

Prosiect Maen Hir

Solar a Storio Ynni



Preliminary Environmental Information Report Volume III

Appendix 9-3: Technical Note - Construction Traffic Trip Generation and Distribution

Prosiect Maen Hir - September 2024

EN010156

lightsourcebp



TECHNICAL NOTE



Client Lightsource BP
Project Prosiect Maen Hir
Subject Construction Trip Generation Note
Prepared By G.J Checked and Authorised By CR

Page No. 1 of 7
Project No. 23-062
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1 INTRODUCTION

1.1 NOTE PURPOSE

- 1.1.1 Velocity Transport Planning (VTP) has been appointed by Lightsource BP (the Applicant) in respect of a Development Consent Order (DCO) application for a Solar Farm above 350MW, Battery Energy Storage Systems (BESS) and associated infrastructure in Anglesey, Wales, known as Prosiect Maen Hir (hereafter referred to as 'the Project').
- 1.1.2 The Isle of Anglesey County Council (IoACC) is the local planning authority and local highway authority for the road network in Anglesey, excluding the A55. The A55 is under the jurisdiction of the North and Mid Wales Trunk Road Agent (NMWTRA).
- 1.1.3 The most significant transport impacts for renewable schemes comparable to the Project are associated with the construction and decommissioning phases. At this stage, it is assumed that decommissioning will be no worse in terms of transport impacts than construction.
- 1.1.4 The operational impacts of the Project will be minimal and primarily associated with maintenance and replacement works, as well as a nominal level of staff activity.
- 1.1.5 This Technical Note (TN) has been prepared to provide details on the trip generation and expected distribution of vehicle trips throughout the surrounding highway network, covering both access from the Strategic Road Network (SRN) and Local Road Network (LRN).
- 1.1.6 Following this introduction, this TN is structured as follows:
- **Section 2:** Construction Trip Generation
 - **Section 3:** Construction Trip Distribution



2 CONSTRUCTION TRIP GENERATION

2.1 METHODOLOGY

- 2.1.1 Initial information provided by the Applicant based on similar project experience suggested an expected peak of 30 HGVs per day (60 two-way trips) given the likely phasing and availability of equipment to undertake the required construction works.
- 2.1.2 To support the DCO submission and ensure that the likely significant environmental effects are assessed appropriately, it is proposed to generate construction 'trip rates' for the DCO submission to ensure a robust assessment of the peak transport impacts.
- 2.1.3 As a means of generating construction trip rates, a review of other comparable DCOs has been undertaken to compare the anticipated levels of construction vehicle activity against the number of Solar modules - to pro-rata against and to generate trip rates per 1,000 modules.
- 2.1.4 This approach is similar to the Industry Standard methodology and good practice used in TRICS data, as with assessments of residential uses (e.g. trip rates per unit) and commercial or retail uses (trip rates per 100 sqm of floor area / seats).
- 2.1.5 It is noted that a comparable approach and methodology was accepted in relation to the DCO for the Mallard Pass Solar Farm which was approved by the Planning Inspectorate (PINS) on 12th July 2024.
- 2.1.6 It is assumed that the trip rates, whilst linked to the number of modules, would also capture the other aspects of peak construction of the Project, including assembly, construction of internal tracks and security.
- 2.1.7 It is assumed that other components of the Project e.g. the BESS, would all be captured within the daily peak as some of the other activities across the site might reduce in activity to facilitate construction of other aspects of the Project.
- 2.1.8 Whilst it is acknowledged that the construction requirements of each DCO Solar Farm would be bespoke and there may be slight variations between the schemes, it is considered that the daily peaks would be comparable in terms of the peaks in vehicular activity. Any differences would then be accounted for within the programme; whereby the peak number of vehicles remains the same, albeit the length of the peaks may increase or decrease accordingly.
- 2.1.9 The Applicant would then commit to accommodating the anticipated peak for construction vehicles within the programme and through the wording DCO, which would be provided to the appointed contractor prior to tender.
- 2.1.10 This approach is in accordance with the Institute of Environmental Management and Assessment (IEMA) Environmental Assessment of Traffic and Movement (EATM, 2023) guidance which recognises in paragraph 1.24 the need for proportionality in the assessment of the transport impacts.

2.2 COMPARABLE SCHEMES

- 2.2.1 In accordance with industry good practice (similar to a TRICS based assessment), other renewable schemes have been reviewed in terms of their suitability and whether they are considered appropriate to develop trip rates from.



2.2.2 A summary of the comparable schemes that have been reviewed is set out below:

- **Cleve Hill:** a 350MW Solar Park in Faversham that was consented on 28th May 2020, with the new substation located within Graveney alongside BESS and supporting infrastructure. Generated a peak of 162 LGV and 80 HGV trips across different respective months over a 24-month programme.
- **Longfield:** a Solar Park exceeding 50MW within Essex, with works to provide an extension to the Bulls Lodge substation that was consented by the PINS in June 2023. Generated a maximum of 96 daily HGV trips, equivalent to a peak of 192 two-way trips. The Longfield Solar Farm scheme was also over a 24-month programme and included BESS.
- **Sunnica Energy Farm:** an energy farm comprising 500MW on the border of Suffolk and Cambridgeshire, which includes an extension to the Burwell National Grid Extension and three on-site substations connecting to the grid. There would be a peak of 155 HGV deliveries per day across the cumulative phases of construction. The Sunnica Energy Farm scheme was over a 24-month programme and included BESS. Sunnica was consented by the PINS on 12th July 2024.
- **Little Crow Solar Park:** a Solar Park exceeding 50MW within North Lincolnshire that was consented by the PINS on 5th April 2022. It was predicted that there would be 16 two-way daily HGV trips each month over an 11-month construction programme. It is noted that the Transport and Access Chapter for this scheme referred to a total of 356,670 modules requiring 14 two-way HGV movements per day over the 11-month programme. The Little Crow Solar Park scheme also included BESS.
- **Mallard Pass Solar Farm:** a Solar Park exceeding 350MW in Essendine, Lincolnshire that was consented by the PINS on 12th July 2024. Mallard Pass predicted a peak of 54 daily HGV deliveries per day and 105 LGVs, with a total of 159 two-way vehicle trips across the 24-month programme.
- **Gate Burton Energy Park:** a Solar Park comprising 500MW in West Lindsey, Lincolnshire that was consented by the PINS on 12th July 2024. The scheme predicted a total of 244 daily vehicle trips (comprising 60 daily HGVs) across the 24-36 month programme, though the majority of these trips were associated with the grid connection corridor also linked to the Cottam Solar and West Burton DCOs.

SITE JUSTIFICATION

- 2.2.3 It is acknowledged that the Longfield Solar Farm, Sunnica Energy Farm and Gate Burton proposals include a significant amount of works and construction vehicle activity that is associated with the additional options for further grid connections or additional substations - which is not considered to be relevant to the Project given the current proposals.
- 2.2.4 The Little Crow scheme was not considered appropriate to include as the programme only lasted 11 months and the scheme only generated a very low level of HGV activity. Although as above, it is noted that the scheme referred to a total of 356,670 modules requiring 14 two-way HGV movements per day over the 11-month programme for the modules alone (87% of the total HGV activity associated with modules with the remaining trips associated with BESS and supporting infrastructure).
- 2.2.5 On that basis, the Cleve Hill Solar Park was deemed to be the most suitable in terms of the proposals and works required. The methodology for trips for the Mallard Pass scheme followed a similar approach and will be included for reference.



- 2.2.6 As stated previously, whilst there may be differences in the individual schemes in other aspects, such as the amount of cabling required for the layout of a specific scheme or the amount of material to be imported to construct the on-site access roads, it is considered that the overall peaks in construction would be comparable.
- 2.2.7 The Applicant would then commit to accommodating the anticipated peak for construction vehicles within the programme, which would be developed further by the contractor, once appointed.
- 2.2.8 Any deviations would then be accounted for within the programme; whereby the peak number of vehicles remains the same, albeit the duration of the peaks may increase or decrease accordingly.

PROGRAMME

- 2.2.9 A review of the Cleve Hill Solar Park construction programme identified a total construction period of 24-months. Assuming that the Project would be constructed over a similar period, the traffic generation per activity identified for the Cleve Hill Solar Park is generally considered to be consistent.
- 2.2.10 The trip generation and subsequent construction ‘trip rates’ associated with the Cleve Hill Solar Park are presented below in **Table 2-1**.

Table 2-1: Cleve Hill Trip Generation and Construction Vehicle Trip Rates

SCHEME	MODULES	TOTAL VEHICLE DAILY PEAK		TOTAL DAILY HGVS PEAK	AVERAGE DAILY FLOWS	
		HGV	LGV		HGV	LGV
Cleve Hill	884,388	60	162	80	62	90
Trip Rate per 1,000 Modules		0.0678	0.1832	0.0905	0.0701	0.1018

- 2.2.11 The Cleve Hill peak daily construction traffic flows were identified as occurring in week 100 of the construction programme. This comprised a total of 222 two-way total vehicle movements, of which 162 two-way movements were identified as being LGVs and 60 two-way movements were associated with HGVs.

2.3 PROJECT QUANTUM

- 2.3.1 For the purposes of this TN and the PEIR assessment, it is assumed that the solar aspects of the Project comprise a total of 950,000 modules and the programme is 24 months. It is also assumed that there is a peak of 650 staff required, though on average this would be less than 300 staff.
- 2.3.2 In addition to the assumptions on modules and to ensure the assessment is robust, it is proposed to apply a contingency factor of 10% to the expected trip generation to account for any additional trips that could be associated with transfers of staff between the location of the works or fluctuations in daily requirements due to equipment demand and availability.
- 2.3.3 With the addition of the contingency factor, the construction vehicle activity for the Project across the site is presented within **Table 2-2**.

Table 2-2: Proposed Maen Hir Construction Trip Generation (Two-way Trips)

SCHEME	TOTAL VEHICLE DAILY PEAK		TOTAL DAILY HGVS PEAK	AVERAGE DAILY FLOWS	
	HGV	LGV		HGV	LGV
Trip Rate per 1,000 Modules	0.0678	0.1832	0.0905	0.0701	0.1018



SCHEME	TOTAL VEHICLE DAILY PEAK		TOTAL DAILY HGV PEAK	AVERAGE DAILY FLOWS	
	HGV	LGV		HGV	LGV
Proposed Maen Hir	71	191	95	73	106
Cleve Hill	60	162	80	62	90
Mallard Pass	41	105	54	42	58

- 2.3.4 For the purposes of the Environmental Statement (ES) and subsequent environmental assessments, it is proposed to assume that the peak in LGV trips and HGV trips overlap. On that basis, the Project would generate a worst-case of 95 two-way HGVs and 191 two-way LGVs (total of 286 two-way vehicle trips) across the 24-month construction programme.
- 2.3.5 It is noted that the figures calculated of 95 two-way HGV trips exceed the Applicant’s original estimation of 60 two-way HGV trips for a peak in daily activity so are considered to be robust.
- 2.3.6 Whilst in reality there will be phasing and it is unlikely this number of vehicles will consistently be required, for the purposes of the ES it will be assumed there will be no phasing and the number of vehicles generated will be consistent across the construction programme.



3 CONSTRUCTION TRIP DISTRIBUTION

3.1 OVERVIEW

- 3.1.1 As noted in Section 2, it is predicted that the Project will generate a total of 95 two-way HGVs and 191 two-way LGVs (total of 286 two-way vehicle trips) per day.
- 3.1.2 To inform how the peak in vehicular trips is split across the respective areas of the Project, the proportional areas of each area relative to the rest of the scheme will be used to inform the breakdown.
- 3.1.3 The indicative proportions for each of the areas of the Project and corresponding vehicular trips is shown below:
- Maen Hir North (28%) - 26 two-way HGVs and 54 two-way LGVs;
 - Maen Hir Central (44%) - 42 two-way HGVs and 84 two-way LGVs; and
 - Maen Hir South (28%) – 26 two-way HGVs and 54 two-way LGVs.

3.2 HGV DISTRIBUTION

- 3.2.1 The routing assumption for HGVs assumes that the vast majority of deliveries will route from the east via the Britannia Bridge. The following routes for HGVs are proposed:
- **Route 1: Northern Route:** Access to / from the north, via Britannia Bridge - A5025 - B5111 - Unclassified Road towards Penbol - Rhosgoch
 - **Route 2: Southern Route:** Access to / from the south, via Britannia Bridge - A55 - Junction 6 of the A5 - Holyhead Road - B4422 - B5109 - Lon Sardis - NCR5.
- 3.2.2 An overview of the routing for HGVs alongside the respective 38 links to be assessed in the ES is included at **APPENDIX A**.
- 3.2.3 Holyhead Port in the west may be used for a small number of Abnormal Indivisible Load (AIL) deliveries, which would take place alongside a nominal amount of AIL deliveries from the east via the Britannia Bridge, though any AIL deliveries will be planned and agreed with the Police through the Electronic Service Delivery for Abnormal Loads (ESDAL) system and therefore fall outside the scope of the typical HGV delivery process.
- 3.2.4 Where possible, the Project will seek to utilise internal access tracks to reduce the impact to the local highway network. To safeguard against the event that these internal access tracks are not feasible or deliverable, an assumption has been made using professional judgement to retain some of this traffic on the network to access all points of the Project to ensure that all the likely significant environmental impacts are considered.
- 3.2.5 It is assumed that vehicles will all arrive and depart via the same route.
- 3.2.6 An overview of the daily HGV distribution across the relevant links, alongside the corresponding traffic impact, is included at **APPENDIX B**.



3.3 STAFF DISTRIBUTION

- 3.3.1 With respect to the distribution of staff and LGV trips, a review of the likely routes has been undertaken based on the proximity of the respective area of the Project to surrounding land uses, including residential settlements and areas that trips could reasonably originate from.
- 3.3.2 For Maen Hir North, it is assumed that trips could feasibly originate from any direction north, east and west at equal proportions to account for the residential settlements in these directions. However, the majority of the traffic flow is likely to come from the south given the size of the residential settlements in this location and access via the SRN and A55 should these trips originate from east of Anglesey.
- 3.3.3 A similar assumption is made for Maen Hir Central with trips split evenly between the north, east and west, with the majority arriving from the south.
- 3.3.4 For Maen Hir South, it is assumed that the majority of trips will route from the south via the A55, though a small proportion would route from the north or from the east via the B5111.
- 3.3.5 A summary of the assumed distribution to each respective area of the Project is provided in **Table 3-1**.

Table 3-1: Proposed Maen Hir Staff / LGV Distribution

DIRECTION	MAEN HIR NORTH	MAEN HIR CENTRAL	MAEN HIR SOUTH
North	20%	20%	10%
East	20%	20%	10%
West	20%	20%	0%
South	40%	40%	80%

- 3.3.6 The general routing distribution has then been applied to the LRN and each of the links using a series of ‘first-principles’ assumptions using the Google Maps route planner tool to identify the quickest and most logical route.
- 3.3.7 It is assumed that vehicles will all arrive and depart via the same route.
- 3.3.8 An overview of the daily distribution for staff / LGV trips on each link is included at **APPENDIX C**.

3.4 TOTAL VEHICLE IMPACT

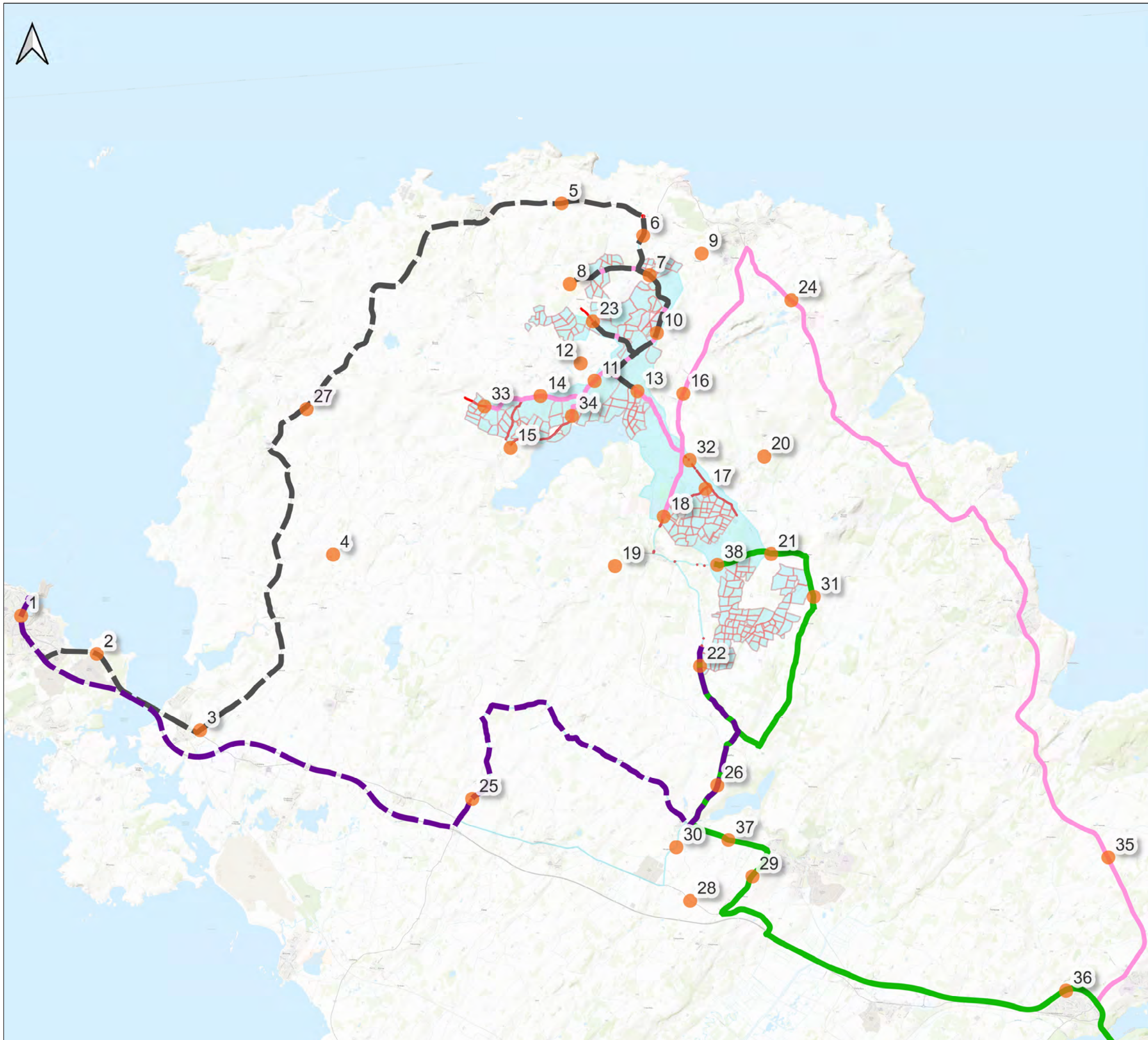
- 3.4.1 An overview of the total vehicular trip impact and distribution of the Project on each link across the LRN is included at **APPENDIX D**.
- 3.4.2 If required, the vehicular impact will be amended to reflect any changes in the Project to ensure that the likely significant environmental effects are considered.



APPENDIX A

VEHICLE ROUTING AND LINK OVERVIEW





LEGEND

Boundary

Site Boundary

PEIR Boundary

Survey Location

Link Location

Routes

Route 1 - Northern Route

Route 2 - Southern Route

Additional Southern AIL Route

Additional Northern AIL Route

- 1 Victoria Road
- 2 London Road
- 3 A5025 West
- 4 Llynon Lodge
- 5 A5025 Mid
- 6 Burwen
- 7 Ty-Coch
- 8 St Peirios
- 9 The Lastra Farm
- 10 Coed Y Gwynt
- 11 Penbol Gatehouse
- 12 Hafod Uchaf
- 13 Jones John
- 14 Carreglefn
- 15 Llanbabo
- 16 B5111 North
- 17 Frongaer BB
- 18 B5111 Mid
- 19 B5112 North
- 20 Capel Park
- 21 Lon Leidr
- 22 B5111 South
- 23 Bodewryd
- 24 A5025 East
- 25 B5112 South
- 26 Bryn Hyfryd
- 27 A5025 Lon Las
- 28 A5 Ffordd Caergybi
- 29 B4422
- 30 Llangedfni
- 31 NCR 5
- 32 Frongaer BB 2 (Unnamed Road)
- 33 Tref Alaw (Unnamed Road)
- 34 Penbol Gatehouse (Unnamed Road)
- 35 A5025 Pentaeth Road
- 36 A55
- 37 B5109
- 38 NCR 5 (2)



PROJECT TITLE

PROSIECT MAEN HIR

DRAWING TITLE

Construction Routing Overview

ISSUED BY	VTP	T: 01865 887 050
DATE	06.08.24	DRAWN GJ
SCALE @A4	NTS	CHECKED CR
STATUS	ISSUE	APPROVED CR

DWG. NO. 0001_SK001_A

No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

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Sources: Ordnance Survey

APPENDIX B

HGV DISTRIBUTION



LINK	NAME	HGV DISTRIBUTION		DAILY TRIPS	
		NORTHERN ROUTE*	SOUTHERN ROUTE*	TOTAL VEHICLES	HGV
1	Victoria Road			0	0
2	London Road			0	0
3	A5025 West			0	0
4	Llynon Lodge			0	0
5	A5025 Mid			0	0
6	Burwen			0	0
7	Ty-Coch	49%		33	33
8	St Peirios			0	0
9	The Lastra Farm			0	0
10	Coed Y Gwynt	49%		33	33
11	Penbol Gatehouse	21%		14	14
12	Hafod Uchaf			0	0
13	Jones John	70%		48	48
14	Carreglefn	11%		7	7
15	Llanbabo	11%		7	7
16	B5111 North	100%		68	68
17	Frongaer BB			0	0
18	B5111 Mid	30%		20	20
19	B5112 North			0	0
20	Capel Park			0	0
21	Lon Leidr		20%	5	5
22	B5111 South		100%	26	26
23	Bodewryd	11%		7	7
24	A5025 East	100%		68	68
25	B5112 South			0	0
26	Bryn Hyfryd		100%	26	26
27	A5025 Lon Las			0	0
28	A5 Ffordd Caergybi			0	0
29	B4422		100%	26	26
30	Llangefni			0	0
31	NCR 5		20%	5	5
32	Frongaer BB 2 (Unnamed Road)			0	0
33	Tref Alaw (Unnamed Road)	11%		7	7
34	Penbol Gatehouse (Unnamed Road)	11%		7	7
35	A5025 Pentaeth Road	100%		68	68
36	A55		100%	26	26
37	B5109		100%	26	26
38	NCR 5 (2)		20%	5	5

*Northern HGV route covers Maen Hir North and Maen Hir Central. Southern HGV route covers Maen Hir south only.

APPENDIX C

LGV DISTRIBUTION



LINK	NAME	LGV DISTRIBUTION			DAILY TRIPS	
		MAEN HIR NORTH	MAEN HIR CENTRAL	MAEN HIR SOUTH	TOTAL VEHICLES	HGV
1	Victoria Road	11	17		28	0
2	London Road	11	17		28	0
3	A5025 West	11	17		28	0
4	Llynon Lodge				0	0
5	A5025 Mid	11	17		28	0
6	Burwen	11	17		28	0
7	Ty-Coch	54	17		70	0
8	St Peirios	11			11	0
9	The Lastra Farm	11	17	5	33	0
10	Coed Y Gwynt	43	34	5	82	0
11	Penbol Gatehouse		17		17	0
12	Hafod Uchaf				0	0
13	Jones John	21	76	5	103	0
14	Carreglefn		17		17	0
15	Llanbabo		17		17	0
16	B5111 North	11	17	5	33	0
17	Frongaer BB				0	0
18	B5111 Mid	21	76	11	108	0
19	B5112 North	11	17	5	33	0
20	Capel Park				0	0
21	Lon Leidr				0	0
22	B5111 South	11	17	54	81	0
23	Bodewryd	11			11	0
24	A5025 East	11	17	5	33	0
25	B5112 South	5	8	21	35	0
26	Bryn Hyfryd	11	17	43	70	0
27	A5025 Lon Las				0	0
28	A5 Ffordd Caergybi				0	0
29	B4422	5	8	21	35	0
30	Llangefni	5	8	21	35	0
31	NCR 5				0	0
32	Frongaer BB 2 (Unnamed Road)				0	0
33	Tref Alaw (Unnamed Road)				0	0
34	Penbol Gatehouse				0	0
35	A5025 Pentaeth Road	11			11	0
36	A55				0	0
37	B5109				0	0
38	NCR 5 (2)				0	0

APPENDIX D

VEHICULAR TRIP SUMMARY



LINK	NAME	TOTAL PROPOSED DAILY TRIPS	
		TOTAL VEHICLES	HGV
1	Victoria Road	28	0
2	London Road	28	0
3	A5025 West	28	0
4	Llynon Lodge	0	0
5	A5025 Mid	28	0
6	Burwen	28	0
7	Ty-Coch	104	33
8	St Peirios	11	0
9	The Lastra Farm	33	0
10	Coed Y Gwynt	115	33
11	Penbol Gatehouse	31	14
12	Hafod Uchaf	0	0
13	Jones John	150	48
14	Carreglefn	24	7
15	Llanbabo	24	7
16	B5111 North	101	68
17	Frongaer BB	0	0
18	B5111 Mid	128	20
19	B5112 North	33	0
20	Capel Park	0	0
21	Lon Leidr	5	5
22	B5111 South	108	26
23	Bodewryd	18	7
24	A5025 East	101	68
25	B5112 South	35	0
26	Bryn Hyfryd	97	26
27	A5025 Lon Las	0	0
28	A5 Ffordd Caergybi	0	0
29	B4422	62	26
30	Llangefni	35	0
31	NCR 5	5	5
32	Frongaer BB 2 (Unnamed Road)	0	0
33	Tref Alaw (Unnamed Road)	7	7
34	Penbol Gatehouse (Unnamed Road)	7	7
35	A5025 Pentaeth Road	79	68
36	A55	26	26
37	B5109	26	26
38	NCR 5 (2)	5	5