table 12 Peak Construction Traffic Network Impact

Count Ref.	Survey Location	Cars/LGV	HGV	Total	Cars/LGV % Increase	HGV % Increase	Total % Increase
1	C1336, near Site Access	225	178	403	47.09%	2,793.57%	153.41%
2	A481, west of access to Fforest Fields	1,007	157	1,164	4.35%	94.19%	11.28%
3	A481, west of A481 / A44 priority junction	599	316	916	5.64%	44.87%	16.54%
4	A44, east of A481 / A44 priority junction	1,939	788	2,727	1.36%	14.20%	4.76%
5	A44, southwest of New Radnor	2,514	276	2,790	1.04%	55.20%	4.65%
6	A44, west of A481 / A44 priority junction	1,505	468	1,973	0.40%	0.00%	0.31%
7	A44, east of Crossgates	4,064	298	4,362	0.15%	0.00%	0.14%
8	A483, south of Crossgates	7,182	251	7,433	0.08%	0.00%	0.08%
9	A483, Llandrindod Wells	6,350	155	6,505	0.51%	0.00%	0.49%
10	A483, Ridgebourne	6,881	215	7,096	0.47%	0.00%	0.45%
11	A483, east of A483 / A470 roundabout	6,043	349	6,391	0.20%	4.18%	0.41%
12	A483, north of Wye Bridge	9,106	564	9,670	0.13%	2.55%	0.27%
13	A470, Aberduhonw	4,963	390	5,353	0.24%	0.00%	0.22%
14	A470, south of Erwood	5,985	356	6,341	0.20%	0.00%	0.19%
15	A470, north of A470 / A438 priority junction	3,944	251	4,196	0.31%	0.00%	0.29%

Please note that variances may occur due to rounding.

The highest total traffic movement increase within the study area is along the C1336, near the Site Access with a total traffic increase of 153.41%. The second highest total traffic movement increase within the Study Area is anticipated along the A481, west of the A481, west of A481 / A44 priority junction, where it is estimated to increase by 16.54%. The next highest increase occurs along the A481, west of the access to Fforest Fields, where it is estimated to increase by 11.28%. The total increase along other links within the Study Area are less than 10%, which is considered to be within daily flow variations.

The total HGV traffic movements are expected to increase by 2,793.57% (172 two-way HGV movements) on the C1336, near the Site access, by 94.19% along the A481 to the west of the access to Fforest Fields (76 two-way HGV movements), by 55.20% along the A44, southwest of New Radnor (98 two-way HGV movements) and by 44.87% along the A481, west of the A481 / A44 priority junction (98 two-way HGV movements).

Whilst these could be considered a large increase in percentage terms, it is not considered to be a significant increase when considering vehicle numbers, with the maximum average 172 HGV movements per day predicted along the C1336, equates to approximately 14 two-way HGV movements per hour over a typical 12 hour working day (assuming a flat profile).

It should be noted the construction phase is transitory in nature and the peak of construction activities is short lived, occurring over a relatively short timeframe (as shown in **Table 10** Construction Traffic Profile) when taking account of the whole construction programme.

A review of existing theoretical road capacity has been undertaken using The NESA Manual, formerly part of the Design Manual for Roads and Bridges, Volume 15, Part 5. 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 13**.

Table 13 Theoretical Road Capacity

Count Ref.	Survey Location	2028 Baseline Flow (total traffic)	2028 Base + Development Flows (total traffic)	Theoretical Road Capacity (12hr)	Spare Road Capacity %
1	C1336, near Site Access	159	403	19,200	98%
2	A481, west of access to Fforest Fields	1,046	1,164	21,600	95%
3	A481, west of A481 / A44 priority junction	786	916	28,800	97%
4	A44, east of A481 / A44 priority junction	2,603	2,727	28,800	91%
5	A44, southwest of New Radnor	2,666	2,790	21,600	87%
6	A44, south of A481 / A44 priority junction	1,967	1,973	21,600	91%
7	A44, east of Crossgates	4,356	4,362	28,800	85%
8	A483, south of Crossgates	7,427	7,433	28,800	74%
9	A483, Llandrindod Wells	6,473	6,505	19,200	66%
10	A483, Ridgebourne	7,064	7,096	19,200	63%
11	A483, east of A483 / A470 roundabout	6,365	6,391	19,200	67%
12	A483, north of Wye Bridge	9,644	9,670	19,200	50%
13	A470, Aberduhonw	5,341	5,353	28,800	81%
14	A470, south of Erwood	6,329	6,341	28,800	78%
15	A470, north of A470 / A438 priority junction	4,184	4,196	21,600	81%

The results indicate there are no road capacity issues with the addition of construction traffic associated with the Proposed Development and ample spare capacity exists within the trunk and local road network to accommodate all construction phase traffic.

8 Proposed Traffic Mitigation Measures

8.1 Construction Phase

8.1.1 Construction Traffic Management Plan (CTMP)

During the construction period, a project website, blog and/or social media feed would be regularly updated to provide the latest information relating to traffic movements associated with vehicles accessing the Site. This would be agreed with PCC and NMWTRA.

The following measures would be implemented during the construction phase through the CTMP:

- agree AIL route modifications and improvements with PCC, NMWTRA, South Wales Trunk Road Agent (SWTRA) and other relevant stakeholders.
- where possible, the detailed design process would minimise the volume of material to be imported to Site to help reduce HGV numbers;
- a Site worker transport and travel arrangement plan, including transport modes to and from the worksite (including pick up and drop off times);
- a TMP for AIL deliveries;
- 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 PCC;
- normal Site working hours would be limited to between 0700 and 1900 (Monday to Friday) and 0700 and 1300 (Saturday), though component delivery and turbine erection may take place outside these hours;
- appropriate traffic management measures would be put in place on the A481 and C1336 leading through to the Site accesses, to avoid conflict with general traffic, subject to the agreement of PCC. Typical measures would include HGV turning and crossing signs and/or banksmen at the Site access and warning signs;
- provide construction updates on the project website and or a newsletter to be distributed to residents within an agreed distance of the Site;
- adoption of a voluntary reduced speed limits at locations to be agreed with PCC, NMWTRA; and SWTRA;
- 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 the villages); and,
 - identification of the required access routes and the controls to ensure no departure from these routes.

PCC is likely to request that an agreement be put in place to cover the cost of abnormal wear on its road network.

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 condition of the road prior to any construction work commencing. This baseline would provide evidence of any change in the road condition during the construction phase. Any necessary repairs would be coordinated with PCC's roads team. Any damage caused by traffic associated with the Proposed Development during the construction period, which would be hazardous to public traffic, would be repaired immediately.

Damage to road infrastructure caused directly by construction traffic would be remediated, and street furniture that is removed on a temporary basis would be fully reinstated.

There would be a regular road review, and any debris and mud would be removed from the carriageway using an onsite road sweeper to ensure road safety for all road users.

Before the AILs traverse the routes from the selected PoE, the following tasks would be undertaken to ensure load and road user safety:

- Ensure any vegetation which may foul the loads is trimmed back to allow passage;
- Confirm there are no roadworks or closures that could affect the passage of the loads;
- Check no new or diverted underground services on the proposed route are at risk from the abnormal loads; and,
- Confirm the police are satisfied with the proposed movement strategy.

8.2 Abnormal Load Transport Management Plan

The **ES Volume 4: Technical Appendix 11.2: Transport Management Plan Report** outlines traffic management measures that could help reduce the effect of AIL convoys.

8.3 Onsite Measures delivered using a Path Management Plan (PaMP)

It is recognised that it will be necessary to divert PRowS, either temporarily or permanently, for both the construction and operational phases of the Proposed Development. Within the PaMP, consideration has been given to pedestrians, cyclists and equestrians alike due to potential interactions between construction traffic and users of the PRowS, Common Land, Open Access Land and tracks during the construction and operational phase. Appropriate measures will be formulated into a PaMP.

Users of the PRowS will be separated from construction traffic using barriers (where permitted and appropriate) and this will ensure that safe access to the Site for recreational purposes will be maintained. Crossing points will be provided where required, with path users having right of way.

Appropriate Traffic Signs Manual Chapter 8⁹ compliant temporary road signage would be provided to assist at these crossing points for the benefit of all users.

The Principal Contractor will ensure that speed limits are always adhered to by their drivers and associated subcontractors. This is particularly important within proximity to the PRow, Common Land and at crossing points. Advisory speed limit signage will also be installed on approaches to areas where path users may interact with construction traffic.

Signage will be installed on the Site exits that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians, cyclists and equestrians in the area, as well as the potential presence of animals. This will also be emphasised in the weekly toolbox talks. General measures implemented on similar schemes will be given consideration as part of the Proposed Development. These measures are predominantly focused around the interactions between HGV traffic and horses. 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.

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.

⁹ Department for Transport/Highways Agency, Department for Regional Development (Northern Ireland), Transport Scotland & Welsh Assembly Government (2009): Traffic Signs Manual, Chapter 8 – Traffic Safety Measures and Signs for Road Works and Temporary Situations

The British Horse Society has previously recommended 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, please approach slowly or even stop in order to give riders time to find a gateway or lay by 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.

8.4 Staff Travel Plan

A Staff Travel Plan will be deployed where necessary, to manage the arrival and departure profile of staff and to encourage sustainable modes of transport, especially car-sharing. A package of measures could include:

- Appointment of a Travel Plan Coordinator (TPC);
- Provision of public transport information;
- Mini-bus service for transport of Site staff;
- Promotion of a car sharing scheme; and,
- Car parking management.

8.5 Operational Phase Mitigation

The Site entrances to the substation element and the wind farm element will be well maintained and monitored during the operational life of the Proposed Development. Regular maintenance will be undertaken to keep the Site access tracks drainage systems fully operational and to ensure there are no run-off issues onto the public road network.

9 Summary & Conclusions

Pell Frischmann Consultants Ltd has been commissioned by Land Use Consultants Ltd on behalf of the Applicant to undertake a Transport Assessment for the the Proposed Development, approximately 3 kilometres east of Builth Wells, within Powys County Council's administrative area.

The wind farm element of the Proposed Development will be accessed via the main Site access junction at the existing C1336 / U1377 priority junction, south of the A481 and to the east of the Site. The C1335, which routes from the A481 to Glaschw, currently serves access to several farms and areas of agricultural land, individual residential dwellings, and a burial ground. The U1377 is a single track road providing access to a farm and agricultural land which joins existing tracks within the Site boundary

The substation element of the Proposed Development will be accessed via an existing gated access located on the A481, located approximately 2.90 kilometres to the west of the A481 / C1336 junction, by way of the A481.

A combination of new and existing traffic data established a base point for determining the impact during the construction phase and was factored to future levels to help determine the effect of construction traffic on the local road network.

The construction traffic would result in a temporary increase in traffic flows on the road network surrounding the Proposed Development. The peak of construction in terms of vehicular movements will be 244 daily journeys (72 Car / Lights and 172 HGV journeys). Over the course of a typical 12 hour working day on the Site, this would equate to approximately 14 two-way HGV movements per hour.

It should be noted that the onsite access tracks and crane hardstands will be constructed from crushed rock obtained via the proposed borrow pits or when creating the cuttings and other earthworks. It is anticipated that 100% of the material would be obtained from the Site. As a robust assessment it is assumed that 50% of crushed rock will be imported to the Site and as such the estimated construction traffic trips are considered overly robust.

A series of mitigation measures and management plans have been proposed to help mitigate and offset the impacts of both the construction and operational phase traffic flows. These can be secured by planning condition, with detail to be agreed in consultation with PCC and North and Mid Wales Trunk Road Agent or South Wales Trunk Road Agent (as the Highways Authorities).

No link capacity issues are expected on any of the roads assessed due to the additional movements associated with the proposed development. The effects of construction traffic are temporary in nature and are transitory.

The operational and decommissioning phases have not been assessed as they were scoped out of the Transport Assessment. The operational phase is restricted to occasional maintenance operations which generate significantly lower volumes of traffic that are not considered to be in excess of daily traffic variation levels on the road network. The decommissioning phase involves fewer trips on the road network than the construction phase, as minor elements of infrastructure are likely to be left in place, adding to local infrastructure that can potentially be used for further agricultural or leisure uses in the future.

The Proposed Development will lead to a temporary increase in traffic volumes within the Study Area during the construction phase only, however this can be appropriately and effectively managed. It is therefore concluded that there are no transport related matters which would preclude the construction of the Proposed Development Site.

Annex A Indicative Junction Layouts



- NOTES:**
1. ALL DIMENSIONS ARE IN METERS UNLESS STATED OTHERWISE.
 2. ALL WORKS TO BE EXECUTED IN ACCORDANCE WITH THE DMRB, THE MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAYS WORKS, DESIGN MANUAL FOR ROADS AND BRIDGES, AND TRAFFIC SIGNS MANUAL.
 3. ALL WORKS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENT OF THE STATUTORY AUTHORITIES AND CONSTRUCTION DESIGN MANAGEMENT REGULATIONS.
 4. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER IMMEDIATELY SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO COMMENCEMENT OF WORKS.
 5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING SERVICES AND DRAINAGE CONNECTIONS PRIOR TO COMMENCING WORKS.

LEGEND:

 PROPOSED ROAD CONSTRUCTION

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Client

BUTE ENERGY

Project

ABEREDW ENERGY PARK

Drawing Title

SITE ACCESS JUNCTION
GENERAL ARRANGEMENT

	Name	Date	Scale
Drawn	SDM	03/02/25	1:500
Checked	SCM	03/02/25	File No. 10100008_SK_0003 - 0012 (Construction Details)
			Drawing Status DRAFT

Drawing No.	Revision
10100008_SK_0009	A



- NOTES:
1. ALL DIMENSIONS ARE IN METERS UNLESS STATED OTHERWISE.
 2. ALL WORKS TO BE EXECUTED IN ACCORDANCE WITH THE DMRB, THE MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAYS WORKS, DESIGN MANUAL FOR ROADS AND BRIDGES, AND TRAFFIC SIGNS MANUAL.
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LEGEND:

PROPOSED ROAD CONSTRUCTION

ABNORMAL LOAD OVERRUN AREA

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Drawing Title

**SUBSTATION ACCESS JUNCTION
GENERAL ARRANGEMENT**

	Name	Date	Scale	1:500
Drawn	SDM	03/02/25	File No.	10100008_SK_0003 - 0012 (Construction Details)
Checked	SCM	03/02/25	Drawing Status	DRAFT
Drawing No.	10100008_SK_0010			Revision
				A