



Transport Statement

Solar Farm, Pen Caer Lan Farm, Neath

Greentech Invest UK (8) Ltd

Prepared by:

SLR Consulting Limited

Ground Floor Belmont House , Churchill Way, Cardiff,
CF10 2HE

SLR Project No.: 425.002241.00001

Client Reference No: 002241

30 April 2025

Revision: V2

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
V1	4 February 2025	T. Monk	E. Wheeler	E. Wheeler
V2	30 April 2025	T. Monk	E. Wheeler	E. Wheeler

Basis of Report

This document has been prepared by SLR Consulting Limited (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with Greentech Invest UK (8) Ltd (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/or information supplied by the Client and/or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.



Table of Contents

1.0	Introduction	1
2.0	Existing Conditions.....	2
3.0	Planning Policy Context	9
4.0	Development Proposals.....	13
5.0	Vehicle Trip Attraction	16
6.0	Summary and Conclusion	18

Tables in Text

Table 2-1 – A4109: Vehicle Speed by Direction	5
Table 2-2 – PIC Collision Summary	6
Table 5-1 – Construction Schedule: Vehicles by Activity and Month	16
Table 5-2 – Forecast Construction Traffic Movements (Across 6 month Construction Schedule)	16

Figures in Text

Figure 2-1 – Site Location and Local Highway Network	2
Figure 2-2 – Site Location and Public Rights of Way (PRoW)	3
Figure 2-3 – X8 Bus Route.....	4
Figure 2-4 – A4109: Two Way Traffic Flow	5
Figure 2-5 – PIC Overview	7
Figure 3-1 – Sustainable Transport Hierarchy	9
Figure 3-2 – Wales Transport Strategy Priorities and Ambitions	10
Figure 4-1 – Extract of Development Proposals	13
Figure 4-2 – Construction Traffic Route.....	15

Appendices

Appendix A	Bus Timetable
Appendix B	Traffic Data
Appendix C	Site Layout Drawings
Appendix D	SLR Drawings
Appendix E	Bridge Structural Condition Report



1.0 Introduction

Overview

- 1.1 SLR Consulting Limited (SLR) has been appointed by Greentech Invest UK (8) Ltd to provide transport and highways advice in relation to proposals for the installation of a solar photovoltaic farm at Pen Caer Lan Farm, Seven Sisters, Neath, SA10 9EP.
- 1.2 This Transport Statement (TS) sets out the transport and highway matters associated with the scheme and sets out the effect on the local highway network. Neath Port Talbot Council (NPTC) are both the local planning and highway authority.

Development Overview

- 1.3 The proposed development comprises:

Installation of a solar farm comprising ground mounted solar PV panels with a generating capacity of up to 25MWp, including permanent grid connection hub, mounting framework, inverters, underground cabling, stock proof fence, CCTV, internal tracks and associated infrastructure, landscaping, biodiversity net benefit and environmental enhancements for a temporary period of 40 years.

Report Structure

- 1.4 The TS is structured as follows:
- **Section 2 – Existing Conditions:** Provides a summary of the existing transport conditions within the local area;
 - **Section 3 – Planning Policy Context:** Summarises relevant local and national transport policy;
 - **Section 4 – Development Proposals:** Details the development proposals;
 - **Section 5 – Vehicle Trip Attraction:** Presents the transport impact of the development; and
 - **Section 6 – Summary & Conclusion:** Sets out the summary and conclusion of the report.

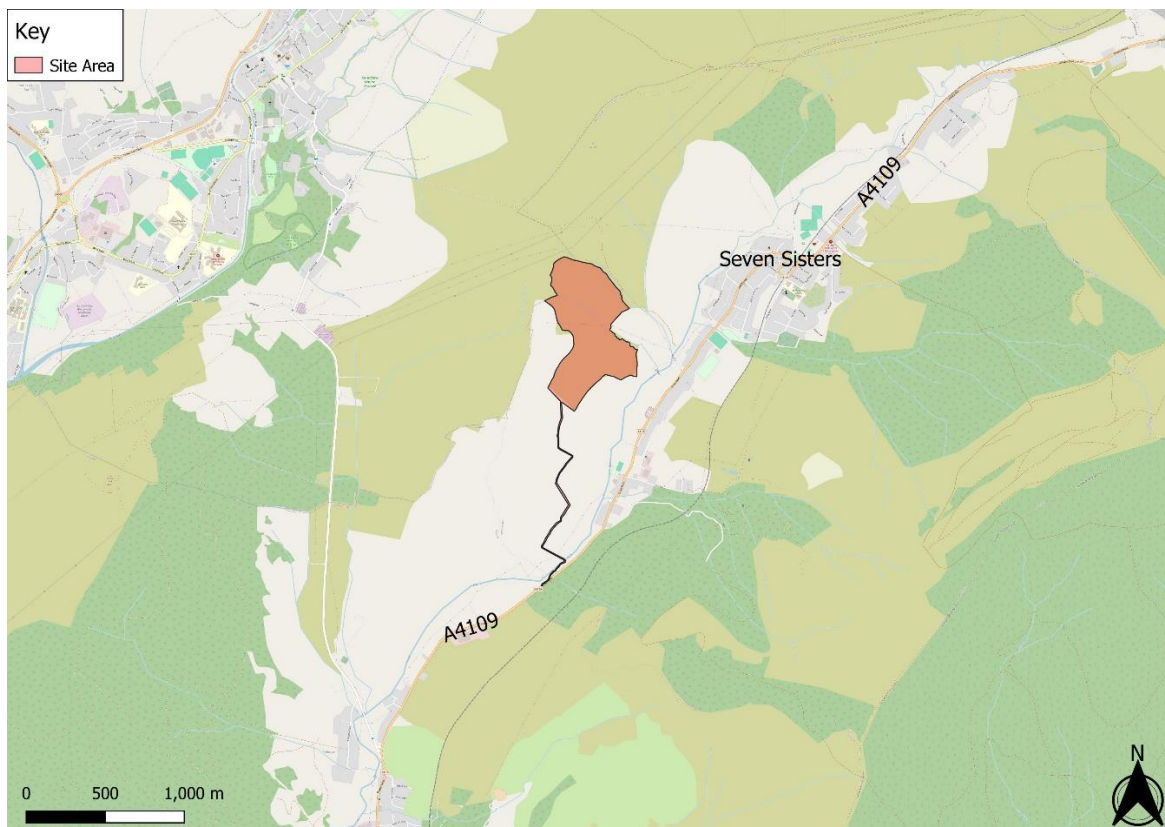


2.0 Existing Conditions

Site Location

- 2.1 The site is located 1km west of Seven Sisters a rural village, within Neath Port Talbot County. The site access is to be taken from Dulais Road (A4109), through an existing farm access.
- 2.2 A site location plan in the context of the local highway network is presented at **Figure 2-1**.

Figure 2-1 – Site Location and Local Highway Network

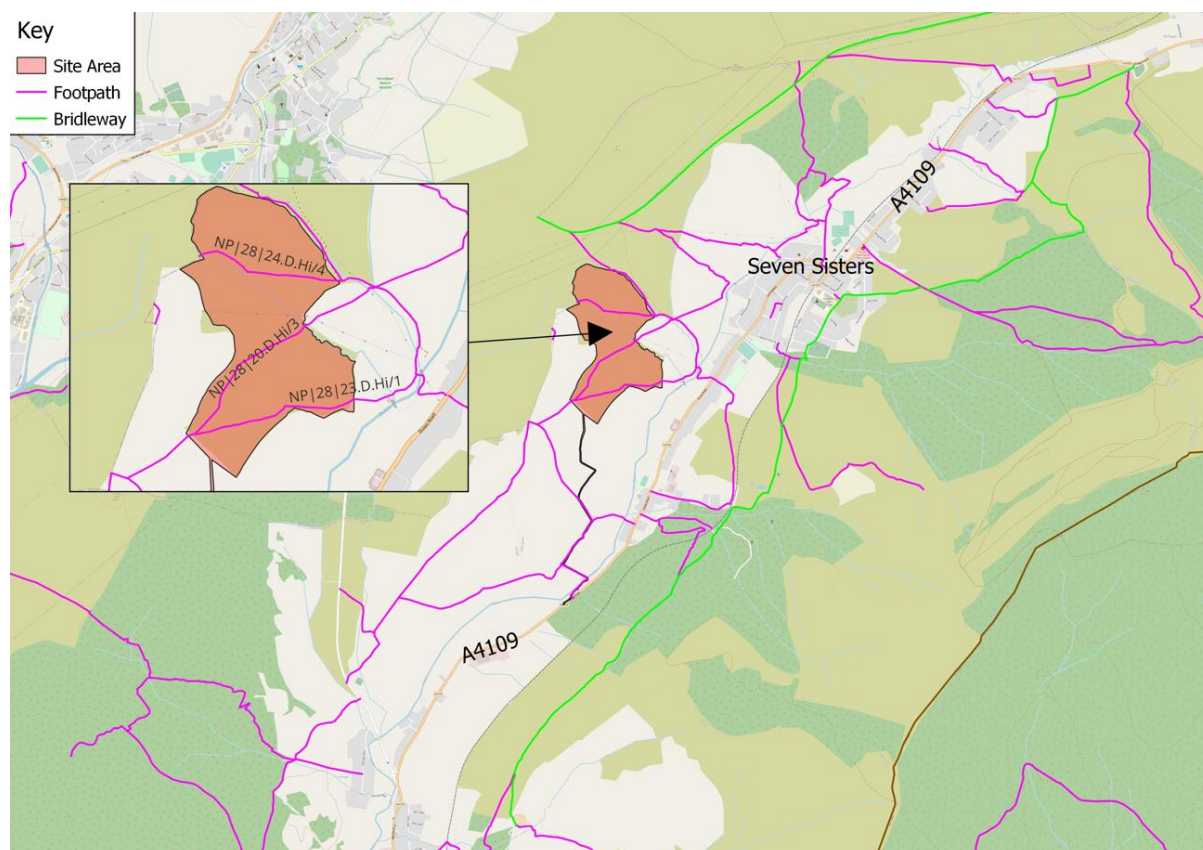


Sustainable Access

- 2.3 Due to the nature of the development, it is expected that the majority of staff trips to and from the site will be made by car or site minibus. However, it is worth noting that there are a number of designated Public Rights of Way (PRoW) within the vicinity / site boundary, and these could be used for accessing the village of Seven Sisters or the Bus stops that are located approximately 100m northeast of the site access on A4109 Dulais Road.
- 2.4 The site is shown in the context of the surrounding PRoW network in **Figure 2-2**.



Figure 2-2 – Site Location and Public Rights of Way (PRoW)



Bus Access

- 2.5 The 'Ynys Fforch Fawr' bus stops are located on A4109 Dulais Road and provide access to the 58, 907 and X8 bus services. The eastbound bus stop provides a bus shelter.
- 2.6 The X8 and 907 provide a service between Coelbren (School) to Neath Victoria Gardens (Neath Bus station) in the centre of Neath. Neath railway station is located an approximate 350m (5 minutes) walk from Neath Bus Station supporting onward connectivity by rail.
- 2.7 The X8 bus route is illustrated in **Figure 2-3**.



Figure 2-3 – X8 Bus Route



- 2.8 The X8 operates on an approximate hourly frequency between 06:55 and 18:46 across week days and Saturday. A full timetable is provided in **Appendix A**.

Highway Network

- 2.9 The site is accessed by a combination of existing farm tracks and a small section of new access track connecting to this existing route.
- 2.10 Access to the highway network is provided via a priority junction with A4109 Dulais Road. The A4109 provides onward connectivity to the southwest to the A465 and the M4 Junction 43 at Llandarcy.

A4109

- 2.11 The A4109 is a single carriageway 'A' class road which routes north south and connects with Seven Sisters to the north and the A465 at Aberdulais in the south. In the vicinity of the site access, the A4109 is approximately 6.3m in width. It has a signed speed limit of 40 mph, however where it passes through settlements this is reduced to 30 mph.
- 2.12 An Automatic Traffic Count (ATC) was undertaken on A4109 in March 2024 to measure vehicle composition, volume and speed. The ATC was undertaken between 16th – 22nd March 2024. The timing of the survey is not considered to effect the speed profiles recorded. A copy of the traffic survey data is provided in **Appendix B**.



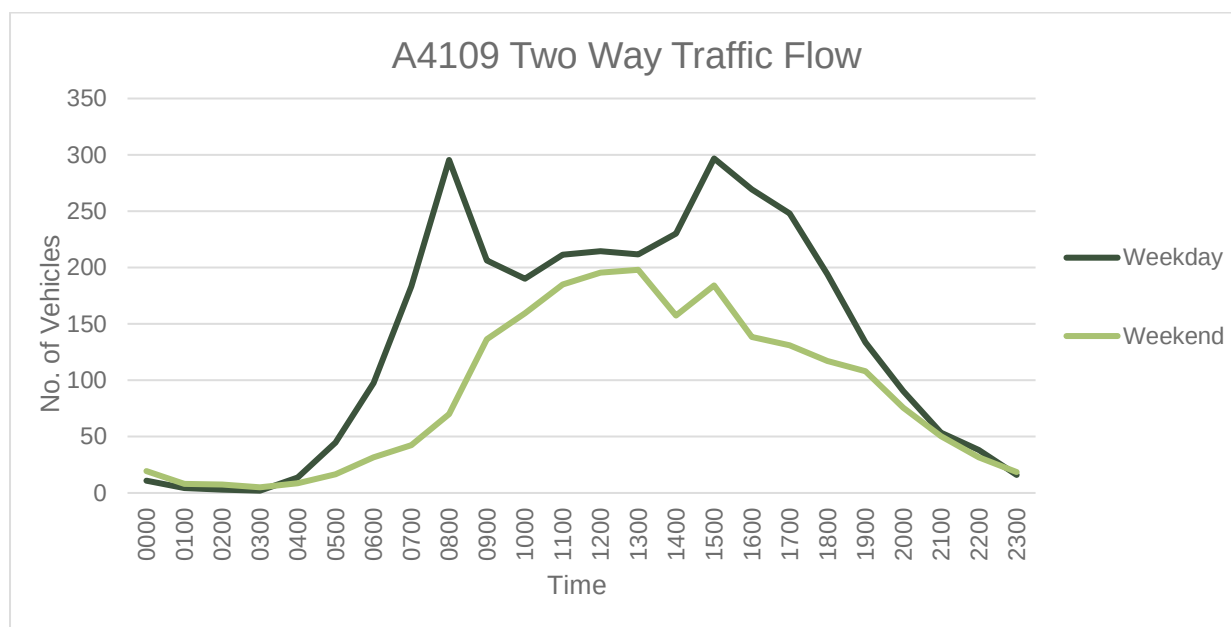
2.13 A summary of vehicle speed by direction is provided in **Table 2-1**.

Table 2-1 – A4109: Vehicle Speed by Direction

	Direction	
	Northbound	Southbound
Mean Speed	43.6 mph	43.5 mph
85th Percentile	51.0 mph	50.6 mph

2.14 The average weekday and weekend traffic flows are shown in **Figure 2-4**.

Figure 2-4 – A4109: Two Way Traffic Flow



2.15 The average weekday two-way traffic flow is 3,259 vehicles across the 24 hour period (based on 5 week days) and the average weekend two-way traffic flow is 2,096 vehicles across the 24 hour period (based on two weekend days).

A465

2.16 The A4109 continues 9km south where it enters Aberdulais. Here the A4109 connects with the A465. The A465 is a part of the Strategic Road Network (SRN) maintained by the South Wales Trunk Road Agent (SWTRA) on behalf of Welsh Government.

2.17 The A465 routes between Swansea in the west and Monmouthshire in the east and is known as the Heads of the Valleys Road. It has been the subject of an extensive upgrade programme over the last 20 years which has converted the route to a dual carriageway.

M4

2.18 The A465 continues 5.6km south where it enters Llandarcy. Here the A465 connects to the M4 at Junction 43. The M4 provides onward connectivity towards Carmarthen (via the A48) to the west and to Port Talbot, Bridgend, Cardiff and Newport to the east.



Collision Analysis

Overview

- 2.19 A review of Personal Injury Collision (PIC) data for the surrounding highway network has been undertaken using data sourced from CrashMap, an online database of PIC records. The records relate to PICs on public roads that are reported to the police and subsequently recorded, using the STATS19 collision reporting form.
- 2.20 The most recently available five-year period has been analysed between 01/01/2019 and 31/12/2023. A summary of collisions by year is provided in **Table 2-2**.

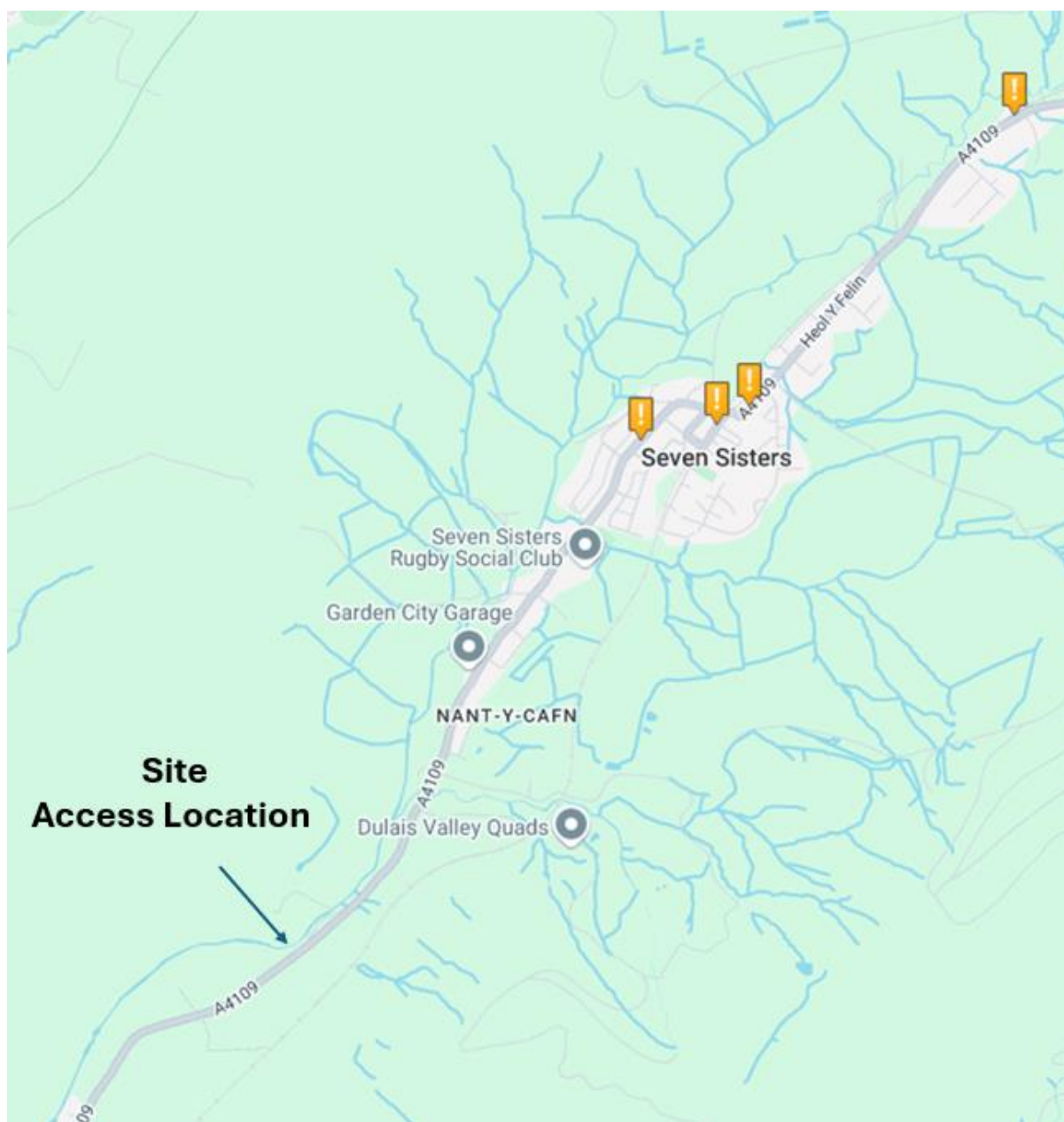
Table 2-2 – PIC Collision Summary

Year	Slight	Serious	Fatal	Total
2019	1	0	0	1
2020	0	0	0	0
2021	2	0	0	2
2022	0	0	0	0
2023	1	0	0	1
Total	4	0	0	4

- 2.21 The location and severity of collisions are shown in **Figure 2-5**.



Figure 2-5 – PIC Overview



- 2.22 A total of four collisions have been recorded in the area over the last 5-years. The four recorded collisions resulted in four slight injuries. There were 0 fatal collisions associated with the area over the last 5-years.
- 2.23 Reviewing the collisions, none of the collisions form a pattern or cluster that would suggest a highway design-based safety concern is present. A cluster of incidents would be classified as four incidents within three years and all within 100m of each other in accordance with Statistic for Wales and Welsh Government Guidance. When this is considered, there are no areas where 'clusters' of incidents could be identified.
- 2.24 Of the recorded collisions, all four took place on the A4109 to the north of the site access junction. Three collisions occurred in the settlement of Seven Sisters and one occurred between Seven Sisters and Onllwyn.



Summary

- 2.25 The review of PIC has not identified any existing highway safety issue that could be exacerbated by the proposed development. The majority of traffic is expected to route to and from the development site via the A4109 to the south and therefore not pass through the settlement of Seven Sisters where records of PIC have been identified.

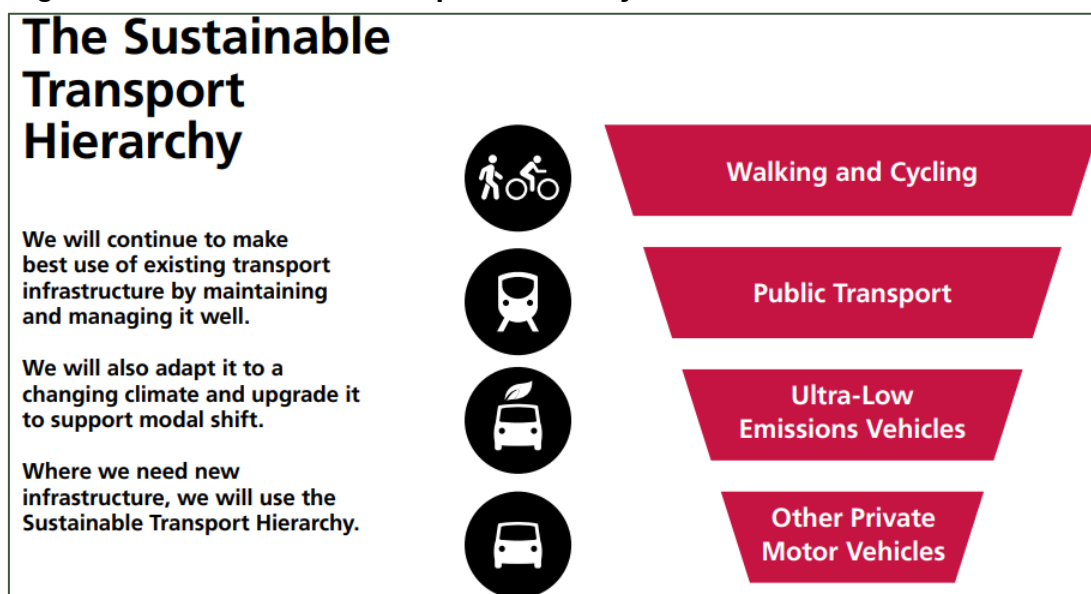


3.0 Planning Policy Context

Overview

- 3.1 This section of the report outlines the relevant policies for development and transport in Wales, which are cognisant of one another and follow a common theme; moving towards carbon reduction in the promotion of communities, virtual and active mobility, followed by public transport with private vehicles at the bottom of the hierarchy. This is shown in **Figure 3-1**.

Figure 3-1 – Sustainable Transport Hierarchy



National Policy

Planning Policy Wales (Edition 12) February 2024

- 3.2 Planning Policy Wales Edition 12 (PPW) sets out the land use planning policies of the Welsh Government.
- 3.3 Section 3 of PPW highlights the significance of the planning system in decarbonisation and reducing the impacts of climate change.
- 3.4 Regarding strategic and spatial choices, and specifically accessibility, PPW states that:
- “Spatial strategies should support the objectives of minimising the need to travel, reducing reliance on the private car and increasing walking, cycling and use of public transport.”*
- 3.5 Section 4 of PPW concerns Active and Social places. It asserts that Active and Social Places are those which provide well-connected cohesive communities. It further states that a ‘Resilient Wales’ is supported by promoting well-connected infrastructure.



Future Wales: The National Plan 2040 (February 2021)

- 3.6 Future Wales: The National Plan 2040 is a National Development Framework for Wales. It influences all levels of the planning system in Wales and will help to shape Strategic and Local Development Plans prepared by councils and national park authorities.
- 3.7 One of the main challenges facing Wales is climate change. The document highlights the importance of reducing emissions to protect well-being and to demonstrate global responsibility. The planning system needs to focus on delivering a decarbonised and resilient Wales through the places that are created, the energy generated and the natural resources and materials that are used and how people live and travel.

Wales Transport Strategy, Llwybr Newydd (November 2020)

- 3.8 This document is a draft strategy for the future of transport in Wales and sets out the ambitions for the next 20 years and Welsh Government's priorities for the next 5 years. Consultation on the draft strategy ended on 25th January 2021.
- 3.9 The long-term ambition for the strategy is for a transport system that contributes to a more equal and a healthier Wales and ensures that there are fewer physical, economic, social, and attitudinal barriers that prevent people from walking, cycling, or using public transport. Priorities include growing public transport use; providing safe, accessible, well-maintained, and managed transport infrastructure; making sustainable transport more attractive and affordable; and supporting innovations that deliver more sustainable choices.

Figure 3-2 – Wales Transport Strategy Priorities and Ambitions



Technical Advice Note 18 (Transport)

- 3.10 Technical Advice Note (TAN 18) elaborates on the relationship between land use planning and transport infrastructure by outlining a range of key accessibility principles that should inform future patterns of development.
- 3.11 As the site is expected to generate minimal maintenance trips during regular operation, TAN 18 also provides consideration for HGVs and freight, which could apply to the construction phase for the development.
- 3.12 TAN 18 states that sites that attract these movements should be located away from congested inner areas and have direct access to the rail network and/or to the local distributor road network, trunk, or principal road network. The site is able to achieve this principal road connection as the site access connects directly to the A4109 which in turn links to the M4 motorway via the A456.

Well-being of Future Generations (Wales) Act 2015

- 3.13 Wales faces several challenges now and, in the future, such as climate change, poverty, health inequalities, jobs, and growth.
- 3.14 The Well-being of Future Generations Act puts in place seven well-being goals that will help to tackle these challenges. The Act makes it clear the listed public bodies must work to achieve all of the goals, not just one or two.
- 3.15 In terms of the impact of the goals on develop and travel, the first goal of 'A Prosperous Wales' recognises the need for an innovative, productive, and low carbon society and is somewhat all-encompassing of the other goals and the need for sustainable travel options and low carbon communities.



Local Policy

Joint Transport Plan for South West Wales (2015-2020)

- 3.16 The Joint Transport Plan (JTP) for South West Wales, represent the local authorities of Carmarthenshire County Council, Neath Port Talbot County Borough Council, Pembrokeshire County Council, and City and County of Swansea. These authorities formed a transport consortium in 1998. This consortium was responsible for working with partners and stakeholders to prepare a Regional Transport Plan (RTP). This plan sets out a vision, objectives and a long-term strategy for a 20-year period and a five-year programme of projects.



- 3.17 This RTP includes policy and guidance including recognition of key gateways into and out of the region. This includes the SRN and the identification of:

“The M4 motorway, trunk roads and strategic local roads are all vital gateways to the region for freight and passenger movements and are the most commonly used entry/exit routes to South West Wales”.

Neath Port Talbot Local Development Plan (LDP)

- 3.18 The Neath Port Talbot Local Development Plan (LDP) (2011 – 2026) was adopted in January 2016.
- 3.19 The LDP contains a number of Transport and Access Policies. Of particular relevance to the proposed development, is “Policy TR 2 – Design and Access of New Development” which includes:
- “1. The development does not compromise the safe, effective and efficient use of the highway network and does not have an adverse impact on highway safety or create unacceptable levels of traffic generation”.*
- 3.20 Through this TS it is demonstrated that the proposed development does not compromise the safe, effective and efficient use of the highway network.

Summary

- 3.21 Overall, the principles of the proposed development of this site comply with the transport related planning policies highlighted within this chapter, locally and nationally.
- 3.22 The majority of traffic associated with the site relates to the site construction and setup and then the eventual decommissioning. Limited activity is required to support its ongoing operation.
- 3.23 It has been demonstrated that access to the site is available using local bus services and onward connection to the site on foot.



4.0 Development Proposals

Overview

- 4.1 This section of the report sets out the development proposals, including the quantum of development, access arrangements and layout of the site.
- 4.2 The development proposals consist of the installation of a solar farm comprising ground mounted solar PV panels with a generating capacity of up to 25MWp, including permanent grid connection hub, mounting framework, inverters, underground cabling, stock proof fence, CCTV, internal tracks and associated infrastructure, landscaping, biodiversity net benefit and environmental enhancements for a temporary period of 40 years.
- 4.3 The proposed site layout is illustrated in **Figure 4-1** and a copy is provided in **Appendix C**.

Figure 4-1 – Extract of Development Proposals



Site Access

- 4.4 Access to the site will be provided from the A4109 via an existing farm track which will be extended up to the site boundary.
- 4.5 Access from the A4109 is provided by an existing access junction which currently provides access to an existing farm (Ynys-Fforch Fawr).
- 4.6 The access junction arrangements with the A4109 are shown in **SLR Drawing 237790_PD01 – Visibility assessment**, a copy of which is provided in **Appendix D**.
- 4.7 Visibility splays have been demonstrated as 2.4m x 160m for the righthand splay and 2.4m x 130m (maximum achievable) for the lefthand splay. Vegetation within the adopted highway and land within the applicant's control will be maintained to provide these visibility splays.
- 4.8 The existing gates will be kept in an open position during the construction phase to avoid any entering vehicles blocking back onto the highway.
- 4.9 From the junction with the A4109, an existing farm track routes parallel to A4109 Dulais Road and the River Dulais for approximately 200m. This track then turns 90 degrees and crosses the River Dulais on an existing bridge. A structural report has been undertaken, a copy of which is provided in **Appendix E**.
- 4.10 The track then routes approximately 650m to the north following the boundary of existing fields. From this point, a new access track is to be constructed to provide a final connection into the site. Only small excavators will be needed to construct the track extension into the site.
- 4.11 This access route is shown in the site masterplan, a copy of which is provided in **Appendix C**.
- 4.12 Vehicle swept path analysis has been undertaken for the site access route and it has been demonstrated that a 7.5t box van and Mobile Crane are able to navigate across the existing bridge. A copy of **SLR Drawing AT_C01** is provided in **Appendix D**.

Construction Overview

- 4.13 An overview of the site set up and construction is as follows:
- Creation of the visibility splay followed by the creation of the stone access track through the extension of the existing farm track up to the site. The internal tracks, construction compound and substation compound areas will then be formed;
 - Installation of the perimeter security fencing and entry gates to ensure site security during the construction period;
 - The substations and spare parts containers (small) will then be installed;
 - The delivered material will be unloaded into the compound and then distributed by telehandlers throughout the site, utilising the installed tracks;



- In the final stage of the process the permanent substation compound can form part of the temporary construction compound.

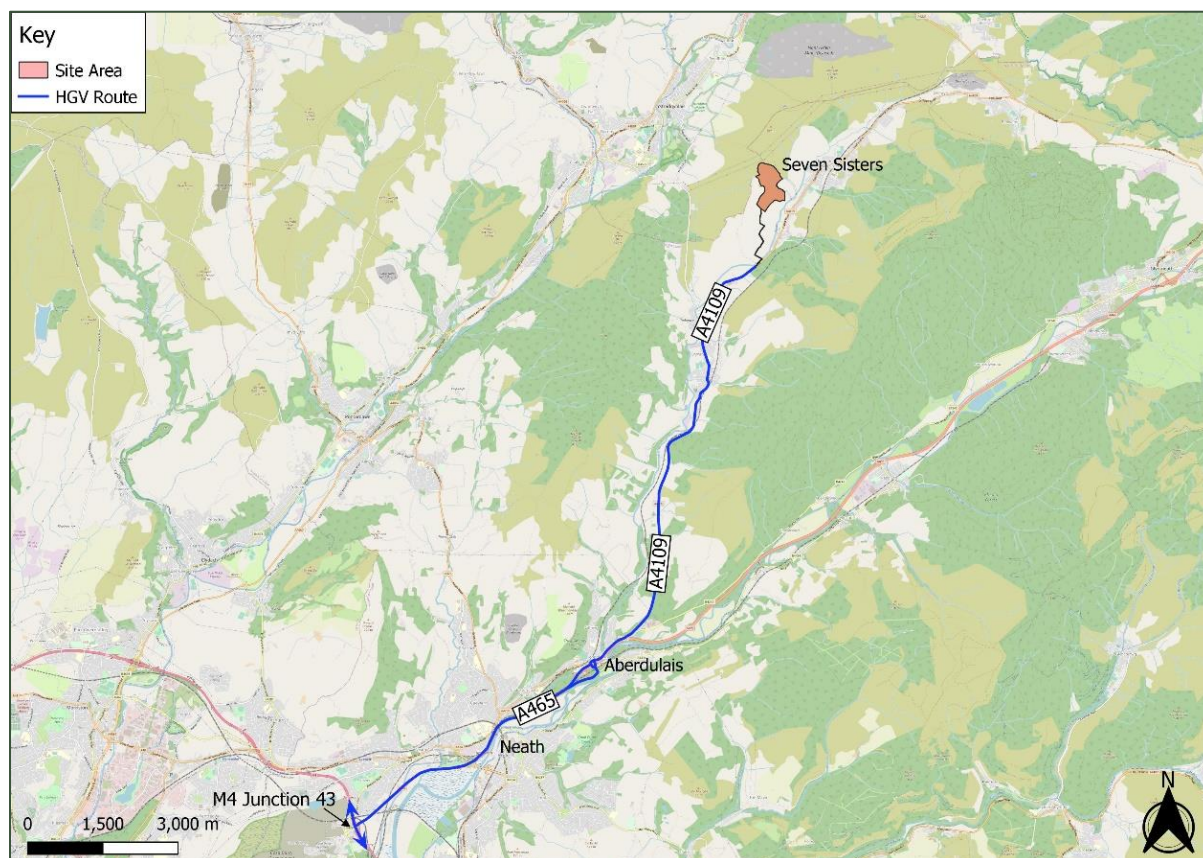
Internal Construction Route Management

- 4.14 Only one delivery vehicle will be allowed within the site/construction compound at any one time. An appropriate pitstop area will be designated on the highway network to ensure that no delivery HGV approaches the site until the previous delivery HGV has departed. The A4109 includes a series of laybys that are likely to be appropriate for vehicles to wait temporarily before being called to site.
- 4.15 Material unloaded from the HGV will be despatched from the compound throughout the site during the unloading process and as soon as the HGV has departed, creating space for the next delivery.

Construction Traffic Route

- 4.16 A construction route to and from the site access with A4109 Dulais has been identified, with the Trunk Road network accessible via the A465 approximately 11.5km to the south west. This route is detailed In **Figure 4-2**.

Figure 4-2 – Construction Traffic Route



- 4.17 The proposed construction route starts on the SRN from M4 Junction 43 before routing along the A465 to Aberdulais. At this point, the construction route joins the A4109 and routes up to the site access junction.



5.0 Vehicle Trip Attraction

Construction Traffic

- 5.1 The construction period is scheduled to last for approximately 6 months. The number of vehicle movements expected during the construction period is presented within **Table 5-1**. The number of movements have been provided/confirmed by the Applicant.

Table 5-1 – Construction Schedule: Vehicles by Activity and Month

Activity	Month 1					Month 2				Month 3				Month 4				Month 5				Month 6				Total
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
COMPOUND & ENABLING WORKS																										
7.5t vehicles		13	13																							26
SOLAR PANEL, STRUCTURE & CABLE																										
7.5t vehicles					39	39	39	39	39	39	39	39	39	39	39											429
ACCESS TRACK & CABLE TRENCHES																										
7.5t vehicles		13	26	26		7	0	0	3	3	3	3	3	3	3	3	3	3								97
CONTAINERISED INVERTORS / TRANSFORMERS																										
7.5t vehicles																			3	3	3					8
WELFARE FACILITIES & COMMS. OFFICE																										
7.5t vehicles					5																					5
SUBSTATION & SWITCHGEAR CONTAINERS																										
7.5t vehicles																						1	1			3
BATTERY CONTAINERS																										
7.5t vehicles																										
SPARE PARTS CONTAINERS																										
7.5t vehicles																								8		8
GENERAL, DIGGERS, PILING MACHINE etc.																										
7.5t vehicles					5					1			1				3									10
Anticipated Weekly Totals	0	26	39	36	39	46	39	39	42	43	42	42	43	42	42	3	5	3	3	3	3	1	1	8	0	587

- 5.2 There are expected to be a total of 587 trips across the 6 month construction programme. Peak construction traffic movements are expected in Month 2 with up to 169 vehicles arriving at the site.
- 5.3 Construction workers will be brought to the site by minibus, however the location from which these staff will travel from is currently unknown and is dependent on the appointed contractor.
- 5.4 The construction does not require any abnormal loads to access the site, with all components required to construct the solar farm delivered on 7.5t Box Van (8m) (as a maximum length).

Table 5-2 – Forecast Construction Traffic Movements (Across 6 month Construction Schedule)

Activity	Total Number of Deliveries	Total Movements (Two Way)
Compound Enabling Works	26	52
Solar Panel, Structure & Cable	429	858
Access Track & Cable Trenches	97.5	195
Containerised Inverter/Transformer	8	15.6
Welfare Facilities & Comms. Office	5.2	10.4
Substation & Switchgear Containers	2.6	5.2
Spare Parts Containers	8	16
General, Diggers, Piling Machine etc.	10.4	20.8
Total	587	1,173

- 5.5 As noted, the period in which deliveries are at their highest intensity will take place over a period of 3 months (Month 1 to Month 3 of the programme).



- 5.6 The site construction is expected to take place across 5 days per week (Monday-Friday all day). As such, during the busiest month for construction (Month 3), the 169 vehicle movements across the month are expected to result in a typical 8 vehicle arrivals or 16 two way trips per day during the construction phase.
- 5.7 The average weekday two-way traffic flow on A4109 Dulais Road is 3,259. This would then increase during the development construction to 3,275 (+16 vehicles), an increase of 0.49%. This increase will be for the peak construction period only.
- 5.8 The addition of 16 trips per day is unlikely to be discernible across the local transport network.
- 5.9 Irrespective, this will be a short-term impact and ongoing operational trips will be negligible.

Operational Phase

- 5.10 Upon completion of the construction phase, it is unlikely that regular trips will need to be made to the development. It is anticipated that there will be a maximum of two vehicles per month routing to the site to undertake the maintenance of the equipment.
- 5.11 The level of additional traffic as a result of the proposed development during the operational phase will be negligible.

Summary

- 5.12 Based on the above, the site will generate up to 16 two-way trips during the busiest period of construction.
- 5.13 During the operation of the site this is expected to only see a limited number of maintenance trips that represent less than one trip daily with only 2 scheduled maintenance visits every month. This is considered to be negligible and will be indiscernible on the wider highway network.



6.0 Summary and Conclusion

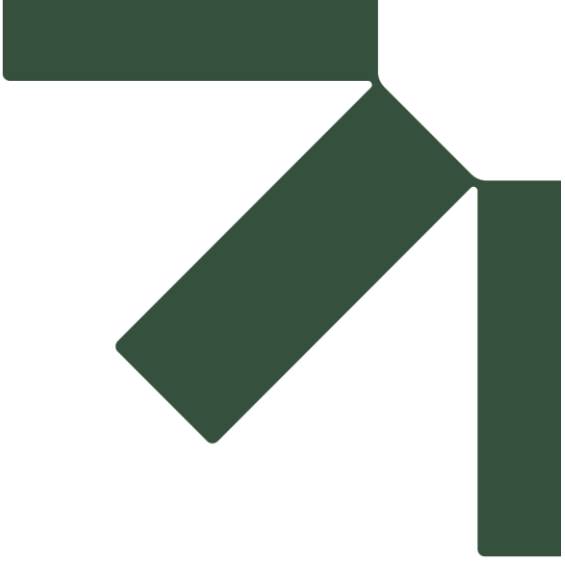
Summary

- 6.1 SLR Consulting Limited (SLR) has been commissioned by Greentech Invest UK (8) Ltd to provide transport and highways advice in relation to proposals for the installation of a solar photovoltaic farm at Pen Caer Lan Farm, Seven Sisters, Neath, SA10 9EP.
- 6.2 The proposed development comprises the installation of a solar photovoltaic farm, which would generate 23.7MW plus ancillary infrastructure and equipment.
- 6.3 The 'Ynys Fforch Fawr' bus stops are located on A4109 Dulais Road within approximately 100m of the site access junction. These bus stops provide access to the X8 bus service. The X8 operates on an approximate hourly frequency across the day and provides, via an onward walking connection via the site access route, access to the site by public transport.
- 6.4 Access to the highway network is provided via a priority junction with A4109 Dulais Road. The A4109 provides onward connectivity to the southwest to the A465 and the M4 Junction 43 at Llandarcy.
- 6.5 From the junction with A4109 Dulais Road, the site is accessed by a combination of existing farm tracks and new access track connecting to this existing route.

Conclusion

- 6.6 The review of PIC has not identified any existing highway safety issue that could be exacerbated by the proposed development. The majority of traffic is expected to route to and from the development site via the A4109 to the south and therefore not pass through the settlement of Seven Sisters where records of PIC have been identified.
- 6.7 The existing site access arrangements have been reviewed and it has been demonstrated that access can be provided to the site by a 7.5t box van (8m in length).
- 6.8 The anticipated vehicle movements associated with both the construction and operational phases have been set out. It has been demonstrated that during the peak period of construction, the temporary increase in traffic volumes will result in a 0.47% increase in traffic volumes on the A4109 Dulais Road. This is considered to be indiscernible on the local and wider highway network.





Appendix A Bus Timetable

Transport Statement

Solar Farm, Pen Caer Lan Farm, Neath

Greentech Invest UK (8) Ltd

SLR Project No.: 425.002241.00001

30 April 2025

Mondays to Fridays except Public Holidays

Service Number	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8
Moriah Chapel	—	0745	0847	0948	1048	1148	1250	1350	1450	1550	1650	1747
Banwen Rugby Club	0655	0751	0853	0953	1053	1153	1255	1355	1455	1556	1656	1753
Onllwyn Social Club	0701	0756	0858	0957	1057	1157	1259	1359	1459	1601	1701	1758
Seven Sisters Post Office	0711	0805	0907	1005	1105	1205	1307	1407	1507	1608	1708	1805
Crynant Business Park	0721	0818	0920	1018	1118	1218	1320	1420	1520	1620	1720	1817
Aberdulais Falls	0731	0829	0931	1029	1129	1229	1331	1431	1530	1630	1730	1827
Green Dragon	0735	0834	0936	1034	1134	1234	1336	1436	1535	1634	1734	1832
Neath Bus Station	0741	0843	0944	1042	1142	1241	1343	1443	1547	1641	1741	1838

Service Number	X8
Banwen Rugby Club	1846
Onllwyn Social Club	1850
Seven Sisters Post Office	1856
Crynant Business Park	1906
Aberdulais Falls	1916
Green Dragon	1921
Neath Bus Station	1927

Saturdays except Public Holidays

Service Number	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8
Moriah Chapel	—	0745	0847	0948	1048	1148	1250	1350	1450	1550	1650	1747
Banwen Rugby Club	0655	0751	0853	0953	1053	1153	1255	1355	1455	1556	1656	1753
Onllwyn Social Club	0701	0756	0858	0957	1057	1157	1259	1359	1459	1601	1701	1758
Seven Sisters Post Office	0711	0805	0907	1005	1105	1205	1307	1407	1507	1608	1708	1805
Crynant Business Park	0721	0818	0920	1018	1118	1218	1320	1420	1520	1620	1720	1817
Aberdulais Falls	0731	0829	0931	1029	1129	1229	1331	1431	1530	1630	1730	1827
Green Dragon	0735	0834	0936	1034	1134	1234	1336	1436	1535	1634	1734	1832
Neath Bus Station	0741	0843	0944	1042	1142	1241	1343	1443	1547	1641	1741	1838

Service Number	X8
Banwen Rugby Club	1846
Onllwyn Social Club	1850
Seven Sisters Post Office	1856
Crynant Business Park	1906
Aberdulais Falls	1916
Green Dragon	1921
Neath Bus Station	1927

No service on Sundays and Public Holidays

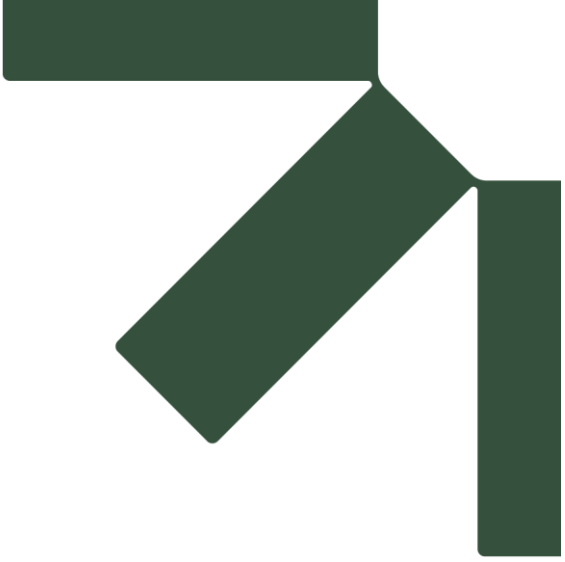
Mondays to Fridays except Public Holidays

Service Number	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8
Neath Bus Station	0655	0755	0855	0955	1055	1155	1255	1355	1455	1555	1655	1800
Green Dragon	0702	0803	0903	1003	1103	1203	1303	1403	1503	1604	1703	1808
Aberdulais Falls	0708	0809	0909	1009	1109	1209	1309	1409	1509	1609	1709	1814
Crynant Business Park	0719	0820	0920	1020	1120	1220	1320	1420	1520	1620	1720	1825
Seven Sisters Post Office	0729	0831	0932	1032	1132	1232	1332	1432	1533	1633	1731	1835
Onllwyn Cemetery	0734	0836	0937	1037	1137	1238	1338	1438	1539	1639	1736	1840
Banwen Rugby Club	0738	0840	0941	1041	1141	1243	1343	1443	1543	1644	1740	1845
Moriah Chapel	0744	0846	0947	1047	1147	1249	1349	1449	1549	1650	1746	—

Saturdays except Public Holidays

Service Number	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8	X8
Neath Bus Station	0655	0755	0855	0955	1055	1155	1255	1355	1455	1555	1655	1800
Green Dragon	0702	0803	0903	1003	1103	1203	1303	1403	1503	1604	1703	1808
Aberdulais Falls	0708	0809	0909	1009	1109	1209	1309	1409	1509	1609	1709	1814
Crynant Business Park	0719	0820	0920	1020	1120	1220	1320	1420	1520	1620	1720	1825
Seven Sisters Post Office	0729	0831	0932	1032	1132	1232	1332	1432	1533	1633	1731	1835
Onllwyn Cemetery	0734	0836	0937	1037	1137	1238	1338	1438	1539	1639	1736	1840
Banwen Rugby Club	0738	0840	0941	1041	1141	1243	1343	1443	1543	1644	1740	1845
Moriah Chapel	0744	0846	0947	1047	1147	1249	1349	1449	1549	1650	1746	—

No service on Sundays and Public Holidays



Appendix B Traffic Data

Transport Statement

Solar Farm, Pen Caer Lan Farm, Neath

Greentech Invest UK (8) Ltd

SLR Project No.: 425.002241.00001

30 April 2025

Class		Axes	Groups	Description	Parameters	Dominant Vehicle	Aggregate
1	SV	2	1 OR 2	Short - Car, light Van	d(1)>=1.7m, d(1)<=3.2m & axles=2		Light
2	SVT	3, 4 OR 5	3	Short Towing - Trailer, Caravan, Boat, etc.	groups=3, d(1)>=2.1m, d(1)<=3.2m, d(2)>=2.1m & axles=3,4,5		
3	TB2	2	2	Two axle truck or Bus	d(1)>3.2m & axles=2		Medium
4	TB3	3	2	Three axle truck or Bus	axles=3 & groups=2		
5	T4	>3	2	Four axle truck	axles>3 & groups=2		
6	ART3	3	3	Three axle articulated vehicle or Rigid vehicle and trailer	d(1)>3.2m, axles=3 & groups=3		Heavy
7	ART4	4	>2	Four axle articulated vehicle or Rigid vehicle and trailer	d(2)<2.1m or d(1)<2.1m or d(1)>3.2m axles = 4 & groups>2		
8	ART5	5	>2	Five axle articulated vehicle or Rigid vehicle and trailer	d(2)<2.1m or d(1)<2.1m or d(1)>3.2m axles = 5 & groups>2		
9	ART6	>=6	>2	Six (or more) axle articulated vehicle or Rigid vehicle and trailer	axles=6 & groups>2 or axles>6 & groups=3		
10	BD	>6	4	B-Double or Heavy truck and trailer	groups=4 & axles>6		
11	DRT	>6	5	Double road train or Heavy truck and two trailers	groups=5,6 & axles>6		
12	TRT	>6	>6	Triple road train or Heavy truck and three (or more) trailers	groups>6 & axles>6		Light
14	M/C	2	1 OR 2	Motorcycle	d(1)>=1.18m, d(1)<=1.7m & axles=2		
15	CYCLE	2	1 OR 2	Cycle	d(1)<1.18 & axles=2		

	Northbound	Southbound
Total	10143	10342
Mean Speed	43.6	43.5
85%	51	50.6

16 March 2024

Time [--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	15	14	0	1	0	0	0	0	0	0	0	0	0	0	0	43.7	54.5
0100	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	50.4	-
0200	5	4	0	1	0	0	0	0	0	0	0	0	0	0	0	49.7	-
0300	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	49.9	-
0400	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	52.5	-
0500	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	41.7	-
0600	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	49.6	67.9
0700	13	12	0	1	0	0	0	0	0	0	0	0	0	0	0	47	55.6
0800	28	21	2	5	0	0	0	0	0	0	0	0	0	0	0	46.9	55.9
0900	60	54	0	6	0	0	0	0	0	0	0	0	0	0	0	43.5	51.3
1000	78	70	1	6	0	0	0	0	0	0	0	0	0	1	0	44.9	52.1
1100	97	87	0	8	0	0	0	0	0	0	0	0	0	2	0	44.2	52.2
1200	101	94	0	6	0	0	0	0	0	0	0	0	0	0	1	46	54.7
1300	100	93	0	7	0	0	0	0	0	0	0	0	0	0	0	45.2	51.3
1400	92	84	0	6	0	0	0	0	0	0	0	0	0	2	0	45.3	52.8
1500	103	95	0	7	0	0	0	0	0	0	0	0	0	1	0	44.1	51.2
1600	61	56	0	5	0	0	0	0	0	0	0	0	0	0	0	46.6	54.8
1700	83	80	0	3	0	0	0	0	0	0	0	0	0	0	0	45.1	51.3
1800	66	60	0	6	0	0	0	0	0	0	0	0	0	0	0	45.7	54
1900	60	58	0	2	0	0	0	0	0	0	0	0	0	0	0	46.2	52.1
2000	47	43	0	3	0	0	0	0	0	0	0	0	0	1	0	48.3	61.8
2100	32	32	0	0	0	0	0	0	0	0	0	0	0	0	0	47.7	57.6
2200	27	27	0	0	0	0	0	0	0	0	0	0	0	0	0	41.6	51.7
2300	19	18	0	1	0	0	0	0	0	0	0	0	0	0	0	44.2	60.8
07-19	882	806	3	66	0	0	0	0	0	0	0	0	0	6	1	45.1	52.6
06-22	1034	952	3	71	0	0	0	0	0	0	0	0	0	7	1	45.5	52.8
06-00	1080	997	3	72	0	0	0	0	0	0	0	0	0	7	1	45.4	52.8
00-00	1114	1029	3	74	0	0	0	0	0	0	0	0	0	7	1	45.4	52.9

17 March 2024

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	42.7	47.8
0100	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	45.7	-
0200	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	44.7	-
0300	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	45.4	-
0400	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	49.2	-
0500	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	38.3	-
0600	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	49	59.3
0700	12	10	0	2	0	0	0	0	0	0	0	0	0	0	0	49.1	59.2
0800	19	17	0	2	0	0	0	0	0	0	0	0	0	0	0	46.6	55
0900	56	39	1	15	0	0	0	0	0	0	0	0	0	0	1	42.9	49.6
1000	74	61	0	11	0	0	0	1	0	0	0	0	0	0	1	45	52.8
1100	72	68	0	4	0	0	0	0	0	0	0	0	0	0	0	46.1	53.7
1200	85	81	1	3	0	0	0	0	0	0	0	0	0	0	0	46.5	56
1300	100	90	1	8	0	0	0	0	0	0	0	0	0	1	0	44.2	49.5
1400	77	71	0	5	0	0	0	0	0	0	0	0	0	0	1	46	54.5
1500	118	109	0	8	0	0	0	0	0	0	0	0	0	0	1	46.1	53.7
1600	78	72	1	4	0	0	0	0	0	0	0	0	0	1	0	50.1	56.5
1700	61	55	0	6	0	0	0	0	0	0	0	0	0	0	0	48.3	58.1
1800	61	57	1	2	0	0	0	1	0	0	0	0	0	0	0	47	55.8
1900	52	52	0	0	0	0	0	0	0	0	0	0	0	0	0	43.9	51.5
2000	32	30	1	1	0	0	0	0	0	0	0	0	0	0	0	49.8	55.9
2100	29	27	0	2	0	0	0	0	0	0	0	0	0	0	0	49.3	56.4
2200	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	47	52.3
2300	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	43.9	-
07-19	813	730	5	70	0	0	0	2	0	0	0	0	0	2	4	46.3	54.8
06-22	938	851	6	73	0	0	0	2	0	0	0	0	0	2	4	46.4	54.8
06-00	961	874	6	73	0	0	0	2	0	0	0	0	0	2	4	46.4	54.7
00-00	992	905	6	73	0	0	0	2	0	0	0	0	0	2	4	46.3	54.7

18 March 2024

[illegible]

1600	152	133	0	18	0	0	0	0	0	0	0	0	0	0	1	0	44.9	52.6
1700	140	129	0	10	0	0	0	0	0	0	0	0	0	0	1	0	44.7	52.8
1800	113	105	0	8	0	0	0	0	0	0	0	0	0	0	0	0	44.9	52.4
1900	62	56	0	6	0	0	0	0	0	0	0	0	0	0	0	0	46.7	55.7
2000	47	44	0	3	0	0	0	0	0	0	0	0	0	0	0	0	48.2	59.1
2100	20	18	0	2	0	0	0	0	0	0	0	0	0	0	0	0	47.3	56.5
2200	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47.1	55
2300	9	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	46.9	-
07-19	1320	1130	3	174	3	2	2	2	0	0	0	0	0	0	2	2	43.9	51.3
06-22	1471	1263	3	192	3	2	2	2	0	0	0	0	0	0	2	2	44.3	52
06-00	1498	1289	3	193	3	2	2	2	0	0	0	0	0	0	2	2	44.3	52.2
00-00	1514	1304	3	194	3	2	2	2	0	0	0	0	0	0	2	2	44.4	52.2

19 March 2024

Time [--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	47.5	-
0100	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	38.2	-
0200	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	40.8	-
0300	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	57.4	-
0400	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	43.1	-
0500	6	4	0	2	0	0	0	0	0	0	0	0	0	0	0	43.2	-
0600	21	14	0	7	0	0	0	0	0	0	0	0	0	0	0	42.4	49.3
0700	62	49	0	10	2	1	0	0	0	0	0	0	0	0	0	43.8	50.7
0800	116	95	0	20	0	1	0	0	0	0	0	0	0	0	0	42.5	49.9
0900	76	65	0	10	0	0	0	1	0	0	0	0	0	0	0	43.4	49.9
1000	78	65	1	11	0	0	0	0	0	0	0	0	0	0	1	42.8	51
1100	96	78	0	17	0	0	0	0	1	0	0	0	0	0	0	45	51.9
1200	99	86	0	12	0	1	0	0	0	0	0	0	0	0	0	45.7	53
1300	109	94	0	15	0	0	0	0	0	0	0	0	0	0	0	39.7	47.8
1400	129	112	0	16	0	0	0	0	0	0	0	0	0	0	1	41.3	48
1500	161	134	0	26	0	0	0	0	0	0	0	0	0	1	0	41.4	48
1600	161	141	1	17	0	0	0	0	0	0	0	0	0	1	1	43.8	51.6
1700	145	138	0	7	0	0	0	0	0	0	0	0	0	0	0	43.4	49
1800	108	102	0	5	0	0	0	0	0	0	0	0	0	1	0	43.1	48.9
1900	80	74	0	6	0	0	0	0	0	0	0	0	0	0	0	43.1	50.1
2000	56	52	0	4	0	0	0	0	0	0	0	0	0	0	0	46.6	54.2
2100	27	26	0	1	0	0	0	0	0	0	0	0	0	0	0	42.8	46.7
2200	23	22	0	1	0	0	0	0	0	0	0	0	0	0	0	46.7	54.6
2300	10	9	0	1	0	0	0	0	0	0	0	0	0	0	0	43.2	-
07-19	1340	1159	2	166	2	3	0	1	1	0	0	0	0	3	3	42.9	49.9
06-22	1524	1325	2	184	2	3	0	1	1	0	0	0	0	3	3	43	49.9
06-00	1557	1356	2	186	2	3	0	1	1	0	0	0	0	3	3	43.1	49.9
00-00	1576	1372	2	189	2	3	0	1	1	0	0	0	0	3	3	43.1	50

20 March 2024

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	8	7	0	1	0	0	0	0	0	0	0	0	0	0	0	49.2	-
0100	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	59.7	-
0200	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	59.5	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
0400	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	44.3	-
0500	8	7	0	1	0	0	0	0	0	0	0	0	0	0	0	41.1	-
0600	23	16	0	6	1	0	0	0	0	0	0	0	0	0	0	47.5	55.9
0700	52	43	0	9	0	0	0	0	0	0	0	0	0	0	0	42.1	48.3
0800	120	100	0	19	1	0	0	0	0	0	0	0	0	0	0	39.6	45.6
0900	84	63	1	18	2	0	0	0	0	0	0	0	0	0	0	42	48.2
1000	76	60	0	15	1	0	0	0	0	0	0	0	0	0	0	42.2	49.5
1100	96	79	0	16	0	0	0	1	0	0	0	0	0	0	0	42.5	49.9
1200	88	79	0	8	0	0	1	0	0	0	0	0	0	0	0	43.4	50.9
1300	107	89	0	16	1	0	0	1	0	0	0	0	0	0	0	42.3	48.6
1400	125	107	0	18	0	0	0	0	0	0	0	0	0	0	0	41.2	47.6
1500	156	130	0	25	0	1	0	0	0	0	0	0	0	0	0	42	47.7
1600	164	143	0	20	0	1	0	0	0	0	0	0	0	0	0	42	49
1700	154	147	0	6	0	0	0	0	0	0	0	0	0	0	1	41.6	51
1800	120	108	0	9	0	0	0	0	0	0	0	0	0	1	2	42.8	51.8
1900	74	70	0	2	0	0	0	0	0	0	0	0	0	2	0	43.8	51.8
2000	49	47	0	2	0	0	0	0	0	0	0	0	0	0	0	47.8	55.5
2100	40	38	0	2	0	0	0	0	0	0	0	0	0	0	0	47.4	53.3
2200	24	22	0	2	0	0	0	0	0	0	0	0	0	0	0	49	55.9
2300	11	10	0	1	0	0	0	0	0	0	0	0	0	0	0	45.1	54.9
07-19	1342	1148	1	179	5	2	1	2	0	0	0	0	0	1	3	41.9	48.7
06-22	1528	1319	1	191	6	2	1	2	0	0	0	0	0	3	3	42.4	49.6
06-00	1563	1351	1	194	6	2	1	2	0	0	0	0	0	3	3	42.5	49.7
00-00	1587	1373	1	196	6	2	1	2	0	0	0	0	0	3	3	42.6	49.9

21 March 2024

[illegible]

0900	97	83	1	12	0	0	0	1	0	0	0	0	0	0	0	42.9	49.3
1000	85	73	0	10	0	0	0	0	0	0	0	0	0	2	0	42	51.5
1100	105	89	0	13	1	0	0	0	0	0	0	0	0	1	1	41	47.8
1200	111	100	0	10	0	0	0	0	0	0	0	0	0	1	0	43.2	49.1
1300	112	94	0	16	1	1	0	0	0	0	0	0	0	0	0	42.8	47.5
1400	136	117	0	17	0	0	0	0	0	0	0	0	0	1	1	42.4	49
1500	190	160	0	28	1	0	0	0	0	0	0	0	0	1	0	41.3	47.2
1600	159	143	0	15	0	0	0	0	0	0	0	0	0	1	0	43	50.2
1700	149	137	0	12	0	0	0	0	0	0	0	0	0	0	0	45.2	53.7
1800	98	87	1	8	1	0	0	0	0	0	0	0	0	0	1	45.1	52
1900	75	74	0	1	0	0	0	0	0	0	0	0	0	0	0	44.4	51.8
2000	64	61	0	3	0	0	0	0	0	0	0	0	0	0	0	44.2	49
2100	35	33	0	2	0	0	0	0	0	0	0	0	0	0	0	44.8	52.4
2200	34	32	0	2	0	0	0	0	0	0	0	0	0	0	0	46.6	56.6
2300	15	12	0	3	0	0	0	0	0	0	0	0	0	0	0	47	55.7
07-19	1416	1232	2	165	4	1	0	2	0	0	0	0	0	7	3	42.6	49.4
06-22	1611	1416	2	176	4	1	0	2	0	0	0	0	0	7	3	42.8	49.6
06-00	1660	1460	2	181	4	1	0	2	0	0	0	0	0	7	3	43	50
00-00	1683	1480	2	184	4	1	0	2	0	0	0	0	0	7	3	43	50

22 March 2024

Time [--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	48.1	64.2
0100	3	1	0	2	0	0	0	0	0	0	0	0	0	0	0	48.5	-
0200	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	41.8	-
0300	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	48.1	-
0400	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	48.9	-
0500	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	40.8	-
0600	22	18	0	4	0	0	0	0	0	0	0	0	0	0	0	44	50.1
0700	46	39	0	7	0	0	0	0	0	0	0	0	0	0	0	42.5	50.2
0800	126	103	0	22	0	0	0	1	0	0	0	0	0	0	0	41.5	47.3
0900	95	77	1	16	0	1	0	0	0	0	0	0	0	0	0	40.3	47.2
1000	94	73	1	20	0	0	0	0	0	0	0	0	0	0	0	40.9	46.5
1100	97	80	0	15	1	0	0	1	0	0	0	0	0	0	0	40.7	47.2
1200	133	119	0	13	0	0	0	1	0	0	0	0	0	0	0	40.7	45.6
1300	128	110	0	15	0	1	0	1	0	0	0	0	0	1	0	41.9	47.5
1400	145	123	0	21	0	0	0	0	0	0	0	0	0	1	0	41.6	47.8
1500	160	143	0	13	0	0	0	1	0	0	0	0	0	2	1	42.4	47.3
1600	136	122	0	11	0	0	0	1	0	0	0	0	0	1	1	43	50.3
1700	143	132	0	9	0	0	0	0	0	0	0	0	0	2	0	43.5	51.7
1800	111	106	0	4	0	0	0	0	0	0	0	0	0	1	0	43	49.5
1900	74	68	0	6	0	0	0	0	0	0	0	0	0	0	0	43.1	51
2000	55	50	0	5	0	0	0	0	0	0	0	0	0	0	0	44.9	52.6
2100	40	35	0	4	0	0	0	0	0	0	0	0	0	0	1	45.2	58.4
2200	35	35	0	0	0	0	0	0	0	0	0	0	0	0	0	44.7	51.2
2300	11	10	0	1	0	0	0	0	0	0	0	0	0	0	0	42.4	48.2
07-19	1414	1227	2	166	1	2	0	6	0	0	0	0	0	8	2	41.9	48.2
06-22	1605	1398	2	185	1	2	0	6	0	0	0	0	0	8	3	42.2	48.8
06-00	1651	1443	2	186	1	2	0	6	0	0	0	0	0	8	3	42.2	48.9
00-00	1677	1467	2	188	1	2	0	6	0	0	0	0	0	8	3	42.3	48.9



SITE: Pencaerlan Solar A4109, Wales

LOCATION: Attached to tree

GRID REFERENCE: 51.748444, -3.734691

DIRECTION: NORTHBOUND SPEED LIMIT: NSL

16 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	15	0	0	0	0	0	9	3	3	0	0	0	0	0	0	0	43.7	54.5
0100	5	0	0	0	0	0	1	2	0	2	0	0	0	0	0	0	50.4	-
0200	5	0	0	0	1	0	0	0	3	1	0	0	0	0	0	0	49.7	-
0300	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	49.9	-
0400	4	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	52.5	-
0500	3	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	41.7	-
0600	13	0	0	0	0	2	2	4	2	1	0	2	0	0	0	0	49.6	67.9
0700	13	0	0	0	0	3	2	1	6	1	0	0	0	0	0	0	47	55.6
0800	28	0	0	0	0	3	6	9	6	4	0	0	0	0	0	0	46.9	55.9
0900	60	0	0	0	0	11	26	9	9	3	2	0	0	0	0	0	43.5	51.3
1000	78	0	0	0	2	12	22	20	14	8	0	0	0	0	0	0	44.9	52.1
1100	97	0	1	1	1	16	30	23	18	6	1	0	0	0	0	0	44.2	52.2
1200	101	0	1	0	2	8	24	38	18	5	5	0	0	0	0	0	46	54.7
1300	100	0	0	0	1	8	33	36	16	4	1	1	0	0	0	0	45.2	51.3
1400	92	0	0	1	0	10	27	26	22	4	2	0	0	0	0	0	45.3	52.8
1500	103	0	0	0	2	11	37	33	16	3	0	1	0	0	0	0	44.1	51.2
1600	61	0	0	0	0	4	18	20	13	4	2	0	0	0	0	0	46.6	54.8
1700	83	0	0	0	0	4	33	30	11	5	0	0	0	0	0	0	45.1	51.3
1800	66	0	0	0	0	7	20	20	14	4	1	0	0	0	0	0	45.7	54
1900	60	0	0	0	0	3	22	21	11	1	1	0	1	0	0	0	46.2	52.1
2000	47	0	0	0	0	4	11	17	6	2	5	2	0	0	0	0	48.3	61.8
2100	32	0	0	0	0	4	7	8	8	3	2	0	0	0	0	0	47.7	57.6
2200	27	0	0	0	4	6	4	9	3	0	0	0	0	1	0	0	41.6	51.7
2300	19	0	0	0	0	4	8	3	1	2	1	0	0	0	0	0	44.2	60.8
07-19	882	0	2	2	8	97	278	265	163	51	14	2	0	0	0	0	45.1	52.6
06-22	1034	0	2	2	8	110	320	315	190	58	22	6	1	0	0	0	45.5	52.8
06-00	1080	0	2	2	12	120	332	327	194	60	23	6	1	1	0	0	45.4	52.8
00-00	1114	0	2	2	13	121	342	337	202	64	23	6	1	1	0	0	45.4	52.9

17 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	12	0	0	0	0	3	4	4	0	1	0	0	0	0	0	0	42.7	47.8
0100	3	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	45.7	-
0200	3	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	44.7	-
0300	4	0	0	0	1	1	0	1	0	0	0	1	0	0	0	0	45.4	-
0400	5	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	49.2	-
0500	4	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	38.3	-
0600	12	0	0	0	0	2	2	2	3	2	1	0	0	0	0	0	49	59.3
0700	12	0	0	0	0	0	4	2	4	1	1	0	0	0	0	0	49.1	59.2
0800	19	0	0	0	0	5	1	7	4	1	1	0	0	0	0	0	46.6	55
0900	56	0	1	1	0	7	24	15	2	6	0	0	0	0	0	0	42.9	49.6
1000	74	1	0	1	0	0	29	25	15	3	0	0	0	0	0	0	45	52.8
1100	72	0	0	0	1	3	26	23	11	5	1	2	0	0	0	0	46.1	53.7
1200	85	0	0	0	0	4	35	19	14	10	2	0	1	0	0	0	46.5	56
1300	100	0	0	0	0	9	42	36	8	3	1	1	0	0	0	0	44.2	49.5
1400	77	0	1	0	0	8	21	22	17	6	1	1	0	0	0	0	46	54.5
1500	118	0	1	0	0	7	37	44	19	6	2	2	0	0	0	0	46.1	53.7
1600	78	0	0	0	0	1	16	23	23	11	2	2	0	0	0	0	50.1	56.5
1700	61	0	0	0	0	5	15	15	15	8	1	2	0	0	0	0	48.3	58.1
1800	61	0	0	0	0	3	19	22	9	7	1	0	0	0	0	0	47	55.8

1900	52	0	0	0	0	3	27	13	8	1	0	0	0	0	0	0	43.9	51.5
2000	32	0	0	0	2	0	3	10	13	2	1	1	0	0	0	0	49.8	55.9
2100	29	0	0	0	0	1	6	9	9	2	1	0	1	0	0	0	49.3	56.4
2200	16	0	0	0	0	0	4	7	4	1	0	0	0	0	0	0	47	52.3
2300	7	0	0	0	0	0	3	3	1	0	0	0	0	0	0	0	43.9	-
07-19	813	1	3	2	1	52	269	253	141	67	13	10	1	0	0	0	46.3	54.8
06-22	938	1	3	2	3	58	307	287	174	74	16	11	2	0	0	0	46.4	54.8
06-00	961	1	3	2	3	58	314	297	179	75	16	11	2	0	0	0	46.4	54.7
00-00	992	1	3	2	4	65	321	308	181	77	16	12	2	0	0	0	46.3	54.7

18 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	8	0	0	0	0	0	1	3	2	1	1	0	0	0	0	0	50.5	-
0100	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	60.2	-
0200	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	51.3	-
0300	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	48.5	-
0400	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	44.7	-
0500	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	44.2	-
0600	22	0	0	0	0	0	5	8	6	2	1	0	0	0	0	0	48.5	57.4
0700	49	0	0	0	0	8	18	13	9	0	0	1	0	0	0	0	43.7	51.6
0800	130	0	0	0	1	22	74	17	9	6	0	1	0	0	0	0	42.2	48.3
0900	95	0	0	2	1	9	38	24	16	4	1	0	0	0	0	0	44.1	51.2
1000	82	0	0	0	3	15	33	18	7	4	2	0	0	0	0	0	42.9	50.4
1100	103	0	1	0	2	9	41	35	12	3	0	0	0	0	0	0	43.4	49.8
1200	94	0	1	0	5	11	44	21	6	5	1	0	0	0	0	0	42.3	48.4
1300	98	0	0	0	0	6	39	37	10	3	2	0	1	0	0	0	45.1	50.1
1400	124	0	0	1	9	14	42	38	12	7	1	0	0	0	0	0	42.8	51.1
1500	140	0	0	0	2	12	53	44	21	6	1	1	0	0	0	0	44.7	52.2
1600	152	0	0	0	2	11	65	43	18	9	3	0	0	1	0	0	44.9	52.6
1700	140	0	0	0	1	27	38	37	27	7	3	0	0	0	0	0	44.7	52.8
1800	113	0	0	0	6	6	36	40	17	5	1	1	1	0	0	0	44.9	52.4
1900	62	0	0	0	1	3	20	16	14	7	1	0	0	0	0	0	46.7	55.7
2000	47	0	0	0	0	6	10	13	8	7	2	0	0	1	0	0	48.2	59.1
2100	20	0	0	0	0	1	6	7	3	2	1	0	0	0	0	0	47.3	56.5
2200	18	0	0	0	0	2	4	4	6	1	1	0	0	0	0	0	47.1	55
2300	9	0	0	0	0	1	3	2	1	1	1	0	0	0	0	0	46.9	-
07-19	1320	0	2	3	32	150	521	367	164	59	15	4	2	1	0	0	43.9	51.3
06-22	1471	0	2	3	33	160	562	411	195	77	20	4	2	2	0	0	44.3	52
06-00	1498	0	2	3	33	163	569	417	202	79	22	4	2	2	0	0	44.3	52.2
00-00	1514	0	2	3	33	163	572	423	205	81	24	4	2	2	0	0	44.4	52.2

19 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	8	0	0	0	0	0	2	4	0	2	0	0	0	0	0	0	47.5	-
0100	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	38.2	-
0200	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	40.8	-
0300	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	57.4	-
0400	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	43.1	-
0500	6	0	0	0	0	2	1	2	0	1	0	0	0	0	0	0	43.2	-
0600	21	0	0	0	0	4	10	4	3	0	0	0	0	0	0	0	42.4	49.3
0700	62	0	0	1	0	4	32	14	9	1	0	1	0	0	0	0	43.8	50.7
0800	116	0	0	0	3	21	50	25	10	7	0	0	0	0	0	0	42.5	49.9
0900	76	0	0	0	1	10	32	21	10	2	0	0	0	0	0	0	43.4	49.9
1000	78	0	1	2	0	9	33	20	9	4	0	0	0	0	0	0	42.8	51
1100	96	0	0	0	0	6	46	25	10	5	4	0	0	0	0	0	45	51.9
1200	99	0	0	0	0	8	35	35	12	5	3	1	0	0	0	0	45.7	53
1300	109	0	3	3	6	24	44	17	6	5	1	0	0	0	0	0	39.7	47.8
1400	129	0	1	3	4	21	63	24	6	6	1	0	0	0	0	0	41.3	48

1500	161	0	0	1	6	33	67	33	16	3	2	0	0	0	0	0	41.4	48
1600	161	0	1	0	2	27	48	46	28	9	0	0	0	0	0	0	43.8	51.6
1700	145	0	0	0	0	19	59	48	15	4	0	0	0	0	0	0	43.4	49
1800	108	0	0	0	2	13	48	31	11	3	0	0	0	0	0	0	43.1	48.9
1900	80	0	0	0	0	8	41	19	6	5	1	0	0	0	0	0	43.1	50.1
2000	56	0	0	0	0	0	23	19	7	5	2	0	0	0	0	0	46.6	54.2
2100	27	0	0	0	0	7	10	7	1	1	1	0	0	0	0	0	42.8	46.7
2200	23	0	0	0	0	1	8	9	3	0	1	1	0	0	0	0	46.7	54.6
2300	10	0	0	0	0	1	3	5	1	0	0	0	0	0	0	0	43.2	-
07-19	1340	0	6	10	24	195	557	339	142	54	11	2	0	0	0	0	42.9	49.9
06-22	1524	0	6	10	24	214	641	388	159	65	15	2	0	0	0	0	43	49.9
06-00	1557	0	6	10	24	216	652	402	163	65	16	3	0	0	0	0	43.1	49.9
00-00	1576	0	6	10	24	219	658	408	163	69	16	3	0	0	0	0	43.1	50

20 March 2024

Time [--]	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	8	0	0	0	0	1	1	2	1	3	0	0	0	0	0	0	49.2	-
0100	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	59.7	-
0200	2	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	59.5	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
0400	5	0	0	0	0	0	3	1	1	0	0	0	0	0	0	0	44.3	-
0500	8	0	0	0	0	3	3	0	2	0	0	0	0	0	0	0	41.1	-
0600	23	0	0	0	0	1	9	5	5	1	0	2	0	0	0	0	47.5	55.9
0700	52	0	0	0	0	9	22	15	5	1	0	0	0	0	0	0	42.1	48.3
0800	120	0	0	0	7	36	56	10	8	3	0	0	0	0	0	0	39.6	45.6
0900	84	0	0	0	1	17	38	19	6	2	0	1	0	0	0	0	42	48.2
1000	76	0	0	0	2	11	41	11	8	3	0	0	0	0	0	0	42.2	49.5
1100	96	0	0	0	1	18	46	17	9	3	2	0	0	0	0	0	42.5	49.9
1200	88	0	0	0	0	11	40	22	11	4	0	0	0	0	0	0	43.4	50.9
1300	107	0	0	0	4	18	43	29	11	1	0	1	0	0	0	0	42.3	48.6
1400	125	0	0	0	9	25	52	28	7	2	2	0	0	0	0	0	41.2	47.6
1500	156	0	0	0	5	23	68	51	9	0	0	0	0	0	0	0	42	47.7
1600	164	0	0	2	6	24	74	36	15	6	1	0	0	0	0	0	42	49
1700	154	0	1	0	16	29	53	29	17	6	2	1	0	0	0	0	41.6	51
1800	120	0	2	0	1	15	52	29	15	4	1	1	0	0	0	0	42.8	51.8
1900	74	0	0	0	1	12	28	18	10	4	0	0	1	0	0	0	43.8	51.8
2000	49	0	0	0	0	3	12	17	11	3	1	2	0	0	0	0	47.8	55.5
2100	40	0	0	0	0	3	12	11	10	2	1	0	1	0	0	0	47.4	53.3
2200	24	0	0	0	0	1	3	11	6	3	0	0	0	0	0	0	49	55.9
2300	11	0	0	0	1	0	4	2	3	1	0	0	0	0	0	0	45.1	54.9
07-19	1342	0	3	2	52	236	585	296	121	35	8	4	0	0	0	0	41.9	48.7
06-22	1528	0	3	2	53	255	646	347	157	45	10	8	2	0	0	0	42.4	49.6
06-00	1563	0	3	2	54	256	653	360	166	49	10	8	2	0	0	0	42.5	49.7
00-00	1587	0	3	2	54	260	660	364	170	53	10	9	2	0	0	0	42.6	49.9

21 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	8	0	0	0	0	4	2	1	1	0	0	0	0	0	0	0	39.6	-
0100	3	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	52.3	-
0200	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	44	-
0300	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	44.6	-
0400	7	0	0	0	0	2	1	2	2	0	0	0	0	0	0	0	44.8	-
0500	3	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	47.1	-
0600	21	0	0	0	0	1	6	11	3	0	0	0	0	0	0	0	45.3	50
0700	52	0	0	0	0	4	19	19	8	1	1	0	0	0	0	0	44.6	51.9
0800	122	0	0	5	5	41	49	16	2	2	1	0	1	0	0	0	39.1	45
0900	97	0	0	0	2	18	36	28	8	4	1	0	0	0	0	0	42.9	49.3
1000	85	0	0	0	0	25	28	18	12	2	0	0	0	0	0	0	42	51.5

1100	105	1	0	2	2	20	54	15	4	4	2	1	0	0	0	0	41	47.8
1200	111	0	1	0	1	15	42	36	12	2	1	0	1	0	0	0	43.2	49.1
1300	112	0	0	0	0	11	54	37	6	3	1	0	0	0	0	0	42.8	47.5
1400	136	0	1	0	3	25	54	39	11	2	0	0	1	0	0	0	42.4	49
1500	190	0	0	1	2	41	94	31	15	5	1	0	0	0	0	0	41.3	47.2
1600	159	0	0	0	2	15	83	34	21	4	0	0	0	0	0	0	43	50.2
1700	149	0	0	0	2	13	59	35	29	6	3	0	2	0	0	0	45.2	53.7
1800	98	0	1	1	0	4	34	36	13	5	4	0	0	0	0	0	45.1	52
1900	75	0	0	0	0	12	25	21	12	4	0	1	0	0	0	0	44.4	51.8
2000	64	0	0	0	0	4	31	22	2	5	0	0	0	0	0	0	44.2	49
2100	35	0	0	0	1	2	14	10	5	2	0	1	0	0	0	0	44.8	52.4
2200	34	0	0	0	2	3	8	9	6	4	1	1	0	0	0	0	46.6	56.6
2300	15	0	0	0	0	1	5	2	5	2	0	0	0	0	0	0	47	55.7
07-19	1416	1	3	9	19	232	606	344	141	40	15	1	5	0	0	0	42.6	49.4
06-22	1611	1	3	9	20	251	682	408	163	51	15	3	5	0	0	0	42.8	49.6
06-00	1660	1	3	9	22	255	695	419	174	57	16	4	5	0	0	0	43	50
00-00	1683	1	3	9	22	261	699	427	179	57	16	4	5	0	0	0	43	50

22 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	13	0	0	0	0	2	2	5	1	1	1	1	0	0	0	0	48.1	64.2
0100	3	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	48.5	-
0200	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	41.8	-
0300	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	48.1	-
0400	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	48.9	-
0500	5	0	0	0	0	1	3	1	0	0	0	0	0	0	0	0	40.8	-
0600	22	0	0	0	0	2	7	10	3	0	0	0	0	0	0	0	44	50.1
0700	46	0	0	0	1	8	17	11	9	0	0	0	0	0	0	0	42.5	50.2
0800	126	0	0	0	1	29	60	24	8	3	1	0	0	0	0	0	41.5	47.3
0900	95	0	0	0	7	24	37	20	4	3	0	0	0	0	0	0	40.3	47.2
1000	94	0	0	2	4	18	41	21	7	0	1	0	0	0	0	0	40.9	46.5
1100	97	0	0	0	0	30	40	19	7	1	0	0	0	0	0	0	40.7	47.2
1200	133	0	0	0	2	31	65	26	8	0	1	0	0	0	0	0	40.7	45.6
1300	128	0	0	1	0	25	63	25	9	3	2	0	0	0	0	0	41.9	47.5
1400	145	0	0	0	6	27	61	35	10	6	0	0	0	0	0	0	41.6	47.8
1500	160	0	1	0	2	21	76	47	8	2	2	0	0	1	0	0	42.4	47.3
1600	136	1	0	0	1	26	55	29	16	3	3	1	1	0	0	0	43	50.3
1700	143	0	0	1	6	19	57	31	20	8	1	0	0	0	0	0	43.5	51.7
1800	111	0	0	0	3	20	36	36	12	3	1	0	0	0	0	0	43	49.5
1900	74	0	0	0	4	8	32	16	12	1	1	0	0	0	0	0	43.1	51
2000	55	0	0	0	1	6	14	23	7	4	0	0	0	0	0	0	44.9	52.6
2100	40	0	1	0	0	5	13	9	4	7	1	0	0	0	0	0	45.2	58.4
2200	35	0	0	0	0	4	11	14	4	2	0	0	0	0	0	0	44.7	51.2
2300	11	0	0	0	0	1	7	2	1	0	0	0	0	0	0	0	42.4	48.2
07-19	1414	1	1	4	33	278	608	324	118	32	12	1	1	1	0	0	41.9	48.2
06-22	1605	1	2	4	38	299	674	382	144	44	14	1	1	1	0	0	42.2	48.8
06-00	1651	1	2	4	38	304	692	398	149	46	14	1	1	1	0	0	42.2	48.9
00-00	1677	1	2	4	38	307	700	407	151	48	15	2	1	1	0	0	42.3	48.9

Grand Total

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
--	10143	3	21	32	188	1396	3952	2674	1251	449	120	40	13	4	0	0	43.6	51



SITE: Pencaerlan Solar A4109, Wales

LOCATION: Attached to tree

GRID REFERENCE: 51.748444, -3.734691

DIRECTION: NORTHBOUND

SPEED LIMIT: NSL

	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Averages	
	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	1-5.	1-7.
Hour									
0000-0100	15	12	8	8	8	8	13	9	10.3
0100-0200	5	3	2	2	1	3	3	2.2	2.7
0200-0300	5	3	1	1	2	1	2	1.4	2.1
0300-0400	2	4	1	1	0	1	1	0.8	1.4
0400-0500	4	5	2	1	5	7	2	3.4	3.7
0500-0600	3	4	2	6	8	3	5	4.8	4.4
0600-0700	13	12	22	21	23	21	22	21.8	19.1
0700-0800	13	12	49	62	52	52	46	52.2	40.9
0800-0900	28	19	130	116	120	122	126	122.8	94.4
0900-1000	60	56	95	76	84	97	95	89.4	80.4
1000-1100	78	74	82	78	76	85	94	83	81
1100-1200	97	72	103	96	96	105	97	99.4	95.1
1200-1300	101	85	94	99	88	111	133	105	101.6
1300-1400	100	100	98	109	107	112	128	110.8	107.7
1400-1500	92	77	124	129	125	136	145	131.8	118.3
1500-1600	103	118	140	161	156	190	160	161.4	146.9
1600-1700	61	78	152	161	164	159	136	154.4	130.1
1700-1800	83	61	140	145	154	149	143	146.2	125
1800-1900	66	61	113	108	120	98	111	110	96.7
1900-2000	60	52	62	80	74	75	74	73	68.1
2000-2100	47	32	47	56	49	64	55	54.2	50
2100-2200	32	29	20	27	40	35	40	32.4	31.9
2200-2300	27	16	18	23	24	34	35	26.8	25.3
2300-2400	19	7	9	10	11	15	11	11.2	11.7
Totals									
0700-1900	882	813	1320	1340	1342	1416	1414	1366.4	1218.1
0600-2200	1034	938	1471	1524	1528	1611	1605	1547.8	1387.3
0600-0000	1080	961	1498	1557	1563	1660	1651	1585.8	1424.3
0000-0000	1114	992	1514	1576	1587	1683	1677	1607.4	1449
AM Peak	1100	1000	800	800	800	800	800		
	97	74	130	116	120	122	126		
PM Peak	1500	1500	1600	1600	1600	1500	1500		
	103	118	152	161	164	190	160		



SITE: Pencaerlan Solar A4109, Wales

LOCATION: Attached to tree

GRID REFERENCE: 51.748444, -3.734691

DIRECTION: SOUTHBOUND SPEED LIMIT: NSL

16 March 2024

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	51.1	-
0100	4	3	0	1	0	0	0	0	0	0	0	0	0	0	0	44.6	-
0200	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	52.3	-
0300	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	39.4	-
0400	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	39.1	-
0500	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	51.6	57.5
0600	22	21	0	1	0	0	0	0	0	0	0	0	0	0	0	50.1	59.3
0700	38	36	0	2	0	0	0	0	0	0	0	0	0	0	0	47.9	53.8
0800	73	62	0	9	0	0	0	0	0	0	0	0	0	0	2	48.5	59.2
0900	93	80	0	10	0	0	0	0	0	0	0	0	0	0	3	45.3	52.5
1000	95	85	1	9	0	0	0	0	0	0	0	0	0	0	0	45.6	52.7
1100	112	100	0	10	0	0	0	0	0	0	0	0	0	1	1	44.1	51.1
1200	106	94	1	8	0	0	0	0	0	0	0	0	0	3	0	45.5	51.3
1300	107	96	0	11	0	0	0	0	0	0	0	0	0	0	0	45.8	53.6
1400	67	62	0	5	0	0	0	0	0	0	0	0	0	0	0	45.8	52
1500	53	47	1	4	0	0	0	0	0	0	0	0	0	1	0	46	53.3
1600	58	54	0	3	0	0	0	0	0	0	0	0	0	1	0	47.1	52.9
1700	61	55	0	6	0	0	0	0	0	0	0	0	0	0	0	48	53.1
1800	51	48	0	2	0	0	0	1	0	0	0	0	0	0	0	46.1	52.4
1900	50	47	0	3	0	0	0	0	0	0	0	0	0	0	0	48.1	55.3
2000	36	34	0	2	0	0	0	0	0	0	0	0	0	0	0	49.9	59.9
2100	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	49.7	60.3
2200	12	10	0	1	0	1	0	0	0	0	0	0	0	0	0	45	56.5
2300	7	5	0	2	0	0	0	0	0	0	0	0	0	0	0	46.8	-
07-19	914	819	3	79	0	0	0	1	0	0	0	0	0	6	6	46	53
06-22	1045	944	3	85	0	0	0	1	0	0	0	0	0	6	6	46.4	53.4
06-00	1064	959	3	88	0	1	0	1	0	0	0	0	0	6	6	46.4	53.4
00-00	1104	998	3	89	0	1	0	1	0	0	0	0	0	6	6	46.5	53.6

17 March 2024

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	50.4	-
0100	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	53.7	-
0200	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	38.4	-
0300	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	61.1	-
0400	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	46.7	-
0500	8	7	0	1	0	0	0	0	0	0	0	0	0	0	0	49.1	-
0600	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	48.4	55.8
0700	22	21	0	1	0	0	0	0	0	0	0	0	0	0	0	50	59.1
0800	20	18	0	2	0	0	0	0	0	0	0	0	0	0	0	48.6	63.3
0900	64	55	0	8	1	0	0	0	0	0	0	0	0	0	0	47.3	58
1000	72	62	0	9	0	0	0	1	0	0	0	0	0	0	0	46.8	55.5
1100	89	81	1	7	0	0	0	0	0	0	0	0	0	0	0	45.4	52.8
1200	99	90	1	7	0	0	0	0	0	0	0	0	0	1	0	44.9	50.6
1300	89	81	0	7	0	0	0	1	0	0	0	0	0	0	0	45.8	52.5
1400	79	74	0	5	0	0	0	0	0	0	0	0	0	0	0	45.7	53.6
1500	94	78	0	14	0	0	0	0	0	0	0	0	0	1	1	43.9	50.7
1600	80	70	1	7	1	0	0	0	0	0	0	0	0	0	1	44.1	51.8
1700	57	54	0	3	0	0	0	0	0	0	0	0	0	0	0	47.5	54.4
1800	56	48	0	4	0	0	0	0	0	0	0	0	0	4	0	44.1	51.9

1900	54	49	0	5	0	0	0	0	0	0	0	0	0	0	0	0	48.7	54.5
2000	36	35	0	1	0	0	0	0	0	0	0	0	0	0	0	0	47.9	57.6
2100	17	16	0	1	0	0	0	0	0	0	0	0	0	0	0	0	49.3	56.2
2200	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48 -	
2300	4	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	48.3 -	
07-19	821	732	3	74	2	0	0	2	0	0	0	0	0	0	6	2	45.6	53.1
06-22	944	848	3	81	2	0	0	2	0	0	0	0	0	0	6	2	46	53.4
06-00	956	859	3	81	2	0	0	2	0	0	0	0	0	0	7	2	46	53.4
00-00	981	883	3	82	2	0	0	2	0	0	0	0	0	0	7	2	46.1	53.6

18 March 2024

Time [--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	55.1	-
0100	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	67.4	-
0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
0300	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	55.2	-
0400	12	10	0	2	0	0	0	0	0	0	0	0	0	0	0	42.6	51.2
0500	35	27	0	8	0	0	0	0	0	0	0	0	0	0	0	50.9	59.7
0600	80	63	0	16	0	0	0	0	0	0	0	0	0	1	0	49.6	58.6
0700	134	113	1	19	0	0	0	1	0	0	0	0	0	0	0	47.5	54.1
0800	189	157	0	30	0	0	1	1	0	0	0	0	0	0	0	43.8	50.7
0900	111	90	0	20	1	0	0	0	0	0	0	0	0	0	0	43.4	48.6
1000	103	85	1	17	0	0	0	0	0	0	0	0	0	0	0	42.8	48.7
1100	103	80	2	17	1	0	1	0	0	0	0	0	0	0	2	41.6	47.4
1200	110	90	1	16	0	0	0	2	0	0	0	0	0	0	1	42.8	48.6
1300	79	64	0	13	0	0	0	1	0	0	0	0	0	0	1	42	48.3
1400	87	72	0	13	0	0	0	0	0	0	0	0	0	2	0	43.6	51.1
1500	137	106	1	27	1	0	0	0	0	0	0	0	0	1	1	43.4	49.8
1600	94	81	0	13	0	0	0	0	0	0	0	0	0	0	0	45.4	52.7
1700	97	86	0	9	0	0	0	0	0	0	0	0	0	1	1	45.3	52.6
1800	73	65	0	7	0	0	0	0	0	0	0	0	0	1	0	44.8	52.7
1900	52	47	0	5	0	0	0	0	0	0	0	0	0	0	0	44.7	51.6
2000	20	17	0	3	0	0	0	0	0	0	0	0	0	0	0	45.1	54.5
2100	20	17	0	3	0	0	0	0	0	0	0	0	0	0	0	48.2	55.3
2200	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	45.9	-
2300	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	43.8	-
07-19	1317	1089	6	201	3	0	2	5	0	0	0	0	0	5	6	43.9	50.8
06-22	1489	1233	6	228	3	0	2	5	0	0	0	0	0	6	6	44.3	51.4
06-00	1497	1240	6	229	3	0	2	5	0	0	0	0	0	6	6	44.3	51.4
00-00	1548	1279	6	241	3	0	2	5	0	0	0	0	0	6	6	44.5	51.6

19 March 2024

[illegible]

1500	129	107	0	22	0	0	0	0	0	0	0	0	0	0	0	40.8	45.6
1600	122	106	0	15	0	0	0	0	0	0	0	0	0	0	1	42.4	48.7
1700	102	91	0	8	0	0	0	1	0	0	0	0	0	2	0	43.6	51.4
1800	60	54	0	6	0	0	0	0	0	0	0	0	0	0	0	43.2	49.6
1900	54	49	0	5	0	0	0	0	0	0	0	0	0	0	0	44.4	49.7
2000	48	46	0	2	0	0	0	0	0	0	0	0	0	0	0	44.1	50.6
2100	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	43	49.9
2200	10	9	0	1	0	0	0	0	0	0	0	0	0	0	0	48.5	-
2300	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	49.4	-
07-19	1321	1111	2	198	3	1	0	3	0	0	0	0	0	2	1	42.5	49.4
06-22	1518	1290	2	215	3	1	0	3	0	0	0	0	0	2	2	42.9	50
06-00	1532	1303	2	216	3	1	0	3	0	0	0	0	0	2	2	43	50
00-00	1592	1353	2	226	3	1	0	3	0	0	0	0	0	2	2	43.1	50.2

20 March 2024

Time [--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	41.8	-
0100	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	42.5	-
0200	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	44.3	-
0300	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	49.8	-
0400	9	6	0	3	0	0	0	0	0	0	0	0	0	0	0	47.4	-
0500	44	41	0	3	0	0	0	0	0	0	0	0	0	0	0	46.7	55.9
0600	76	63	0	12	0	0	0	0	0	0	0	0	0	0	1	46.6	53.7
0700	130	109	0	21	0	0	0	0	0	0	0	0	0	0	0	45	50
0800	178	148	0	29	1	0	0	0	0	0	0	0	0	0	0	41.7	48.2
0900	125	102	1	20	1	0	0	0	0	0	0	0	0	1	0	41.8	47.6
1000	99	78	0	21	0	0	0	0	0	0	0	0	0	0	0	40.6	48.7
1100	97	78	0	18	0	0	0	1	0	0	0	0	0	0	0	42.6	48.8
1200	106	91	0	13	0	0	1	1	0	0	0	0	0	0	0	41.8	47.2
1300	85	63	0	19	0	0	0	2	0	0	0	0	0	1	0	40.7	47
1400	101	89	0	12	0	0	0	0	0	0	0	0	0	0	0	41.3	45.8
1500	126	97	0	29	0	0	0	0	0	0	0	0	0	0	0	40.1	46.2
1600	122	106	1	15	0	0	0	0	0	0	0	0	0	0	0	41.9	46.6
1700	92	83	1	7	0	0	0	0	0	0	0	0	0	1	0	42.7	48.1
1800	97	88	0	8	0	0	0	0	0	0	0	0	0	1	0	43.8	49.4
1900	68	61	0	7	0	0	0	0	0	0	0	0	0	0	0	44.9	50.4
2000	30	26	0	4	0	0	0	0	0	0	0	0	0	0	0	43	50.5
2100	25	24	0	0	0	0	0	1	0	0	0	0	0	0	0	48.3	55.1
2200	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	46.7	-
2300	5	4	0	1	0	0	0	0	0	0	0	0	0	0	0	49.2	-
07-19	1358	1132	3	212	2	0	1	4	0	0	0	0	0	4	0	42	48
06-22	1557	1306	3	235	2	0	1	5	0	0	0	0	0	4	1	42.5	48.6
06-00	1571	1319	3	236	2	0	1	5	0	0	0	0	0	4	1	42.5	48.7
00-00	1629	1371	3	242	2	0	1	5	0	0	0	0	0	4	1	42.7	48.8

21 March 2024

Time [--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	44.4	-
0100	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	56.4	-
0200	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	47.6	-
0300	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	37.4	-
0400	10	9	0	1	0	0	0	0	0	0	0	0	0	0	0	47.3	-
0500	43	37	0	6	0	0	0	0	0	0	0	0	0	0	0	49	56.6
0600	79	66	0	12	0	0	0	1	0	0	0	0	0	0	0	46.4	52.6
0700	125	103	0	22	0	0	0	0	0	0	0	0	0	0	0	44	50
0800	178	150	0	27	1	0	0	0	0	0	0	0	0	0	0	40.8	46.1
0900	113	98	0	14	0	0	0	1	0	0	0	0	0	0	0	41.8	47.1
1000	111	92	1	15	0	0	0	0	0	0	0	0	0	3	0	40.9	46.8

1100	122	95	0	23	1	1	0	1	0	0	0	0	0	1	0	38.9	44.9
1200	113	100	0	13	0	0	0	0	0	0	0	0	0	0	0	40.6	45.8
1300	135	112	1	20	0	0	0	0	0	0	0	0	0	2	0	40.3	47.7
1400	101	85	0	15	1	0	0	0	0	0	0	0	0	0	0	41.1	46.9
1500	130	101	2	24	1	0	0	0	0	0	0	0	0	1	1	40.8	46.3
1600	121	99	0	20	0	0	0	0	0	0	0	0	0	2	0	41.4	47.2
1700	108	98	0	10	0	0	0	0	0	0	0	0	0	0	0	43.4	50.2
1800	87	83	0	3	0	0	0	0	0	0	0	0	0	1	0	42.9	50.5
1900	52	48	0	4	0	0	0	0	0	0	0	0	0	0	0	43.6	51
2000	54	52	0	2	0	0	0	0	0	0	0	0	0	0	0	44.6	52.4
2100	20	19	0	1	0	0	0	0	0	0	0	0	0	0	0	43.1	47.5
2200	12	10	0	2	0	0	0	0	0	0	0	0	0	0	0	48.3	60.2
2300	6	5	0	1	0	0	0	0	0	0	0	0	0	0	0	48.1	-
07-19	1444	1216	4	206	4	1	0	2	0	0	0	0	0	10	1	41.3	47.4
06-22	1649	1401	4	225	4	1	0	3	0	0	0	0	0	10	1	41.8	48
06-00	1667	1416	4	228	4	1	0	3	0	0	0	0	0	10	1	41.8	48
00-00	1729	1471	4	235	4	1	0	3	0	0	0	0	0	10	1	42.1	48.4

22 March 2024

Time [--	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Cls 14	Cls 15	Mean	Vpp 85
0000	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	46.4	-
0100	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	47.2	-
0200	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	45.1	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
0400	12	11	0	1	0	0	0	0	0	0	0	0	0	0	0	42.7	48.2
0500	36	33	0	3	0	0	0	0	0	0	0	0	0	0	0	47.7	54.4
0600	66	55	0	10	0	0	0	0	0	0	0	0	0	0	1	46.1	52.8
0700	119	94	0	24	0	0	0	1	0	0	0	0	0	0	0	44.7	51.9
0800	156	125	0	30	1	0	0	0	0	0	0	0	0	0	0	40.9	45.5
0900	121	102	0	19	0	0	0	0	0	0	0	0	0	0	0	39.7	44.8
1000	133	117	0	15	0	0	0	1	0	0	0	0	0	0	0	39.4	43.5
1100	131	108	0	21	0	0	0	2	0	0	0	0	0	0	0	38.9	45
1200	120	104	0	14	1	0	0	1	0	0	0	0	0	0	0	40.7	46.2
1300	104	95	0	8	0	0	0	1	0	0	0	0	0	0	0	42.6	47.6
1400	115	90	0	23	0	0	0	0	0	0	0	0	0	2	0	41	45.3
1500	155	121	2	29	0	0	0	1	0	0	0	0	0	1	1	39.9	46.1
1600	115	105	0	8	0	0	0	1	0	0	0	0	0	1	0	42.4	48.3
1700	110	102	0	8	0	0	0	0	0	0	0	0	0	0	0	43.4	52
1800	104	98	0	4	0	0	0	0	0	0	0	0	0	2	0	40.7	46
1900	77	71	0	4	0	0	0	0	0	0	0	0	0	2	0	43.4	50
2000	29	26	0	3	0	0	0	0	0	0	0	0	0	0	0	45.1	51.1
2100	23	20	0	3	0	0	0	0	0	0	0	0	0	0	0	44.9	56.2
2200	20	19	0	1	0	0	0	0	0	0	0	0	0	0	0	43.5	48.4
2300	7	6	0	1	0	0	0	0	0	0	0	0	0	0	0	49.8	-
07-19	1483	1261	2	203	2	0	0	8	0	0	0	0	0	6	1	41.1	46.6
06-22	1678	1433	2	223	2	0	0	8	0	0	0	0	0	8	2	41.5	47.5
06-00	1705	1458	2	225	2	0	0	8	0	0	0	0	0	8	2	41.6	47.6
00-00	1759	1507	2	230	2	0	0	8	0	0	0	0	0	8	2	41.7	47.9



SITE: Pencaerlan Solar A4109, Wales

LOCATION: Attached to tree

GRID REFERENCE: 51.748444, -3.734691

DIRECTION: SOUTHBOUND SPEED LIMIT: NSL

16 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	8	0	0	0	0	0	3	2	1	0	0	1	1	0	0	0	51.1	-
0100	4	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	44.6	-
0200	5	0	0	0	0	0	2	0	0	1	2	0	0	0	0	0	52.3	-
0300	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	39.4	-
0400	4	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	39.1	-
0500	18	0	0	0	0	1	0	6	8	2	0	0	1	0	0	0	51.6	57.5
0600	22	0	0	0	0	1	6	2	9	2	2	0	0	0	0	0	50.1	59.3
0700	38	0	0	0	0	2	8	12	13	2	1	0	0	0	0	0	47.9	53.8
0800	73	0	0	0	2	0	23	19	14	7	5	2	0	1	0	0	48.5	59.2
0900	93	0	0	2	2	8	24	30	21	5	1	0	0	0	0	0	45.3	52.5
1000	95	0	0	0	3	4	30	32	20	5	1	0	0	0	0	0	45.6	52.7
1100	112	0	1	1	2	8	45	30	19	5	1	0	0	0	0	0	44.1	51.1
1200	106	0	0	0	0	11	40	28	18	3	3	2	0	1	0	0	45.5	51.3
1300	107	0	0	0	1	13	31	33	17	9	3	0	0	0	0	0	45.8	53.6
1400	67	0	0	0	1	10	18	20	14	2	0	1	0	1	0	0	45.8	52
1500	53	0	0	0	0	6	16	15	10	1	5	0	0	0	0	0	46	53.3
1600	58	0	0	0	0	3	12	21	18	3	1	0	0	0	0	0	47.1	52.9
1700	61	0	0	0	1	0	17	17	21	4	1	0	0	0	0	0	48	53.1
1800	51	0	0	0	1	4	15	19	6	5	1	0	0	0	0	0	46.1	52.4
1900	50	0	0	0	1	3	15	11	13	3	2	1	0	1	0	0	48.1	55.3
2000	36	0	0	0	0	1	7	12	10	4	0	2	0	0	0	0	49.9	59.9
2100	23	0	0	0	0	0	7	6	5	3	1	1	0	0	0	0	49.7	60.3
2200	12	0	0	0	1	1	4	2	2	2	0	0	0	0	0	0	45	56.5
2300	7	0	0	0	0	1	1	3	1	1	0	0	0	0	0	0	46.8	-
07-19	914	0	1	3	13	69	279	276	191	51	23	5	0	3	0	0	46	53
06-22	1045	0	1	3	14	74	314	307	228	63	28	9	0	4	0	0	46.4	53.4
06-00	1064	0	1	3	15	76	319	312	231	66	28	9	0	4	0	0	46.4	53.4
00-00	1104	0	1	3	16	78	327	323	241	69	30	10	2	4	0	0	46.5	53.6

17 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	4	0	0	0	0	1	0	1	0	1	1	0	0	0	0	0	50.4	-
0100	4	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	53.7	-
0200	2	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	38.4	-
0300	3	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	61.1	-
0400	4	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	46.7	-
0500	8	0	0	0	0	1	1	1	4	0	1	0	0	0	0	0	49.1	-
0600	16	0	0	0	0	0	5	6	3	2	0	0	0	0	0	0	48.4	55.8
0700	22	0	0	0	0	0	4	10	4	2	1	1	0	0	0	0	50	59.1
0800	20	0	0	0	1	1	3	7	4	1	3	0	0	0	0	0	48.6	63.3
0900	64	0	0	1	0	3	18	22	10	7	1	2	0	0	0	0	47.3	58
1000	72	0	0	0	0	6	19	26	12	6	3	0	0	0	0	0	46.8	55.5
1100	89	1	0	0	1	3	37	27	13	4	2	1	0	0	0	0	45.4	52.8
1200	99	0	0	0	1	8	40	32	11	1	4	2	0	0	0	0	44.9	50.6
1300	89	0	0	0	0	9	27	25	20	7	1	0	0	0	0	0	45.8	52.5
1400	79	0	0	0	0	7	23	31	10	5	2	1	0	0	0	0	45.7	53.6
1500	94	0	0	0	2	11	38	25	12	4	2	0	0	0	0	0	43.9	50.7
1600	80	0	0	0	2	11	27	26	9	4	1	0	0	0	0	0	44.1	51.8
1700	57	0	0	0	1	3	14	17	15	3	3	0	1	0	0	0	47.5	54.4
1800	56	0	0	1	0	10	16	19	6	2	1	1	0	0	0	0	44.1	51.9

1500	129	0	0	0	1	33	57	32	5	1	0	0	0	0	0	0	40.8	45.6
1600	122	0	0	0	3	16	60	29	12	1	1	0	0	0	0	0	42.4	48.7
1700	102	0	0	0	2	17	40	23	12	5	2	0	0	1	0	0	43.6	51.4
1800	60	0	0	0	0	6	28	18	6	2	0	0	0	0	0	0	43.2	49.6
1900	54	0	0	0	0	5	19	22	5	2	1	0	0	0	0	0	44.4	49.7
2000	48	0	0	0	0	5	24	9	8	1	1	0	0	0	0	0	44.1	50.6
2100	18	0	0	0	1	1	7	6	2	1	0	0	0	0	0	0	43	49.9
2200	10	0	0	0	0	2	3	2	2	0	0	0	0	0	0	1	48.5	-
2300	4	0	0	0	0	0	2	1	0	0	0	1	0	0	0	0	49.4	-
07-19	1321	0	0	2	30	240	532	329	142	32	12	1	0	1	0	0	42.5	49.4
06-22	1518	0	0	2	32	257	602	382	181	43	17	1	0	1	0	0	42.9	50
06-00	1532	0	0	2	32	259	607	385	183	43	17	2	0	1	0	1	43	50
00-00	1592	0	0	2	34	261	620	405	197	52	17	2	0	1	0	1	43.1	50.2

20 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	41.8	-
0100	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	42.5	-
0200	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	44.3	-
0300	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	49.8	-
0400	9	0	0	0	0	0	2	4	1	2	0	0	0	0	0	0	47.4	-
0500	44	0	0	0	0	3	14	14	7	3	2	1	0	0	0	0	46.7	55.9
0600	76	0	0	0	1	4	21	24	20	6	0	0	0	0	0	0	46.6	53.7
0700	130	0	0	0	0	11	48	50	12	7	0	2	0	0	0	0	45	50
0800	178	0	0	0	2	39	82	39	11	2	1	2	0	0	0	0	41.7	48.2
0900	125	0	0	0	4	22	57	32	6	4	0	0	0	0	0	0	41.8	47.6
1000	99	0	0	0	2	25	46	16	7	3	0	0	0	0	0	0	40.6	48.7
1100	97	0	0	1	0	17	40	29	6	3	1	0	0	0	0	0	42.6	48.8
1200	106	0	0	0	0	21	58	17	7	1	2	0	0	0	0	0	41.8	47.2
1300	85	0	0	0	0	29	32	17	6	0	0	0	0	1	0	0	40.7	47
1400	101	0	0	0	3	15	57	22	2	1	0	1	0	0	0	0	41.3	45.8
1500	126	0	0	0	5	36	52	27	4	1	1	0	0	0	0	0	40.1	46.2
1600	122	0	0	0	0	23	66	22	7	3	0	1	0	0	0	0	41.9	46.6
1700	92	0	0	1	1	15	37	28	8	0	2	0	0	0	0	0	42.7	48.1
1800	97	0	0	0	1	12	37	34	8	2	1	2	0	0	0	0	43.8	49.4
1900	68	0	0	0	0	5	26	24	10	2	0	1	0	0	0	0	44.9	50.4
2000	30	0	0	0	0	4	14	8	2	2	0	0	0	0	0	0	43	50.5
2100	25	0	0	0	0	1	6	8	8	1	1	0	0	0	0	0	48.3	55.1
2200	9	0	0	0	0	0	3	4	1	0	1	0	0	0	0	0	46.7	-
2300	5	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	49.2	-
07-19	1358	0	0	2	18	265	612	333	84	27	8	8	0	1	0	0	42	48
06-22	1557	0	0	2	19	279	679	397	124	38	9	9	0	1	0	0	42.5	48.6
06-00	1571	0	0	2	19	279	682	403	128	38	10	9	0	1	0	0	42.5	48.7
00-00	1629	0	0	2	19	282	700	423	137	43	12	10	0	1	0	0	42.7	48.8

21 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	44.4	-
0100	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	56.4	-
0200	3	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	47.6	-
0300	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	37.4	-
0400	10	0	0	0	0	1	4	3	0	1	0	0	1	0	0	0	47.3	-
0500	43	0	0	0	0	1	7	18	9	7	1	0	0	0	0	0	49	56.6
0600	79	0	0	0	0	4	21	33	14	7	0	0	0	0	0	0	46.4	52.6
0700	125	0	0	0	1	11	57	36	11	8	1	0	0	0	0	0	44	50
0800	178	0	0	0	0	54	71	42	8	3	0	0	0	0	0	0	40.8	46.1
0900	113	0	0	0	1	21	54	26	6	5	0	0	0	0	0	0	41.8	47.1
1000	111	0	0	1	4	20	55	22	7	1	1	0	0	0	0	0	40.9	46.8

1100	122	0	0	2	9	36	50	17	7	0	1	0	0	0	0	0	38.9	44.9
1200	113	0	0	0	3	29	52	25	2	1	0	1	0	0	0	0	40.6	45.8
1300	135	0	0	0	6	46	44	28	8	0	2	1	0	0	0	0	40.3	47.7
1400	101	0	0	0	5	20	43	26	6	1	0	0	0	0	0	0	41.1	46.9
1500	130	0	0	2	8	17	68	26	6	3	0	0	0	0	0	0	40.8	46.3
1600	121	0	0	1	2	20	62	29	4	2	1	0	0	0	0	0	41.4	47.2
1700	108	0	0	0	2	22	35	31	11	5	1	0	0	1	0	0	43.4	50.2
1800	87	0	0	0	4	13	35	19	13	1	0	1	1	0	0	0	42.9	50.5
1900	52	0	0	0	0	8	17	17	7	3	0	0	0	0	0	0	43.6	51
2000	54	0	0	0	1	3	27	12	4	6	0	1	0	0	0	0	44.6	52.4
2100	20	0	0	0	0	1	10	9	0	0	0	0	0	0	0	0	43.1	47.5
2200	12	0	0	0	0	1	2	5	2	1	1	0	0	0	0	0	48.3	60.2
2300	6	0	0	0	0	0	4	0	1	0	0	0	1	0	0	0	48.1	-
07-19	1444	0	0	6	45	309	626	327	89	30	7	3	1	1	0	0	41.3	47.4
06-22	1649	0	0	6	46	325	701	398	114	46	7	4	1	1	0	0	41.8	48
06-00	1667	0	0	6	46	326	707	403	117	47	8	4	2	1	0	0	41.8	48
00-00	1729	0	0	6	47	328	719	428	128	55	10	4	3	1	0	0	42.1	48.4

22 March 2024

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
0000	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	46.4	-
0100	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	47.2	-
0200	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	45.1	-
0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
0400	12	0	0	0	0	1	7	3	1	0	0	0	0	0	0	0	42.7	48.2
0500	36	0	0	0	0	3	6	15	10	1	1	0	0	0	0	0	47.7	54.4
0600	66	0	0	0	2	3	17	26	13	4	1	0	0	0	0	0	46.1	52.8
0700	119	0	0	0	0	8	52	36	12	7	4	0	0	0	0	0	44.7	51.9
0800	156	0	0	0	6	21	92	27	10	0	0	0	0	0	0	0	40.9	45.5
0900	121	0	0	0	3	36	56	20	6	0	0	0	0	0	0	0	39.7	44.8
1000	133	0	0	0	2	42	68	19	2	0	0	0	0	0	0	0	39.4	43.5
1100	131	0	0	0	8	48	51	16	6	2	0	0	0	0	0	0	38.9	45
1200	120	0	0	1	1	41	45	19	7	6	0	0	0	0	0	0	40.7	46.2
1300	104	0	0	0	1	11	58	23	5	4	1	0	1	0	0	0	42.6	47.6
1400	115	0	0	0	5	22	62	20	3	2	0	0	0	0	0	1	41	45.3
1500	155	0	0	2	5	51	55	34	8	0	0	0	0	0	0	0	39.9	46.1
1600	115	0	0	1	1	15	57	28	10	1	1	1	0	0	0	0	42.4	48.3
1700	110	0	0	0	1	18	51	19	15	4	2	0	0	0	0	0	43.4	52
1800	104	0	0	1	2	22	54	19	5	0	1	0	0	0	0	0	40.7	46
1900	77	0	0	0	3	10	30	21	10	2	1	0	0	0	0	0	43.4	50
2000	29	0	0	0	0	2	13	7	5	2	0	0	0	0	0	0	45.1	51.1
2100	23	0	0	1	1	2	7	4	5	3	0	0	0	0	0	0	44.9	56.2
2200	20	0	0	0	1	3	6	8	0	2	0	0	0	0	0	0	43.5	48.4
2300	7	0	0	0	0	1	0	2	3	1	0	0	0	0	0	0	49.8	-
07-19	1483	0	0	5	35	335	701	280	89	26	9	1	1	0	0	1	41.1	46.6
06-22	1678	0	0	6	41	352	768	338	122	37	11	1	1	0	0	1	41.5	47.5
06-00	1705	0	0	6	42	356	774	348	125	40	11	1	1	0	0	1	41.6	47.6
00-00	1759	0	0	6	42	360	788	370	137	41	12	1	1	0	0	1	41.7	47.9

Grand Total

Time [--	Total	Vbin 6 12	Vbin 12 19	Vbin 19 25	Vbin 25 31	Vbin 31 37	Vbin 37 43	Vbin 43 50	Vbin 50 56	Vbin 56 62	Vbin 62 68	Vbin 68 75	Vbin 75 81	Vbin 81 87	Vbin 87 93	Vbin 93 99	Mean	Vpp 85
--	10342	3	1	24	184	1556	4020	2740	1231	391	127	44	10	9	0	2	43.5	50.6



SITE: Pencaerlan Solar A4109, Wales

LOCATION: Attached to tree

GRID REFERENCE: 51.748444, -3.734691

DIRECTION: SOUTHBOUND

SPEED LIMIT: NSL

	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Averages	
	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	1-5.	1-7.
Hour									
0000-0100	8	4	1	3	1	2	3	2	3.1
0100-0200	4	4	2	3	2	2	2	2.2	2.7
0200-0300	5	2	0	2	1	3	1	1.4	2
0300-0400	1	3	1	2	1	2	0	1.2	1.4
0400-0500	4	4	12	9	9	10	12	10.4	8.6
0500-0600	18	8	35	41	44	43	36	39.8	32.1
0600-0700	22	16	80	77	76	79	66	75.6	59.4
0700-0800	38	22	134	147	130	125	119	131	102.1
0800-0900	73	20	189	163	178	178	156	172.8	136.7
0900-1000	93	64	111	115	125	113	121	117	106
1000-1100	95	72	103	89	99	111	133	107	100.3
1100-1200	112	89	103	107	97	122	131	112	108.7
1200-1300	106	99	110	98	106	113	120	109.4	107.4
1300-1400	107	89	79	101	85	135	104	100.8	100
1400-1500	67	79	87	88	101	101	115	98.4	91.1
1500-1600	53	94	137	129	126	130	155	135.4	117.7
1600-1700	58	80	94	122	122	121	115	114.8	101.7
1700-1800	61	57	97	102	92	108	110	101.8	89.6
1800-1900	51	56	73	60	97	87	104	84.2	75.4
1900-2000	50	54	52	54	68	52	77	60.6	58.1
2000-2100	36	36	20	48	30	54	29	36.2	36.1
2100-2200	23	17	20	18	25	20	23	21.2	20.9
2200-2300	12	8	6	10	9	12	20	11.4	11
2300-2400	7	4	2	4	5	6	7	4.8	5
Totals									
0700-1900	914	821	1317	1321	1358	1444	1483	1384.6	1236.9
0600-2200	1045	944	1489	1518	1557	1649	1678	1578.2	1411.4
0600-0000	1064	956	1497	1532	1571	1667	1705	1594.4	1427.4
0000-0000	1104	981	1548	1592	1629	1729	1759	1651.4	1477.4
AM Peak	1100	1100	800	800	800	800	800		
	112	89	189	163	178	178	156		
PM Peak	1300	1200	1500	1500	1500	1300	1500		
	107	99	137	129	126	135	155		

Appendix C

Site Layout Drawings

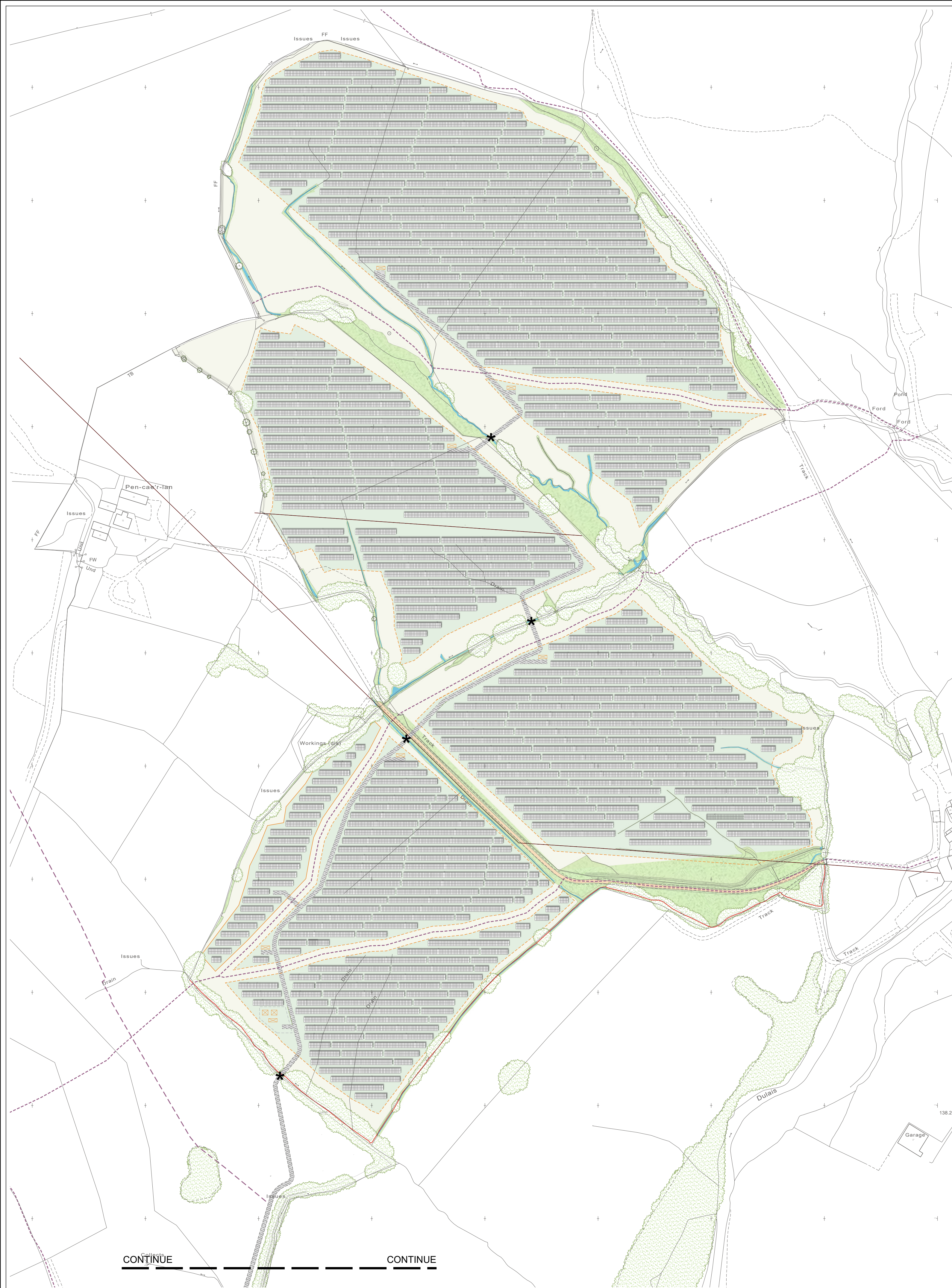
Transport Statement

Solar Farm, Pen Caer Lan Farm, Neath

Greentech Invest UK (8) Ltd

SLR Project No.: 425.002241.00001

30 April 2025



This drawing is copyright of Lighthouse Development Consulting based upon the Ordnance Survey Map with the sanction of the Controller General Copyright Reserved O.S. LICENCE No 010001873. The plan is of Her Majesty's Stationary Office.

Legend:

- Existing Vegetation Retained
- Overhead Power Lines
- Existing PRoW
- Existing Improved Grassland
- Existing Rough Grassland
- Existing Access Track
- Proposed Solar Panels
- Proposed Internal Access Track
- Proposed Perimeter Security Fence
- Proposed Sub-Station
- Proposed Temporary Bridge Crossing over watercourse
- Proposed Improved Grassland and Species Rich Grass Seed Mix (under arrays)
- Proposed Inverter Cabinets

Note:

Unless identified differently within the drawing, the proposed off-set distances have been applied:

- 5m between existing hedgerows and proposed fencelines or solar arrays;
- 5m between proposed fencelines and solar arrays;
- 5m between field drains and fencelines / solar arrays;
- 10m between main water courses (upper edge of embankment) and fencelines or solar arrays; and
- 10m between existing woodland and any element of the proposed development, noting distance is taken from base of identified feature and not the plotted canopy overhang.

Do not scale from this drawing unless for Planning purposes. Illustrated dimensions only are to be used.

All dimensions must be checked on site by the contractor prior to the commencement of any building works.

Where applicable, dimensions and details are to be read in conjunction with specialist consultant drawings or available information, with any discrepancy between drawings brought to the attention of the project managers prior to the commencement of any fabrication or building works.

0m 40m 100m
1:2000

N

Rev.	Date	Notes	By
-	01/09/2024	FIRST ISSUE - Draft v0.1	ICS
-	16/10/2024	FIRST ISSUE - Draft v0.2	ICS
-	19/10/2024	FIRST ISSUE - Draft v0.3	ICS
-	31/10/2024	FIRST ISSUE - Draft v0.4	ICS
-	31/10/2024	FIRST ISSUE - Draft v0.4	ICS

Pencaerlan Solar Project

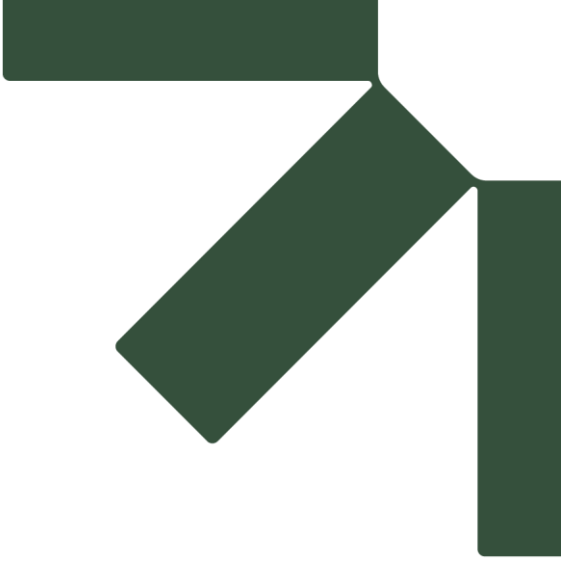
lighthouse
DEVELOPMENT CONSULTING

Site: <https://www.lighthouse-dc.co.uk/>

Drawing Title: **Pencaerlan**

Drawing No or Client Ref		Revision	Scale
Site Block Plan - Proposed		Draft v0.5	1:2,000 @ A1

Figure 2	App By	Date	CAD Ref
Figure 2	ICS	01.09.24	14123-01-0002 - Draft v0.5 - Fig 2 Site Block Plan



Appendix D SLR Drawings

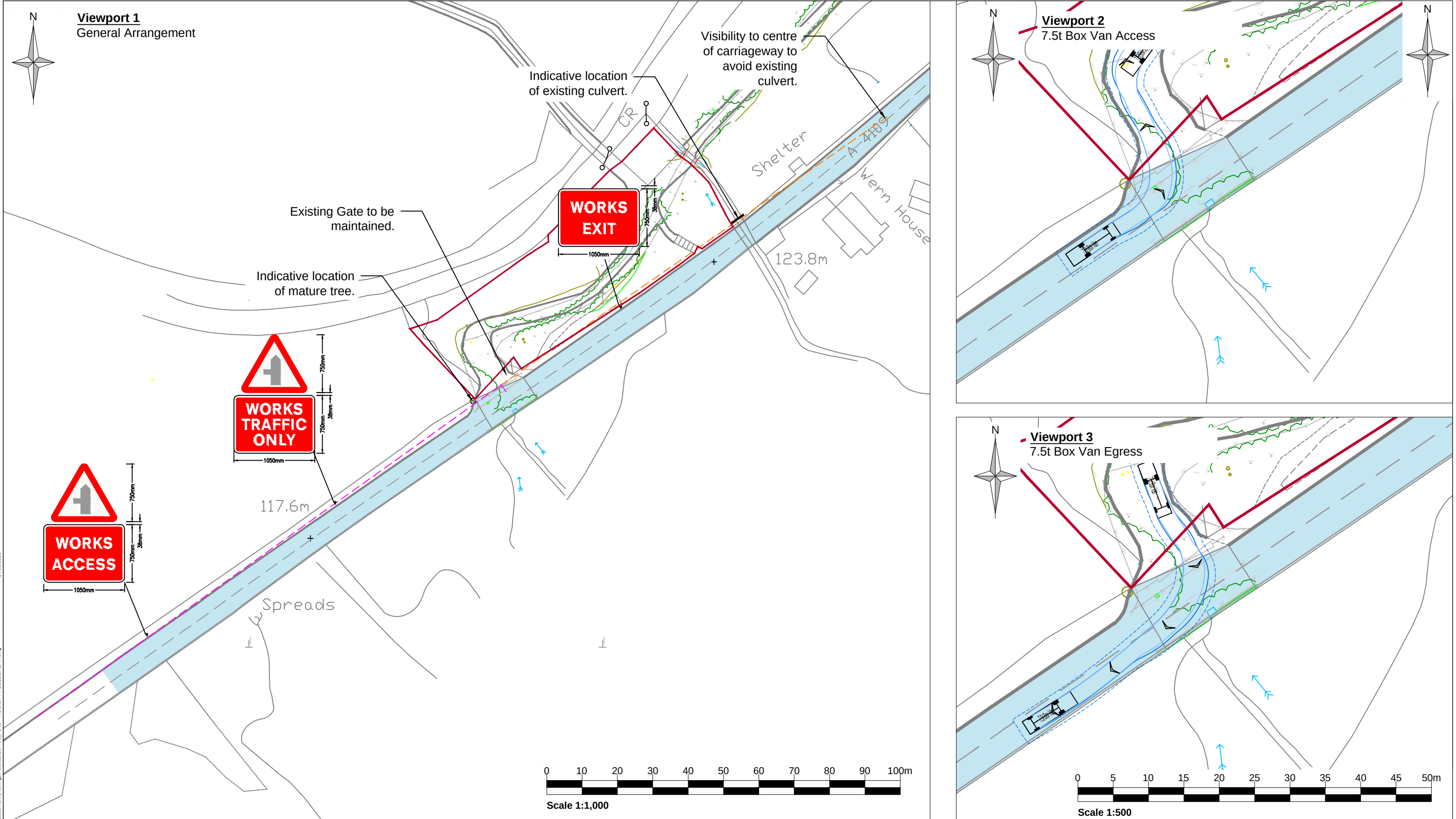
Transport Statement

Solar Farm, Pen Caer Lan Farm, Neath

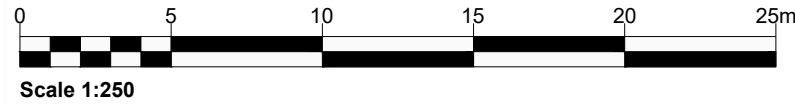
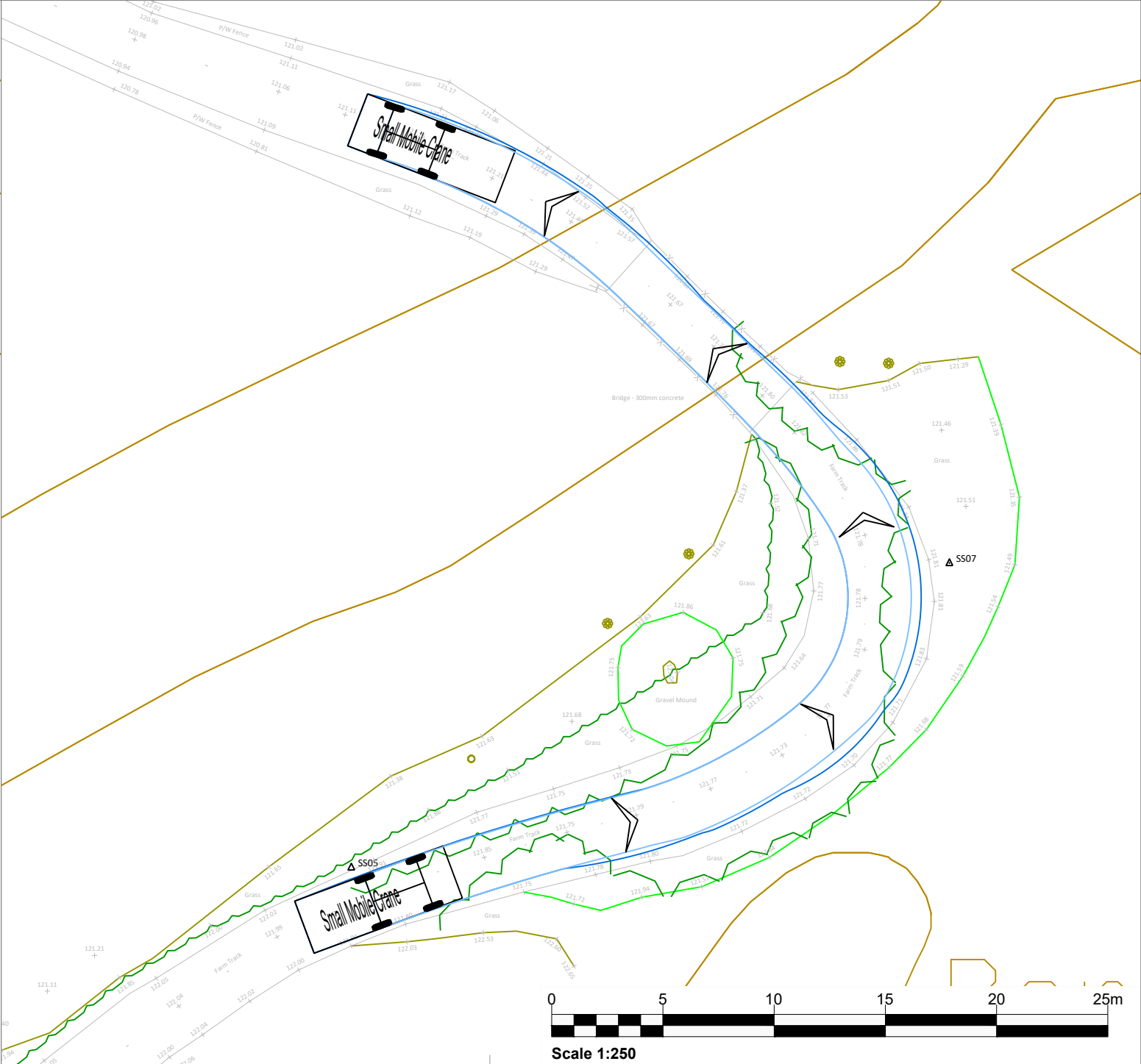
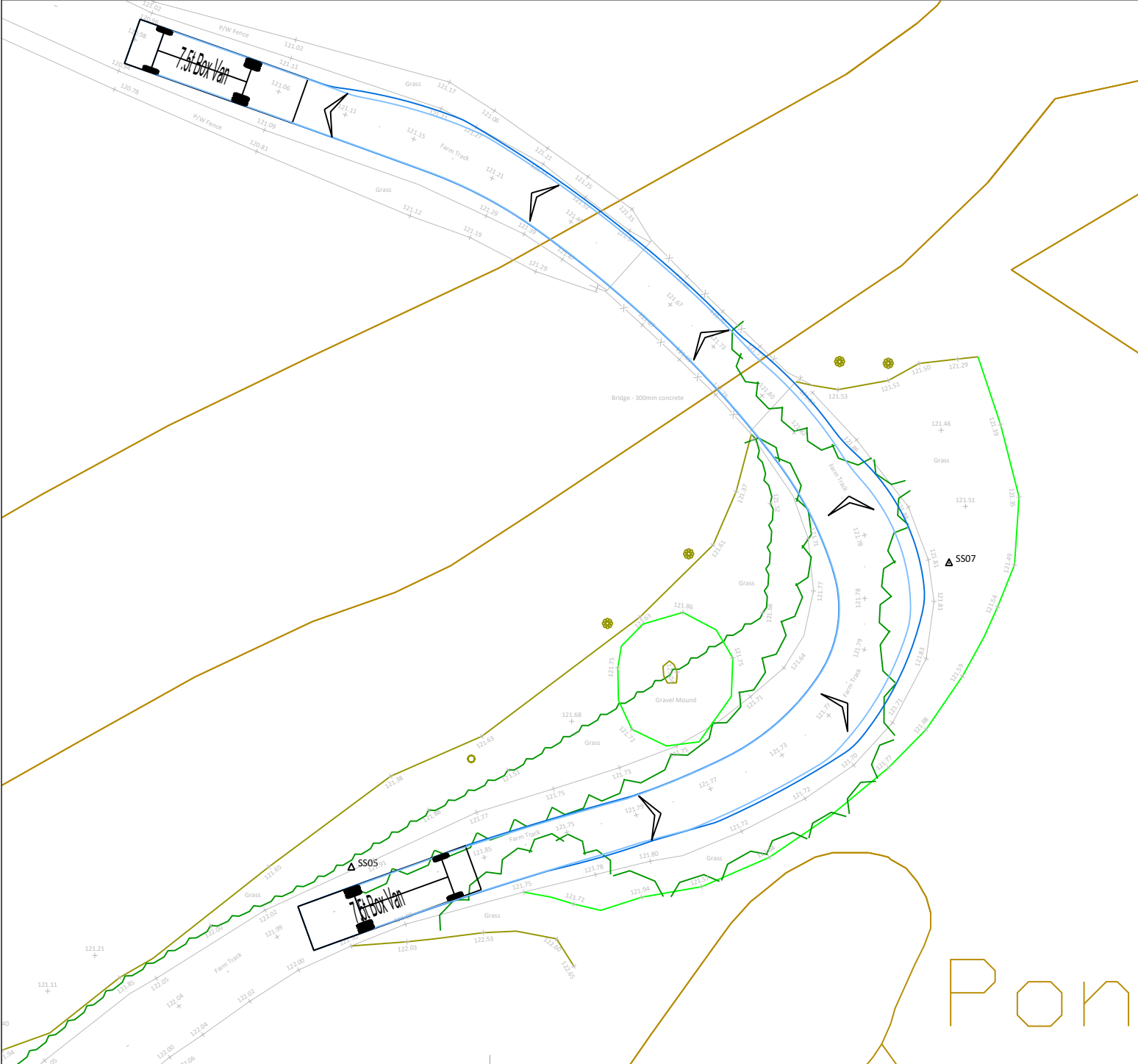
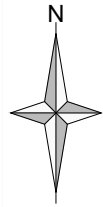
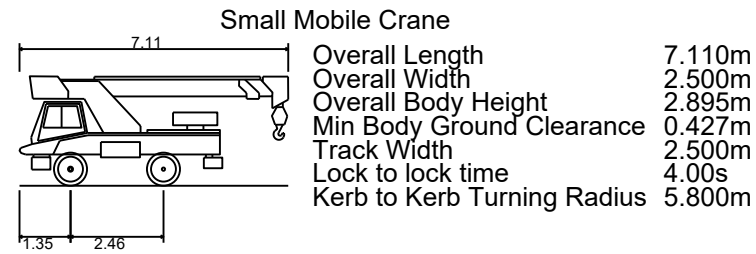
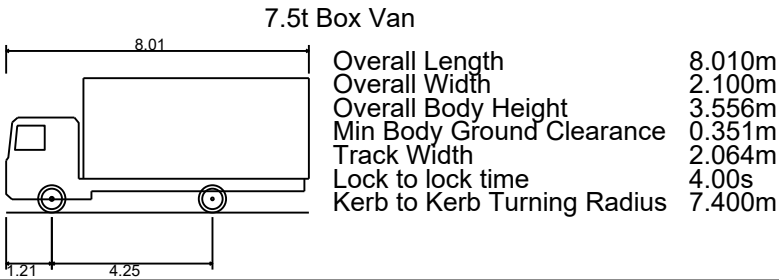
Greentech Invest UK (8) Ltd

SLR Project No.: 425.002241.00001

30 April 2025



 www.slrconsulting.com				Client																				Notes: 1.								Legend: 2.4m x 160m VISIBILITY SPLAY 2.4m x 130m MAX VISIBILITY SPLAY REDLINE BOUNDARY ADOPTED HIGHWAY EXTENTS 7.5t Box Van 8.01 8.01 8.01 8.01 8.01 8.01 8.01 8							
---	--	--	--	--------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---------------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



www.slrconsulting.com

Drawing Status & Suitability Code
DRAFT

Designed KR	Drawn KR	Checked EW	Authorised EW
Date 06.09.24	Date 06.09.24	Date 06.09.24	Date 06.09.24
Drawing Number AT_C01		Rev.	

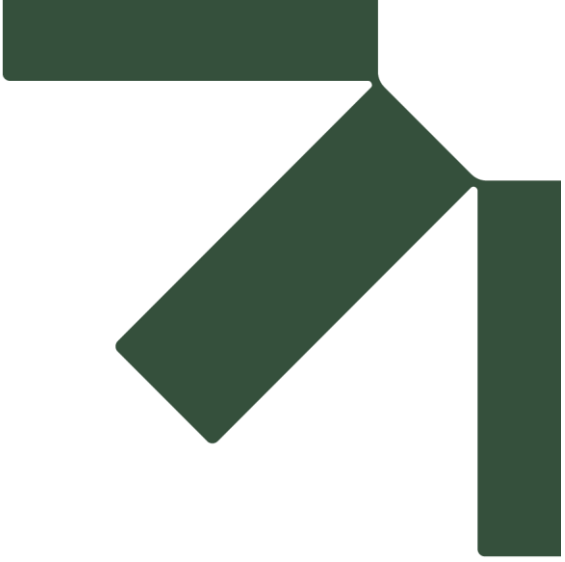
Client Greentech Invest UK (8) Ltd
Project Solar Farm, Seven Sisters, Neath
Drawing Title Swept Path Analysis Existing River Dulais Bridge Small Mobile Crane and 7.5t Box Van
Scale 1:250 @ A3
SLR Project No. 237790

Rev	Amendments	Date	By	Chk	Auth
-----	------------	------	----	-----	------

Rev	Amendments	Date	By	Chk	Auth
-----	------------	------	----	-----	------

Notes:
1.

Legend:



Appendix E Bridge Structural Condition Report

Transport Statement

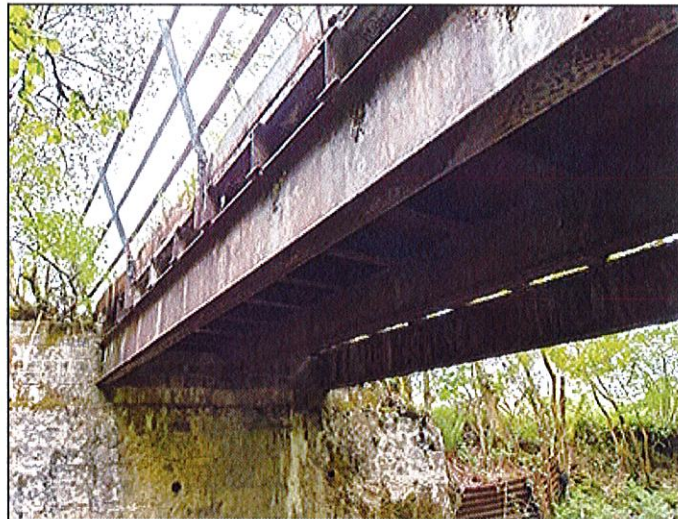
Solar Farm, Pen Caer Lan Farm, Neath

Greentech Invest UK (8) Ltd

SLR Project No.: 425.002241.00001

30 April 2025

REPORT
ON
STRUCTURAL CONDITION
OF
FARM ACCESS BRIDGE
AT
YNYS FFORCH FAWR LANE
SEVEN SISTERS
NEATH PORT TALBOT
SA10 9HB



June 2023

*G P Haden and Associates, Engineers and Surveyors,
The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD*

1
REPORT
ON
STRUCTURAL CONDITION
OF
FARM ACCESS BRIDGE
AT
YNYS FFORCH FAWR LANE
SEVEN SISTERS
NEATH PORT TALBOT
SA10 9HB

July 2023

CONTENTS

1.0	INSTRUCTIONS	2
2.0	BACKGROUND	5
3.0	INSPECTION AND COMMENTS	6
4.0	EXTERNAL FACTORS	8
5.0	INTERPRETATIONS	9
6.0	CONCLUSIONS AND RECOMMENDATIONS	11
	APPENDIX	
	Photographs	

1.0 INSTRUCTIONS

- 1.1 Instructions** My instructions have been received from Yaw Ofori of *greentech energy*. I am requested to consider the condition of the bridge which gives access to Ynys Fforch Fawr Farm over the Dulais river and in particular.

To assess the feasibility of the bridge on its suitability for crossing with delivery vehicles up to 32 tonne HGVs (as specified by DNOs) for construction transportation for a solar park. The feasibility to cover:

- i) the assessment of the viability of using the bridge in its current form to accommodate delivery vehicles*
- ii) what measures are needed to be added to strengthen it in order to accommodate delivery vehicles plus cost to implement*

I carried out a site visit on 19th May 2013 in the company of Yaw Ofori and Jimmy Offley from *greentech energy* and the landowners Phil and Owen Williams when it was cloudy with sunny intervals and an air temperature of 14degC. The river level was probably at its normal flow level.

This report has been prepared for the sole use *greentech energy* in connection with the proposed works and may not be used for any other purpose without the express permission of the author.

- 1.1 Scope of the Works** The scope of works covered by this report is as follows:

- 1.1.1** Documentary research
- 1.1.2** Review site history and surrounding topography
- 1.1.3** Initial site investigation
- 1.1.4** Assess the structural integrity of the crossing
- 1.1.5** Provide a report of the findings

- 1.2 Limitations** The report provides an assessment of the potential status of the structure and the ground below the site based on the available information.

I have obtained, reviewed and evaluated information in preparing this report from the available and appropriate sources. My conclusions, opinions and recommendations are based on this information and the information obtained during the investigation. I do not warrant the accuracy of the information.

This report has been prepared for the use of *greentech energy* in connection with the condition of the crossing and may not be used for any other purpose without the express permission of the author.

The report is intended to indicate any possible structural defects and should not be considered as a Schedule of Works or to be relied on as a comprehensive list of defects in the crossing.

1.2 Qualifications of Author Geoffrey Peter Haden is a Chartered Civil Engineer who graduated from University College of Swansea in 1965 with a BSc (Hons) Wales degree.

In 1970 I was awarded an MSc by the University of Wales. My specialised research at the Department of Civil Engineering at the University College of Swansea was in Foundation Engineering where I developed design methods for the Vibroflotation method of increasing the bearing capacity of weak soils. This technique is now used extensively throughout the world.

I am a member of the Institution of Civil Engineers and the Chartered Institution of Highways and Transportation.

I have been in practice on my own account, trading under the title G P Haden and Associates, since 1973. My experience covers engineering and building projects of various sizes including the design of the River Tawe Flood Prevention Scheme, supervision of the Pontamman Road Improvement Scheme, new build housing and industrial developments and the renovation and alteration of existing buildings including those that may be listed or of historic interest.

I have acted as an expert and joint witness in a number of building disputes involving boundaries and subsidence claims. During this time I have been involved

in investigation and remedial works to a considerable number of properties and structures which have suffered subsidence and other damage using a variety of traditional and piled solutions.

2.0 BACKGROUND

- 2.1 Current Site Use and Surrounding Area** The bridge is a composite bridge with a reinforced concrete deck cast on top of a grillage of steel beams which are in turn carried by three steel beams spanning across the river with a span of about 8.5m and a width of 2.3m. The access to the bridge is a lane off the A4109.

The bridge is built on abutments of local stone which are built off foundations of concrete which are founded on rock ledges above the minimum water level.

The bridge serves Ynys Fforch Fawr Farm and its outbuildings which are situated approximately 200m inland from the north bank of the Dulais river. The river at this point drains the upper reaches of the Dulais valley and, with all rivers of this stage in their development, is 'flashy' and subject to abrupt rise and fall in river levels

- 2.2 Geology** The 1:50,000 scale British Geological Survey (BGS) plan 231 Merthyr show the underlying rock as Sandstone of the Carboniferous series of the South Wales Coal Measures which have a shallow dip to the south. This is overlain with superficial deposits of glacial till (boulder clay). The Coal Authority Interactive Map shows a number of coal seam outcrops running from south west to north east in and around the site which is classified as a Development High Risk Area. However there is no underground or shallow mine workings indicated. Any mining would have ceased some time ago and movement associated with mine workings would have also ceased. A mining report from the Coal Authority would confirm that this is the case.

3.0 INSPECTION AND COMMENTS

This report sets out to comment on the form of construction and the structural integrity of the structure. The inspection has been a visual one aimed at assessing the extent of the particular problems highlighted. I have not inspected parts of the structure which are covered, unexposed or inaccessible and I am, therefore, unable to report that any such part of the structure is free from defect. This survey concentrates on the defects that are causing concern and the description of the various elements is made on that basis.

3.1 Bridge Beams and Deck The span of the bridge is approximately 8.5m and the width 2.3m

3.1.1 Concrete Deck The concrete deck is approximately 100mm thick and is monolithic with no expansion joints apparent. There are no apparent cracks or evidence of structural movement. It was not possible to ascertain the reinforcement steel present as none was exposed. There was no visible corrosion of the steel and no evidence of any previous repairs having been made to the deck. Photo One

3.1.2 Support Beams The concrete deck is carried on 254mm x 146mm x 31kg Universal Beams (UB) laid across the deck at approximately 800mm centres. These in turn are supported on three steel beams spanning to the abutments. The outer beams are 601mm x 178 x 82kg UB while the central beam is 406 x 140 x 39kg UB. Photo Three

Generally the steel is in good condition with only surface rust. However, the central main beam shows corrosion to an extent which will prevent it being capable of carrying its full load. Photo Four

3.2 Abutments The abutments are constructed of random rubble stone. The full extent of the construction is not apparent but it would appear that they may have been constructed to carry an earlier wider bridge. The main face of each abutment is in sound condition and does not show any signs of movement. There does not appear to be any significant scouring at the base of the abutments which might affect the stability. Photo Two

3.3 Access The access to the bridge from the north is a straight stoned track from the farm and outbuildings. The access from the south is more tortuous with a right hand bend just after the turn off from the A4107. There is then a 100m straight before a 90deg left hand bend just before the bridge. A swept path analysis has been carried out previously for the first bend but not for the one near to the bridge.

4.0 EXTERNAL FACTORS

The property lies within an area which formed part of the South Wales Coal Field as indicated in 2.1 above. We are not aware of any quarrying operations in the immediate vicinity of the property which would affect the structure.

We are not aware of any road schemes or other factors which might increase the volume and size of traffic which may affect the foundations of the structure.

5.0 INTERPRETATIONS

5.1 Bridge Beams and Deck Apart from the central main beam the steel and concrete is in good condition. Without being able to see the original design calculations the only way to assess the load bearing capacity of the structure is to carry out calculations. The calculations given in the Appendix considered each element of the structure independently based on a maximum load of 32 tonnes. This is higher than the load from a fire appliance at 11.5 tonnes but less than the loads from BS5400 which is the British Standard for bridges in the UK. The width of the bridge is around 2.30m. the maximum width of lorries in the UK is 2.55m but the width from outside tyre to outside tyre will be less. The condition can be summarised as follows:

5.1.1 Bridge Deck Provided that the minimum reinforcement is in place the concrete deck will carry to required loads

5.1.2 Deck Support Beams The calculations indicate that the cross beams will carry the loads from the bridge deck.

5.1.3 Main Support Beams Calculations were carried out for a maximum vehicle load on the bridge. The load is shared by the three main support beams. The outer beams are capable of carrying the loads from above but the middle beam – which is smaller and carries twice the load – is undersize and not capable of carrying the loads. This means that the bridge is capable of carrying the proposed loads

5.2 Abutments The main loadbearing sections of the abutments are in sound condition. Prior to any work being done it would be advisable to check the overall thickness of the abutments and the bearing length by digging a trial hole to one corner of each abutment.

5.3 Natural Resources Wales Should the work proceed that is in the river then it is likely that permission will be needed from Natural Resources Wales.

- 5.4 Services** I have not been made aware of any underground services in the bridge or the approach road. The statutory bodies should be contacted prior to any work being undertaken.
- 5.5 Access** The layout on the south side should be assessed using data from the vehicles that are to use the crossing to produce a swept path analysis. This would ascertain whether any further excavation is needed to allow the vehicles to turn to cross the bridge.
- 5.5 Discussion** They say that a chain is only as strong as its weakest link and in the case of this bridge the weakest link is the central main support beam. Calculations showed that it would be seriously under size under full load. A further run of calculations was carried out ignoring the central beam. This indicates that the rest of the structure is capable of carrying the anticipated loads.

These conclusions are subject to further site checks. Should it be shown that the bridge is under strength there are a number of alternatives to provide a new crossing. These range in cost from £16k to 35k excluding delivery and installation which is likely to add a further £5 to 7k. See Appendix

6.0 CONCLUSIONS AND RECOMMENDATIONS

- 6.1** The calculations show that the bridge is capable of carrying the anticipated loads subject to additional investigations as below:
- 6.2** Check the amount of steel reinforcement in the deck.
- 6.3** Check the thickness of the abutments and check their stability by calculation.
- 6.4** Carry out a swept path analysis on the bend from the south immediately before the bridge and consider any additional excavations that may be required.
- 6.5** Check with DNOs and any other delivery vehicles that the width of the bridge (2.3m) is sufficient.
- 6.6** During the delivery of the heavy equipment the condition of the bridge and abutments should be assessed on a regular weekly basis.

Geoffrey Haden BSc MSc CEng MICE MCIHT
Chartered Engineer
G P Haden and Associates
Keeper's Cottage
Clyne Woods
Swansea SA3 5BD

June 2023

APPENDIX

1 **Photographs**

2 **Design Calculations**

3 **Alternative bridges available**

In addition to the leaflets shown the following may be of interest

<https://www.bridgesforsale.co.uk/bridge-for-sale/12m-x-5m-vb>

£35k

<https://www.bridgesforsale.co.uk/bridge-for-sale/12m-x-48m-vehicle-bridge>

www.beaverbridges.co.uk



Photo One General view of the bridge looking north. The bridge construction can be seen with a concrete deck on steel plate shuttering supported on cross beams at 800mm centres which are in turn carried by main beams spanning from abutment to abutment.



Photo Two The north abutment appears to have been built for a wider bridge. The abutment is on a sandstone ledge and there does not appear to be any undermining of the foundations.



Photo Three The underside of the bridge showing the three main support beams.



Photo Four Closeup of the central main beam. This beam has a great deal of corrosion particularly to the bottom flange. This will reduce the load carrying capacity. The other steelwork has some surface corrosion which is not significant.

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Assessment of Structural Integrity				1	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

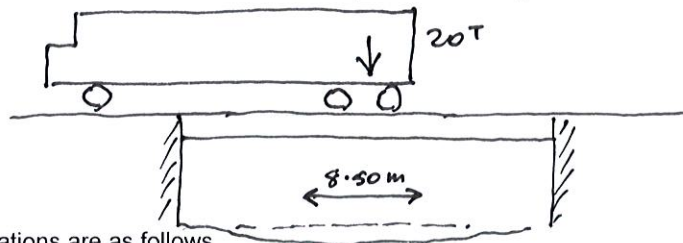
DESIGN CALCULATIONS
FOR
ASSESSMENT
OF
STRUCTURAL INTEGRITY
OF
FARM BRIDGE
AT
YNYS FFORCH FAWR
SEVEN SISTERS
NEATH PORT TALBOT

June 2023

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project Farm Bridge at Ynys Fforch Fawr				Job no. 1036/23/01	
	Calcs for Assessment of Structural Integrity				Start page no./Revision 2	
	Calcs by gph	Calcs date 22/06/2023	Checked by	Checked date	Approved by	Approved date

The design calculations assess in broad terms the capability of the bridge to carry loads from vehicles of up to 32 tonnes gross laden weight. In the absence of specific data a number of assumptions have been made.

1. A short vehicle has been taken as an example so that the maximum loads on the bridge are either the front or rear axles
2. The load has been divided so that the rear axles carry 20 tonnes.
3. There are twin rear axles so that the load per wheel is 5 tonnes or 50 kN
4. The dead load from the deck and other parts of the bridge is assumed to be 5 kN/m².



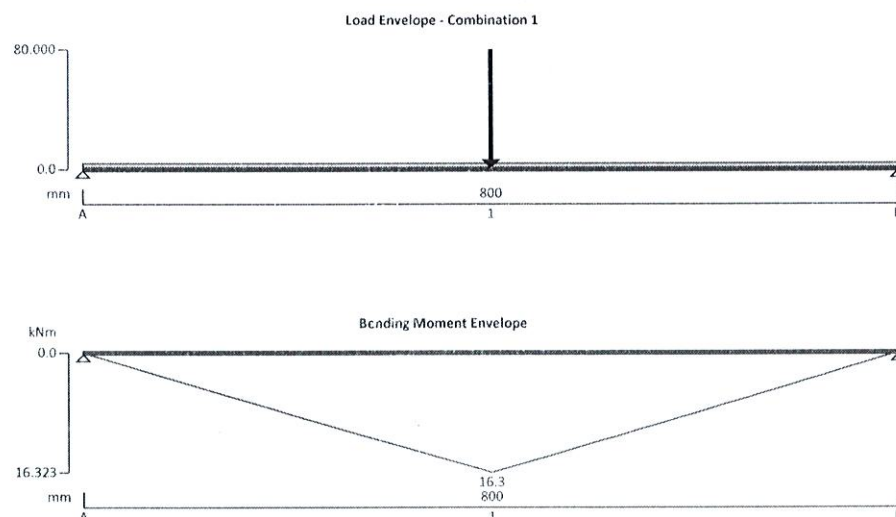
The calculations are as follows

1. A design check on the reinforced concrete deck with assumed reinforcement and concrete strength
2. Assessment of the cross beams supported on main beams on the outside plus a central main beam
3. Assessment of the load capacity of the central main beam spanning across the river – 8.5 m
4. Assessment of the cross beams without the central main beam
5. Assessment of the load capacity of the side beams without any support from the central beam

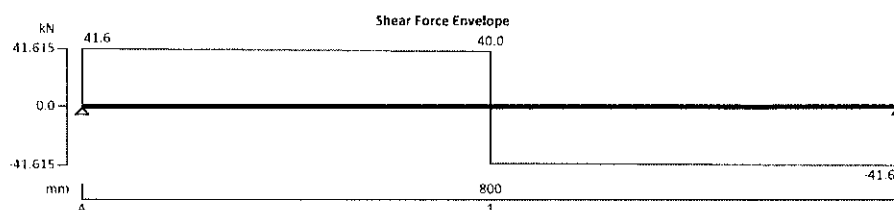
RC BEAM ANALYSIS & DESIGN BS8110

The concrete deck is supported by steel cross beams at 800mm centres. As a simplified assessment it is assumed that the loading carried by the deck is greatest when the wheels of one axle are at midspan between cross beams and act as a point load - 50 kN per wheel

TEDDS calculation version 2.1.14



G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Assessment of Structural Integrity				3	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				



Support conditions

Support A	Vertically restrained
	Rotationally free
Support B	Vertically restrained
	Rotationally free

Applied loading

Dead self weight of beam $\times 1$
Imposed point load 50 kN at 400 mm

Load combinations

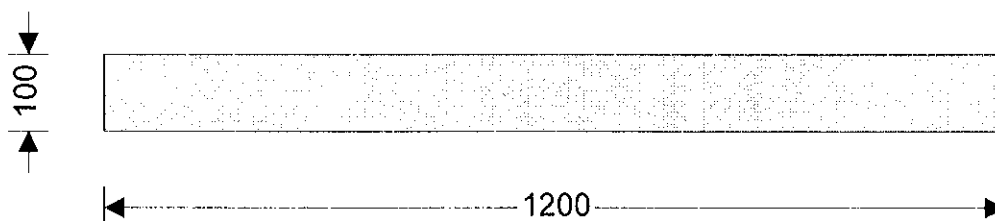
Load combination 1	Support A	Dead $\times 1.40$
		Imposed $\times 1.60$
	Span 1	Dead $\times 1.40$
		Imposed $\times 1.60$
	Support B	Dead $\times 1.40$
		Imposed $\times 1.60$

Analysis results

Maximum moment support A	$M_{A_max} = 0 \text{ kNm}$	$M_{A_red} = 0 \text{ kNm}$
Maximum moment span 1 at 400 mm	$M_{s1_max} = 16 \text{ kNm}$	$M_{s1_red} = 16 \text{ kNm}$
Maximum moment support B	$M_{B_max} = 0 \text{ kNm}$	$M_{B_red} = 0 \text{ kNm}$
Maximum shear support A	$V_{A_max} = 42 \text{ kN}$	$V_{A_red} = 42 \text{ kN}$
Maximum shear support A span 1 at 50 mm	$V_{A_s1_max} = 41 \text{ kN}$	$V_{A_s1_red} = 41 \text{ kN}$
Maximum shear support B	$V_{B_max} = -42 \text{ kN}$	$V_{B_red} = -42 \text{ kN}$
Maximum shear support B span 1 at 750 mm	$V_{B_s1_max} = -41 \text{ kN}$	$V_{B_s1_red} = -41 \text{ kN}$
Maximum reaction at support A	$R_A = 42 \text{ kN}$	
Unfactored dead load reaction at support A	$R_{A_Dead} = 1 \text{ kN}$	
Unfactored imposed load reaction at support A	$R_{A_Imposed} = 25 \text{ kN}$	
Maximum reaction at support B	$R_B = 42 \text{ kN}$	
Unfactored dead load reaction at support B	$R_{B_Dead} = 1 \text{ kN}$	
Unfactored imposed load reaction at support B	$R_{B_Imposed} = 25 \text{ kN}$	

Rectangular section details

Section width	$b = 1200 \text{ mm}$
Section depth	$h = 100 \text{ mm}$



G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project		Job no.	
	Farm Bridge at Ynys Fforch Fawr		1036/23/01	
	Calcs for		Start page no./Revision	
	Assessment of Structural Integrity		4	
	Calcs by	Calcs date	Checked by	Checked date
	gph	22/06/2023		
			Approved by	Approved date

Concrete details

Concrete strength class	C30/37
Characteristic compressive cube strength	$f_{cu} = 37 \text{ N/mm}^2$
Modulus of elasticity of concrete	$E_c = 20 \text{ kN/mm}^2 + 200 \times f_{cu} = 27400 \text{ N/mm}^2$
Maximum aggregate size	$h_{agg} = 20 \text{ mm}$

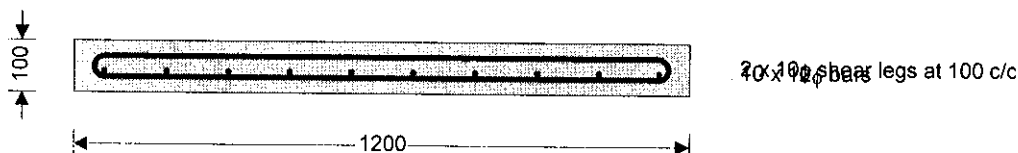
Reinforcement details

Characteristic yield strength of reinforcement	$f_y = 500 \text{ N/mm}^2$
Characteristic yield strength of shear reinforcement	$f_{yv} = 500 \text{ N/mm}^2$

Nominal cover to reinforcement

Nominal cover to top reinforcement	$C_{nom_t} = 25 \text{ mm}$
Nominal cover to bottom reinforcement	$C_{nom_b} = 25 \text{ mm}$
Nominal cover to side reinforcement	$C_{nom_s} = 35 \text{ mm}$

Mid span 1



Design moment resistance of rectangular section (cl. 3.4.4) - Positive moment

Design bending moment	$M = \text{abs}(M_{s1_red}) = 16 \text{ kNm}$
Depth to tension reinforcement	$d = h - C_{nom_b} - \phi_v - \phi_{bot} / 2 = 59 \text{ mm}$
Redistribution ratio	$\beta_b = \min(1 - m_{rs1}, 1) = 1.000$
	$K = M / (b \times d^2 \times f_{cu}) = 0.106$
	$K' = 0.156$

$K' > K$ - No compression reinforcement is required

Lever arm	$z = \min(d \times (0.5 + (0.25 - K / 0.9)^{0.5}), 0.95 \times d) = 51 \text{ mm}$
Depth of neutral axis	$x = (d - z) / 0.45 = 18 \text{ mm}$
Area of tension reinforcement required	$A_{s,req} = M / (0.87 \times f_y \times z) = 736 \text{ mm}^2$
Tension reinforcement provided	10 x 12φ bars
Area of tension reinforcement provided	$A_{s,prov} = 1131 \text{ mm}^2$
Minimum area of reinforcement	$A_{s,min} = 0.0013 \times b \times h = 156 \text{ mm}^2$
Maximum area of reinforcement	$A_{s,max} = 0.04 \times b \times h = 4800 \text{ mm}^2$

PASS - Area of reinforcement provided is greater than area of reinforcement required

Rectangular section in shear

Shear reinforcement provided	2 x 10φ legs at 100 c/c
Area of shear reinforcement provided	$A_{sv,prov} = 1571 \text{ mm}^2/\text{m}$
Minimum area of shear reinforcement (Table 3.7)	$A_{sv,min} = 0.4 \text{ N/mm}^2 \times b / (0.87 \times f_{yv}) = 1103 \text{ mm}^2/\text{m}$

PASS - Area of shear reinforcement provided exceeds minimum required

Maximum longitudinal spacing (cl. 3.4.5.5)	$S_{vl,max} = 0.75 \times d = 44 \text{ mm}$
--	--

FAIL - Longitudinal spacing of shear reinforcement provided is greater than maximum

Design concrete shear stress	$v_c = 0.79 \text{ N/mm}^2 \times \min(3, [100 \times A_{s,prov} / (b \times d)]^{1/3}) \times \max(1, (400 \text{ mm} / d)^{1/4}) \times (\min(f_{cu}, 40 \text{ N/mm}^2) / 25 \text{ N/mm}^2)^{1/3} / \gamma_m = 1.359 \text{ N/mm}^2$
Design shear resistance provided	$v_{s,prov} = A_{sv,prov} \times 0.87 \times f_{yv} / b = 0.569 \text{ N/mm}^2$
Design shear stress provided	$v_{prov} = v_{s,prov} + v_c = 1.928 \text{ N/mm}^2$

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Assessment of Structural Integrity				5	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

Design shear resistance

$$V_{prov} = V_{prov} \times (b \times d) = 136.5 \text{ kN}$$

Shear links provided valid between 0 mm and 800 mm with tension reinforcement of 1131 mm²

Spacing of reinforcement (cl 3.12.11)

Actual distance between bars in tension

$$s = (b - 2 \times (C_{nom_s} + \phi_v + \phi_{bot}/2)) / (N_{bot} - 1) - \phi_{bot} = 110 \text{ mm}$$

Minimum distance between bars in tension (cl 3.12.11.1)

Minimum distance between bars in tension

$$s_{min} = h_{agg} + 5 \text{ mm} = 25 \text{ mm}$$

PASS - Satisfies the minimum spacing criteria

Maximum distance between bars in tension (cl 3.12.11.2)

Design service stress

$$f_s = (2 \times f_y \times A_{s,req}) / (3 \times A_{s,prov} \times \beta_b) = 217.0 \text{ N/mm}^2$$

Maximum distance between bars in tension

$$s_{max} = \min(47000 \text{ N/mm} / f_s, 300 \text{ mm}) = 217 \text{ mm}$$

PASS - Satisfies the maximum spacing criteria

Span to depth ratio (cl. 3.4.6)

Basic span to depth ratio (Table 3.9)

$$\text{span_to_depth}_{basic} = 20.0$$

Design service stress in tension reinforcement

$$f_s = (2 \times f_y \times A_{s,req}) / (3 \times A_{s,prov} \times \beta_b) = 217.0 \text{ N/mm}^2$$

Modification for tension reinforcement

$$f_{tens} = \min(2.0, 0.55 + (477 \text{ N/mm}^2 - f_s) / (120 \times (0.9 \text{ N/mm}^2 + (M / (b \times d^2)))) = 1.001$$

Modification for compression reinforcement

$$f_{comp} = \min(1.5, 1 + (100 \times A_{s2,prov} / (b \times d)) / (3 + (100 \times A_{s2,prov} / (b \times d)))) = 1.000$$

Modification for span length

$$f_{long} = 1.000$$

Allowable span to depth ratio

$$\text{span_to_depth}_{allow} = \text{span_to_depth}_{basic} \times f_{tens} \times f_{comp} = 20.0$$

Actual span to depth ratio

$$\text{span_to_depth}_{actual} = L_{s1} / d = 13.6$$

PASS - Actual span to depth ratio is within the allowable limit

Based on the assumptions made the deck is capable of carrying the anticipated loads

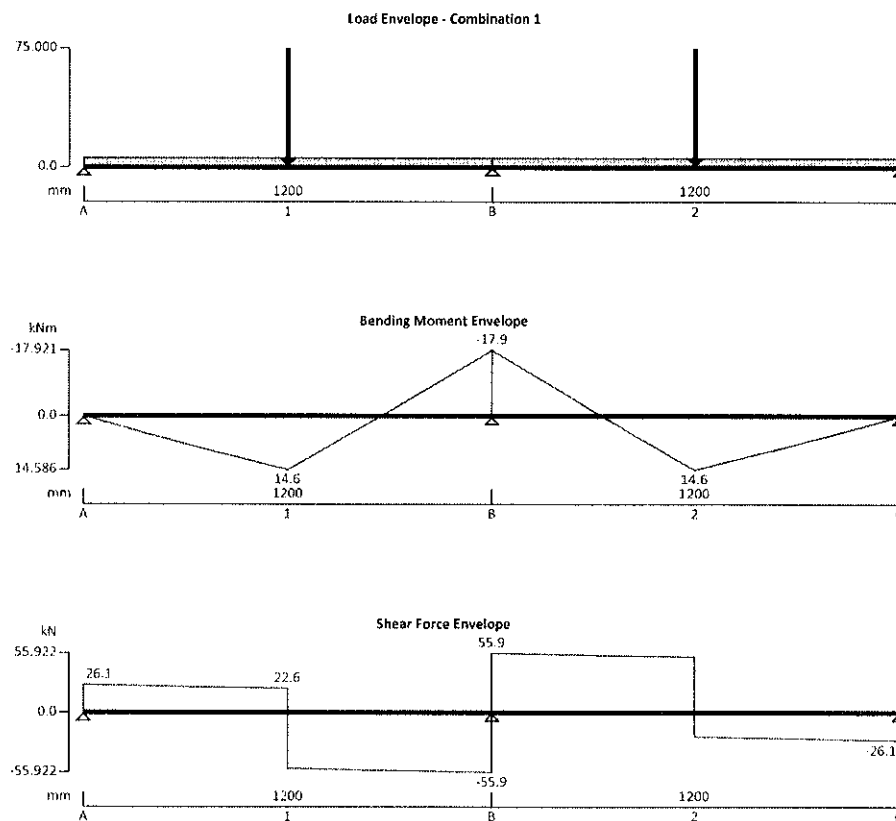
G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project		Job no.	
	Farm Bridge at Ynys Fforch Fawr		1036/23/01	
	Calcs for		Start page no./Revision	
	Cross Beam Supporting Bridge Deck		6	
	Calcs by	Calcs date	Checked by	Checked date
	gph	22/06/2023		
			Approved by	Approved date

The load capacity of the central main beam needs to be assessed. Firstly the cross beams are assessed with support on the outer main beams and the central main beam using wheel loads and the dead load of the deck

STEEL BEAM ANALYSIS & DESIGN (EN1993-1-1:2005)

In accordance with EN1993-1-1:2005 incorporating Corrigenda February 2006 and April 2009 and the UK national annex

TEDDS calculation version 3.0.14



Support conditions

Support A

Vertically restrained

Rotationally free

Support B

Vertically restrained

Rotationally free

Support C

Vertically restrained

Rotationally free

Applied loading

Beam loads

Permanent self weight of beam $\times 1$

Variable point load 50 kN at 600 mm

Variable point load 50 kN at 1800 mm

Permanent full UDL 4 kN/m

Load combinations

Load combination 1

Support A

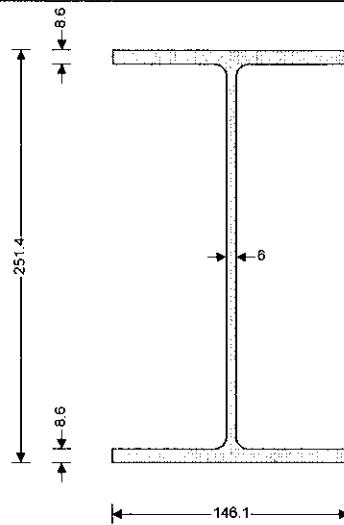
Permanent $\times 1.35$

Variable $\times 1.50$

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Cross Beam Supporting Bridge Deck				7	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

		Permanent × 1.35
		Variable × 1.50
	Support B	Permanent × 1.35
		Variable × 1.50
		Permanent × 1.35
		Variable × 1.50
	Support C	Permanent × 1.35
		Variable × 1.50
Analysis results		
Maximum moment	$M_{max} = 14.6 \text{ kNm}$	$M_{min} = -17.9 \text{ kNm}$
Maximum moment span 1	$M_{s1_max} = 14.6 \text{ kNm}$	$M_{s1_min} = -17.9 \text{ kNm}$
Maximum moment span 2	$M_{s2_max} = 14.6 \text{ kNm}$	$M_{s2_min} = -17.9 \text{ kNm}$
Maximum shear	$V_{max} = 55.9 \text{ kN}$	$V_{min} = -55.9 \text{ kN}$
Maximum shear span 1	$V_{s1_max} = 26.1 \text{ kN}$	$V_{s1_min} = -55.9 \text{ kN}$
Maximum shear span 2	$V_{s2_max} = 55.9 \text{ kN}$	$V_{s2_min} = -26.1 \text{ kN}$
Deflection	$\delta_{max} = 0.1 \text{ mm}$	$\delta_{min} = 0 \text{ mm}$
Deflection span 1	$\delta_{s1_max} = 0.1 \text{ mm}$	$\delta_{s1_min} = 0 \text{ mm}$
Deflection span 2	$\delta_{s2_max} = 0.1 \text{ mm}$	$\delta_{s2_min} = 0 \text{ mm}$
Maximum reaction at support A	$R_{A_max} = 26.1 \text{ kN}$	$R_{A_min} = 26.1 \text{ kN}$
Unfactored permanent load reaction at support A	$R_{A_Permanent} = 1.9 \text{ kN}$	
Unfactored variable load reaction at support A	$R_{A_Variable} = 15.6 \text{ kN}$	
Maximum reaction at support B	$R_{B_max} = 111.8 \text{ kN}$	$R_{B_min} = 111.8 \text{ kN}$
Unfactored permanent load reaction at support B	$R_{B_Permanent} = 6.5 \text{ kN}$	
Unfactored variable load reaction at support B	$R_{B_Variable} = 68.8 \text{ kN}$	
Maximum reaction at support C	$R_{C_max} = 26.1 \text{ kN}$	$R_{C_min} = 26.1 \text{ kN}$
Unfactored permanent load reaction at support C	$R_{C_Permanent} = 1.9 \text{ kN}$	
Unfactored variable load reaction at support C	$R_{C_Variable} = 15.6 \text{ kN}$	
Section details		
Section type	UKB 254x146x31 (Tata Steel Advance)	
Steel grade	S275	
EN 10025-2:2004 - Hot rolled products of structural steels		
Nominal thickness of element	$t = \max(t_r, t_w) = 8.6 \text{ mm}$	
Nominal yield strength	$f_y = 275 \text{ N/mm}^2$	
Nominal ultimate tensile strength	$f_u = 410 \text{ N/mm}^2$	
Modulus of elasticity	$E = 210000 \text{ N/mm}^2$	

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Cross Beam Supporting Bridge Deck				8	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				



Partial factors - Section 6.1

Resistance of cross-sections	$\gamma_{M0} = 1.00$
Resistance of members to instability	$\gamma_{M1} = 1.00$
Resistance of tensile members to fracture	$\gamma_{M2} = 1.10$

Lateral restraint

Span 1 has full lateral restraint
Span 2 has full lateral restraint

Effective length factors

Effective length factor in major axis	$K_y = 1.000$
Effective length factor in minor axis	$K_z = 1.000$
Effective length factor for torsion	$K_{LT,A} = 1.000$
	$K_{LT,B} = 1.000$
	$K_{LT,C} = 1.000$

Classification of cross sections - Section 5.5

$$\varepsilon = \sqrt{[235 \text{ N/mm}^2 / f_y]} = 0.92$$

Internal compression parts subject to bending - Table 5.2 (sheet 1 of 3)

Width of section	$c = d = 219 \text{ mm}$	
	$c / t_w = 39.5 \times \varepsilon \leq 72 \times \varepsilon$	Class 1

Outstand flanges - Table 5.2 (sheet 2 of 3)

Width of section	$c = (b - t_w - 2 \times r) / 2 = 62.5 \text{ mm}$	
	$c / t_f = 7.9 \times \varepsilon \leq 9 \times \varepsilon$	Class 1

Section is class 1

Check shear - Section 6.2.6

Height of web	$h_w = h - 2 \times t_f = 234.2 \text{ mm}$
Shear area factor	$\eta = 1.000$
	$h_w / t_w < 72 \times \varepsilon / \eta$

Shear buckling resistance can be ignored

Design shear force	$V_{Ed} = \max(\text{abs}(V_{\max}), \text{abs}(V_{\min})) = 55.9 \text{ kN}$
Shear area - cl 6.2.6(3)	$A_v = \max(A - 2 \times b \times t_f + (t_w + 2 \times r) \times t_f, \eta \times h_w \times t_w) = 1637 \text{ mm}^2$
Design shear resistance - cl 6.2.6(2)	$V_{c,Rd} = V_{pl,Rd} = A_v \times (f_y / \sqrt{3}) / \gamma_{M0} = 259.9 \text{ kN}$

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Cross Beam Supporting Bridge Deck				9	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

PASS - Design shear resistance exceeds design shear force

Check bending moment at span 1 major (y-y) axis - Section 6.2.5

Design bending moment

$$M_{Ed} = \max(\text{abs}(M_{s1_max}), \text{abs}(M_{s1_min})) = 17.9 \text{ kNm}$$

Design bending resistance moment - eq 6.13

$$M_{c,Rd} = M_{pl,Rd} = W_{pl,y} \times f_y / \gamma_{M0} = 108.1 \text{ kNm}$$

PASS - Design bending resistance moment exceeds design bending moment

Check vertical deflection - Section 7.2.1

Consider deflection due to variable loads

Limiting deflection

$$\delta_{lim} = L_{s2} / 360 = 3.3 \text{ mm}$$

Maximum deflection span 2

$$\delta = \max(\text{abs}(\delta_{max}), \text{abs}(\delta_{min})) = 0.087 \text{ mm}$$

PASS - Maximum deflection does not exceed deflection limit

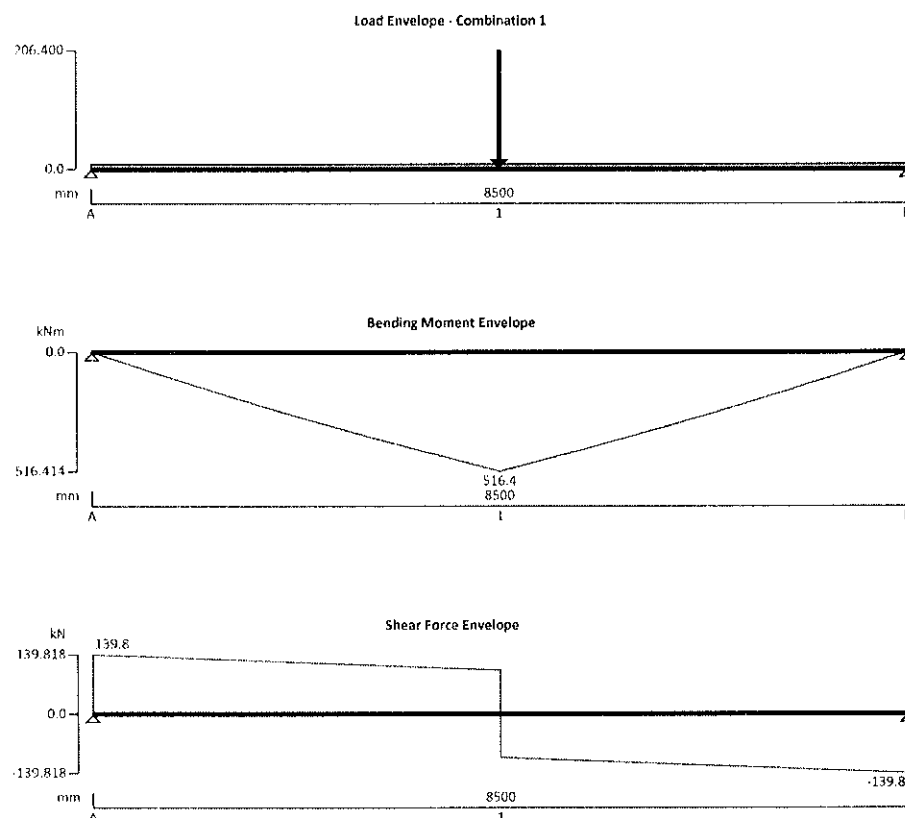
G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project Farm Bridge at Ynys Fforch Fawr				Job no. 1036/23/01	
	Calcs for Design Check on Central Main Beam				Start page no./Revision 10	
	Calcs by gph	Calcs date 22/06/2023	Checked by	Checked date	Approved by	Approved date

The central main beam carries loads from the rear axles through the concrete deck and the cross beams. As a simplification the load from each axle is assumed to be combined and act as a single point load.

STEEL BEAM ANALYSIS & DESIGN (EN1993-1-1:2005)

In accordance with EN1993-1-1:2005 incorporating Corrigenda February 2006 and April 2009 and the UK national annex

TEDDS calculation version 3.0.14



Support conditions

Support A

Vertically restrained

Rotationally free

Support B

Vertically restrained

Rotationally free

Applied loading

Beam loads

Permanent self weight of beam $\times 1$

Permanent full UDL 6 kN/m

Variable point load 137.6 kN at 4250 mm

Load combinations

Load combination 1

Support A

Permanent $\times 1.35$

Variable $\times 1.50$

Permanent $\times 1.35$

Variable $\times 1.50$

Support B

Permanent $\times 1.35$

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Design Check on Central Main Beam				11	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

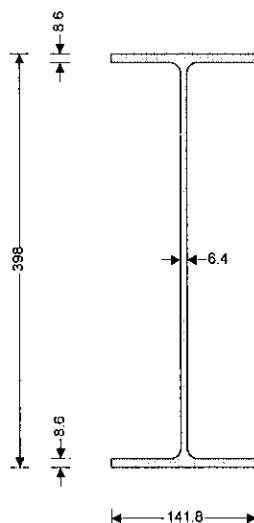
Variable $\times 1.50$

Analysis results

Maximum moment	$M_{\max} = 516.4 \text{ kNm}$	$M_{\min} = 0 \text{ kNm}$
Maximum shear	$V_{\max} = 139.8 \text{ kN}$	$V_{\min} = -139.8 \text{ kN}$
Deflection	$\delta_{\max} = 67 \text{ mm}$	$\delta_{\min} = 0 \text{ mm}$
Maximum reaction at support A	$R_{A_{\max}} = 139.8 \text{ kN}$	$R_{A_{\min}} = 139.8 \text{ kN}$
Unfactored permanent load reaction at support A	$R_{A_{\text{Permanent}}} = 27.1 \text{ kN}$	
Unfactored variable load reaction at support A	$R_{A_{\text{Variable}}} = 68.8 \text{ kN}$	
Maximum reaction at support B	$R_{B_{\max}} = 139.8 \text{ kN}$	$R_{B_{\min}} = 139.8 \text{ kN}$
Unfactored permanent load reaction at support B	$R_{B_{\text{Permanent}}} = 27.1 \text{ kN}$	
Unfactored variable load reaction at support B	$R_{B_{\text{Variable}}} = 68.8 \text{ kN}$	

Section details

Section type	UKB 406x140x39 (Tata Steel Advance)
Steel grade	S275
EN 10025-2:2004 - Hot rolled products of structural steels	
Nominal thickness of element	$t = \max(t_f, t_w) = 8.6 \text{ mm}$
Nominal yield strength	$f_y = 275 \text{ N/mm}^2$
Nominal ultimate tensile strength	$f_u = 410 \text{ N/mm}^2$
Modulus of elasticity	$E = 210000 \text{ N/mm}^2$



Partial factors - Section 6.1

Resistance of cross-sections	$\gamma_{M0} = 1.00$
Resistance of members to instability	$\gamma_{M1} = 1.00$
Resistance of tensile members to fracture	$\gamma_{M2} = 1.10$

Lateral restraint

Span 1 has full lateral restraint

Effective length factors

Effective length factor in major axis	$K_y = 1.000$
Effective length factor in minor axis	$K_z = 1.000$
Effective length factor for torsion	$K_{LT,A} = 1.000$
	$K_{LT,B} = 1.000$

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Design Check on Central Main Beam				12	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

Classification of cross sections - Section 5.5

$$\varepsilon = \sqrt{235 \text{ N/mm}^2 / f_y} = 0.92$$

Internal compression parts subject to bending - Table 5.2 (sheet 1 of 3)

Width of section

$$c = d = 360.4 \text{ mm}$$

$$c / t_w = 60.9 \times \varepsilon \leq 72 \times \varepsilon \quad \text{Class 1}$$

Outstand flanges - Table 5.2 (sheet 2 of 3)

Width of section

$$c = (b - t_w - 2 \times r) / 2 = 57.5 \text{ mm}$$

$$c / t_f = 7.2 \times \varepsilon \leq 9 \times \varepsilon \quad \text{Class 1}$$

Section is class 1

Check shear - Section 6.2.6

Height of web

$$h_w = h - 2 \times t_f = 380.8 \text{ mm}$$

Shear area factor

$$\eta = 1.000$$

$$h_w / t_w < 72 \times \varepsilon / \eta$$

Shear buckling resistance can be ignored

Design shear force

$$V_{Ed} = \max(\text{abs}(V_{\max}), \text{abs}(V_{\min})) = 139.8 \text{ kN}$$

Shear area - cl 6.2.6(3)

$$A_v = \max(A - 2 \times b \times t_f + (t_w + 2 \times r) \times t_f, \eta \times h_w \times t_w) = 2757 \text{ mm}^2$$

Design shear resistance - cl 6.2.6(2)

$$V_{c,Rd} = V_{pl,Rd} = A_v \times (f_y / \sqrt{3}) / \gamma_{M0} = 437.7 \text{ kN}$$

PASS - Design shear resistance exceeds design shear force

Check bending moment major (y-y) axis - Section 6.2.5

Design bending moment

$$M_{Ed} = \max(\text{abs}(M_{s1_max}), \text{abs}(M_{s1_min})) = 516.4 \text{ kNm}$$

Design bending resistance moment - eq 6.13

$$M_{c,Rd} = M_{pl,Rd} = W_{pl,y} \times f_y / \gamma_{M0} = 199 \text{ kNm}$$

FAIL - Design bending moment exceeds design bending resistance moment

Check vertical deflection - Section 7.2.1

Consider deflection due to variable loads

Limiting deflection

$$\delta_{lim} = L_{s1} / 360 = 23.6 \text{ mm}$$

Maximum deflection span 1

$$\delta = \max(\text{abs}(\delta_{\max}), \text{abs}(\delta_{\min})) = 67.022 \text{ mm}$$

FAIL - Deflection exceeds deflection limit

The indications from the calculations are that the beam is significantly under size and not capable of carrying the loads anticipated. The survey indicated that it had suffered serious corrosion and it is possible that it is the remnant of a previous bridge. To check that it is not required the cross beams and the outer beams are assessed without using the central main beam.

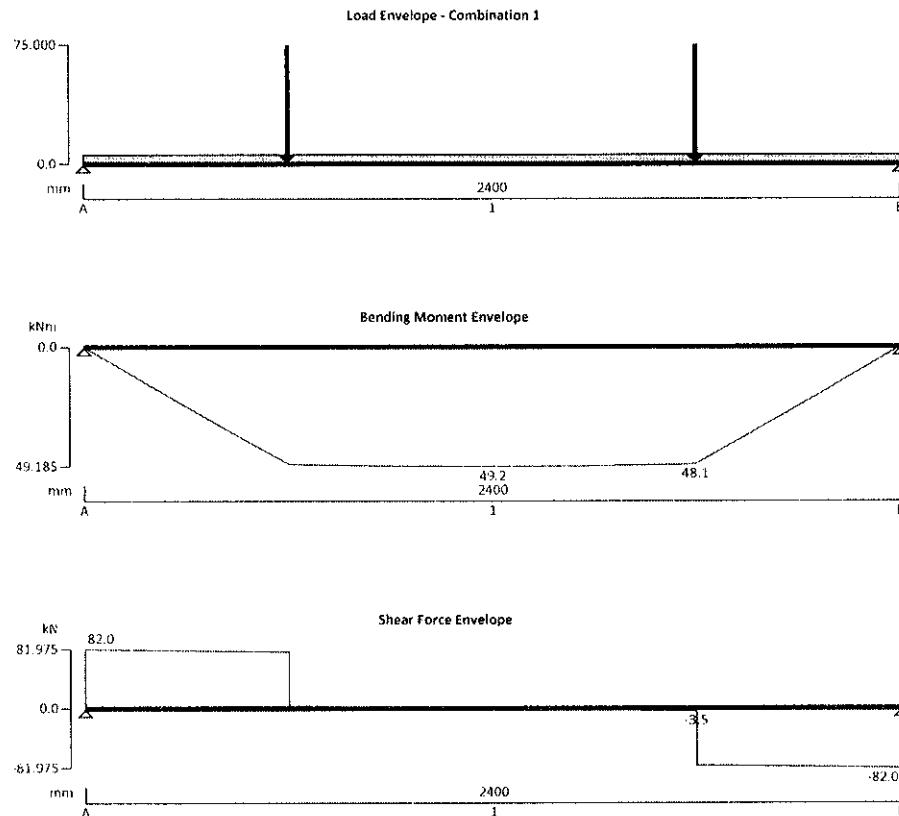
G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Design Check on Cross Beams with Central Support				13	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

The beams carry the same load but without any support from the central main beam

STEEL BEAM ANALYSIS & DESIGN (EN1993-1-1:2005)

In accordance with EN1993-1-1:2005 incorporating Corrigenda February 2006 and April 2009 and the UK national annex

TEDDS calculation version 3.0.14



Support conditions

Support A

Vertically restrained

Rotationally free

Support B

Vertically restrained

Rotationally free

Applied loading

Beam loads

Permanent self weight of beam $\times 1$

Variable point load 50 kN at 600 mm

Variable point load 50 kN at 1800 mm

Permanent full UDL 4 kN/m

Load combinations

Load combination 1

Support A

Permanent $\times 1.35$

Variable $\times 1.50$

Permanent $\times 1.35$

Variable $\times 1.50$

Support B

Permanent $\times 1.35$

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Design Check on Cross Beams with Central Support				14	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

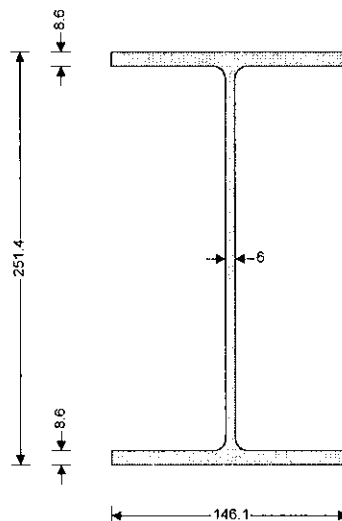
Variable $\times 1.50$

Analysis results

Maximum moment	$M_{\max} = 49.2 \text{ kNm}$	$M_{\min} = 0 \text{ kNm}$
Maximum shear	$V_{\max} = 82 \text{ kN}$	$V_{\min} = -82 \text{ kN}$
Deflection	$\delta_{\max} = 2.1 \text{ mm}$	$\delta_{\min} = 0 \text{ mm}$
Maximum reaction at support A	$R_{A_{\max}} = 82 \text{ kN}$	$R_{A_{\min}} = 82 \text{ kN}$
Unfactored permanent load reaction at support A	$R_{A_{\text{Permanent}}} = 5.2 \text{ kN}$	
Unfactored variable load reaction at support A	$R_{A_{\text{Variable}}} = 50 \text{ kN}$	
Maximum reaction at support B	$R_{B_{\max}} = 82 \text{ kN}$	$R_{B_{\min}} = 82 \text{ kN}$
Unfactored permanent load reaction at support B	$R_{B_{\text{Permanent}}} = 5.2 \text{ kN}$	
Unfactored variable load reaction at support B	$R_{B_{\text{Variable}}} = 50 \text{ kN}$	

Section details

Section type	UKB 254x146x31 (Tata Steel Advance)
Steel grade	S275
EN 10025-2:2004 - Hot rolled products of structural steels	
Nominal thickness of element	$t = \max(t_f, t_w) = 8.6 \text{ mm}$
Nominal yield strength	$f_y = 275 \text{ N/mm}^2$
Nominal ultimate tensile strength	$f_u = 410 \text{ N/mm}^2$
Modulus of elasticity	$E = 210000 \text{ N/mm}^2$



Partial factors - Section 6.1

Resistance of cross-sections	$\gamma_{M0} = 1.00$
Resistance of members to instability	$\gamma_{M1} = 1.00$
Resistance of tensile members to fracture	$\gamma_{M2} = 1.10$

Lateral restraint

Span 1 has full lateral restraint

Effective length factors

Effective length factor in major axis	$K_y = 1.000$
Effective length factor in minor axis	$K_z = 1.000$
Effective length factor for torsion	$K_{LT,A} = 1.000$
	$K_{LT,B} = 1.000$

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Design Check on Cross Beams with Central Support				15	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

Classification of cross sections - Section 5.5

$$\varepsilon = \sqrt{235 \text{ N/mm}^2 / f_y} = 0.92$$

Internal compression parts subject to bending - Table 5.2 (sheet 1 of 3)

Width of section

$$c = d = 219 \text{ mm}$$

$$c / t_w = 39.5 \times \varepsilon \leq 72 \times \varepsilon \quad \text{Class 1}$$

Outstand flanges - Table 5.2 (sheet 2 of 3)

Width of section

$$c = (b - t_w - 2 \times r) / 2 = 62.5 \text{ mm}$$

$$c / t_f = 7.9 \times \varepsilon \leq 9 \times \varepsilon \quad \text{Class 1}$$

Section is class 1

Check shear - Section 6.2.6

Height of web

$$h_w = h - 2 \times t_f = 234.2 \text{ mm}$$

Shear area factor

$$\eta = 1.000$$

$$h_w / t_w < 72 \times \varepsilon / \eta$$

Shear buckling resistance can be ignored

Design shear force

$$V_{Ed} = \max(\text{abs}(V_{\max}), \text{abs}(V_{\min})) = 82 \text{ kN}$$

Shear area - cl 6.2.6(3)

$$A_v = \max(A - 2 \times b \times t_f + (t_w + 2 \times r) \times t_f, \eta \times h_w \times t_w) = 1637 \text{ mm}^2$$

Design shear resistance - cl 6.2.6(2)

$$V_{c,Rd} = V_{pl,Rd} = A_v \times (f_y / \sqrt{3}) / \gamma_{M0} = 259.9 \text{ kN}$$

PASS - Design shear resistance exceeds design shear force

Check bending moment major (y-y) axis - Section 6.2.5

Design bending moment

$$M_{Ed} = \max(\text{abs}(M_{s1_{\max}}), \text{abs}(M_{s1_{\min}})) = 49.2 \text{ kNm}$$

Design bending resistance moment - eq 6.13

$$M_{c,Rd} = M_{pl,Rd} = W_{pl,y} \times f_y / \gamma_{M0} = 108.1 \text{ kNm}$$

PASS - Design bending resistance moment exceeds design bending moment

Check vertical deflection - Section 7.2.1

Consider deflection due to variable loads

Limiting deflection

$$\delta_{lim} = L_{s1} / 360 = 6.7 \text{ mm}$$

Maximum deflection span 1

$$\delta = \max(\text{abs}(\delta_{\max}), \text{abs}(\delta_{\min})) = 2.136 \text{ mm}$$

PASS - Maximum deflection does not exceed deflection limit

The calculations show that the cross beams will carry the loads spanning from side main beam to side main beam

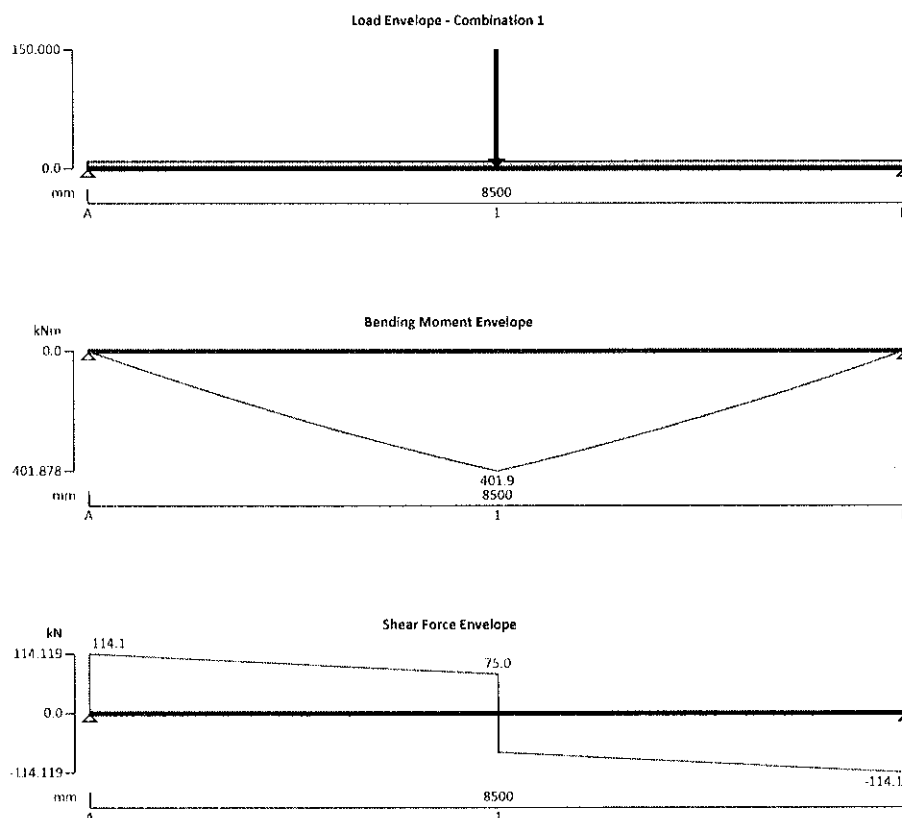
G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Design Check on Outer Main Beams				16	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

The outer main beams are analysed using the data from the cross beam design. As a simplification the load from each axle is assumed to be combined and act as a single point load.

STEEL BEAM ANALYSIS & DESIGN (EN1993-1-1:2005)

In accordance with EN1993-1-1:2005 incorporating Corrigenda February 2006 and April 2009 and the UK national annex

TEDDS calculation version 3.0.14



Support conditions

Support A

Vertically restrained

Rotationally free

Support B

Vertically restrained

Rotationally free

Applied loading

Beam loads

Permanent self weight of beam $\times 1$

Variable point load 100 kN at 4250 mm

Permanent full UDL 6 kN/m

Load combinations

Load combination 1

Support A

Permanent $\times 1.35$

Variable $\times 1.50$

Permanent $\times 1.35$

Variable $\times 1.50$

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 084973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Design Check on Outer Main Beams				17	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

Support B

Permanent $\times 1.35$

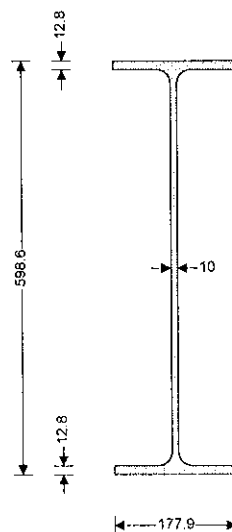
Variable $\times 1.50$

Analysis results

Maximum moment	$M_{\max} = 401.9 \text{ kNm}$	$M_{\min} = 0 \text{ kNm}$
Maximum shear	$V_{\max} = 114.1 \text{ kN}$	$V_{\min} = -114.1 \text{ kN}$
Deflection	$\delta_{\max} = 10.6 \text{ mm}$	$\delta_{\min} = 0 \text{ mm}$
Maximum reaction at support A	$R_{A_{\max}} = 114.1 \text{ kN}$	$R_{A_{\min}} = 114.1 \text{ kN}$
Unfactored permanent load reaction at support A	$R_{A_{\text{Permanent}}} = 29 \text{ kN}$	
Unfactored variable load reaction at support A	$R_{A_{\text{Variable}}} = 50 \text{ kN}$	
Maximum reaction at support B	$R_{B_{\max}} = 114.1 \text{ kN}$	$R_{B_{\min}} = 114.1 \text{ kN}$
Unfactored permanent load reaction at support B	$R_{B_{\text{Permanent}}} = 29 \text{ kN}$	
Unfactored variable load reaction at support B	$R_{B_{\text{Variable}}} = 50 \text{ kN}$	

Section details

Section type	UKB 610x178x82 (British Steel Advance 2022)
Steel grade	S275
EN 10025-2:2004 - Hot rolled products of structural steels	
Nominal thickness of element	$t = \max(t_f, t_w) = 12.8 \text{ mm}$
Nominal yield strength	$f_y = 275 \text{ N/mm}^2$
Nominal ultimate tensile strength	$f_u = 410 \text{ N/mm}^2$
Modulus of elasticity	$E = 210000 \text{ N/mm}^2$



Partial factors - Section 6.1

Resistance of cross-sections	$\gamma_{M0} = 1.00$
Resistance of members to instability	$\gamma_{M1} = 1.00$
Resistance of tensile members to fracture	$\gamma_{M2} = 1.10$

Lateral restraint

Span 1 has full lateral restraint

Effective length factors

Effective length factor in major axis	$K_y = 1.000$
Effective length factor in minor axis	$K_z = 1.000$
Effective length factor for torsion	$K_{LTA} = 1.000$
	$K_{LTB} = 1.000$

G P Haden and Associates Engineers and Surveyors The Keeper's Cottage, Clyne Woods, Swansea SA3 5BD 01792 401401/07506 064973 info@gphadenandassociates.com	Project				Job no.	
	Farm Bridge at Ynys Fforch Fawr				1036/23/01	
	Calcs for				Start page no./Revision	
	Design Check on Outer Main Beams				18	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	gph	22/06/2023				

Classification of cross sections - Section 5.5

$$\varepsilon = \sqrt{[235 \text{ N/mm}^2 / f_y]} = 0.92$$

Internal compression parts subject to bending - Table 5.2 (sheet 1 of 3)

Width of section

$$c = d = 533 \text{ mm}$$

$$c / t_w = 57.7 \times \varepsilon \leq 72 \times \varepsilon \quad \text{Class 1}$$

Outstand flanges - Table 5.2 (sheet 2 of 3)

Width of section

$$c = (b - t_w - 2 \times r) / 2 = 63.9 \text{ mm}$$

$$c / t_f = 5.4 \times \varepsilon \leq 9 \times \varepsilon \quad \text{Class 1}$$

Section is class 1

Check shear - Section 6.2.6

Height of web

$$h_w = h - 2 \times t_f = 573 \text{ mm}$$

Shear area factor

$$\eta = 1.000$$

$$h_w / t_w < 72 \times \varepsilon / \eta$$

Shear buckling resistance can be ignored

Design shear force

$$V_{Ed} = \max(\text{abs}(V_{max}), \text{abs}(V_{min})) = 114.1 \text{ kN}$$

Shear area - cl 6.2.6(3)

$$A_v = \max(A - 2 \times b \times t_f + (t_w + 2 \times r) \times t_f, \eta \times h_w \times t_w) = 6713 \text{ mm}^2$$

Design shear resistance - cl 6.2.6(2)

$$V_{c,Rd} = V_{pl,Rd} = A_v \times (f_y / \sqrt{3}) / \gamma_{M0} = 1065.9 \text{ kN}$$

PASS - Design shear resistance exceeds design shear force

Check bending moment major (y-y) axis - Section 6.2.5

Design bending moment

$$M_{Ed} = \max(\text{abs}(M_{s1_max}), \text{abs}(M_{s1_min})) = 401.9 \text{ kNm}$$

Design bending resistance moment - eq 6.13

$$M_{c,Rd} = M_{pl,Rd} = W_{pl,y} \times f_y / \gamma_{M0} = 619.2 \text{ kNm}$$

PASS - Design bending resistance moment exceeds design bending moment

Check vertical deflection - Section 7.2.1

Consider deflection due to variable loads

Limiting deflection

$$\delta_{lim} = L_{s1} / 360 = 23.6 \text{ mm}$$

Maximum deflection span 1

$$\delta = \max(\text{abs}(\delta_{max}), \text{abs}(\delta_{min})) = 10.598 \text{ mm}$$

PASS - Maximum deflection does not exceed deflection limit

The calculations indicate that the outer main beams are capable of carrying the anticipated loads. The simplification of load distribution will give conservative results

CB12

Safe working load 45 tonne



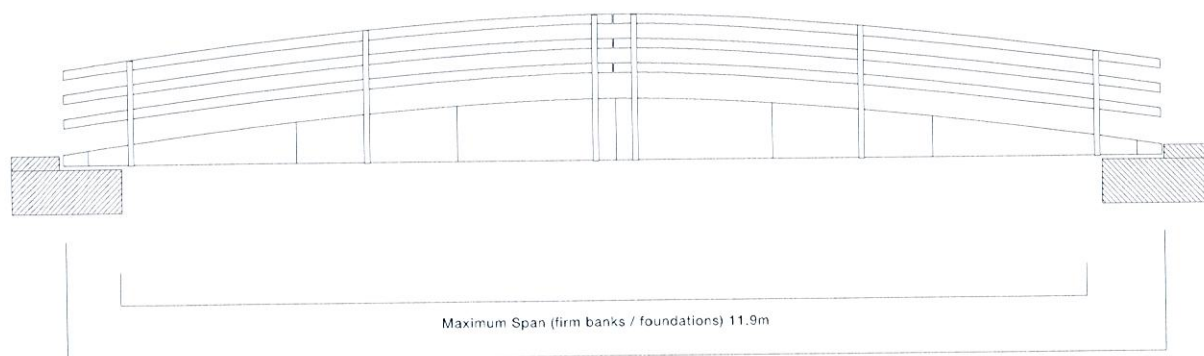
Bridge Specifications

The CB12 is a construction vehicle bridge designed to take a safe working load of up to 45 tonne. It has unique abilities which include, it is quick to install, has a exceptional live load / dead weight ratio reducing crane cost. It can be used in many and varied applications. The bridge will arrive on one articulated trailer in two 'planks', each 'plank' is then lifted into the final position.

Data

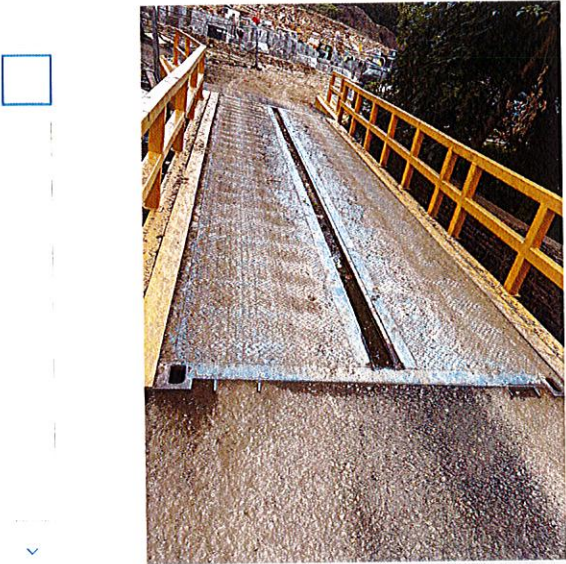
Overall width (not separated)	3.7m
Internal width (not separated)	3.2m
Internal width (separated with a non weight bearing strip)	4.0m
Overall weight of both sections	10 tonne
Width of each unit	1.85m
Minimum bank support	0.760m
Weight of each unit	5 tonne

Dimensions



Foundations drawn are 1m long 3.5m wide (4.4m if separated) .5m deep with a 150mm step to ground level and 13.54m between steps.

Saved in your [Watchlist](#) | [Remove](#) | Buy it now to make it yours.



Have one to sell? [Sell it yourself](#)

28ft Span Temporary / permanant Steel Bridge Complete With Railings Heavy Duty

Condition: Used

Price: £15,000.00



Buy it now

Add to basket

Best Offer:

Make offer

Add to list

Breathe easy. Returns accepted.

Collect 300 Nectar points [Redeem your points](#) |

Conditions

Collection: Free collection in person from huddersfield, United Kingdom. [See details](#)

Returns: 30 days return. Buyer pays for return postage. [See details](#)

Payments: Cash on pickup

Shop with confidence

eBay Money Back Guarantee
Get the item you ordered or your money back.
[Learn more](#)

Seller information
[yorkshirereclamations](#) (506)
100% positive Feedback

[Save seller](#)
[Contact seller](#)
[Visit Shop](#)
[See other items](#)

Registered as private seller, so consumer rights stemming from EU consumer protection law do not apply. eBay Money Back Guarantee still applies to most purchases.

[Report this item](#)

eBay item number: 225103777593

About this item Postage, returns & payments

Seller assumes all responsibility for this listing.
Last updated on 21 Sep, 2022 16:55:34 BST [View all revisions](#)

Item specifics

Condition Used: An item that has been previously used. The item may have some signs of cosmetic wear, but is ... [Read more](#)

Brand Unbranded

Item description from the seller

28ft Span Temporary / permanant Steel Bridge Complete With Railings Heavy Duty.

Will hold 60-75 ton we are told

Please contact us for more information

Ready middle of September

We have spanned a bridge around 40ft by building the ramps up to the sides (see pictures for detail)

Viewing is highly recommended !!

Buy today £18500 !!

DELIVERY CAN BE ARRANGED AT A COST

CASH ON COLLECTION OR BANK TRANSFER ONLY PLEASE

please note all items sold as seen and no returns accepted

if you have any questions

Please Contact

Yorkshire Reclamation

1 Fair Street

Lockwood

Huddersfield

HD1 3QB

Tel: 07780 835 927

01484 302108



yorkshirereclamations

100% Positive Feedback
1.7K items sold

Visit Shop

Contact

Save seller

Popular categories from this shop [See all](#)

- Collectables Business, Office & Industrial Sound & Vision
- Garden & Patio Home, Furniture & DIY
- Computers/Tablets & Networking Pottery, Ceramics & Glass
- Antiques Sporting Goods

Registered as a private seller

Thereby, consumer rights stemming from EU consumer protection law do not apply. eBay buyer protection still applies to most purchases.

Seller Feedback (419)

- i***n (943) • Past 6 months

Great service and friendly seller. Highly recommend 🍌

GREY PVC SLOTTED PANEL TRUNKING IN PACKS OF 8 65mm X 65mm 2 Metre Lengths (#224955914981)
- g***h (570) • Past 6 months

Correct Partner. Thank you!

3COM EtherLink 3C990-TX-95 10/100 Mbps PCI Network Card (#224694287232)
- r***o (1041) • Past 6 months

Item exactly as described,ready and waiting for me when I arrived to pick it up,great comes,spot on, thank you 🍌

Tote Box Sack Cart Heavy Duty (#224687393100)

See all Feedback

Influenced by recent sponsored views





Making Sustainability Happen