

Parc Solar Caenewydd, Swansea

Construction Traffic Management Plan

Development of National Significance in the Renewable Energy Sector
Application Submission





Document Management.

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1. Introduction

- 1.1. Pegasus Group has been appointed by Taiyo Power & Storage Limited (herein referred to as “the Applicant”) to undertake an assessment of the highway and transportation matters for a proposed Non-EIA¹ utility-scale solar and battery storage facility on land fronting the A484 and Swansea Road (B4560) at Gowerton, Swansea. It will deliver a host of landscape, biodiversity, soil, and hydrological enhancements, including measures to strengthen habitat connectivity through this part of the valley, the creation of green buffer zones and public right of ways improvements. The development is called ‘Parc Solar Caenewydd’.
- 1.2. The main development site (excluding cable route) extends to 83 hectares with the energy infrastructure extending to 32 hectares (comprising solar, batteries & substation compounds).
- 1.3. This CTMP accompanies the package of technical documents submitted to Swansea Council as part of a full application in consideration of the development proposal.
- 1.4. The site is currently comprised of open land, with the development split into two separate land parcels: a Northern Development Parcel and Central Development Parcel.
- 1.5. Three accesses are proposed to serve the solar site:
 - i. The Northern Development Parcel is proposed to be served via an upgraded fieldgate access from the A484, approximately 30 metres northwest of the A484 / B4560 Swansea Road. It is proposed that the upgrades will include junction widening and surfacing upgrades; and
 - ii. The Central Development Parcel will be served by two accesses. The primary construction access will be served via the existing southern arm of the A484 / B4560 Swansea Road roundabout. A secondary site access is proposed approximately 400 metres southeast of the B4560 Swansea Road / Hospital Road junction. This secondary access will be utilised by National Grid and specialist operatives during both construction (of the solar and battery storage element) and operational phases.
- 1.6. Two potential Points of Connection (PoC) are proposed into existing pylons. One PoC is located on land to the north of the B4560 Carmarthen Road, and the other is located on land to the west of Denver Road. It is understood that only one PoC will be used, to be determined prior to commencement of construction.
- 1.7. Access to the potential PoC to the north of the B4560 Carmarthen Road is located approximately 800 metres (on road distance) east of the secondary access to the Central Development Parcel, served from an existing private access junction to the Papermill Trout Fishery. Access to the potential PoC located on open land to the west of Denver Road is approximately 1.4 kilometres (on road distance) southeast of the secondary access to the central parcel, which is served by an existing dropped kerb vehicle footway crossover (although a new construction access road would need to be provided).

¹ On 17 August 2022, Planning & Environmental Decision Wales adopted its Environmental Impact Assessment (EIA) Screening Direction. The Welsh Ministers direct that the development is not EIA development within the meaning of the Regulations.



- 1.8. All accesses are shown to be suitable for their proposed uses, with associated improvements where considered necessary detailed in this report.
- 1.9. It is envisaged that the construction programme will take around eight to nine months (up to 39 weeks). It is estimated that the construction of the green infrastructure, and solar energy and battery storage facility could generate an average of eight two-way vehicular movements per day over the eight to nine months construction period. However, it is typical with schemes of this nature that deliveries decrease as construction progresses. This CTMP sets out the following:
- i. Site access arrangements.
 - ii. Routing for construction Heavy Goods Vehicles (HGVs).
 - iii. HGV numbers and vehicle frequency; and
 - iv. Future condition surveys.
- 1.10. It will be the responsibility of the appointed contractor to comply with all statutory regulations and guidelines as appropriate, in relation to construction and movement activities.

Consultation

- 1.11. The first phase of statutory consultation was carried out up to August 2023 for a development proposal of a similar scale at the site. A consultation response for the first phase was received on the 22nd of November 2022 from Swansea Council (SC) as the local highway authority relating to highway impacts have been acknowledged and are addressed in this CTMP. At the time of writing, a second consultation response is yet to be provided for the first phase by SC following submission of CTMP Revision B.
- 1.12. It is noted that a Transport Statement (TS) has been requested by SC to cover access to the site for all modes. Given the type of development proposed, it is considered that the provision of a CTMP is most appropriate. However, if ultimately considered necessary, a short TS can be provided.

2. Site Context

- 2.1. The development site is located approximately 1.5 kilometres to the west of Fforestfach and approximately seven kilometres to the northwest of Swansea.
- 2.2. The site covers approximately 80 hectares of land dedicated to green infrastructure and wildlife habitat improvements, with around 32 hectares available for PV arrays and battery containers. The site is separated into three parcels, with the main development parcel to the south of the B4560 and smaller land parcels to the north of the A484, to the east of Public Right of Way LC71.
- 2.3. The site is bound by the B4560 Swansea Road to the north, open land to the east, the river Afon Lian to the south, and Gowerton treatment works to the west. The site lies within the administrative boundary of Swansea Council (SC). The local highway authority is Swansea Council. A site location plan is included at **Appendix A**.

Public Rights of Way

- 2.4. The parcels of land which comprise the site are subject to five registered Public Rights of Way (PRoW) in total. These are namely PRoW Llwchwr 101 (LC10), Cockett (CO600), Llwchwr 26 (LC26), Llwchwr (LC71), and Llwchwr 72 (LC72). These are shown in a map included at **Appendix B**. No bridleways or byways route through or bound the site.
- 2.5. PRoW Llwchwr (LC71) and PRoW Llwchwr 26 (LC26) both route roughly north to south within the eastern section of the site.
- 2.6. PRoW Cockett (CO600) routes from the site's most eastern point through the site's main land parcel and converges with PRoW Llwchwr 101 (LC10) to the south of the site.
- 2.7. One PRoW routes to the south of the site's southern boundary. PRoW Llwchwr 101 (LC10) connects PRoW Cockett (CO600) with the two PRoWs which route vertically through the site before connecting to PRoW Llwchwr 72 (LC72) which continues to route to the south-east of the site and exits onto the B4560.

Committed Development

- 2.8. A committed residential development (reference 2016/1478) is located approximately one kilometre to the north of the proposed site. The permission is for the development of 705 dwellings, a primary school, commercial floor space, outdoor sports provision and associated green spaces. Considering the size of the development, the scheme is expected to be completed over a 12 year period.
- 2.9. During the busiest times of the construction period, it is expected that four articulated lorries and ten rigid lorries will visit the site per day in addition to a small number of contractor vehicles. This information has been derived from the CTMP provided as part of the application.
- 2.10. The forecast trips associated with the proposed development are discussed in further detail in **Section 6**. The numbers of movements per day are considered to be low in real terms and it is not considered that they will have a material impact when combined with the approved trips generated by the committed development.



Existing Vehicular Access

Central Development Parcel

- 2.11. Access to the western section of the Central Development Parcel is currently provided via the southern arm of the A484 / B4620 / B4560 Swansea Road roundabout. The arm provides access to a private access road which serves Penyfodau Fawr Farm, with associated farm shop and car park. The private access road is lightly trafficked, as experienced during the site visit.
- 2.12. The private road varies in width, although the majority of the route is between approximately 3.5 and 4.5 metres wide. There are two informal passing places provided along the private road as it routes towards the farm shop where road users are required to wait for any oncoming vehicle to enter / exit through the narrower sections.

Central Development Parcel Secondary Access

- 2.13. There is an existing fieldgate access to the rear of the layby on the southern side of the B4560 Swansea Road where the secondary access is located. However, the fieldgate is overgrown with foliage and is understood not to have been used to access the site in some time.

Northern Development Parcel

- 2.14. The Northern Development Parcel is served via an existing priority junction with three metre bellmouth radii on both sides of the carriageway and an approximate 4.8m wide carriageway width. A footway is provided along the southern side of the B4560, either side of the access, although no dropped kerbs are provided for crossing the junction. Access to the site is via a fieldgate, set back approximately ten metres from the carriageway.

Potential Point of Connection north of the B4560 Carmarthen Road

- 2.15. The potential PoC located on land to the north of the B4560 Carmarthen Road is currently served from an existing private access to Papermill Trout Fishery. The junction has a three metre wide carriageway and two metre wide bellmouth radii, with a lighting column located within the verge to the immediate east of the junction. From a desktop study, it appears that vehicles currently overrun the verge on the western side of the junction when accessing and egressing the junction.
- 2.16. The Applicant confirms that discussions with the landowner regarding use of the access is progressing positively.

Potential Point of Connection on land to the west of Denver Road

- 2.17. The potential PoC located on land to the west of Denver Road is located on open land which is currently accessed via a dropped kerb vehicle footway crossover. However, there is no formal access track to the PoC.
- 2.18. The Applicant confirms that discussions with the landowner regarding use of the land to access the PoC is progressing positively.



Local Highway Network

B4560 Swansea Road/Carmarthen Road

- 2.20. The B4560 is a single carriageway road measuring approximately 8.0 metres in width and is generally lit. Double yellow lines prevent parking along the majority of its length between the site and the roundabout junction with the A484. There is a 17 tonne weight limit due to a weak bridge approximately one kilometre southeast from the Hospital Road junction.

A484

- 2.21. The A484 forms two of the arms at the roundabout junction with the access road to the Penyfodau Fawr farm shop, B4560 Swansea Road, and the B4620 Swansea Road. The road is subject to the national speed limit, although this reduces to 40mph on the approaches to the roundabout.
- 2.22. The A484 is provided as a dual carriageway on its approaches to the roundabout and as a single carriageway when leaving the roundabout. Horizontal yellow lines are provided on both roundabout approaches as a traffic calming measure.

A483

- 2.23. The A483 is located approximately two kilometres to the east of the site. It provides access to the M4 motorway at its northern end and to Swansea at its southeastern end. The carriageway is restricted to 50mph and is lit within the vicinity of its roundabout junction with the A484. The A483 connects to Penllergaer interchange to the north which routes onto the M4.

Personal Injury Accident Data

- 2.24. Liaison with Carmarthenshire County Council (CCC) highway officers has confirmed that crashmap.com records are acceptable for the purpose of Personal Injury Accident (PIA) analysis.
- 2.25. A review of the data available for the most recent three year period between 2019 and 2021 confirms that there have been three PIA incidents within the vicinity of the site, which resulted in two slight, one serious and one fatal PIA. A review of each PIA incident is provided below. The accident data, including the plot of the PIAs, is available at **Appendix C**.
- 2.26. The first incident occurred on the B4620 east around 420m to the east of its junction with Hospital Road. It occurred at 08:18 on Thursday 4th July 2019 in daylight and conditions recorded as being dry and fine, without high winds. The accident appears to have occurred when a car attempted to perform a U-turn but collided with an oncoming pedal cyclist. The incident resulted in one serious PIA.
- 2.27. The second incident occurred on the B4620 west approach to the A484/Swansea Road roundabout at 18:17 on Tuesday 1st September 2020. The incident occurred in daylight, with conditions recorded as being dry and fine, without high winds. The incident involved two cars, which appear to have been involved in a nose to tail collision resulting in one slight PIA.



- 2.28. The third and final incident occurred on the B4620 east around 320 metres west of the A484/Swansea Road roundabout at 11:14 on Tuesday 23rd February 2021. No additional information is provided for the incident, although it was confirmed that there were two vehicles involved which resulted in one slight and one fatal PIA.
- 2.29. Following review of the accidents within the vicinity of the site, whilst acknowledging the fatal PIA it appears that there are no accident patterns or clusters to the accidents recorded within the previous three year.

Summary

- 2.30. It is concluded from the available records that there is no existing adverse highway safety pattern or problem on the highway network within the vicinity of the site.

Conclusion

- 2.31. It is concluded that the roads to and from the site are suitable to accommodate construction type vehicles with no existing highway safety issues within the vicinity of the site access. All routes within the vicinity of the site which serve the proposed access are A and B roads, and as such have regular HGV movements. Therefore, the roads in the vicinity of the site are considered suitable for construction traffic associated with the development.

3. Development Proposals

- 3.1. The development proposals associated with this application include the installation, operation, and decommissioning of a renewable energy scheme comprising ground mounted photovoltaics and battery energy storage which could produce approximately 44MW across a redline boundary that extends to a total area of 83.2 hectares (including the cable route) of land located approximately 1.5 kilometres west of Fforestfach and approximately seven kilometres to the northwest of Swansea. Two PoC are proposed via existing pylons. The first PoC is located approximately 800 metres (on road distance) east of the secondary access to the Central Development Parcel on land to the north of the B4560 Carmarthen Road, and the second PoC is located on open land to the west of Denver Road, approximately 1.4 kilometres (on road distance) southeast of the secondary access to the Central Development Parcel.

Central Development Parcel

Primary Access

- 3.2. The primary access for the Central Development Parcel is proposed from the private access road which serves Penyfodau Fawr Farm. Construction vehicles will access the road from the southern arm of the A484 / B4560 Swansea Road roundabout. The SC consultation response confirms that there is no issue with the use of this access in principle, although there may be a need to widen the access road due to the potential for conflict with the existing use.
- 3.3. **Figure 3.1 Revision C** shows a Swept Path Assessment (SPA) of a 16.5 metre Heavy Goods Vehicle (HGV) routing along a construction access track, proposed to be accessed from the private road approximately 60 metres south from its junction with the A484 / B4560 Swansea Road roundabout. The construction access track is proposed to route parallel along the eastern side of the private road. The SPA indicates that a HGV would require the use of the majority of the access road carriageway width, therefore requiring smaller vehicles to give way. Given the nature of the private access road, it is considered that vehicle speeds along the private access road will be relatively slow, and that appropriate visibility is available for two opposing vehicles to identify and give-way to each other. Therefore, it is not considered necessary to widen the access road.
- 3.4. No construction vehicles will be permitted to route through the farmyard. The number of existing vehicles using the access to route to the farm shop is not considered to be material when considered on average across a typical hour. However, if considered necessary, banksmen could be deployed to control the flow of vehicles on the section of the private access road in which there could be conflict with construction vehicles prior to the alternative access track, with priority given to farm and customers of the farm shop over construction vehicles associated with the development of the green infrastructure and renewable energy facility.
- 3.5. The main construction compound for the green infrastructure and renewable energy facility is anticipated to be located in the Central Development Parcel. This will be where all deliveries will be made to throughout the construction phase. This includes deliveries of materials and plant for the Northern Development Parcel. All machinery and deliveries will be off loaded here before being transported by either a 10-metre rigid vehicle or a tractor and trailer before being dropped off at each parcel of land, respectively.

Secondary Access

- 3.6. The secondary access for the Central Development Parcel is proposed to be served from the rear of an existing lay-by on the southern side of the B4560 Swansea Road (E), approximately 430m east of the Hospital Road access. The area is currently overgrown and will require clearance prior to construction. It is also proposed to stop up the lay-by.
- 3.7. The initial SC consultation response requests additional information in relation to the provision of visibility splays and footway provision. Footway provision is not considered to be necessary for the access as no pedestrian access is anticipated.
- 3.8. **Figure 3.2 Revision B** has been superseded by **Appendix D**, which shows the proposed secondary access arrangement for the Central Development Parcel. The access is proposed to be provided with a four metre wide carriageway, with a ten metre radii on the western side of the bellmouth, which would taper into the edge of the carriageway, and a six metre radii on the eastern side of the bellmouth. The taper on the western side of the junction would be approximately 34 metres in length. The existing layby is proposed to be stopped up to accommodate the access.
- 3.9. No pedestrian access is anticipated to the Secondary Access.

Northern Land Parcel Site Access

- 3.10. The Northern Development Parcel is proposed to be served via an existing access on the western side of the B4560 Swansea Road (W), located approximately 30 metres northwest of the A484 / B4560 Swansea Road roundabout.
- 3.11. It is anticipated that all plant and machinery will be decanted within an internal site compound in the Central Development Parcel, prior to being transported to the Northern Development Parcel via a 10m Rigid Vehicle or a tractor and trailer.
- 3.12. The initial SC consultation response suggests that this access is not likely to be supported based on the inability of vehicles to turn right out of the site, with visibility splays also requested.
- 3.13. **Figure 3.3 Revision C** shows the proposed mitigation of the access. The mitigation proposes increasing the eastern side of the junction to a 6m radii bellmouth, with dropped kerbs and tactile paving to be provided on both sides of the junction. A visibility splay of 2.4m x 33m is shown to be achievable to the east towards oncoming traffic, commensurate with vehicle speeds of 25mph. It is anticipated that vehicle speeds at this point will be lower than 25mph in real terms as vehicles will have slowed to manoeuvre the roundabout junction prior to exiting onto the B4560 (W).
- 3.14. **Figure 3.3 Revision C** also shows a SPA for a 10m Rigid Vehicle accessing the site from the east (left turn in) and egressing the site to the west (left turn out), as per the proposed construction route set out in **Section 5**. Signage indicating that the access is a left turn exit only junction will be provided on the lead up to and adjacent to the junction, with the signage and locations to be agreed with the highway authority prior to commencement of the development. The signs will be provided in Welsh above English.

Road Safety Audit

- 3.15. An independent Stage One Road Safety Audit (RSA1) has been carried out for each of the proposed access arrangements. A copy of the audit brief is included at **Appendix E**, the RSA1 is included at **Appendix F** and a Designer's Response is included at **Appendix G**. The RSA raises five issues.
- 3.16. The Designer's Response at **Appendix G** confirms that these issues are addressed within this CTMP and/or can be addressed at detailed design stage. **Figure 3.1 Revision C** provides a Swept Path Assessment of a 16.5m HGV routing from the A484 / B4560 Swansea Road roundabout, along the first 60 metres of the private road and then accessing the proposed construction access track which will route parallel to the east of the private road, therefore avoiding the farmyard and addressing issue 3.2 and assisting with issue 3.1. **Figure 3.3 Revision C** addresses issues 3.4 and 3.5. It is considered that the issues relating to measures being introduced to ensure the safety of pedestrians within the vicinity of the access arrangements are addressed within this CTMP and can be covered by a suitably worded planning condition.

Abnormal Loads

- 3.17. It is noted that Abnormal Indivisible Load (AIL) vehicles will require access to the Central Development Parcel, through both the primary and secondary accesses. These will be subject to an Abnormal Load Assessment in due course.

Public Rights of Way

- 3.18. At this stage, no PRoWs will be diverted as a result of the installation of the solar and battery storage facility. Applications will be submitted, including the necessary time for public consultation, for any required temporary closures of any stretches of PRoWs.
- 3.19. All existing PRoWs identified in **Section 2** will be maintained at all times. If considered necessary, a banksman will be deployed to control both pedestrian movements and traffic control throughout the duration of construction phase when crossing of the PRoWs are required.

4. Site Compound and Internal Routing

Site compounds

- 4.1. Two temporary construction compounds will be required during the construction and decommissioning phases of the development. Both will be located in the Central Development Parcel, with one located in Field Number 11 on the site layout, served from the primary access, and the second located in Field Number 1 on the site layout, served from the secondary access. Both compounds would contain the following:
- Temporary site facilities (Port-a-Cabin type) to be used for site office and welfare facilities, including welfare facilities with provision for sealed waste storage and removal.
 - Container storage unit(s) for tools and equipment storage.
 - Container storage unit(s) for components and materials.
 - Refuelling compound for construction vehicles and machinery.
 - Adequate parking area for cars, construction vehicles and machinery.
 - Designated skips for recycling and construction waste.
 - Wheel washing facility.
 - Adequate space for HGV to manoeuvre and offload within site to reduce impacts on local roads.
- 4.2. For the single field north of the A484, all plant and machinery will be off loaded at the main compound in the central site (next to the farmyard and abutting fields) and then transported along the local road to the northern site. For the main site, all plant and machinery will be off loaded at the compound in the central site (farmyard and abutting fields) and then transported along upgraded existing farm tracks by tractors and trailers.
- 4.3. Whilst the layout of internal site compounds has not been determined at this stage (subject to a contractor being appointed), it is considered that this can be addressed by an appropriately worded planning condition.
- 4.4. No parking by contractors, visitors or delivery vehicles will be permitted on the access tracks leading to the site compounds during the construction phase. Visitors will be advised of the parking arrangements in advance of travelling to the site.
- 4.5. The site compounds will be drawn back/removed as the development of the site progresses.



Internal Roads

- 4.6. It is anticipated that the internal layout will include operational phase access tracks of approximately three metres width (this can vary across the site depending on bends, passing places etc) throughout the site allowing for the movement of construction and maintenance vehicles. The operational phase roads will be completed at the end of the construction phase. During the construction period temporary trackway will be installed, or where conditions permit, over bare ground. No construction vehicles will be permitted to route through the farmyard.
- 4.7. The tracks will be made to withstand the loads transported via tractor and trailer and plant, as appropriate, thereby reducing the propensity for debris to be taken onto the adjacent highway. Internal access tracks will be constructed of graded stone on top of permeable matting.
- 4.8. If ground conditions dictate, wheel washing facilities will be provided at the access point and the entrance to the construction compounds. Wheel wash facilities would be provided in the form of a portable automated high-pressure washer with motion sensors to conserve water, or similar. All construction vehicles would therefore route past the wheel wash facility when egressing via the site and as such will reduce the spread of mud and dirt onto the local highway network. In addition, the condition of the highway will be monitored regularly and, if required, road sweepers will be deployed.

5. Proposed Cable Routing

- 5.1. A cable route is proposed between the substation within the Central Land Parcel, which will be located within the vicinity of the secondary access (shown within Field Number 1 on the layout), to two potential PoCs. It is understood that only one PoC will be used, to be determined prior to commencement of construction. Both of the PoC are shown on the Site Layout which is submitted as part of the wider application.
- 5.2. Access to the potential PoC to the north of the B4560 Carmarthen Road is located approximately 800 metres (on road distance) east of the secondary access to the Central Development Parcel, served from an existing private access junction to the Papermill Trout Fishery. Access to the potential PoC located on open land to the west of Denver Road is approximately 1.4 kilometres (on road distance) southeast of the secondary access to the central parcel, which is served by an existing dropped kerb vehicle footway crossover (although a new construction access road would need to be provided).
- 5.3. The cable route will connect to the PoC via areas of private land and adopted highway.
- 5.4. It will be the responsibility of the appointed contractor to comply with all statutory regulations and guidelines as appropriate in relation to construction and movement activities associated with the installation of the cable route.
- 5.5. The contact details of the appointed contractor and those of the highways department at Swansea Council will be exchanged before commencement of the works on site.
- 5.6. The exact location of the cable route within the highway will be identified by the appointed contractor who will produce a Cable Route Feasibility Report prior to commencement. The presence of any structures, including culverts, along the cable route will be identified at this time, along with any mitigation measures that may be required.

Cabling Laying Method

- 5.7. Appropriate street works notices will be secured and suitable traffic management and procedures will be implemented along the cable route to minimise disruption to background traffic on the local highway network. Temporary mitigation measures are set out later in this Chapter.
- 5.8. The traditional trench and duct method will primarily be used. However, the horizontal directional drilling method may be used where there are identified constraints. Horizontal directional drilling allows for the required ductworks to be conducted and executed without the need to open, empty, and backfill the traditional trenches. Alternative dig methods will be used where appropriate or necessary, such as hand digging to avoid damage tree roots etc.
- 5.9. The estimated duration of works will be confirmed in the next iteration of this CTMP. At this stage it is anticipated that there will be two teams, one working from either end of the route.

Proposed Construction Compounds

- 5.10. All materials and plant will be stored within the construction compounds. Designated areas will be allocated for the storage of materials, machinery, and vehicles when not in use. Wherever possible, materials will only be delivered to the cable route when they are required.
- 5.11. Contractors and equipment will be transported to the cable laying site from the construction compounds on a daily basis. All contractor vehicles will park within the construction compounds in designated parking areas, available for both construction phase visitors and site operatives. Signage will be erected advising/designating where parking is available, with the signs provided in Welsh above English.

Proposed Junction Arrangements

- 5.12. Access to the cable route within the Central Development Parcel will be via the secondary access.
- 5.13. Access to the PoC from the B4560 Carmarthen Road would be via the existing access which serves Papermill Trout Fishery. Should this PoC be used the access would be widened by approximately 0.7 metres. A Swept Path Assessment for an eight metre vehicle accessing the PoC is shown at **Figure 5.1**. The design is subject to detailed design in due course.
- 5.14. Access to the PoC from Denver Road would be via an existing dropped kerb vehicle footway crossover and would require an access track to be constructed for access to the PoC. This access track will be located approximately 18 metres north of a play area, with appropriate screening and fencing to be provided. A drawing of the proposed access arrangements, inclusive of mitigation measures for the play area, will be provided in the next iteration of this CTMP. A Swept Path Assessment for an eight metre vehicle accessing the PoC is shown at **Figure 5.2**. The design is subject to detailed design in due course.

Forecasted Traffic Impact

- 5.15. It is anticipated that the construction teams that will install the cable will be associated with the following vehicles and machinery:
- i. Up to 20 HGVs associated with the delivery of all cables,
 - ii. Two transit vans with trailers;
 - iii. One 32 tonne tipper lorry;
 - iv. One 2.5 tonne excavator (transported via a flat-bed truck);
 - v. One hotbox (used to keep asphalt warm); and
 - vi. Four vans for traffic management.
- 5.16. It is assumed that each construction team would require one set of the above equipment (excluding the HGVs). The exact number of vehicle movements and staff will be confirmed in the next iteration of this CTMP.



- 5.17. The construction phase will be temporary and, alongside traffic management and mitigation measures set out later in this Chapter, the impact of the works on the local highway network would not be material.

Temporary Traffic Management

- 5.18. Where required, suitable temporary traffic management measures would be implemented to ensure safe operation and to reduce the impact of the cable route works on the local highway network as far as is reasonably practical.
- 5.19. Pedestrian access to properties within the affected roads will be maintained at all times.
- 5.20. There will be appropriate signage, lighting and guarding of the temporary works as per the Code of Practice "Safety at Street Works and Road Works" and Chapter 8 of the Traffic Signs Manual 1991, as required by Section 65 of the NRSWA 1991.
- 5.21. Detailed traffic management layouts, site specific risk assessments and method statements will be produced and agreed with SC for all traffic management and highways related construction activities. The precise nature and locations of signage will be agreed with SC and will remain in place for the duration of the construction period.
- 5.22. Appropriate traffic control signage will be agreed as part of any of the above traffic management measures, in line with the Traffic Signs Regulations and General Directions (TSRGD) 2016 and Traffic Signs Manual Chapter 8, to be provided in Welsh above English.
- 5.23. The following traffic management measures could be implemented along the cable route as needed, depending on the nature of the carriageway within which the works are taking place, and whether the cable will be laid within the carriageway or the verge.

Give and Take

- 5.24. On roads along the route where the speed limit is 30mph or less, a give and take arrangement will be implemented whereby traffic gives way to oncoming vehicles past the works.

Stop / Go Boards

- 5.25. On roads along the route where the speed limit does not exceed 60mph (and where adequate visibility and lighting is available), Stop / Go boards will be used to manage the flow of traffic past the cable works. Use of Stop / Go boards will be restricted to daylight hours.
- 5.26. Where manually rotated signs are in use and the operatives are not in direct line of sight, two-way radio communication between operators will be used.

Temporary Traffic Signals

- 5.27. Two way and / or multi-phase traffic signals will be considered where Stop / Go and Give and Take methods cannot be implemented.



Wheel Washing Facility

- 5.28. Wheel washing facilities (in the form of a pressure washer) will be provided within both construction compounds and at the access to the PoC from Denver Road. All vehicles leaving the compound to the cable route site areas will be inspected, and wheels will be washed to prevent mud/debris being spilled onto the roads.

Disposal of Waste

- 5.29. As per the requirement of the Section 50 licence, the appointed contractor will dispose of any waste material arising from the works responsibly, ensuring compliance with all legislation including, but not limited to, the Waste Duty of Care Code of Practice.

Compliance Inspections

- 5.30. SC will meet with the appointed contractor at regular intervals to ensure that the highway is reinstated according to standards. Inspections will take place during the works, six months following reinstatement, and within three months of the guarantee period (up to 3 years). The guarantee period defines the length of time that the end operator must return to bring the road surface back to normal if any defects occur.

6. Proposed Access Route Strategy

- 6.1. The solar farm components will be shipped in 12.2 metre containers which are typically carried to the site on 16.5 metre articulated HGVs.
- 6.2. A site visit was undertaken by Pegasus Group on 18th November 2021 to confirm the most suitable route for construction traffic.

Routing to Central Development Parcel Internal Compound

- 6.3. The proposed route for all traffic associated with construction of the solar farm anticipated to access the internal compound within the Central Development Parcel and decant, is shown on **Figure 6.1 Revision A** and summarised below:
 - i. Vehicles will exit the M4 Junction 47 and route south via the A483.
 - ii. From the A483, vehicles will route west onto the A484.
 - iii. Vehicles using the A484 will access the A484/ B4560 Swansea Road roundabout. From here, vehicles will route south onto the private road serving Penyfodau Fawr Farm and into the Central Development Parcel primary access.
- 6.4. The reverse route will be applied for vehicles exiting the site.
- 6.5. Once materials and plant have been delivered to and decanted within the Central Development Parcel internal compound, smaller vehicles (anticipated to be a 10m Rigid Vehicle / tractor and trailer) will transfer the materials to the Northern Development Parcel and Central Development Parcel secondary access. The proposed routes are below.

Routing to Northern Development Parcel

- 6.6. The following route is proposed for vehicles routing to the northern development parcel:
 - i. Vehicles will route from the Central Development Parcel primary access to the A484/ B4560 Swansea Road via the private access road and route west onto the B4560 Swansea Road (W).
 - ii. Vehicles will then turn left into the Northern Development Parcel.
 - iii. When exiting the Northern Development Parcel, it is proposed that vehicles will exit to the west (left turn out) only, due to the proximity of the A484/ B4560 Swansea Road roundabout. Vehicles will route along the A484 and turn south onto the B4296 Victoria Road; and
 - iv. Vehicles will then travel south before turning east onto the A484 at the B4296 Victoria Road/ A484 roundabout. The A484 connects to the A484/ B4560 Swansea Road roundabout, from Central Development Parcel primary access is accessed.



- 6.7. Signage will be displayed at the Northern Development Parcel access, indicating that construction traffic is only permitted to take a left turn out of the junction onto the B4560 Swansea Road. From here it will follow the pre-established construction traffic route summarised above.
- 6.8. Additionally, appropriate signage will be displayed in strategic locations within the vicinity of the access, warning other road users and pedestrians of potential slow moving construction traffic in the area. The signage will be provided in accordance with TSRGD standards in Welsh above English, the details and location of which will be agreed with the highway authority prior to commencement of the development.

Central Development Parcel secondary access

- 6.9. The following route is proposed for vehicles routing to the central development secondary access:
- i. Vehicles will route from the Central Development Parcel primary access to the A484/B4560 Swansea Road via the private access road and route west onto the B4560 Swansea Road (E). From here vehicles will gain access to the site via an access to the rear of the layby provision located on the southern side of the B4560. The route into the field parcel will utilise a former mine trackway which will be assessed and mitigated if considered necessary.
- 6.10. The routes will ensure, as far as practicable, that heavy construction vehicles associated with the site will not pass through the centre of any villages or small towns and no road closures will be required. There are no signed weight or height restrictions on the route, which is currently used by HGVs and large agricultural vehicles. Drivers will be informed of the route prior to departing for the site.

7. Indicative Construction Programme

Construction Phase

General

- 7.1. Details regarding the construction programme and delivery vehicle types have been provided by Taiyo Power & Storage Ltd based on experience in supporting the development of similar sites elsewhere in the UK. It is acknowledged that further assessment of the anticipated construction activity movements is requested from SC, including a breakdown of vehicle types and movements across an average day for the duration of the construction period.
- 7.2. It is anticipated that the solar battery and storage facility will take approximately eight to nine months (up to 39 weeks) to complete. This includes the preparation of the site, the temporary access roads (if necessary), erection of security fencing, assembly and erection and installation of the cabling and solar module arrays, PV strings, installation of the transformer, battery and substation containers and grid connection. An indicative construction programme is included at **Appendix H**.
- 7.3. The location(s) of where staff will travel from is unknown at this stage as it will depend upon the appointed contractor. However, it is anticipated at this stage that the non-local workforce will stay at local accommodation and general operatives will be transported to the site by minibuses to minimise the impact on the local highway network. The number of car trips to the site will be minimised to those of specialist engineers, National Grid engineers, public authority officers and senior staff, such as project managers and health and safety executives.
- 7.4. The construction period will include the use of HGVs to bring the equipment onto the site and this will be strictly managed to ensure that vehicle movements are controlled and kept to a minimum. Vehicles delivering to the site are of a size regularly using the A484, as set out in **Section 2**. As per **Section 6**, the proposed construction route will ensure, as far as practicable, that heavy construction vehicles associated with the site will not pass through the centre of any villages or small towns. As such special announcements and liaison with residents throughout the construction phase are not considered necessary.
- 7.5. The Applicant has confirmed that around 15 16.5m HGVs are required for every MWp at the site, split equally between the modules and mounting structures.

Vehicle Movements

- 7.6. An average of around 50 construction workers are forecast to be on site during peak times during the construction period. A temporary car parking area (including spaces for minibuses) will be provided on the site within a contractor's compound. Parking will therefore be contained within the site and no parking will occur on the local highway network.
- 7.7. The site is proposed to export up to 44MW with the current conceptual layout including approx. 67,500 modules. This would equate to a total of up to around 660 deliveries by 16.5m HGVs. Assuming an eight to nine month construction period (total) and a six-day working week, this equates to, on average, up to around five deliveries per day by the largest vehicle.

- 7.8. The current conceptual layout plans show a total of 92 inverters, five transformers, 42 battery storage containers, two substations and two storage customer switchgear containers (one for use, one spare) across 79 acres of module arrays. It is assumed that each component will arrive at the site by the smallest possible vehicle, which is anticipated at this stage to be a 10m Rigid Vehicle for inverters and 16.5m HGV for the battery storage, transformer, substation, and storage containers. It is assumed that these components will be transported individually due to their weight and as such this would equate to a total of 143 deliveries.
- 7.9. Some deliveries will be associated with the preparation of the access tracks within the site. As a worst case, stone may be required to construct the temporary access tracks on the site. The stone is likely to arrive on 10m Rigid Vehicles. The precise number will depend on the amount of stone required, but for the purpose of this assessment we have assumed that around 100 deliveries of stone may be required. This is considered to provide a robust estimate of the likely number of deliveries for the access track as in reality, it is likely that temporary access matting and/or soil stabilisation will be used instead resulting in fewer deliveries.
- 7.10. A number of front end JCBs may also be required to transport equipment around the site, and to distribute stone, as necessary. This is a similar size to a tractor and will either be transported to the site or be driven to the site. For the purpose of this assessment, we have assumed that around three JCBs could be required.
- 7.11. It is envisaged that up to around 30 16.5-metre-long articulated vehicles will also be required to transport the compound portacabins/storage to the site.
- 7.12. Up to 20 16.5m HGVs are also anticipated to be required to deliver the cable to connect equipment within the site to the PoC.
- 7.13. In summary, the applicant has confirmed the following large construction vehicle movements could be associated with the construction period as set out in **Table 7.1**. The consultation period and resulting changes to array areas and the associated required containers will enable, thereafter, an updated table to be produced.

Table 7.1 - Large Construction Vehicle Movements – Construction Period

Activity	Type of Vehicle	Total Number of Deliveries	Two-way movements
Delivery/Removal of equipment	Crane	4	8
Solar Farm Components (PV panels, support structures/mounting systems)	Up to 16.5 metre Articulated HGV	660	1320
Associated BESS infrastructure		10	20
Substations and housing		2	4
Contractors Compound		30	60
Customer switchgear containers		2	4
Battery Storage containers		42	84
Cables		20	40
Transformers		5	10
Access Tracks		10 metre Tipper Trucks	100
Backfilling Sand	100		200
Inverters	10 metre Rigid	92	184
Fencing, CCTV, Miscellaneous items		64	128
Concrete (for foundation pouring)	8 metre concrete truck	32	64
General	Front End JCB	3	6
Total		1,166	2,332

- 7.14. **Table 7.1** estimates that 1,166 deliveries (2,332 two-way movements) could be made by vehicles associated with construction, at an average of around five deliveries (ten two-way movements) per day, based on an eight to nine month construction period. This would equate to around one delivery every two hours, should deliveries outside of highway network peak hours be considered necessary. During the busiest times four articulated lorries and ten rigid lorries will visit the site per day. In addition to the large construction vehicle movements identified in **Table 7.1**, there will also be a number of construction movements associated with smaller vehicles such as fuel for plant, the collection of skips for waste management, wastewater removal, the transport of construction workers and sub-contractors.
- 7.15. Deliveries will occur between 0800 and 1800 Monday to Saturday, subject to SC agreement in due course.
- 7.16. Once the full construction schedule and vehicle numbers have been confirmed, an assessment alongside the vehicle numbers associated with the committed development to the north of the site will be undertaken.

Operational Phase

- 7.17. After energisation, it is anticipated that site visits for the maintenance of the site will be ad-hoc and on an as-and-when required basis. These would typically be made by light van or 4x4 type vehicles. Whilst the contractor's compounds will have been removed, space will remain within the site for such vehicles to turn around to ensure that vehicles can turn and exit in a forward gear.

Decommissioning Phase

- 7.18. It is expected that decommissioning the site will involve a similar profile of vehicles as the construction phase with processes predominately in reverse of those which will be undertaken during the construction phase. This would be dealt with at the time of decommissioning.

Summary

- 7.19. It is estimated that there could be a maximum of around 2,332 two-way movements by large vehicles at the site (i.e., 1,166 arrivals and 1,166 departures) over an eight to nine month period. There will also be construction workers arriving at the site first thing in the morning and departing in the evening, although the numbers involved are forecast to be relatively low on a day-to-day basis with car sharing encouraged and minibuses will be provided for general operatives. The level of traffic during the temporary eight to nine month construction phase is not considered to be material and it is considered that this will not have a detrimental impact on the safety or operation of the local or strategic highway network.
- 7.20. During the busiest times of construction, four articulated lorries and ten rigid lorries will visit the site per day. Given the temporary nature of the proposals, and the management and mitigation set out within this CTMP, it is not considered necessary to conduct junction modelling at the proposed site accesses.

8. Proposed Mitigation Measures

- 8.1. The contractor appointed to carry out the construction will introduce measures to minimise the impact on the local highway network resulting from construction activities. These will be managed by the Project Manager and Site Manager.
- 8.2. The Site Manager will assume responsibility for the operation of the site. The details of the Site Manager will be provided to the highway authority in advance of any works being carried out.
- 8.3. Mitigation measures will be likely to include a variety of measures to be agreed between the contractor and highway authority in due course. These may include:
 - i. Temporary signage would be erected in the vicinity of the site during the construction phase. Diagram 7301 'WORKS TRAFFIC ONLY' in the Traffic Signs Regulations and General Directions (TSRGD) will be used to indicate that heavy construction vehicles are turning. Signage will be white text and red background 1050 x 750mm mounted in 'A' frames, as illustrated at **Appendix i**. All signage would be provided in Welsh above English.
 - ii. In order to mitigate any traffic obstructions along the private access road serving the Central Development Parcel primary access, a banksman can be deployed at either end of the road to communicate between vehicles/site management via CB radio (to be agreed between the contractor and Highway Officers). This would ensure no oncoming traffic is approaching before guiding the construction traffic into and out of the site.
 - iii. Wheel washing may be required until the internal access tracks are completed. A hose, or similar facility, could be provided within the site before vehicles exit on to the local highway network if considered necessary.

9. Condition Survey

- 9.1. A Walk-Over Condition Survey on the local highway network will be conducted with Highway Officers at Swansea Council prior to commencement of development, in order to assess the baseline condition of the A484 and the B4560 in the vicinity of the site accesses. This will incorporate a photographic record as appropriate. The report will be a stand-alone document submitted to the highways department for their approval.
- 9.2. This process could also be carried out with Public Rights of Way Officers, as appropriate, in order to assess the baseline condition of the footpaths which cross the site.
- 9.3. This would be followed by a further Condition Survey with Highway Officers with a further photographic record covering the same extents as previously assessed at the end of construction activities, in order to identify and agree any remedial works reasonably attributable to construction activities. A date for this survey will be agreed once construction of the site is complete.

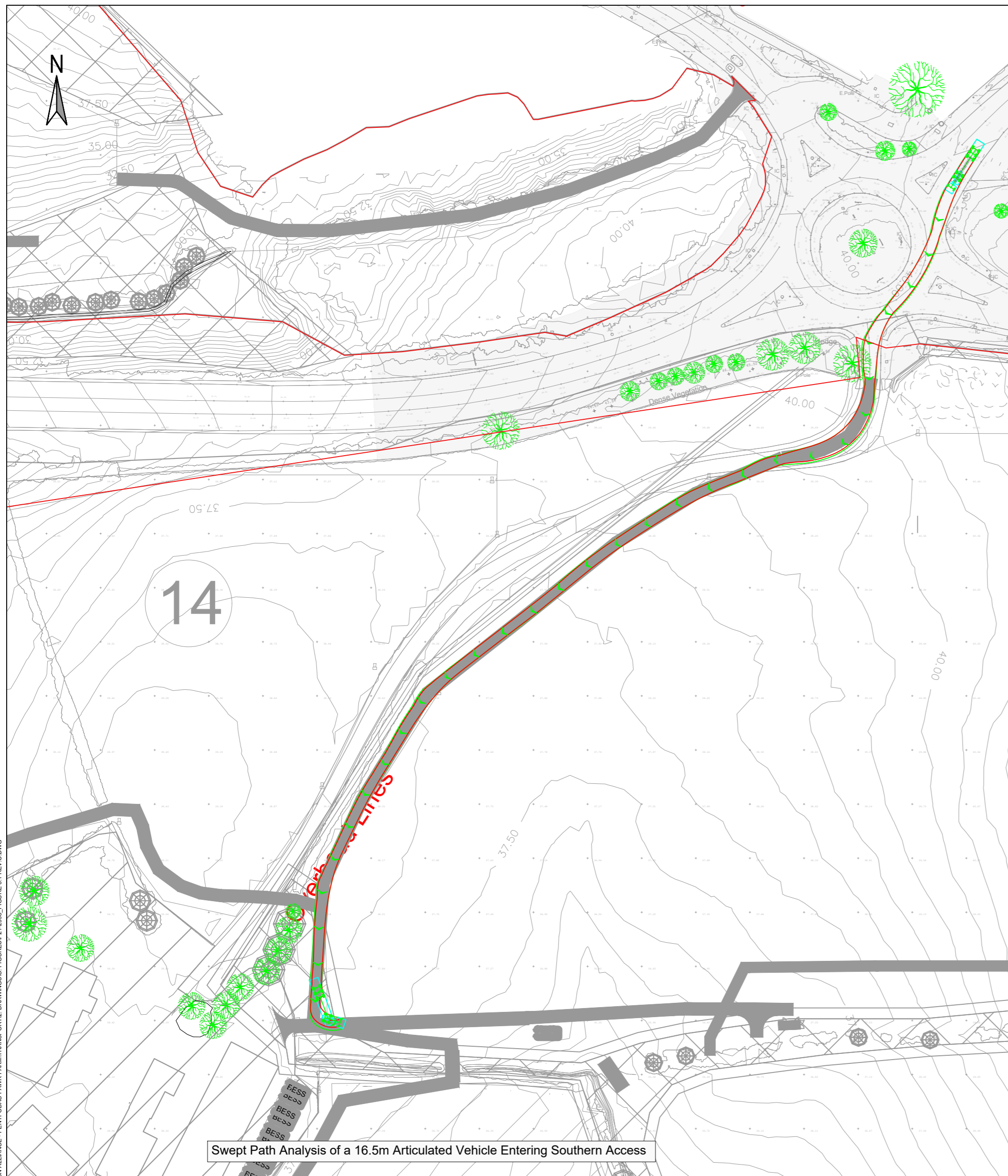


10. Summary and Conclusion

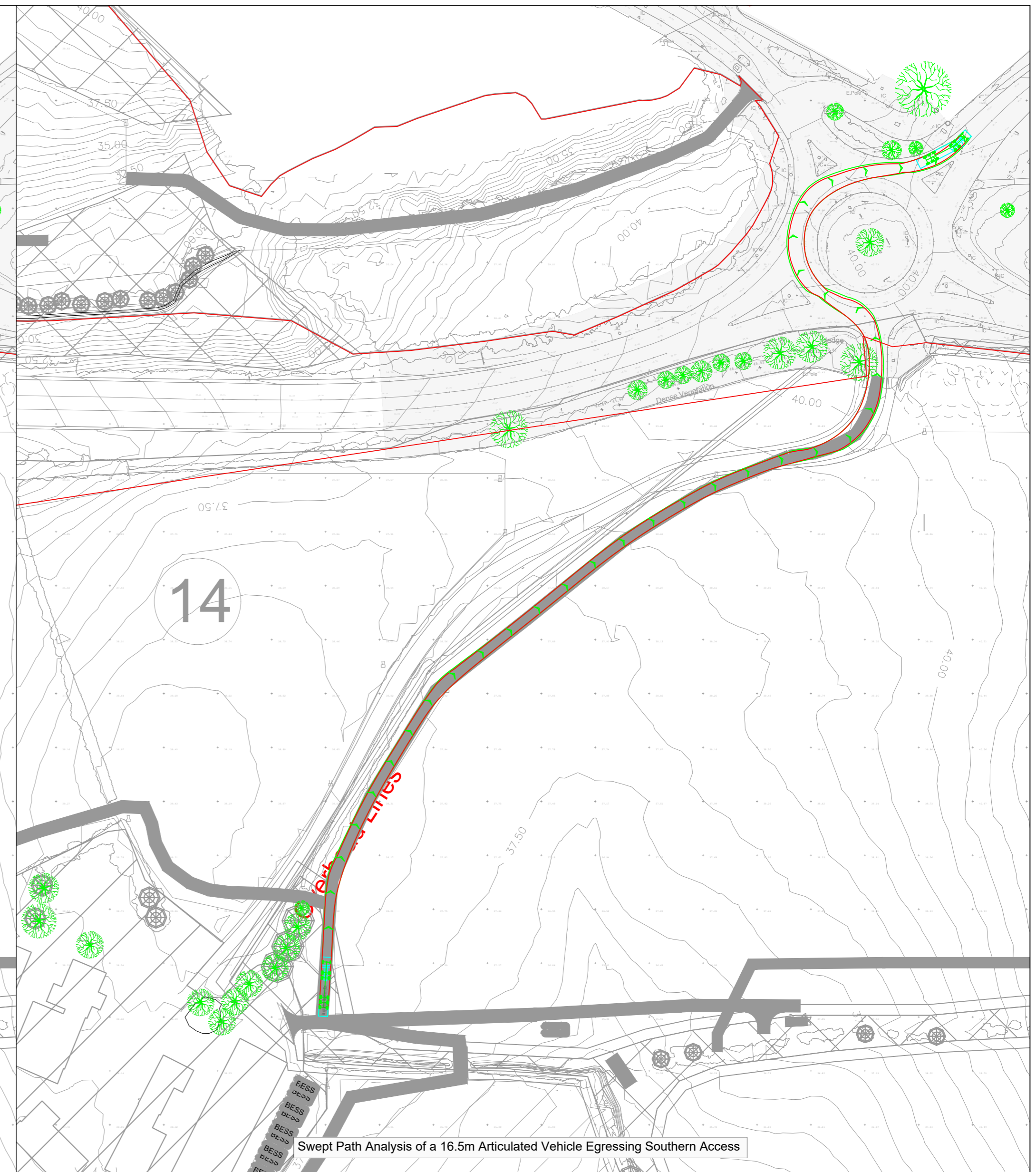
- 10.1. Pegasus Group have been commissioned by Taiyo Power & Storage Limited to provide transport and highways advice in the form of a Construction Traffic Management Plan (CTMP) to support the construction, operation and decommissioning of a green infrastructure, solar and battery storage facility on land fronting the A484 and Swansea Road (B4560) at Gowerton, Swansea.
- 10.2. Details regarding the construction traffic movement and logistics have been provided by Taiyo Power & Storage Limited from its experience in supporting similar development sites located elsewhere in the UK. The consultation period and resulting changes to array areas and the associated required containers will enable, thereafter, an updated table to be produced.
- 10.3. Additional traffic on the local highway network generated during the construction phase is estimated at an average of around five deliveries (ten two-way movements) per day, based on an eight to nine month construction period. This would equate to around one delivery every two hours, should deliveries outside of highway network peak hours be considered necessary. During the busiest times, four articulated lorries and ten rigid lorries will visit the site per day in addition to a small number of contractor vehicles.
- 10.4. The route to and from the site proposes the use of designated A and B roads that are already frequented by HGVs.
- 10.5. Measures to mitigate the construction traffic will be agreed between the appointed contractor and Swansea Council as the local highway authority, where considered to be necessary. It is considered that the implementation of these measures can be covered by an appropriately worded planning condition.
- 10.6. It is concluded that suitable routing and measures can be provided in conjunction with traffic associated with construction activities at this scheme.
- 10.7. It is concluded that there are no valid highway or transportation reasons which should prevent the proposed development of the site.



Figures

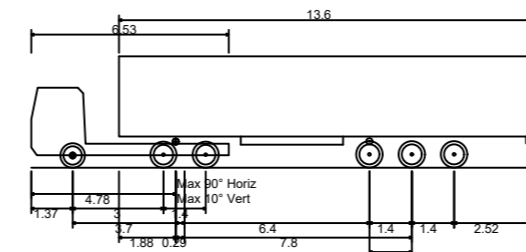


Swept Path Analysis of a 16.5m Articulated Vehicle Entering Southern Access



Swept Path Analysis of a 16.5m Articulated Vehicle Egressing Southern Access

- Key:
- Approximate Site Boundary
 - Approximate Extent of Adopted Highway



Max Legal Length (UK) Articulated Vehicle (16.5m)	16.500m
Overall Length	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

First Floor, South Wing, Equinox
North Great Park Road,
Almondsbury, Bristol, BS32 4QL
01454 625945
www.pegasusgroup.co.uk
Planning | Design | Environment | Economics



REV	DATE	BY	DESCRIPTION	CHK	APD
A	09/12/2022	ADWS	TOPO SURVEY INSERTED, RED LINE AMENDED	ADWS	KSS
B	05/10/2023	ADWS	CONSTRUCTION ACCESS TRACK ADDED AND TRACKING PROVIDED	ADWS	KSS
C	12/12/2023	JAN	SITE LAYOUT UPDATED	ADWS	KSS

CLIENT:
TAIYO POWER STORAGE LIMITED

SCALE @ A2:
1:1,000

CHECKED:
ADWS

APPROVED:
AHJ

PROJECT:
PARC SOLAR CAENEWYDD

DATE:
25/01/2022

DESIGN-DRAWN:
JAN

DRAWING-STATUS:
SK

TITLE:
CENTRAL DEVELOPMENT PARCEL
PRIMARY ACCESS ARRANGEMENT

PROJECT No:
P21-2998

DRAWING No:
FIGURE 3.1

REV:
C



Refuge island to be temporarily removed during construction and re-instated post construction

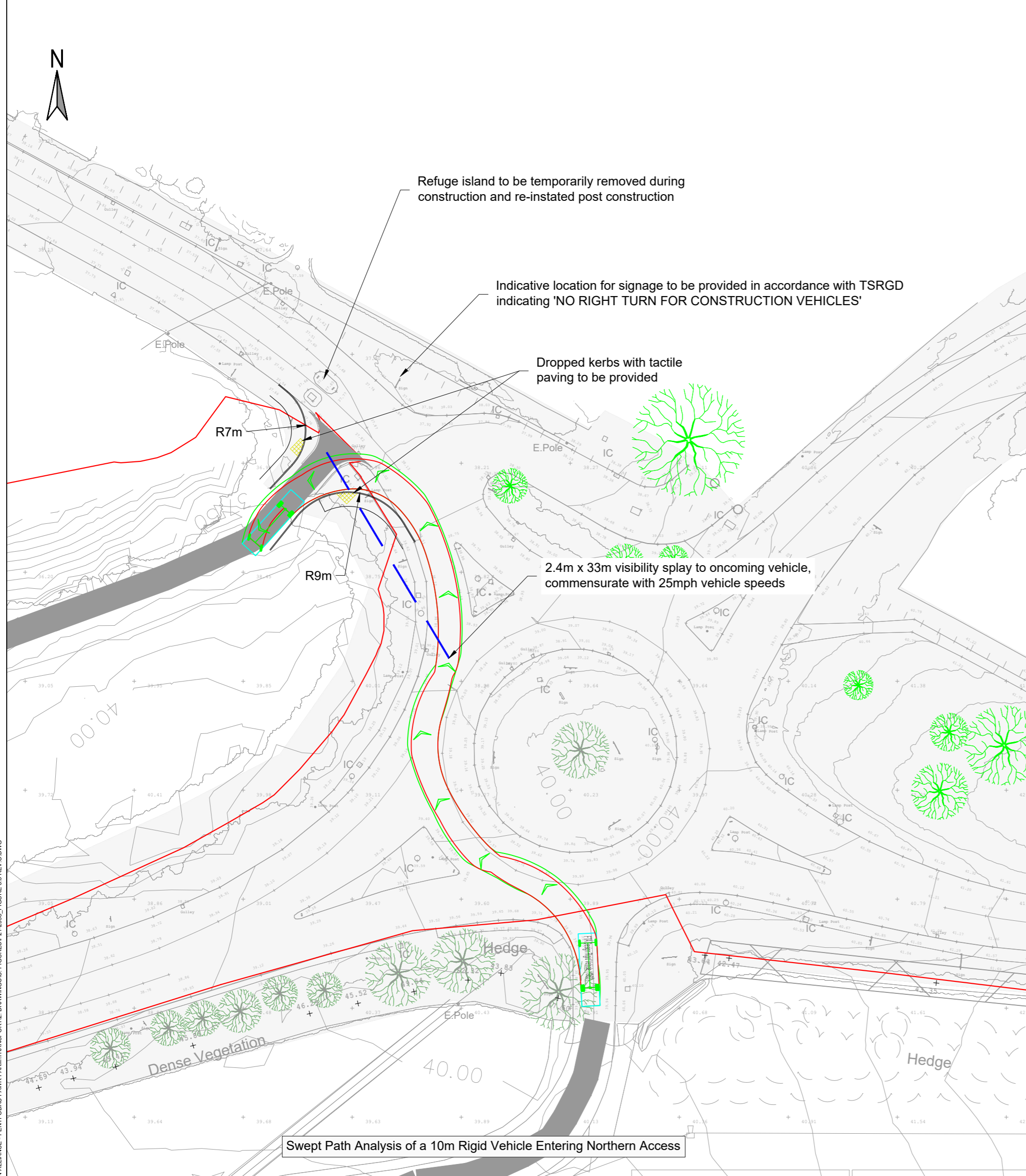
Indicative location for signage to be provided in accordance with TSRGD indicating 'NO RIGHT TURN FOR CONSTRUCTION VEHICLES'

Dropped kerbs with tactile paving to be provided

2.4m x 33m visibility splay to oncoming vehicle, commensurate with 25mph vehicle speeds

R7m

R9m



Swept Path Analysis of a 10m Rigid Vehicle Entering Northern Access

Refuge island to be temporarily removed during construction and re-instated post construction

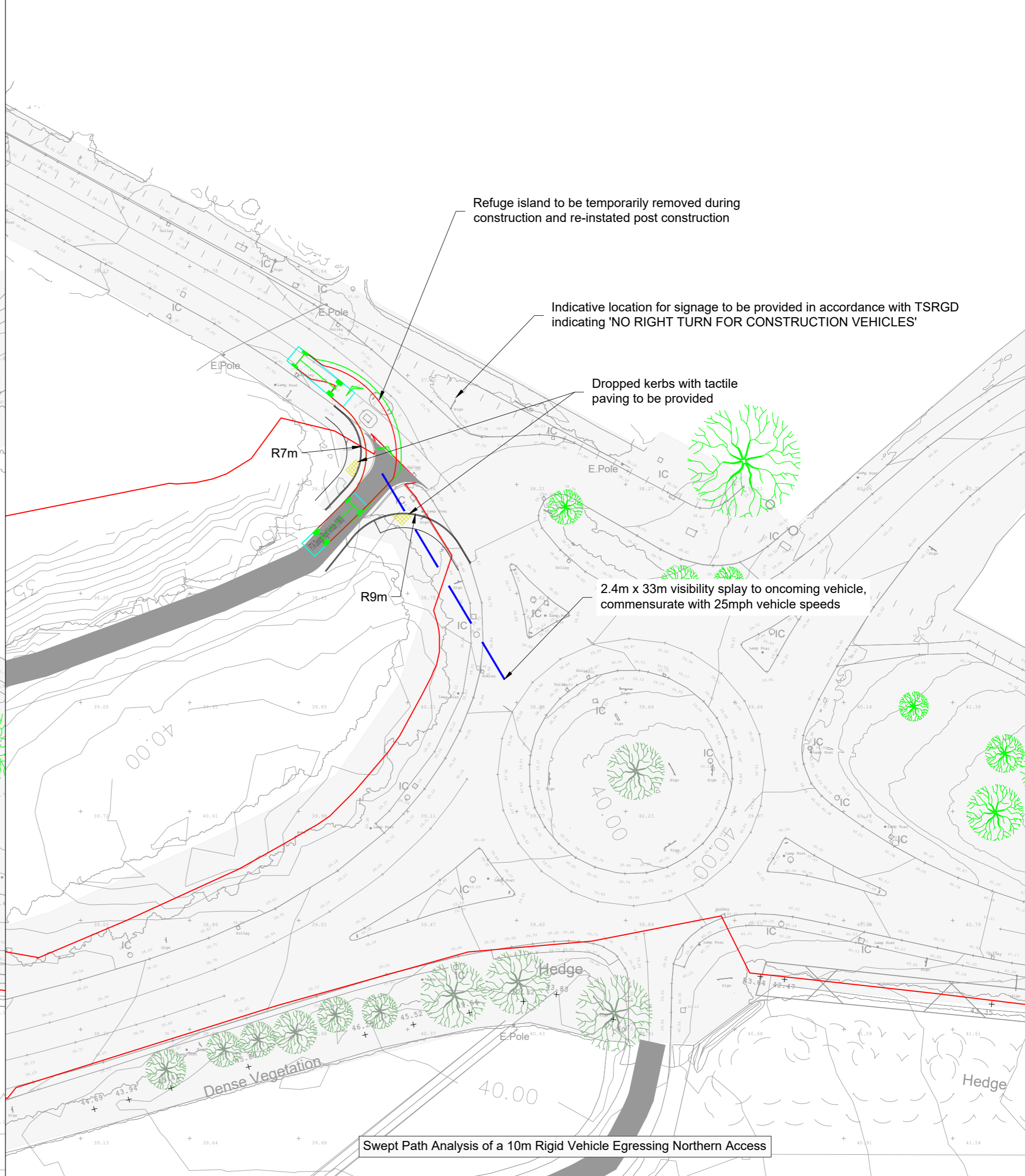
Indicative location for signage to be provided in accordance with TSRGD indicating 'NO RIGHT TURN FOR CONSTRUCTION VEHICLES'

Dropped kerbs with tactile paving to be provided

2.4m x 33m visibility splay to oncoming vehicle, commensurate with 25mph vehicle speeds

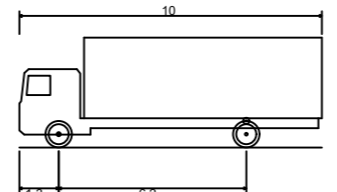
R7m

R9m



Swept Path Analysis of a 10m Rigid Vehicle Egressing Northern Access

- Key:
- Approximate Site Boundary
 - Approximate Extent of Adopted Highway



FTA Design Rigid Vehicle (1983)
 Overall Length 10.000m
 Overall Width 2.500m
 Overall Body Height 3.632m
 Min Body Ground Clearance 0.427m
 Track Width 2.500m
 Lock to lock time 4.00s
 Kerb to Kerb Turning Radius 12.000m

First Floor, South Wing, Equinox North Great Park Road, Almondsbury, Bristol, BS32 4QL 01454 625945 www.pegasusgroup.co.uk Planning Design Environment Economics				REV A B C	DATE 09/12/2022 22/09/2023 12/12/2023	BY ADWS ADWS JAN	DESCRIPTION TOPO SURVEY INSERTED, VISIBILITY SPLAY ADDED TACTILE PAVING AND DROPPED KERBS PROPOSED FURTHER TO RECEIPT OF RSA1 SITE LAYOUT UPDATED	CHK ADWS ADWS ADWS	APD KSS KSS KSS
CLIENT: TAIYO POWER STORAGE LIMITED				SCALE @ A2: 1:500		CHECKED: ADWS		APPROVED: AHJ	
PROJECT: PARC SOLAR CAENEWYDD				DATE: 10/02/2022		DESIGN-DRAWN: JAN		DRAWING-STATUS: SK	
TITLE: NORTHERN DEVELOPMENT PARCEL ACCESS ARRANGEMENT				PROJECT No: P21-2998		DRAWING No: FIGURE 3.3		REV: C	

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X:\BRISTOL_PROJECTS\BRISTOL - LIVE PROJECTS\IP1\IP1_2001_3000\IP1_2998 - LOW CARBON ALLIANCE - PENYFOAU FAWR FARM TRANSPORT DRAWINGS\FIGURE 3.3 REV C.DWG

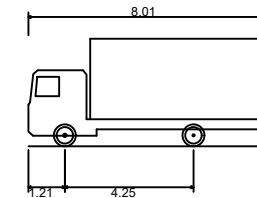
A3

Area

Area



1:500
0 12.5m



7.5t Box Van
 Overall Length 8.010m
 Overall Width 2.100m
 Overall Body Height 3.556m
 Min Body Ground Clearance 0.351m
 Track Width 2.064m
 Lock to lock time 4.00s
 Kerb to Kerb Turning Radius 7.400m

REV	DATE	DESCRIPTION	REVISED BY	APPROVED BY

SWEPT PATH ANALYSIS OF A 8m RIGID VEHICLE - CARMARTHEN ROAD

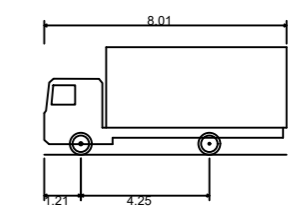
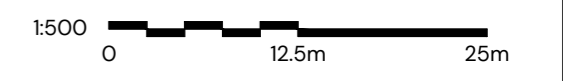
PARC SOLAR CAENEWYDD

CLIENT:
TAIYO POWER STORAGE LIMITED

DATE: 12/12/2023 SCALE: 1:500 DRAWN/CHECKED BY: JAN/ADWS APPROVED BY: KSS

JOB NUMBER: P21-2998 DRAWING NUMBER: FIGURE 5.1 REVISION No: **PEGASUS GROUP**

Swept Path Analysis of a 8m Rigid Vehicle Entering and Egressing Access



7.5t Box Van	
Overall Length	8.010m
Overall Width	2.100m
Overall Body Height	3.556m
Min Body Ground Clearance	0.351m
Track Width	2.064m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	7.400m

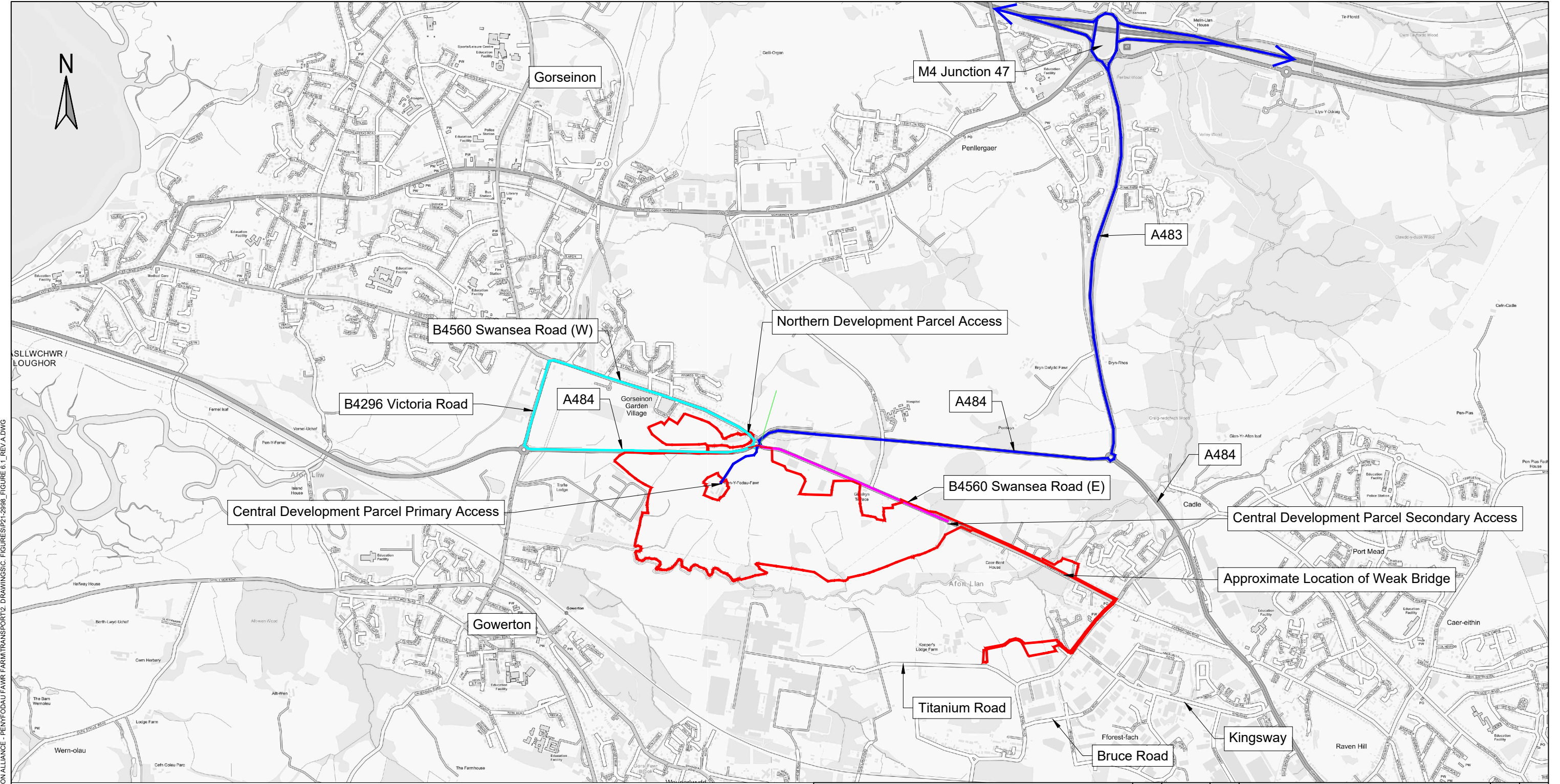
REV	DATE	DESCRIPTION	REVISED BY	APPROVED BY

SWEPT PATH ANALYSIS OF A 8m RIGID VEHICLE - DENVER ROAD
PARC SOLAR CAENEWYDD

CLIENT:
TAIYO POWER STORAGE LIMITED

DATE:	SCALE:	DRAWN/CHECKED BY:	APPROVED BY:
12/12/2023	1:500	JAN/ADWS	KSS

DRAWING NUMBER: **P21-2998** FIGURE 5.2
 REVISION No: **PEGASUS GROUP**



X:\BRISTOL PROJECTS\BRISTOL - LIVE PROJECTS\IP21\2901-3000\IP21-2998 - LOW CARBON ALLIANCE - PENYFODAU FARM FARM TRANSPORT2 DRAWINGS\FIGURES\FIGURE 6.1_REV.A.DWG

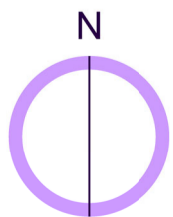
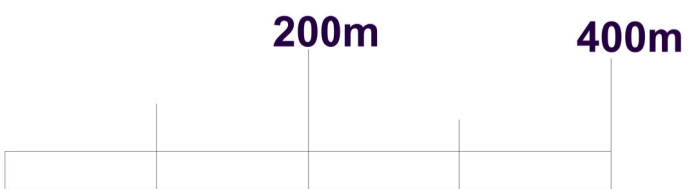
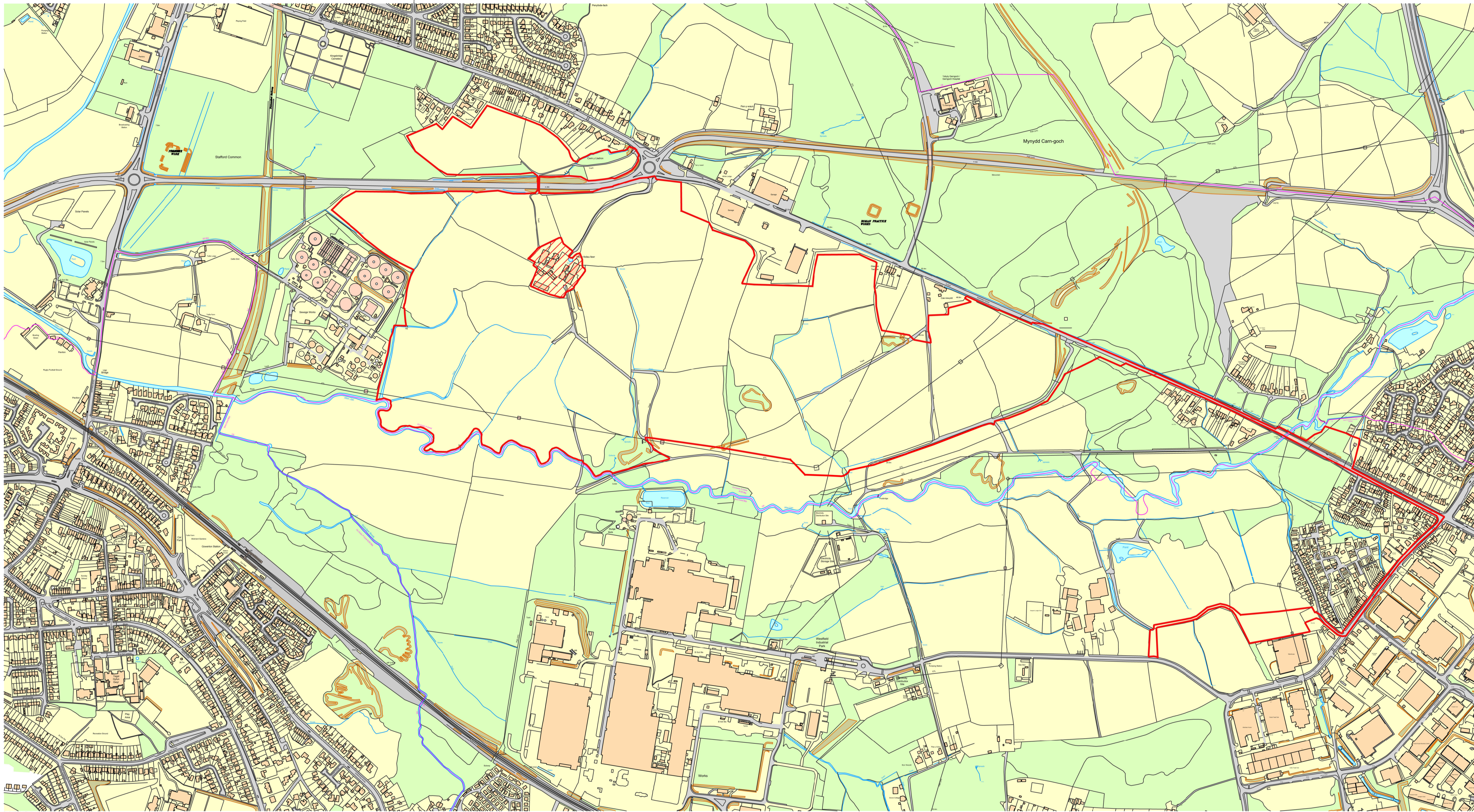
Key:

- Approximate Site Boundary
- Proposed Construction Traffic Route (Access to Central Development Parcel Primary Access, where Internal Compound is accessed)
- Proposed Central Development Parcel Secondary Access Traffic Route
- Proposed Northern Development Parcel Construction Traffic Route

First Floor, South Wing, Equinox North Great Park Road, Almondsbury, Bristol, BS32 4QL 01454 625945 www.pegasusgroup.co.uk Planning Design Environment Economics				REV	DATE	BY	DESCRIPTION	CHK	APD
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TAIYO POWER STORAGE LIMITED		NTS		ADWS		KSS			
PROJECT:		DATE:		DESIGN-DRAWN:		DRAWING-STATUS:			
PARC SOLAR CAENEWYDD		04/10/2023		JAN		SK			
TITLE:		PROJECT No:		DRAWING No:		REV:			
PROPOSED CONSTRUCTION ROUTING PLAN		P21-2998		FIGURE 6.1		A			
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Appendix A



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On behalf of:



Notes

Key:

— Red Line Boundary

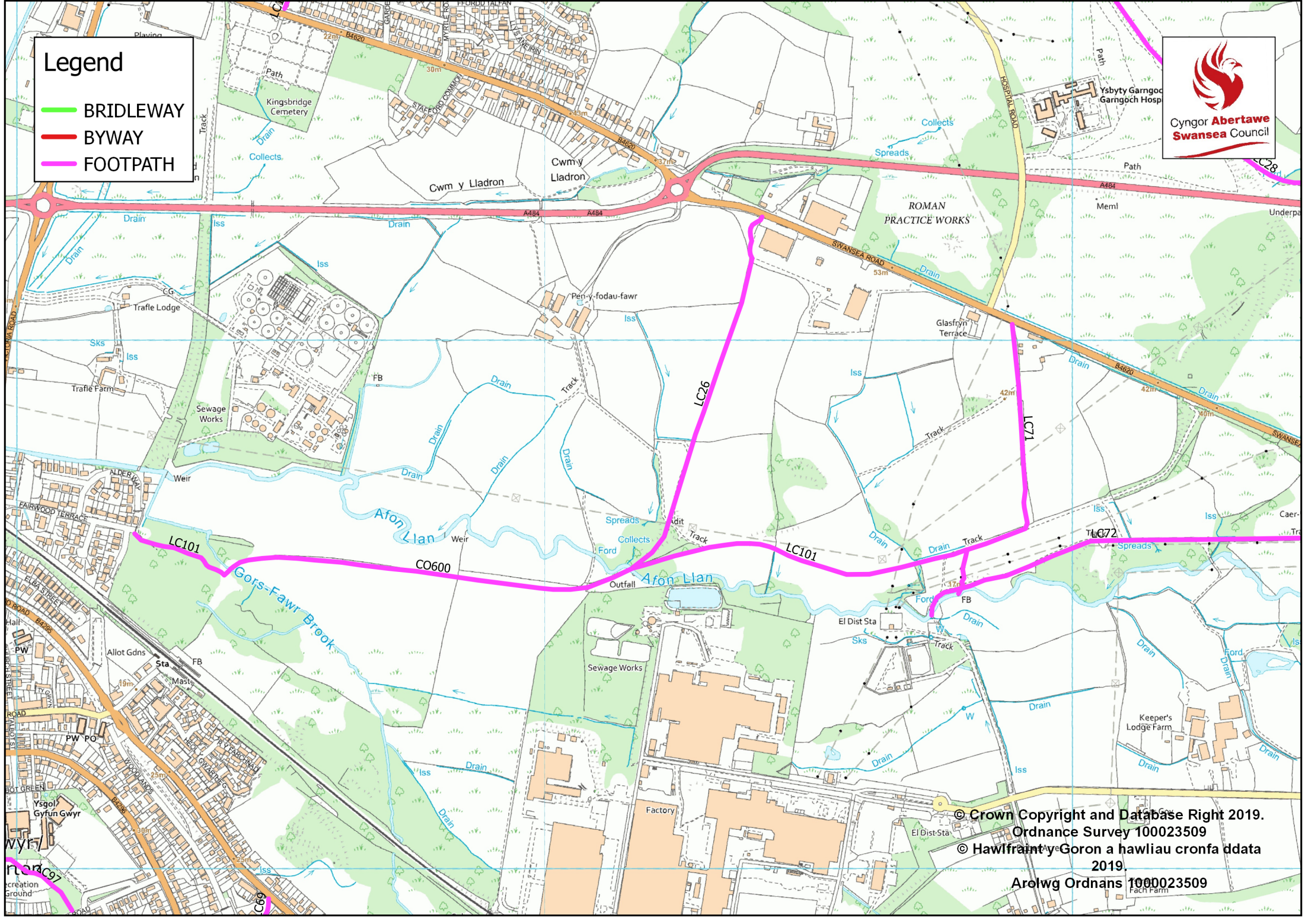
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TITLE	Site Location PLAN			
CLIENT	Taiyo Power and Storage			
STATUS	Planning Application			
Sheet No	Sheet Title			Sheet Size
1				A1
Scale:	Drawing Number			
1:5000	PSC 100 002			



Appendix B

Legend

- BRIDLEWAY
- BYWAY
- FOOTPATH



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 2019.
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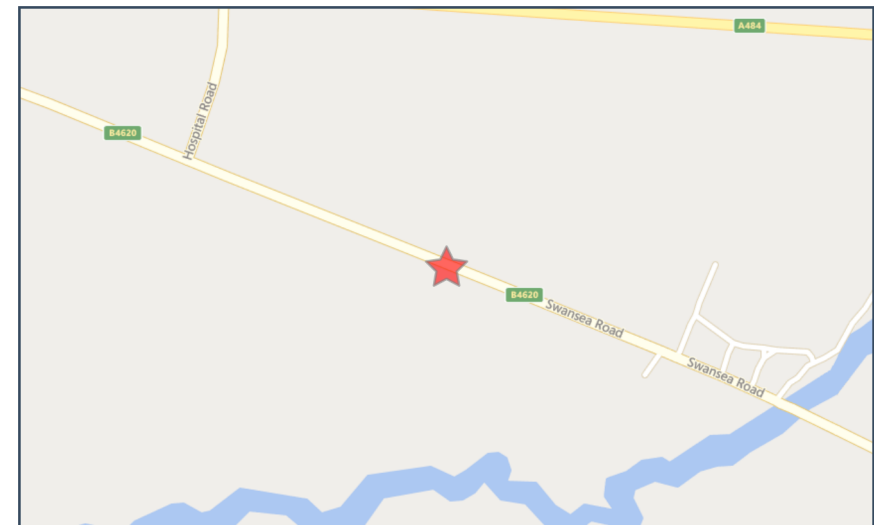
Appendix C



Validated Data

Crash Date: Thursday, July 04, 2019 **Time of Crash:** 8:18:00 AM **Crash Reference:** 2019621900897

Highest Injury Severity:	Serious	Road Number:	B4620	Number of Casualties:	1
Highway Authority:	Swansea	Number of Vehicles:	2	OS Grid Reference:	261225 196890
Local Authority:	Swansea City and County				
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Not at or within 20 metres of junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Not Applicable				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	11	Male	26 - 35	Vehicle is performing a U turn	Offside	Commuting to/from work	None	None
2	Pedal cycle	-1	Male	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Front	Commuting to/from work	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	2	Serious	Driver or rider	Male	36 - 45	Unknown or other	Unknown or other

For more information about the data please visit: www.crashmap.co.uk/home/Faq

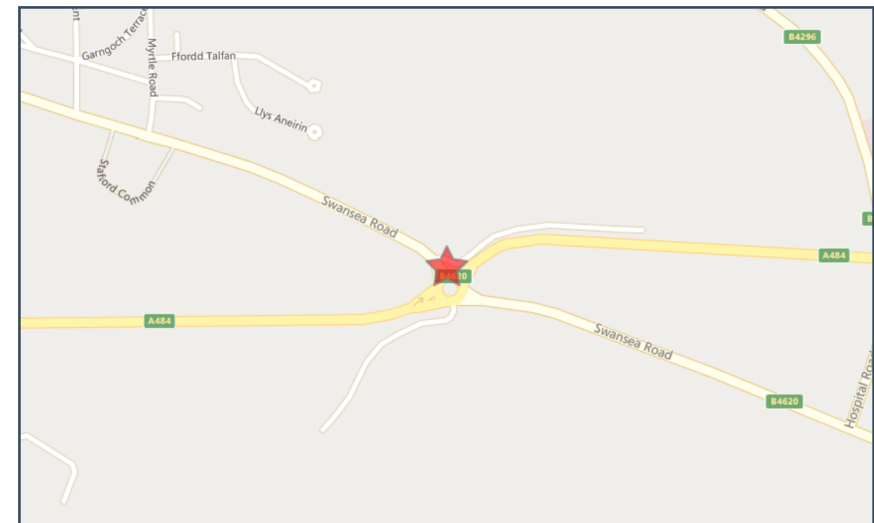
To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Crash Date: Tuesday, September 01, 2020 **Time of Crash:** 6:17:00 PM **Crash Reference:** 2020622000783

Highest Injury Severity:	Slight	Road Number:	B4620	Number of Casualties:	1
Highway Authority:	Swansea			Number of Vehicles:	2
Local Authority:	Swansea City and County			OS Grid Reference:	260245 197311
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)		3 Female	21 - 25	Vehicle is slowing down or stopping	Front	Other	None	None
2	Car (excluding private hire)		2 Female	46 - 55	Vehicle is waiting to turn left	Back	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
	2	2 Slight	Driver or rider	Female	46 - 55	Unknown or other	Unknown or other

For more information about the data please visit: www.crashmap.co.uk/home/Faq

To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services

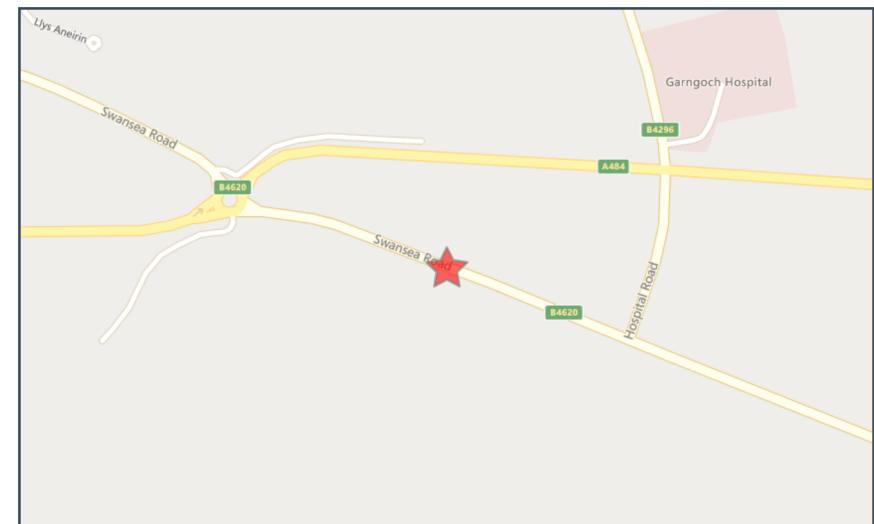


Provisional Data does not include vehicle and casualty records

Crash Date: Tuesday, February 23, 2021 **Time of Crash:** 11:14:00 AM **Crash Reference:** 2021622100136

Highest Injury Severity: Fatal **Road Number:** U0 **Number of Casualties:** 2
Highway Authority: **Number of Vehicles:** 2
Local Authority: **OS Grid Reference:** 260571 197178

Weather Description: Fine with high winds
Road Surface Description: Dry
Speed Limit: 40
Light Conditions: Daylight: regardless of presence of streetlights
Carriageway Hazards: None
Junction Detail: Other junction
Junction Pedestrian Crossing: No physical crossing facility within 50 metres
Road Type: Single carriageway
Junction Control: Give way or uncontrolled



For more information about the data please visit: www.crashmap.co.uk/home/Faq
To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



crashmap.co.uk

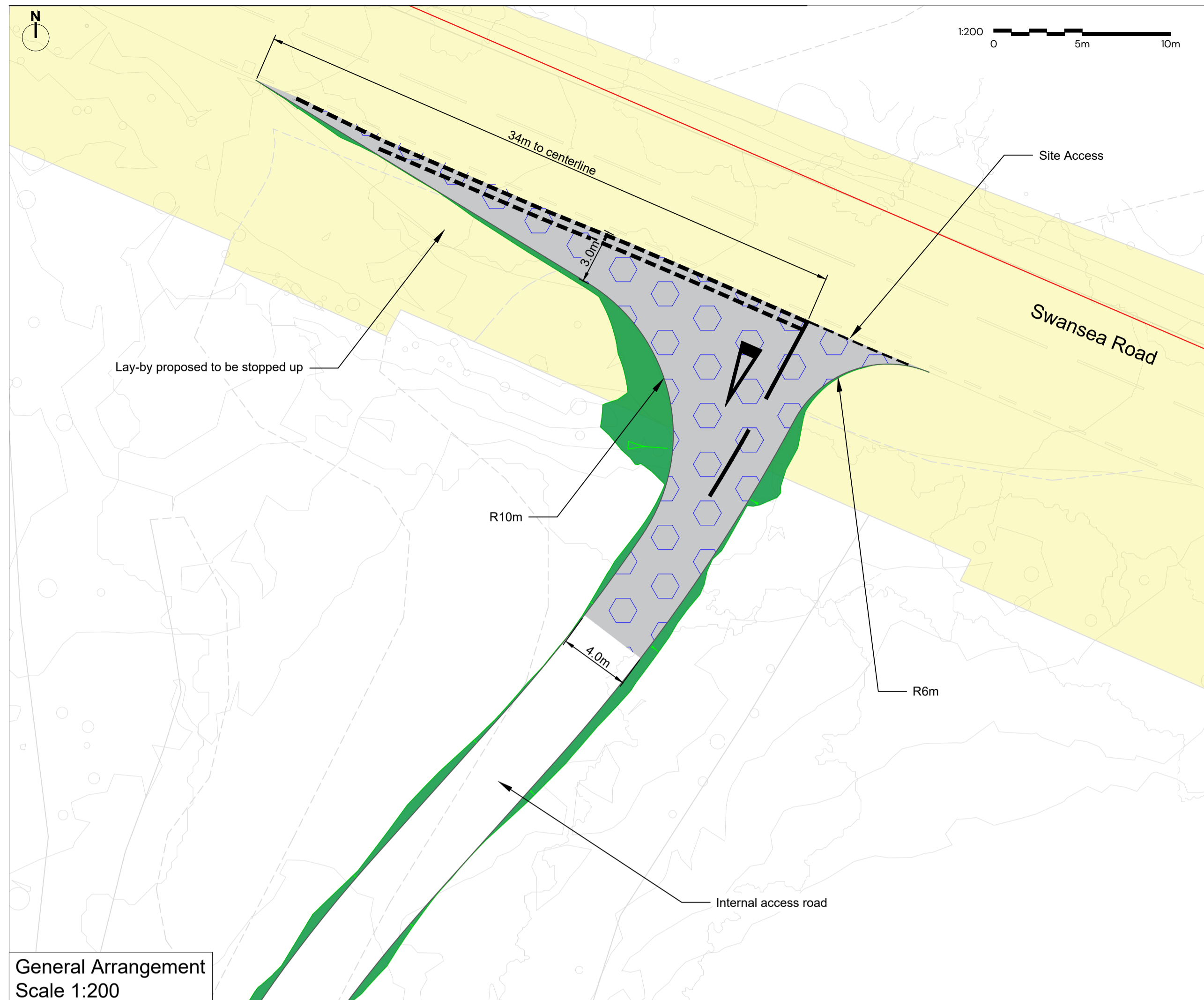
Provisional Data does not include vehicle and casualty records

For more information about the data please visit: www.crashmap.co.uk/home/Faq

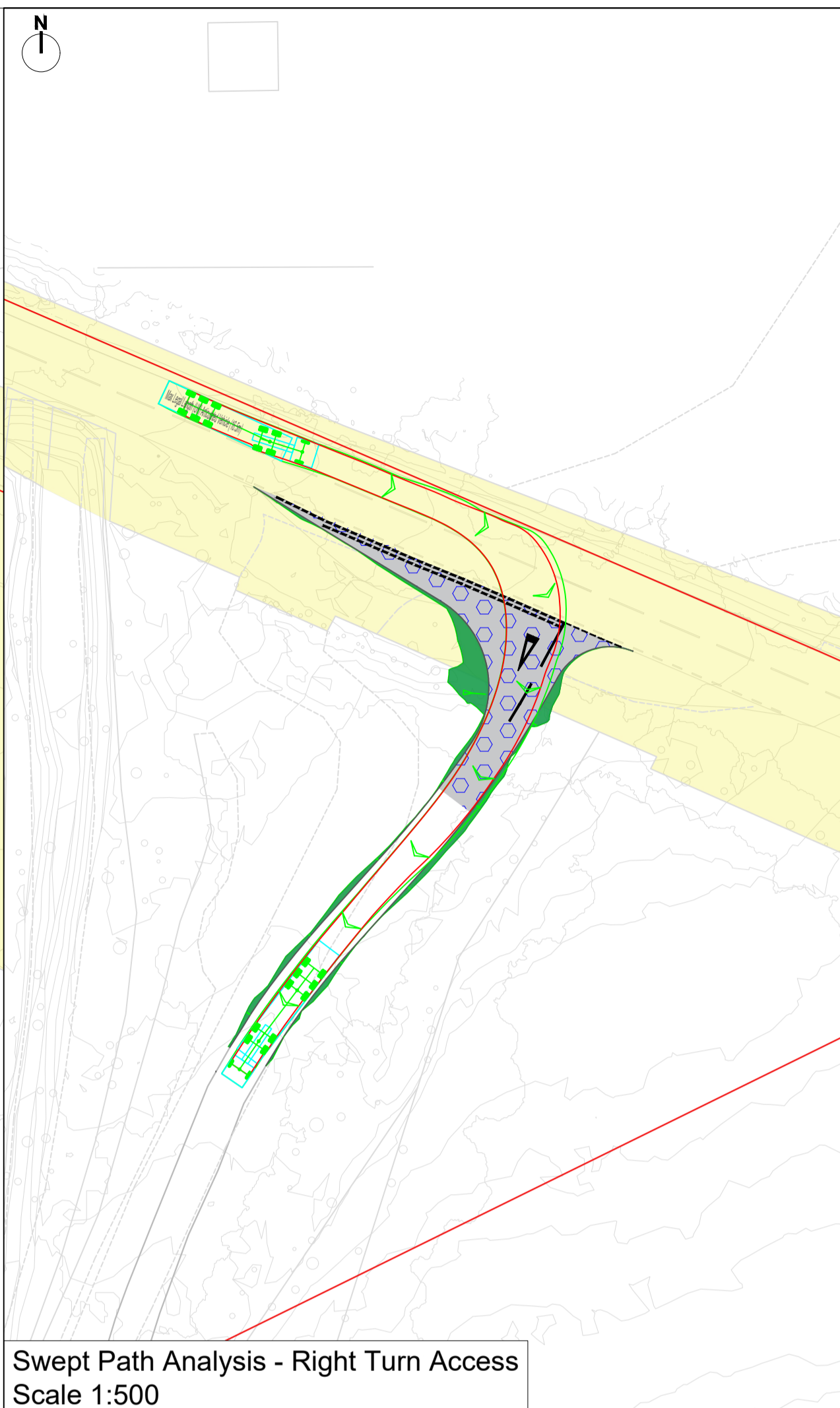
To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



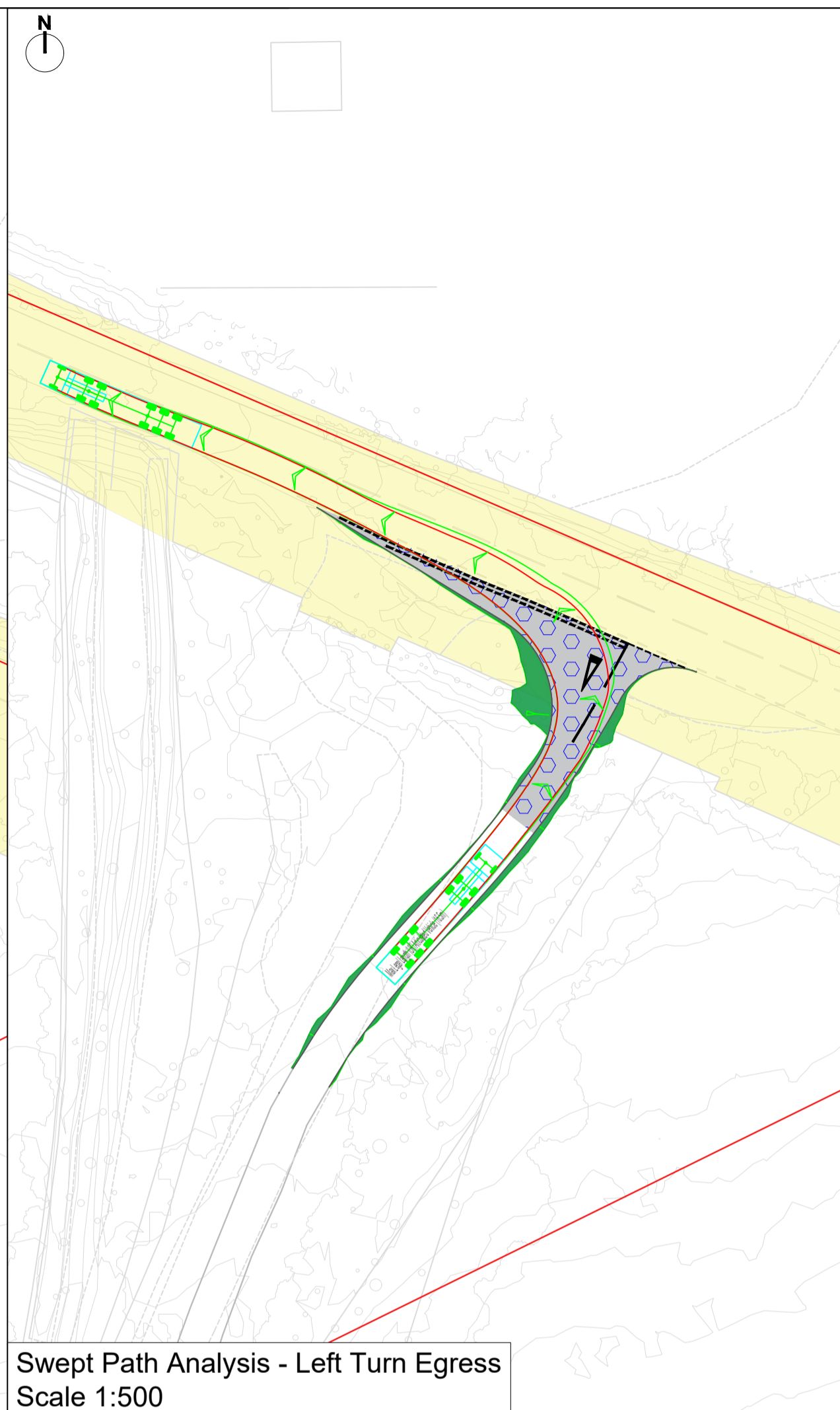
Appendix D



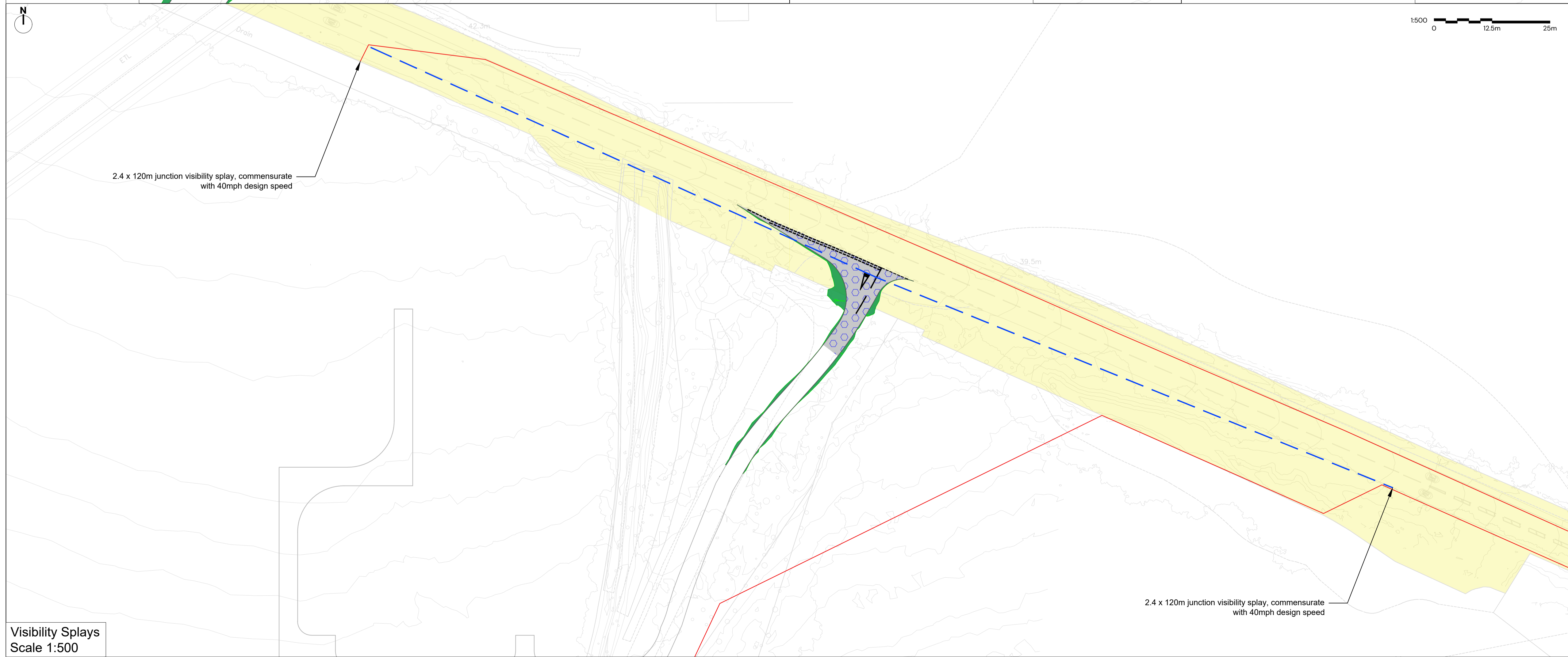
General Arrangement
Scale 1:200



Swept Path Analysis - Right Turn Access
Scale 1:500



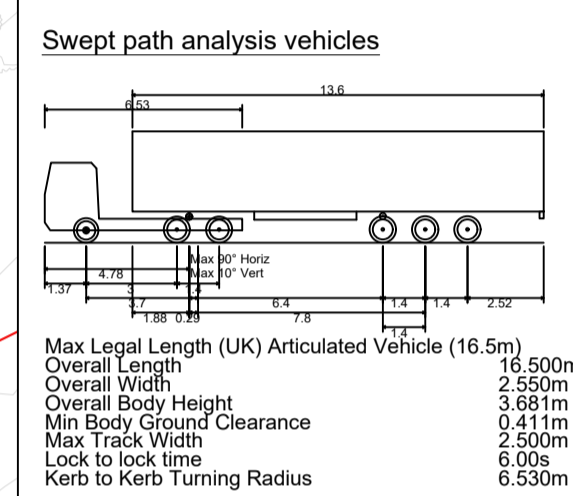
Swept Path Analysis - Left Turn Egress
Scale 1:500



Visibility Spays
Scale 1:500

- Notes:
1. This drawing and design has been produced for the purposes of planning. Pegasus Group accept no liability for the misuse of this drawing from its intended purpose.
 2. The approximate coordinates for this site is E261111, N196821
 3. All works to be carried out strictly in accordance with City and County of Swansea Council's highways specification for street works. If no specification is provided the Manual of Contract Documents for Highway Works (MCHW) shall be used.
 4. Design has been based on a topographical survey undertaken by Mining Surveys UK Ltd, dated 16/12/2021. Pegasus Group accept no liability for the accuracy of these surveys. The Contractor should confirm accuracy of the topographic surveys prior to site works.
 5. Design of junction considers vehicle sizes and movements tracked and shown in this drawing.
 6. No pedestrian access provision has been designed for as there is no existing pedestrian facility on Swansea Road.

- Key:
- Surfacing - Flexible carriageway pavement construction
 - Surfacing - Verge/earthworks construction
 - Assumed public highway boundary
 - Site boundary



REV	DATE	DESCRIPTION	REVISED BY	APPROVED BY

Site Access General Arrangement

Parc Solar Caenewydd

CLIENT:
Taiyo Power Storage Limited

DATE: 14.12.2023 SCALE: AS SHOWN@A1 TEAM/DRAWN BY: SB APPROVED BY: HVC

DRAWING NUMBER:
P21-2998 - PEG - XX - XX - DR - C - 0001 - P1

PEGASUS REF No: P21-1998 DRAWING STATUS: S2



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Appendix E

ROAD SAFETY AUDIT BRIEF

Scheme Details
Scheme Description/Objective
General <i>Define the extents of the RSA, include a brief scheme description, the scheme objectives, a start date for construction if known and a completion date. In addition, for stage 4 RSAs, confirm when all related traffic management has been removed.</i>
<p>This Road Safety Audit Stage 1 brief has been prepared on behalf of Taiyo Power and Storage Ltd (the developer) in respect of three access arrangements which would serve a proposed Solar Farm and Battery Storage Facility application on land fronting the A484 and Swansea Road (B4560) at Gowerton, Swansea.</p> <p>The proposed scheme would comprise approximately 34 hectares of module arrays with a maximum export capacity of 44 megawatts.</p> <p>There are three proposed access locations which would serve the solar farm:</p> <p><u>Penyfodau Fawr Farm Access</u> Access to Penyfodau Fawr Farm is currently provided via the southern arm of the A484 / B4620 / B4560 Swansea Road roundabout. The arm provides access to a private access road which serves a farm shop and car park. The private road varies in width, although the majority of the route is between approximately 3.5 and 4.5 metres wide. There are two informal passing places provided along the private road as it routes towards the farm shop where road users are required to wait for any oncoming vehicle to enter / exit through the narrower sections. This access can be seen in Figure 3.1 Revision A.</p> <p><u>B4560 Swansea Road Access</u> Access to the site from the B4560 Swansea Road is proposed to be served from the rear of an existing lay-by on the southern side of the B4560 Swansea Road (E), approximately 430m east of the Hospital Road junction. The area is currently overgrown and will require clearance prior to construction of the access. It is also proposed to stop up the lay-by. Figure 3.2 Revision B shows the proposed access arrangement which would have a 9m bellmouth radii on the western side and a 6m radii bellmouth on the eastern side of the junction, with a four metre wide carriageway.</p> <p><u>B4620 Swansea Road Access</u> Access to the site from the B4620 Swansea Road is proposed to be served via an existing access located approximately 30 metres northwest of the A484 / B4560 Swansea Road roundabout. This access is proposed to be upgraded to have 7m radii bellmouth on the western side of the junction and 9m radii bellmouth on the eastern side, with dropped kerbs to also be provided. Figure 3.3 Revision A shows the proposed arrangement.</p>
Design Standards Applied to the Scheme Design <i>For example, DMRB.</i>
DMRB, MfS (2007), MfS2 (2010).
Design Speeds <i>Provide details of applied and/or existing design speeds.</i>
20mph
Speed Limits <i>State whether mandatory or advisory, available speed data.</i>
30mph and 40mph

ROAD SAFETY AUDIT BRIEF

<p>Existing Traffic Flows/Queues <i>To include current automatic traffic counter (ATC) data, up-to-date turning count and queue information etc.</i></p>
n/a
<p>Forecast Traffic Flows <i>Where available and relevant, provide future traffic flow data including vehicle proportions.</i></p>
<p>It is forecast that during the construction phase around 1,020 deliveries (2,040 two-way movements) could be made by vehicles associated with the scheme, at an average of around four deliveries (eight two-way movements) per day, based on an eight to nine month construction period. During the busiest times four articulated lorries and 10 rigid lorries will visit the site per day. In addition to the HGV movements will also be a number of construction movements associated with smaller vehicles such as the collection of skips for waste management, the transport of construction workers and sub-contractors.</p> <p>Once the construction phase has been completed it is anticipated that site visits will be for the maintenance on an ad-hoc and on an as-and-when required basis. These would typically be made by light van or 4x4 type vehicles. Whilst the contractor's compound(s) will have been removed, space will remain within the site for such vehicles to turn around to ensure that vehicles can turn and exit in a forward gear.</p>
<p>Pedestrian, Cyclist & Equestrian Desire Lines <i>Include details of pedestrian, cyclist and equestrian movements in the vicinity of the scheme and, when applicable the relevant walking, cycling and horse-riding assessment and review reports HD 42/17 [Ref 7.1].</i></p>
No pedestrian, cycle or equestrian infrastructure is proposed within the vicinity of the site accesses.
<p>Environmental Constraints <i>Include all environmental constraints within the scheme extents, for example sites of special scientific interest (SSSI), conservation areas, listed properties etc.</i></p>
None

<p>Locality</p>
<p>Description of Locality <i>Include all environmental constraints within the scheme extents, e.g. (SSSI), conservation areas, listed properties etc.</i></p>
<p>The development site is located on land fronting the A484 and Swansea Road (B4560) approximately 1.5 kilometres to the west of Fforestfach and approximately seven kilometres to the northwest of Swansea. The site currently consists of agricultural land. The site in its wider geographical context is shown in Appendix A.</p> <p>Approximately one kilometre to the north of the site is the committed garden village development (Ref: 2016/1478) with permission for 705 dwellings, a primary school, commercial floor space, outdoor sports provision and green spaces. This scheme is being brought forward over a 12 year period and is not considered to have a material impact on the proposed development.</p>
<p>General Description <i>Include road network, road type, relevant land uses etc.</i></p>
<p>B4560 Swansea Road The B4560 is a single carriageway road measuring approximately 8.0 metres in width and is generally lit. Double yellow lines prevent parking along the majority of its length between the site and the roundabout</p>

ROAD SAFETY AUDIT BRIEF

junction with the A484. There is a 17 tonne weight limit due to a weak bridge approximately one kilometre southeast from the Hospital Road junction.

A484

The A484 forms two of the arms at the roundabout junction with the access road to the Penyfodau Fawr farm shop, B4560 Swansea Road and the B4620 Swansea Road. The road is subject to the national speed limit, although this reduces to 40mph on the approaches to the roundabout.

The A484 is provided as a dual carriageway on its approaches to the roundabout and as a single carriageway when leaving the roundabout. Horizontal yellow lines are provided on both roundabout approaches as a traffic calming measure.

A483

The A483 is located approximately two kilometres to the east of the site. It provides access to the M4 motorway at its northern end and to Swansea at its southeastern end. The carriageway is restricted to 50mph and is lit within the vicinity of its roundabout junction with the A484. The A483 connects to Penllergaer interchange to the north which routes onto the M4.

Relevant Factors Which May Affect Road Safety

Factors known to the Design Organisation and considered as part of the design. This should also include anything that would not be immediately obvious to the RSA Team – such as school crossing patrols and large events, for example.

Analysis

Collision Data Analysis

Stages 1, 2, and 3 provide a summary of road traffic collision data covering both the extent of the scheme and the adjoining sections of highway. As a minimum, the most recent 36 months of data. At Stage 4, provide 12 months of post-opening validated road traffic collision data. Raw data should be provided as an appendix.

Liaison with Carmarthenshire County Council (CCC) highway officers has confirmed that crashmap.com records are acceptable for the purpose of Personal Injury Accident (PIA) analysis. A review of the data available for the most recent three year period between 2019 and 2021 confirms that there have been three PIA incidents within the vicinity of the site, which resulted in two slight, one serious and one fatal PIA. A review of each PIA incident is provided below. The accident data, including the plot of the PIAs, is available at **Appendix B**.

The first incident occurred on the B4620 east around 420m to the east of its junction with Hospital Road. It occurred at 08:18 on Thursday 4th July 2019 in daylight and conditions recorded as being dry and fine, without high winds. The accident appears to have occurred when a car attempted to perform a U-turn but collided with an oncoming pedal cyclist. The incident resulted in one serious PIA.

The second incident occurred on the B4620 west approach to the A484/Swansea Road roundabout at 18:17 on Tuesday 1st September 2020. The incident occurred in daylight, with conditions recorded as being dry and fine, without high winds. The incident involved two cars, which appear to have been involved in a nose to tail collision resulting in one slight PIA.

The third and final incident occurred on the B4620 east around 320 metres west of the A484/Swansea Road roundabout at 11:14 on Tuesday 23rd February 2021. No additional information is provided for the incident, although it was confirmed that there were two vehicles involved which resulted in one slight and one fatal PIA.

ROAD SAFETY AUDIT BRIEF

Departures from Standards <i>Include status details, i.e., approved/pending/rejected, and any design strategy records produced for improvements to existing trunk roads and motorways.</i>		
none		
Previous Road Safety Audit Stage Reports, Road Safety Audit Response Reports & Evidence of Agreed Actions <i>Attach previous reports to the RSA Brief or provide an explanation where these are not available.</i>		
n/a		
Strategic Decisions <i>Includes items outside the scope of this RSA, which will not change irrespective of the RSA, for example route choice, junction type, approved departures from standard.</i>		
n/a		
List of Included Documents and Drawings <i>For example: previous RSA reports; Design Responses; Departures; Road Traffic Collision Data; Walking, Cycling and Horse-Riding Assessment and Reviews. This could include any relevant operational data such as damage-only collision data or incident logs. This list could be included as an attachment to the RSA Brief or a hyperlink to a shared electronic location where the RSA Brief information has been collated.</i>		
Documents		
Reference/Revision	Title	Date
Appendix A	Site Location Plan	10/01/2022
Appendix B	Personal Injury Accident Data	25/01/2022 and 09/06/2022
Drawings		
Reference/Revision	Title	Date
Figure 3.1 Revision A	Central Development Parcel Primary Access Arrangement	09/12/2022
Figure 3.2 Revision B	Central Development Parcel Secondary Access Arrangement	24/03/2023
Figure 3.3 Revision A	Northern Development Parcel Access Arrangement	09/12/2022

Checklist			
Tick all that are included and provide reasons for those that are not included.			
Site Location plan	✓	Scale Layout Plans	✓
Departures and Relaxations from Standards		Construction/Typical Details	
Previous RSA Reports		Previous RSA Response Reports & Evidence of Agreed Actions	
Collision Data and Collision Data Analysis	✓	Road Traffic Collision Plot	✓

ROAD SAFETY AUDIT BRIEF

Traffic Signal Staging		Traffic Counts	
Speed Surveys		Pedestrian, Cyclist, Horse-Riding Desire Lines & Volumes	
Walking, Cycling and Horse-Riding Assessment & Reviews		Items Outside the Scope of the RSA/Strategic Decisions	
Other Factors that may Impact Upon Road Safety	✓	Design Speeds/Speed Limits	✓
Design Standards Used	✓	Adjacent Land Uses	✓

Departures and Relaxations from Standards – No departures or relaxations.

Construction/Typical Details – None provided.

Previous RSA Reports – No previous RSAs undertaken for this layout.

Previous RSA Response Reports & Evidence of Agreed Actions – No previous RSAs undertaken for this layout.

Traffic Signal Staging – Non signalised junction.

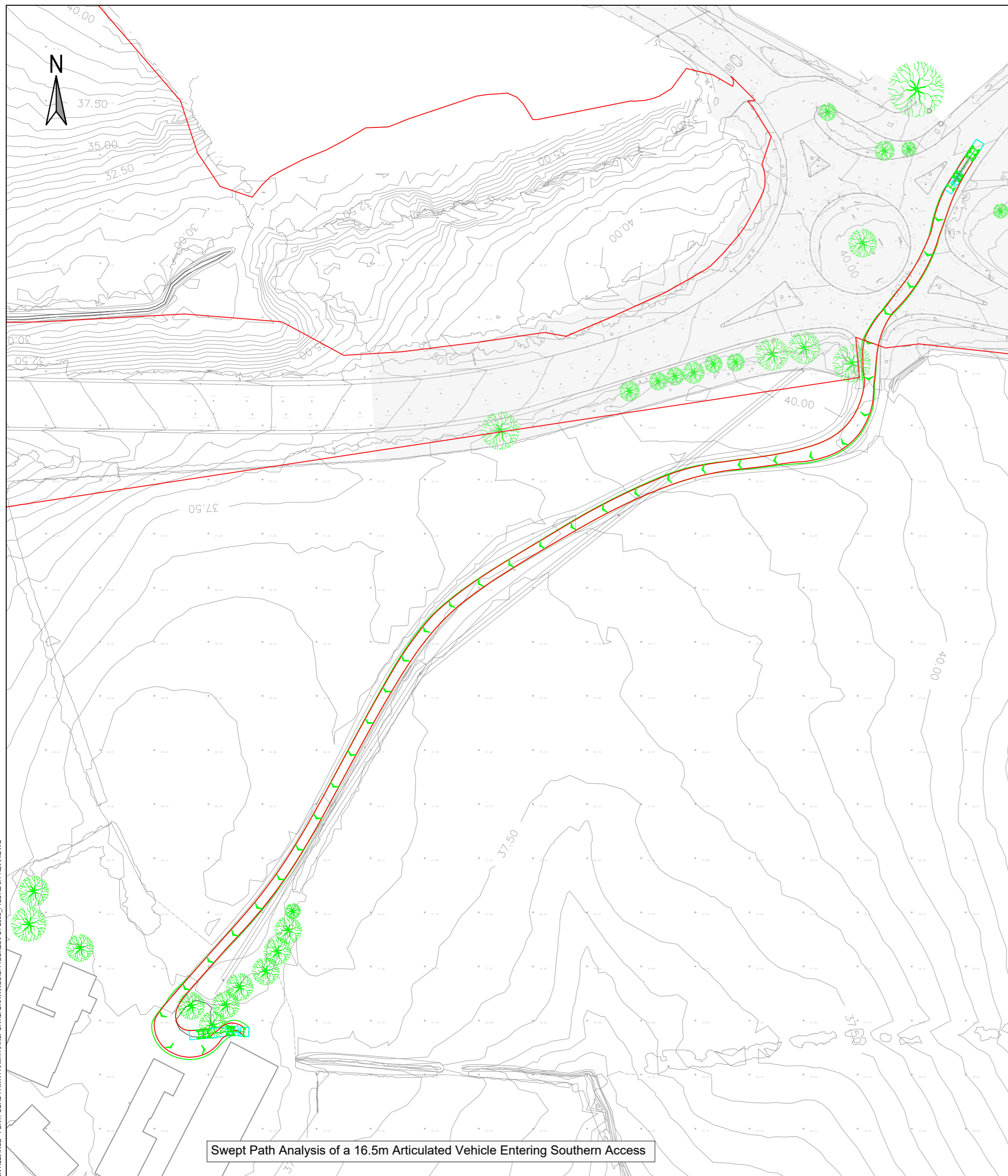
Pedestrian, Cyclist, Horse-Riding Desire Lines & Volumes – Unknown.

Walking, Cycling and Horse-Riding Assessment & Reviews – None provided.

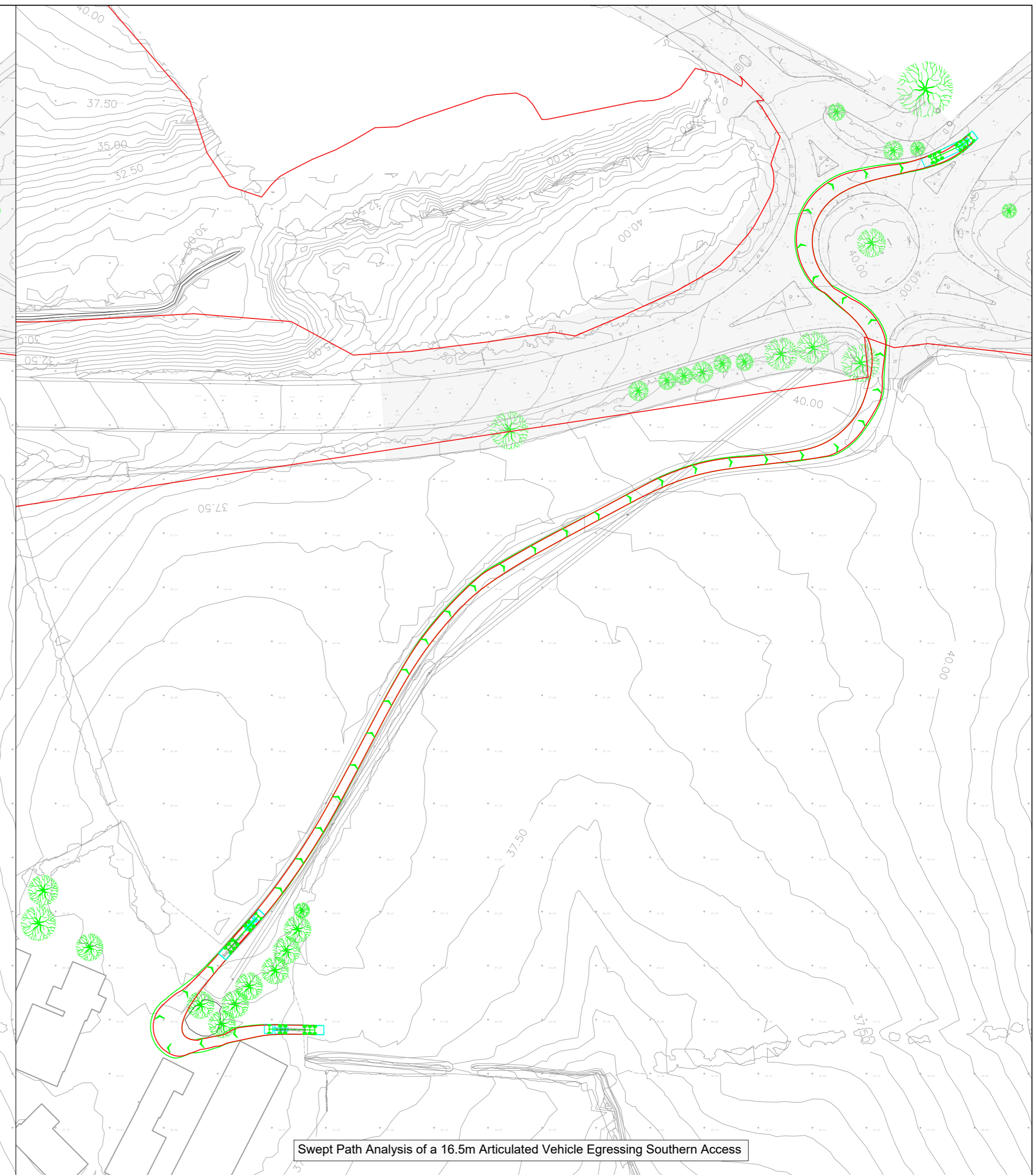
Items Outside the Scope of the RSA/Strategic Decisions – None provided.

Speed Surveys – None provided.

Traffic Counts – None provided.

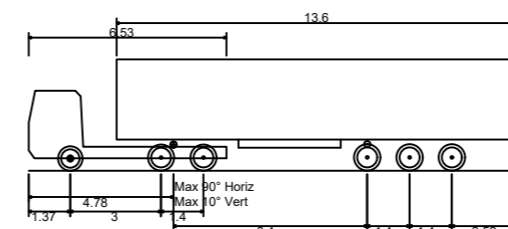


Swept Path Analysis of a 16.5m Articulated Vehicle Entering Southern Access



Swept Path Analysis of a 16.5m Articulated Vehicle Egressing Southern Access

- Key:
- Approximate Site Boundary
 - Approximate Extent of Adopted Highway



Max Legal Length (UK) Articulated Vehicle (16.5m)
 Overall Length 16.500m
 Overall Width 2.550m
 Overall Body Height 3.681m
 Min Body Ground Clearance 0.411m
 Max Track Width 2.500m
 Lock to lock time 6.00s
 Kerb to Kerb Turning Radius 6.530m

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 North Great Park Road,
 Almondsbury, Bristol, BS32 4QL

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REV	DATE	BY	DESCRIPTION	CHK	APD
A	09/12/2022	ADWS	TOPO SURVEY INSERTED, RED LINE AMENDED	ADWS	KSS

CLIENT:
TAIYO POWER STORAGE LIMITED

SCALE @ A2:
1:1,000

CHECKED:
ADWS

APPROVED:
AHJ

PROJECT:
PARC SOLAR CAENEWYDD

DATE:
25/01/2022

DESIGN-DRAWN:
JAN

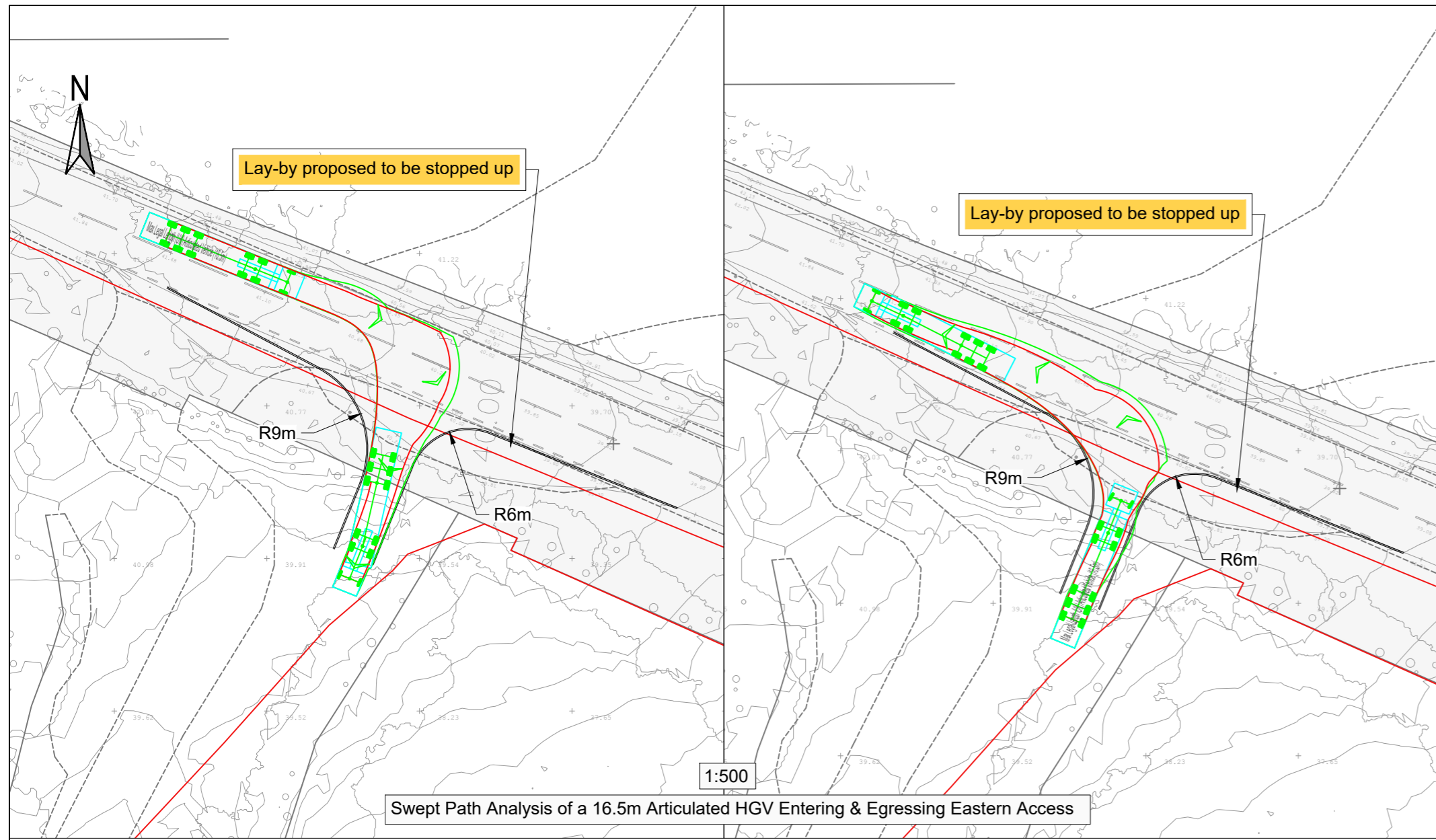
DRAWING-STATUS:
SK

TITLE:
**CENTRAL DEVELOPMENT PARCEL
 PRIMARY ACCESS ARRANGEMENT**

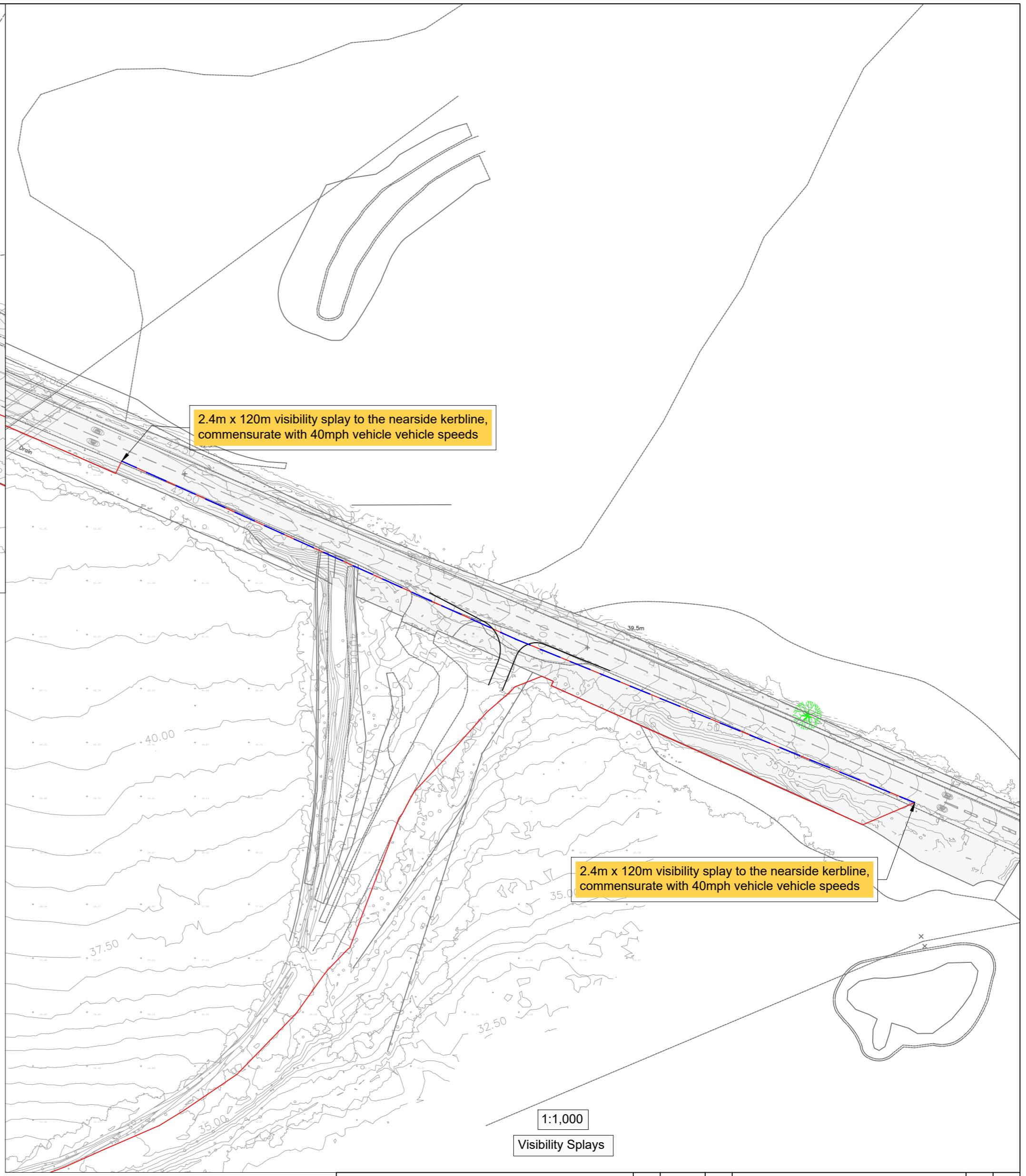
PROJECT No:
P21-2998

DRAWING No:
FIGURE 3.1

REV:
A



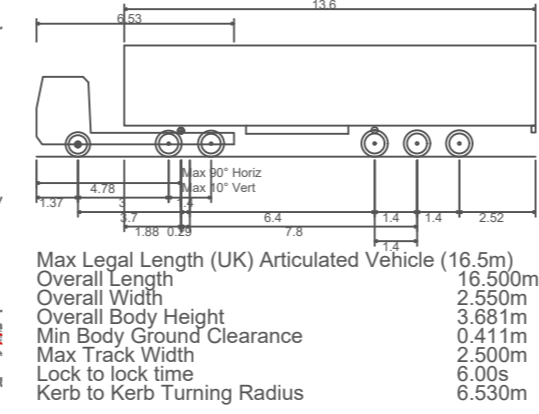
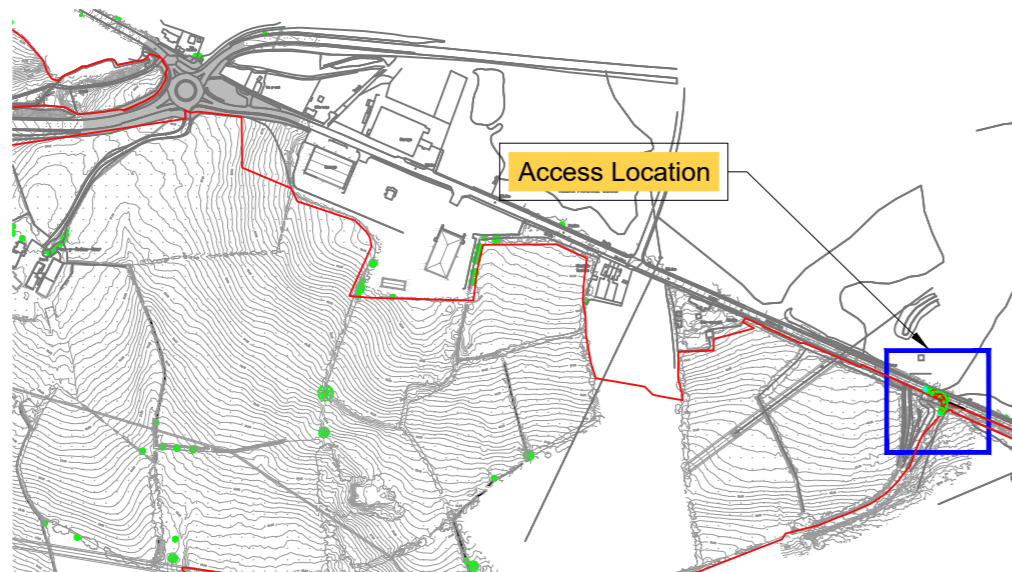
Swept Path Analysis of a 16.5m Articulated HGV Entering & Egressing Eastern Access



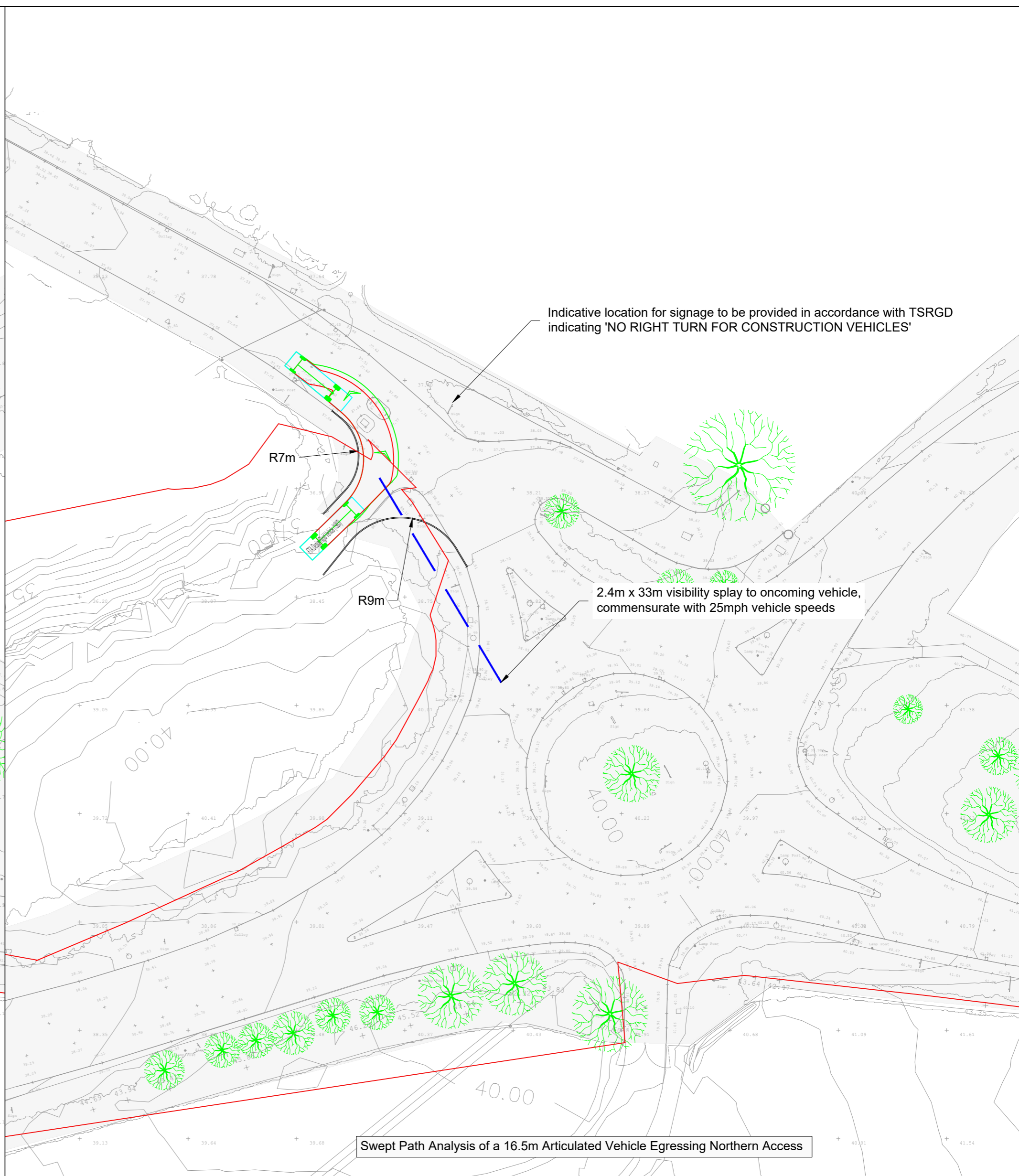
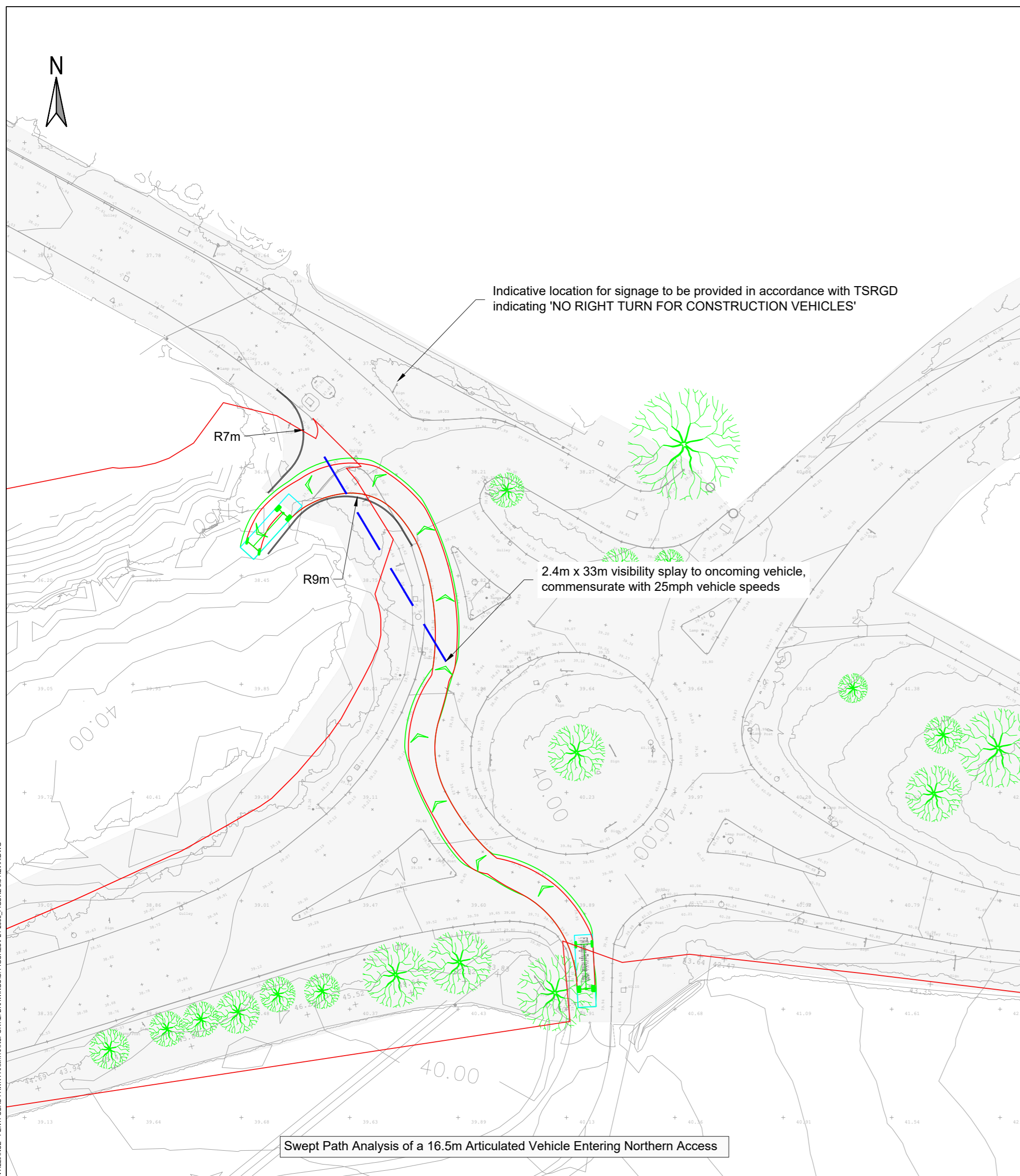
1:1,000
Visibility Splays

X:\BRISTOL_PROJECTS\BRISTOL - LIVE PROJECTS\P1\201-3000\P1-2098 - LOW CARBON ALLIANCE - PENYFOAU FAWR FARM\TRANSPORT\DRAWINGS\FIGURE 3.2 REV B.DWG

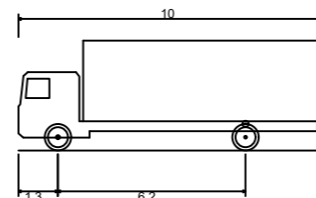
- Key:
- Approximate Site Boundary
 - Approximate Extent of Adopted Highway
 - Visibility Splay



First Floor, South Wing, Equinox North Great Park Road, Almondsbury, Bristol, BS32 4QL 01454 625945 www.pegasusgroup.co.uk Planning Design Environment Economics				REV A B	DATE 09/12/2022 24/03/2023	BY ADWS AG	DESCRIPTION TOPO SURVEY INSERTED, VISIBILITY SPLAY ADDED UPDATED SITE BOUNDARY AND TRACKING	CHK ADWS LT	APD KSS KSS
CLIENT: TAIYO POWER STORAGE LIMITED		SCALE @ A2: AS SHOWN		CHECKED: ADWS		APPROVED: AHJ			
PROJECT: PARC SOLAR CAENEWYDD		DATE: 10/02/2022		DESIGN-DRAWN: JAN		DRAWING-STATUS: SK			
TITLE: CENTRAL DEVELOPMENT PARCEL SECONDARY ACCESS ARRANGEMENT		PROJECT No: P21-2998		DRAWING No: FIGURE 3.2		REV: B			
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- Key:
- Approximate Site Boundary
 - Approximate Extent of Adopted Highway



FTA Design Rigid Vehicle (1983)
 Overall Length 10.000m
 Overall Width 2.500m
 Overall Body Height 3.632m
 Min Body Ground Clearance 0.427m
 Track Width 2.500m
 Lock to lock time 4.00s
 Kerb to Kerb Turning Radius 12.000m

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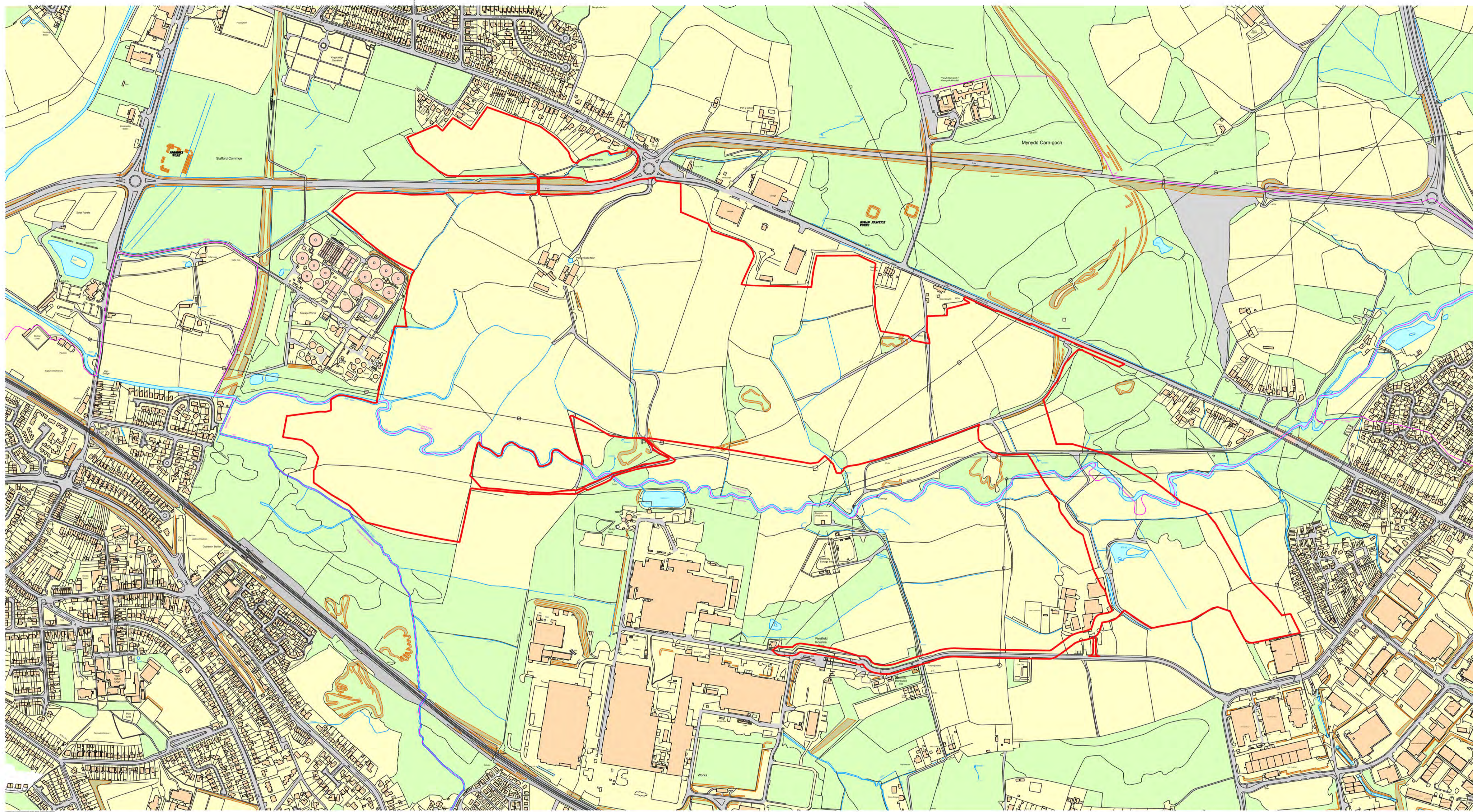


REV	DATE	BY	DESCRIPTION	CHK	APD
A	09/12/2022	ADWS	TOPO SURVEY INSERTED, VISIBILITY SPLAY ADDED	ADWS	KSS

CLIENT: TAIYO POWER STORAGE LIMITED	SCALE @ A2: 1:500	CHECKED: ADWS	APPROVED: AHJ
PROJECT: PARC SOLAR CAENEWYDD	DATE: 10/02/2022	DESIGN-DRAWN: JAN	DRAWING-STATUS: SK
TITLE: NORTHERN DEVELOPMENT PARCEL ACCESS ARRANGEMENT	PROJECT No: P21-2998	DRAWING No: FIGURE 3.3	REV: A

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Appendix A



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On behalf of:



Notes

Key:
 — Red Line Boundary

DRWN	CKD	APP	REV	DESCRIPTION
GR				REV
10/01/2023				V6
PROJECT		Parc Solar Caenewydd		
TITLE		Pre-Application Formal Consultation Site Location Plan		
CLIENT		Taiyo Power and Storage		
STATUS		Pre-Planning Approval		
Sheet No	Sheet Title		Sheet Size	
1			A1	
Scale:	Drawing Number			
1:5000	PSC 100 001			

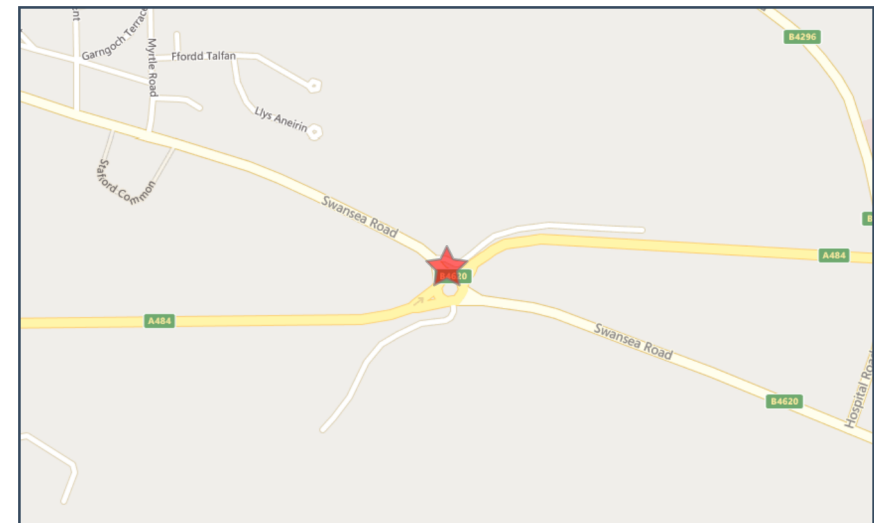
Appendix B



Validated Data

Crash Date: Tuesday, September 01, 2020 **Time of Crash:** 6:17:00 PM **Crash Reference:** 2020622000783

Highest Injury Severity:	Slight	Road Number:	B4620	Number of Casualties:	1
Highway Authority:	Swansea	Number of Vehicles:	2	OS Grid Reference:	260245 197311
Local Authority:	Swansea City and County				
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)		3 Female	21 - 25	Vehicle is slowing down or stopping	Front	Other	None	None
2	Car (excluding private hire)		2 Female	46 - 55	Vehicle is waiting to turn left	Back	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
	2	2 Slight	Driver or rider	Female	46 - 55	Unknown or other	Unknown or other

For more information about the data please visit: www.crashmap.co.uk/home/Faq

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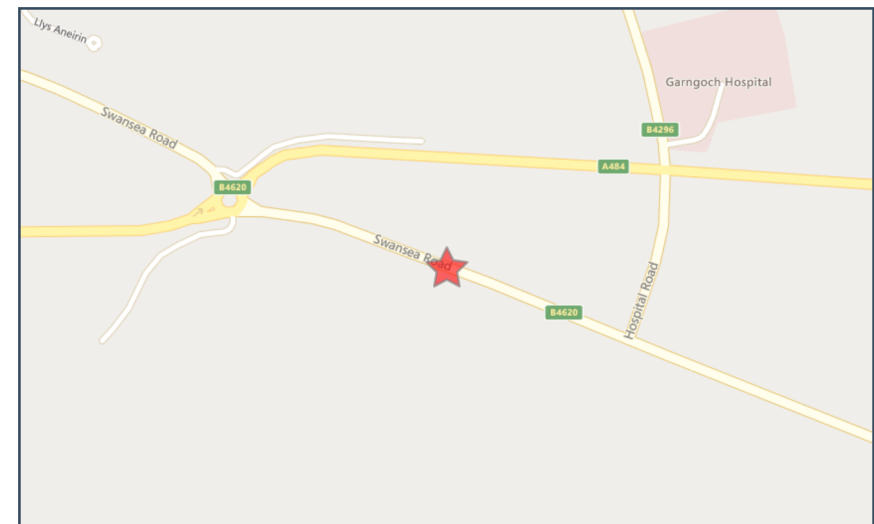


Provisional Data does not include vehicle and casualty records

Crash Date: Tuesday, February 23, 2021 **Time of Crash:** 11:14:00 AM **Crash Reference:** 2021622100136

Highest Injury Severity: Fatal **Road Number:** U0 **Number of Casualties:** 2
Highway Authority: **Number of Vehicles:** 2
Local Authority: **OS Grid Reference:** 260571 197178

Weather Description: Fine with high winds
Road Surface Description: Dry
Speed Limit: 40
Light Conditions: Daylight: regardless of presence of streetlights
Carriageway Hazards: None
Junction Detail: Other junction
Junction Pedestrian Crossing: No physical crossing facility within 50 metres
Road Type: Single carriageway
Junction Control: Give way or uncontrolled



For more information about the data please visit: www.crashmap.co.uk/home/Faq
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crashmap.co.uk

Provisional Data does not include vehicle and casualty records

For more information about the data please visit: www.crashmap.co.uk/home/Faq

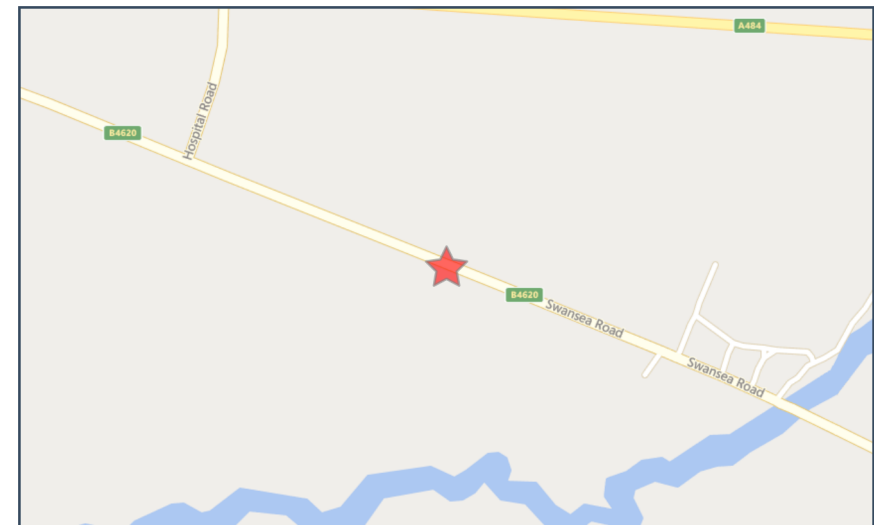
To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Crash Date: Thursday, July 04, 2019 **Time of Crash:** 8:18:00 AM **Crash Reference:** 2019621900897

Highest Injury Severity:	Serious	Road Number:	B4620	Number of Casualties:	1
Highway Authority:	Swansea			Number of Vehicles:	2
Local Authority:	Swansea City and County			OS Grid Reference:	261225 196890
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	30				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Not at or within 20 metres of junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Not Applicable				



For more information about the data please visit: www.crashmap.co.uk/home/Faq
To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Manoeuvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	11	Male	26 - 35	Vehicle is performing a U turn	Offside	Commuting to/from work	None	None
2	Pedal cycle	-1	Male	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Front	Commuting to/from work	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	2	Serious	Driver or rider	Male	36 - 45	Unknown or other	Unknown or other

For more information about the data please visit: www.crashmap.co.uk/home/Faq

To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Appendix F

**Parc Solar Caenwydd, Gowerton, S. Wales.
Proposed Highway Works**

**Road Safety Audit – Stage 1
(Preliminary Design)**

Client: Taiyo Power Storage Ltd.

12th September 2023



Badingham Limited

Transport Planning | Road Safety | Highways

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PROJECT DETAILS

<i>Issue / Revision:</i>	Issue 1
<i>Report Title</i>	Gowerton – RSA11
<i>Date:</i>	12/09/2023
<i>Prepared:</i>	A.R.J. Setter
<i>Signature:</i>	
<i>Prepared:</i>	D. F. Rogers
<i>Signature:</i>	
<i>On behalf of Overseeing/Third Party Organisation</i>	SC/Pegasus
<i>Document Reference:</i>	1191 Gowerton - RSA1 - Issue 1.docx

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TEXT		
SECTION 1	INTRODUCTION	1
SECTION 2	ITEMS RAISED AT PREVIOUS AUDITS	5
SECTION 3	ITEMS RAISED AT THIS AUDIT	6
SECTION 4	AUDIT STATEMENT	17

FIGURES

Figure 1	Site Location Plan
Figure 2	Aerial Photo
Figure 3	Audit Problem Location Plan

SECTION 1: INTRODUCTION

General

- 1.1 This Road Safety Audit Stage 1 (Preliminary Design) report has been undertaken at the request of the local highway authority. It has been prepared on behalf of Taiyo Power Storage Limited and relates highway works associated with the introduction of a new solar park on land adjacent to the A484/Swansea Road roundabout junction, Gowerton, S. Wales.
- 1.2 Swansea Council (SC) is both the local planning authority and the highway authority for the area.

Audit Team

- 1.3 A. R. J. Setter BA (Hons) MSc CMILT MCIHT AMICE MSoRSA
National Highways RSA Certificate of Competency (2015)
Badingham Limited
- D. F. Rogers JP CEng BEng (Hons) MICE MSoRSA FIHE
Ashburn Partnership

Audit Brief

- 1.4 The Road Safety Audit has been undertaken in accordance with the Road Safety Audit Brief provided by L. Taylor of Pegasus. The Audit Brief and Team were approved by L. Taylor on behalf of Taiyo Power Storage Limited.
- 1.5 The terms of reference for this Road Safety Audit are described in GG119. The Audit Team has not been made aware of any departures from standard other than the issues identified in the Audit Brief.

- 1.6 The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the design to any other criteria.

List of Information Provided to Audit Team

- 1.7 The following is a list of documents and drawings provided as part of the Audit Brief:

Document No. | Title | Date

Road Safety Audit Brief - GG119	September 2023
---------------------------------	----------------

Drawing No. | Title | Date

Figure 3.1A Central Development Parcel Primary Access	09/12/2022
---	------------

Figure 3.2B Central Development Parcel Secondary Access	24/03/2023
---	------------

Figure 3.3A Northern Development Parcel Access Arrangement	09/12/2022
--	------------

Main Parties to the Audit

- 1.8 The following are the main parties to the audit:

- Overseeing/Third Party Organisation: SC/Pegasus
- Design Organisation: Pegasus
- Client Organisation (Highway Authority): SC

- 1.9 The location of the site is shown on Figure 1 Site Location Plan and Figure 2 Aerial Photo. The area of the audit extends solely to the works shown on the drawings included in the Audit Brief. Where relevant, extracts from the design drawings and photographs are included to help show the location of any issue raised together with Figure 3 Audit Plan.

- 1.10 The Audit Team visited the site on Thursday 7th September 2023 between 12.20pm and 1.00pm. The weather was fine and clear with dry surfaces. There were no adverse traffic conditions to affect the audit. The Swansea Road lay-by was closed at the time of the site visit.
- 1.11 The proposed works comprise modifications to an existing field access on the north side of the A484 to enable access by large vehicles. Large vehicle access is also proposed via the existing farm shop access serving Penyfodau Fawr Farm, together with a new simple priority access at an existing lay-by on the west side of the Swansea Road, requiring its closure.
- 1.12 The A484/Swansea Road roundabout is a five-arm junction providing access to the Penyfodau Fawr Farm shop. It sits within a 40mph speed limit and urban clearway. The farm access has a metalled surface and curving horizontal alignment. It is single track with passing places and terminates in the farmyard. No footway or lighting is provided. The urban single carriageway B4620 Swansea Road to the north is traffic calmed and has a relatively wide and straight horizontal alignment. It is subject to a 30mph speed limit and has a signed vehicle weight restriction of 7.5t. Opposite the existing field access is a minor access junction and no-through -route. Footways and street lighting are provided on the B4620, which has a general downhill highway gradient sloping from north to south. The rural single carriageway Swansea Road to the south also has a straight horizontal alignment and downhill highway gradient sloping from north to south. It is a bus route and subject to a 40mph speed limit. It has a footway on its eastern side and streetlighting.
- 1.13 Three collisions are recorded in the vicinity of the works within the latest five-year period. The first incident is recorded on the B4620 east around 420m to the east of its junction with Hospital Road. It occurred at 08:18 on Thursday 4th July 2019 in daylight and conditions recorded as being dry and fine, without high winds. The accident appears to have occurred when a car attempted to perform a U-turn but collided with an oncoming pedal cyclist. The incident resulted in one serious PIA.

- 1.14 The second incident occurred on the B4620 west approach to the A484/Swansea Road roundabout at 18:17 on Tuesday 1st September 2020. The incident occurred in daylight, with conditions recorded as being dry and fine, without high winds. The incident involved two cars, which appear to have been involved in a nose to tail collision resulting in one slight PIA.
- 1.15 The third and final incident occurred on the B4620 east around 320 metres west of the A484/Swansea Road roundabout at 11:14 on Tuesday 23rd February 2021. No additional information is provided for the incident, although it was confirmed that there were two vehicles involved which resulted in one slight and one fatal PIA.
- 1.16 Traffic flows at A484/Swansea Road roundabout junction and Swansea Road to the south were constant and busy at the time of the site visit. No pedestrians or cyclists were noted. An electric scooter user was noted to negotiate the roundabout.



Image 1 – Not scooter user on-carriageway at A484/Swansea Road roundabout junction.

SECTION 2: ITEMS RAISED AT PREVIOUS AUDITS

2.1 As this is a Road Safety Audit Stage 1 report no previous audits have been undertaken.

SECTION 3: ITEMS RAISED AT THIS AUDIT

3.1 PROBLEM

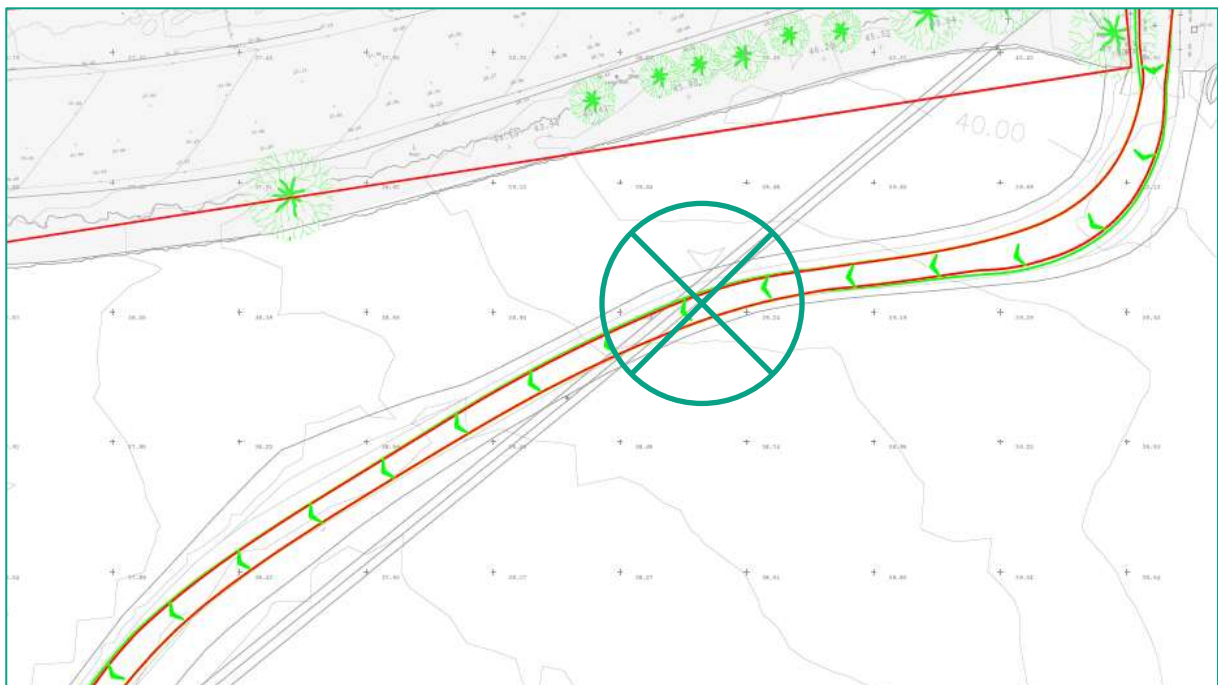
Location: Proposed farm access. Drawing No. Figure 3.1A.

Summary: Potential for collisions arising from lack of access width.

3.1.1 It is unclear if the farm shop is to remain open. Passing space is available in places. However, a 16.5m articulated vehicle may need to pass an opposing vehicle where space is limited and there is a potential for collisions between vehicles resulting in possible injuries to occupants.

RECOMMENDATION

3.1.2 It is recommended that large vehicle arrivals are notified in advance and banksmen employed to ensure clear and safe passage over the access route.



Drawing Extract 1 - Figure 3.1A.



Image 2 – Existing farm access view north.

3.2 PROBLEM

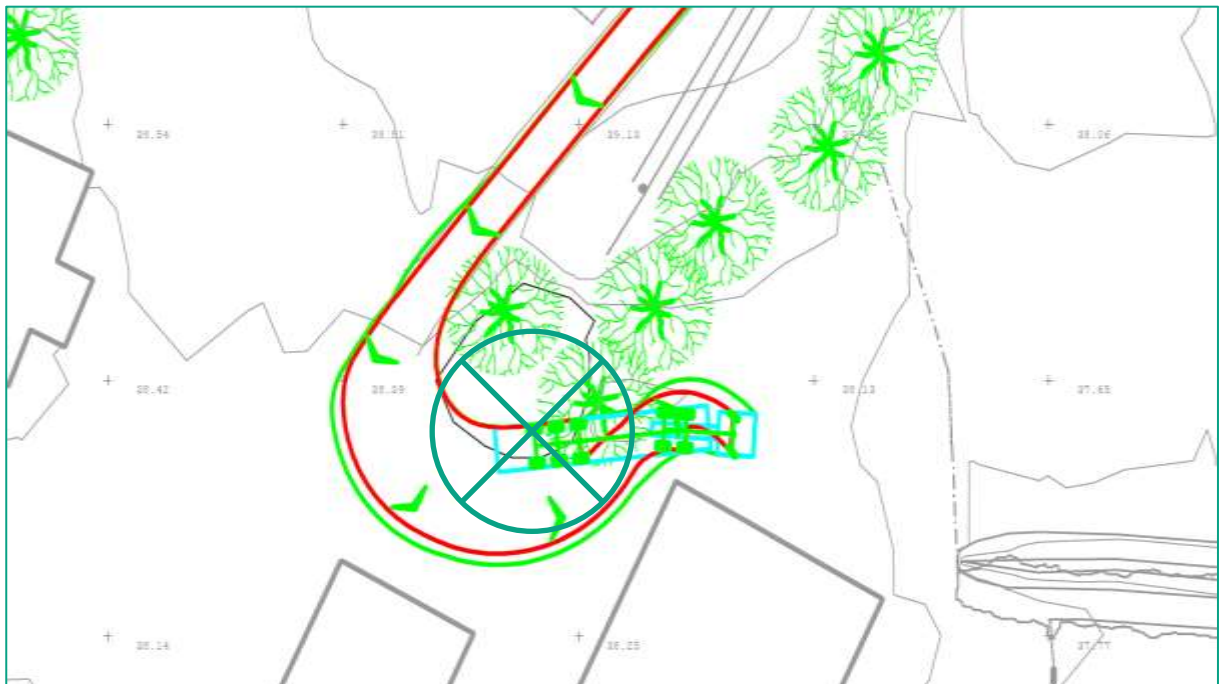
Location: Proposed farm access. Drawing No. Figure 3.1A.

Summary: Potential for collisions arising from vehicles tipping into pond.

3.2.1 The swept path appears to conflict with the farm pond. There is potential for large vehicles to tip into the pond resulting in possible injuries to occupants.

RECOMMENDATION

3.2.2 It is recommended that measures are introduced to enable large vehicles to efficiently and safely access the site.



Drawing Extract 2 – Figure 3.1A



Image 3 – Farm Pond view east.

3.3 PROBLEM

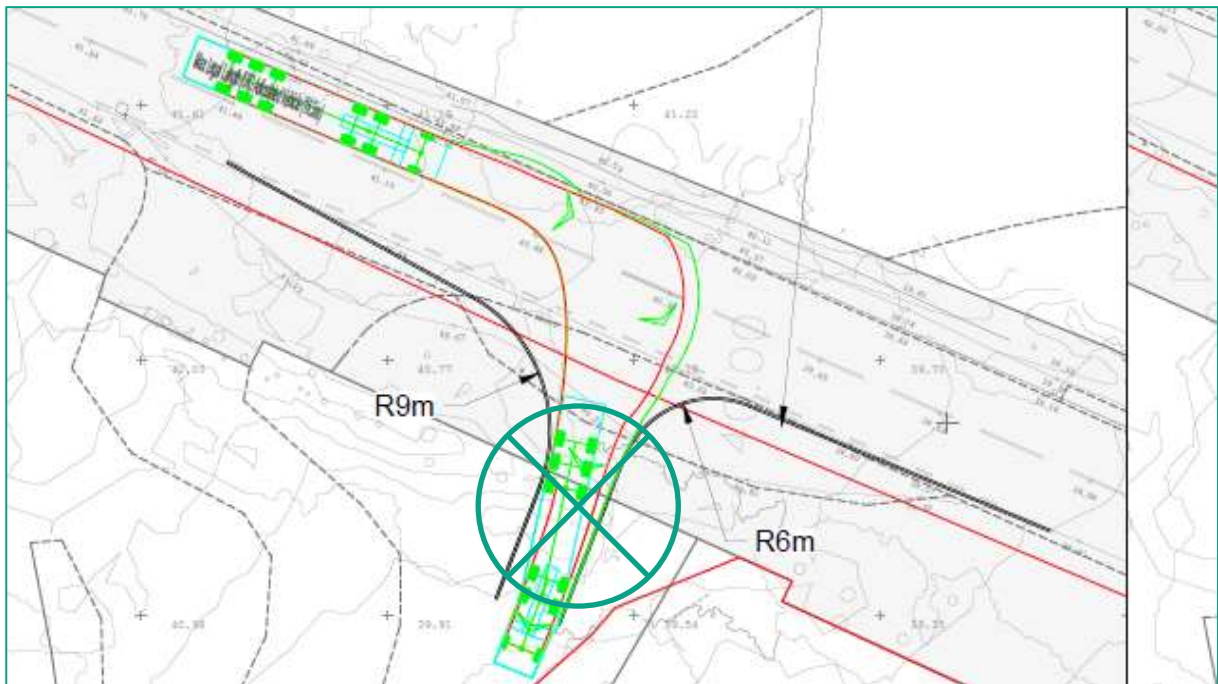
Location: Proposed access with B4620 and Swansea Road (south). Drawing No. Figure 3.2B & Figure 3.3A.

Summary: Potential for collisions arising from vehicles attempting to enter the site and encountering an egressing vehicle.

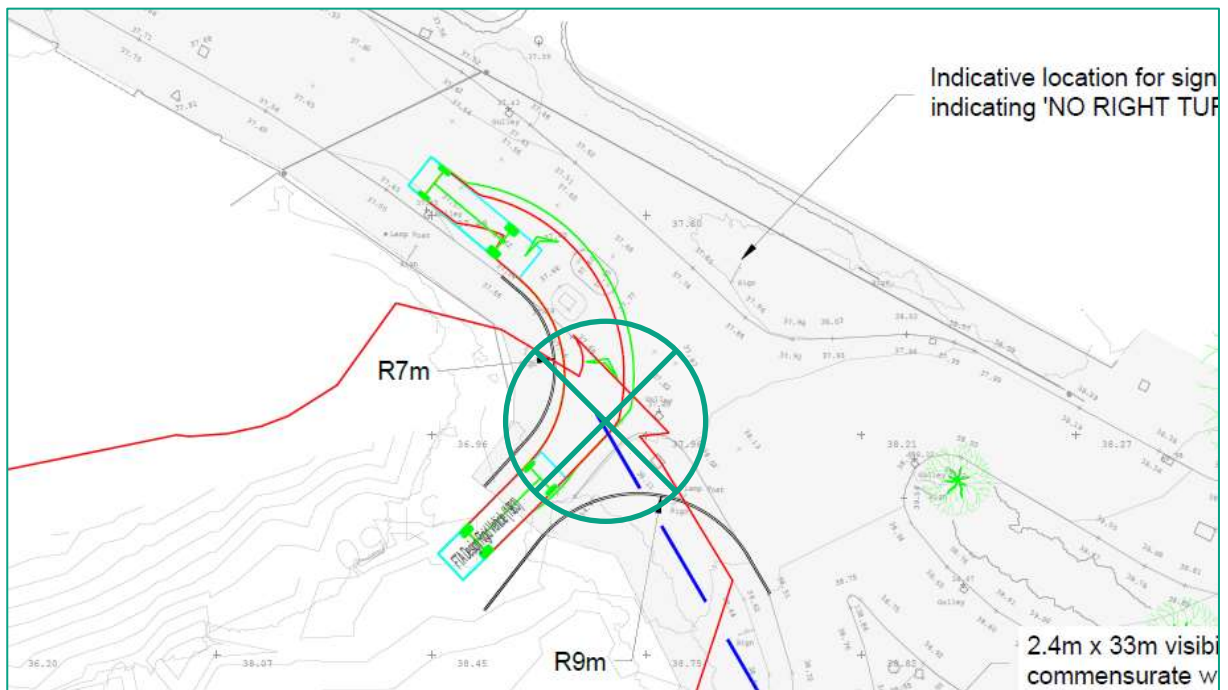
3.3.1 There is potential for vehicles seeking to access the site encountering egressing vehicles where there is insufficient access width to enable the vehicles to pass safely. Accessing vehicles may be required to reverse back into the public highway. There is a risk of collisions between vehicles resulting in possible injuries to occupants.

RECOMMENDATION

3.3.2 It is recommended that access control measures are introduced to ensure two opposing vehicles do not meet at the proposed junctions.



Drawing Extract 3 - Figure 3.2B.



Drawing Extract 4 – Figure 3.3A.



Image 4 – B4620 view northeast.



Image 5 - Swansea Road view south.

3.4 PROBLEM

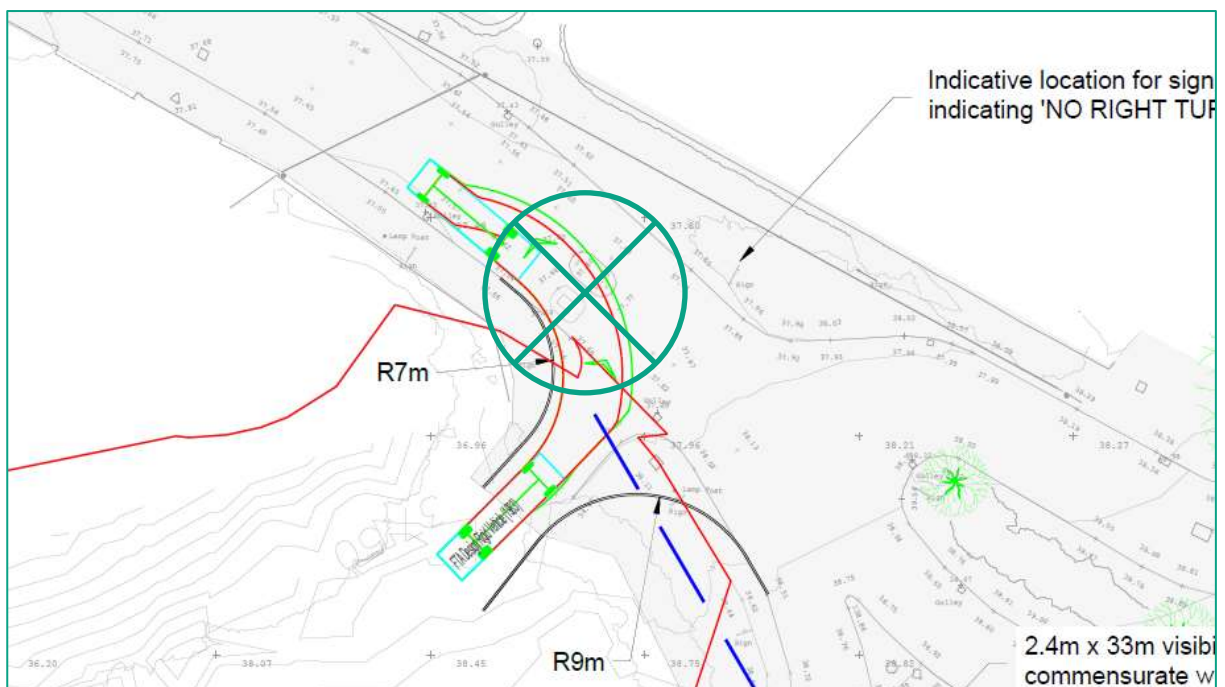
Location: Proposed access with B4620. Drawing No. Figure 3.3A.

Summary: Potential for collisions arising from vehicles over-running pedestrian crossing.

3.4.1 Notwithstanding that the swept path assessment appears to show a large rigid vehicle rather than the 16.5m articulated vehicle labelled, the left-turn egress movement over-runs the existing pedestrian refuge island. There is a potential for collisions between vehicles and pedestrians resulting in possible injuries to pedestrians.

RECOMMENDATION

3.4.2 It is recommended that measures are introduced to ensure the safety of pedestrians in this location.



Drawing Extract 5 – Figure 3.3A.



Image 6 - View east across B4620 from existing access.

3.5 PROBLEM

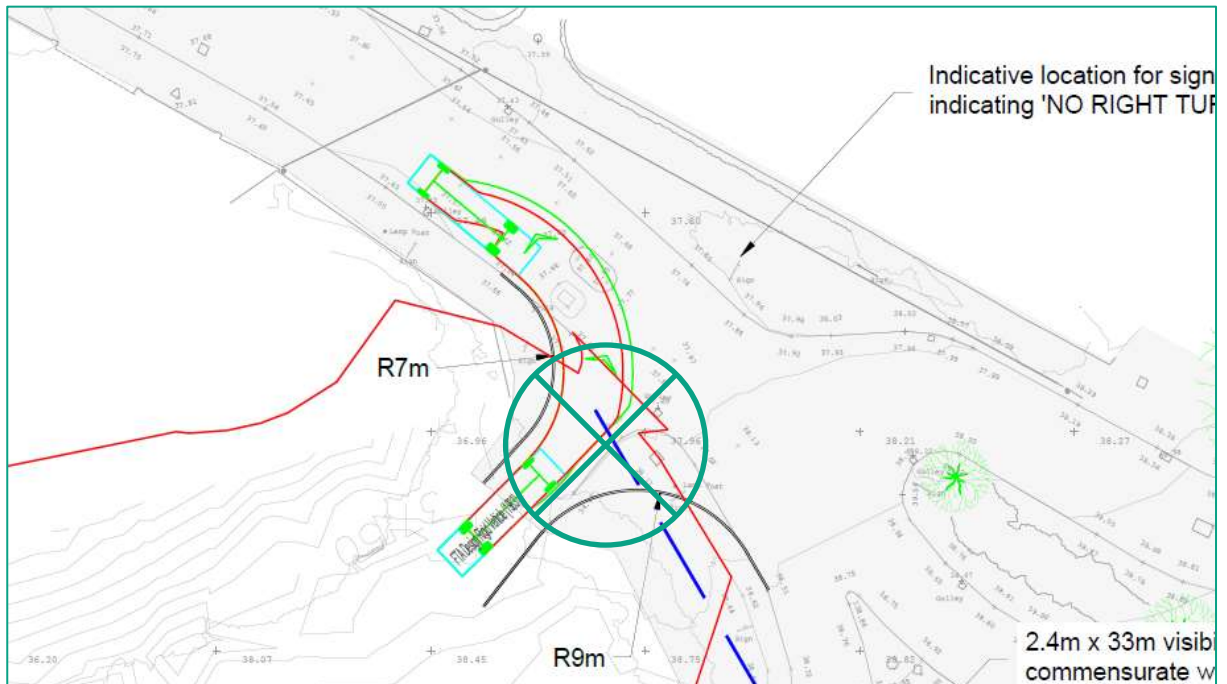
Location: Proposed access with B4620. Drawing No. Figure 3.3A.

Summary: Potential for collisions arising from lack of uncontrolled crossing.

3.5.1 The drawings show the access to be provided with a kerbed arrangement. No tactile paving or dropped-kerb facility is provided for pedestrians and the crossing width is to be increased. There is a risk of tips, trips, and falls, particularly involving the visually impaired resulting in possible injuries to pedestrians.

RECOMMENDATION

3.5.2 It is recommended that tactile paving and dropped kerbs are introduced in this location.



Drawing Extract 6 – Figure 3.3A



Image 7 - View southwest to existing access on B4620.

SECTION 4: AUDIT STATEMENT

4.1 We certify this audit has been undertaken in accordance with DMRB Standard GG119.

Road Safety Audit Team Leader

A. R. J. Setter BA (Hons) MSc CMILT MCIHT AMICE MSoRSA MTPS
National Highways RSA Certificate of Competency (2015)

Director - Badingham Limited

16 Ashley Piece, Ramsbury, Marlborough, Wiltshire, SN8 2QE

Signed:



Date: 12th September 2023

Road Safety Audit Team Member

D. F. Rogers JP CEng BEng (Hons) MICE MSoRSA FIHE

Partner - Ashburn Partnership

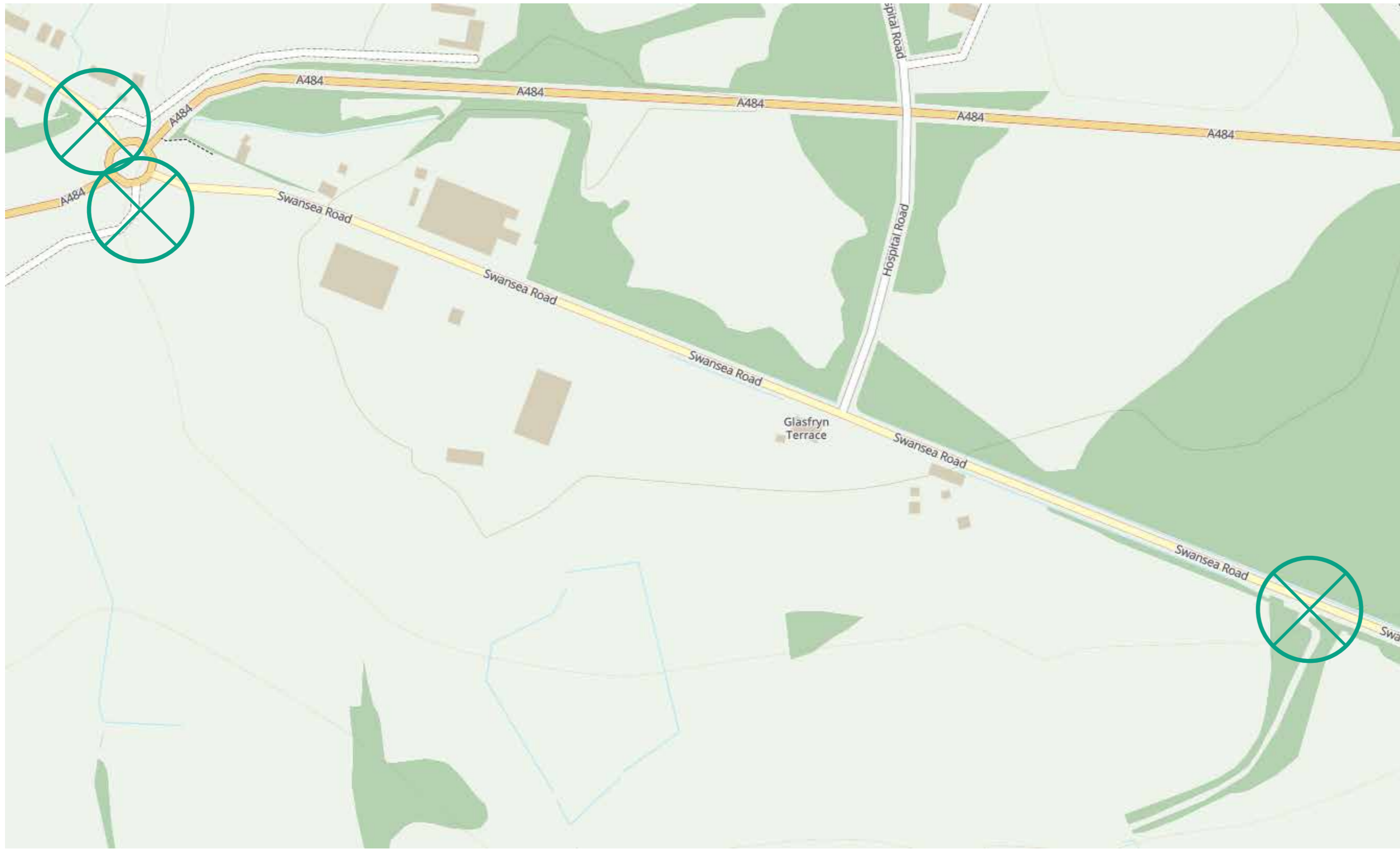
5 Mayfield, Upper Wanborough, Swindon, SN4 0ED

Signed:



Date: 12th September 2023

FIGURES



North



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Rev.	Date	Initials	Amendments

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Client
Taiyo Power Storage Limited.

Project
Parc Solar Caenwydd.

Title
Location Plan

Date	12/09/2023	Status	FINAL
------	------------	--------	-------

Scale	NTS	Original Size	A3
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Drawn	AS	Checked	AS
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Job No.	1191	Drawing No.	FIGURE 1	Rev.	-
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North



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Client

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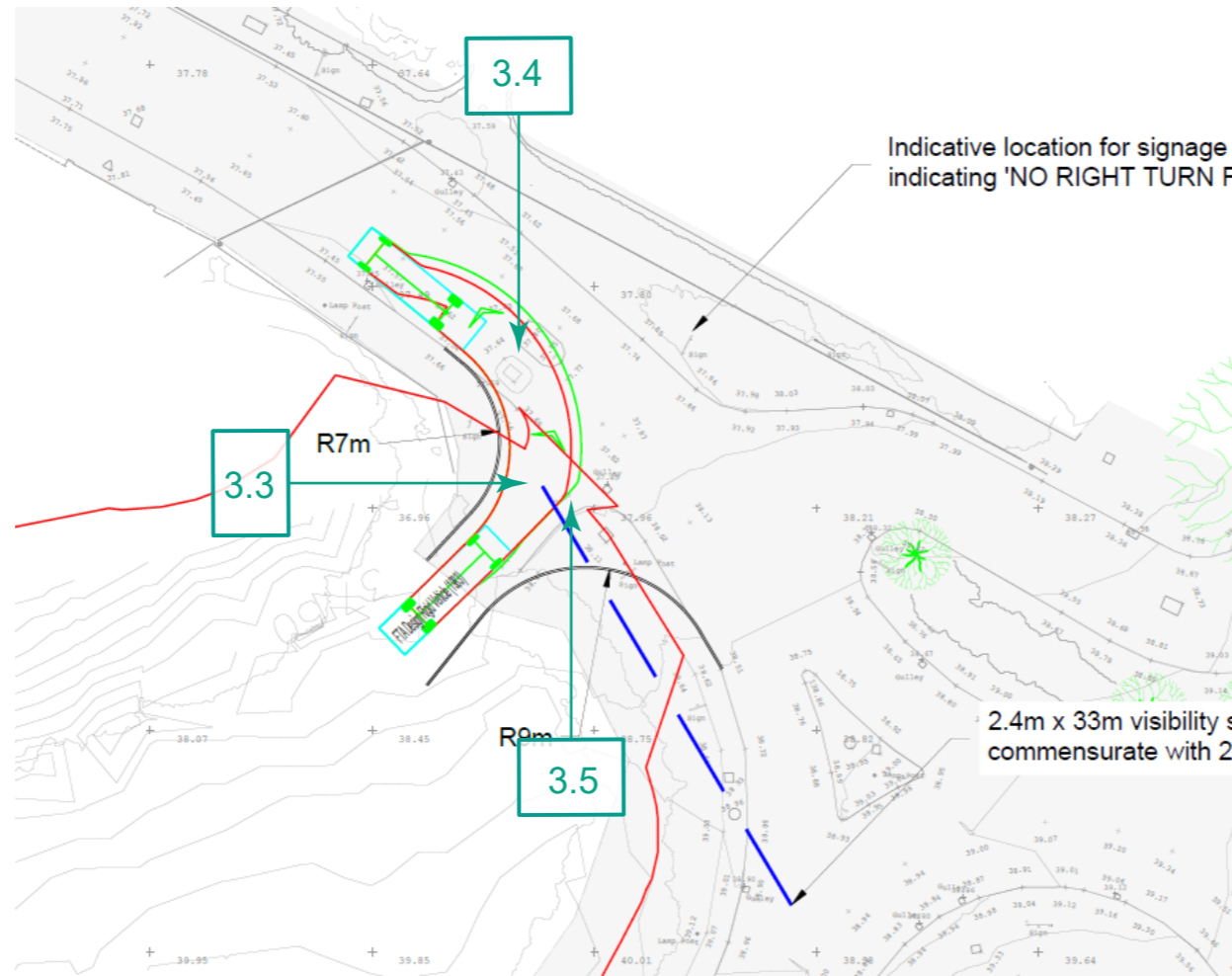
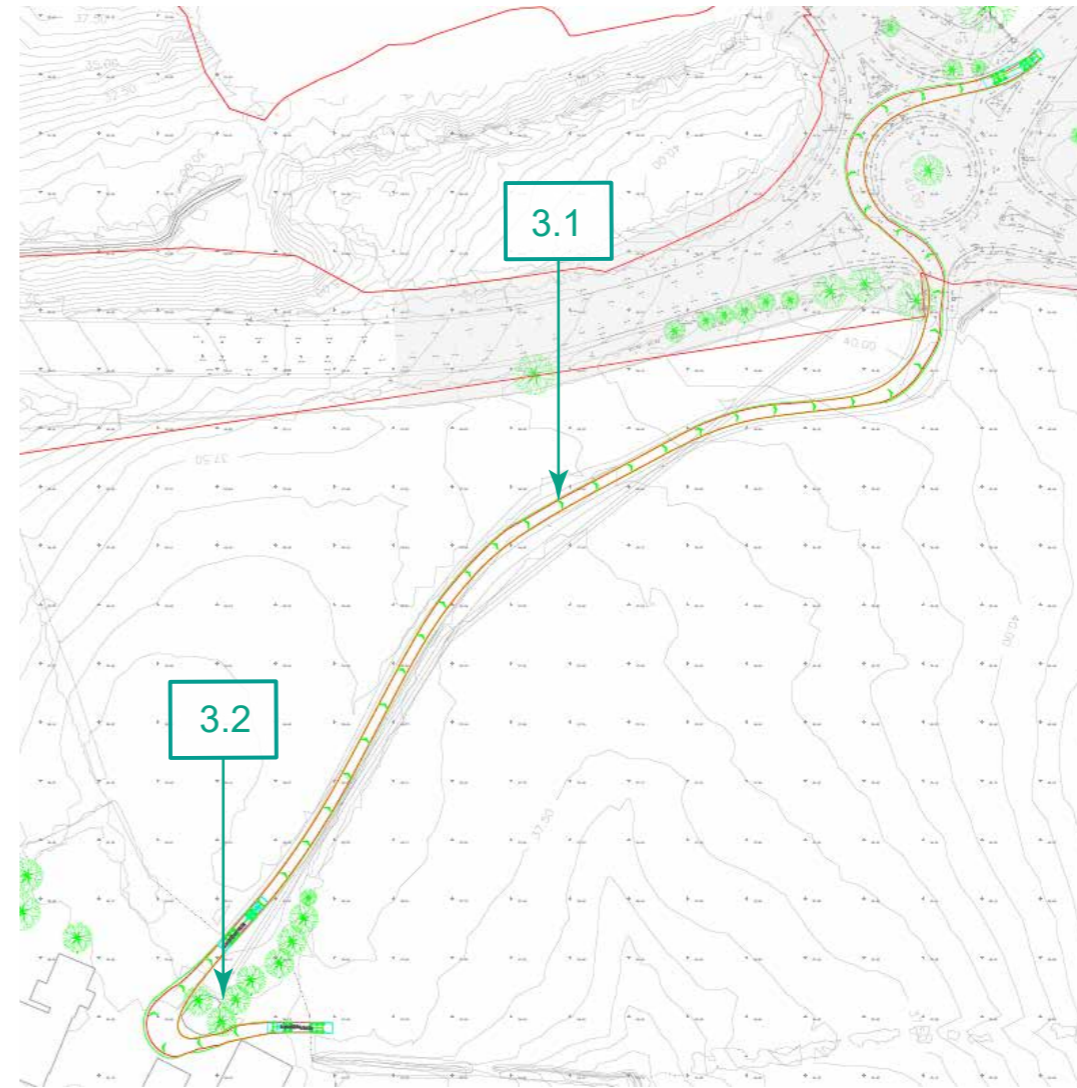
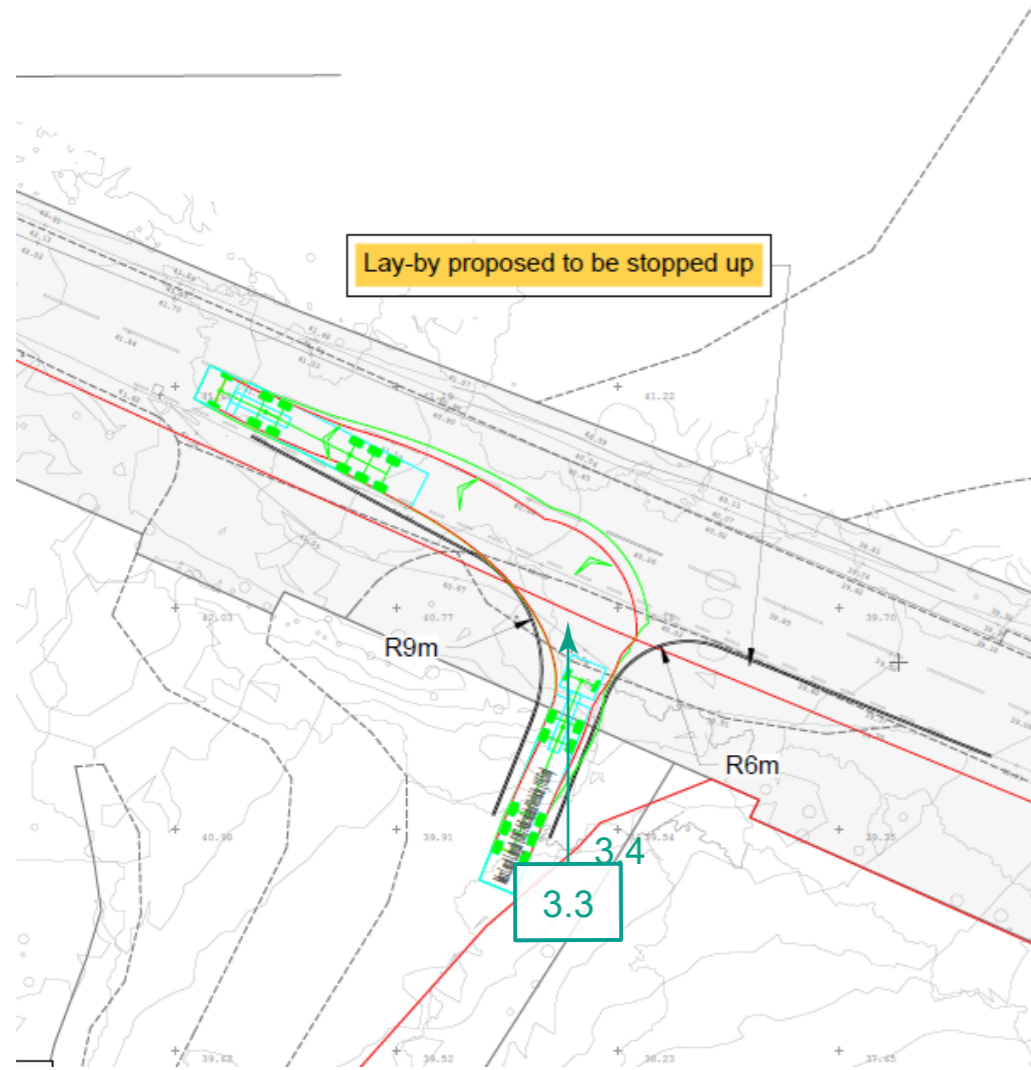
Project

Parc Solar Caenwydd.

Title

Aerial Photo

Date	12/09/2023	Status	FINAL
Scale	NTS	Original Size	A3
Drawn	AS	Checked	AS
Job No.	1191	Drawing No.	FIGURE 2
		Rev.	-



North



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Source: P21_2998 Fig. 3.2 B; P21_2998 Fig. 3.1 A; P21_2998 Fig. 3.3 A

Rev.	Date	Initials	Amendments
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Transport Planning | Road Safety | Highways

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Client

Taiyo Power Storage Limited.

Project

Parc Solar Caenwydd.

Title

Audit Problem Location Plan

Date	12/09/2023	Status	FINAL
Scale	NTS	Original Size	A3
Drawn	AS	Checked	AS
Job No.	1191	Drawing No.	FIGURE 3
		Rev.	-



Appendix G

Project/Report Title: Parc Solar Caenwydd, Gowerton, South Wales
Audit Stage: Stage 1
Date: 13/09/2023
Document Reference: P21-2998_GG119_Response – Gowerton
Document Revision: –
Prepared by (Design Organisation): Pegasus Group
On behalf of (Overseeing Organisation): Swansea Council



Scheme Summary: The proposed development is a Solar Farm scheme with a maximum export capacity of 44 megawatts. Three access locations are proposed, these consist of an existing farm access into the central development parcel off the A484/B4560 Swansea Road roundabout, a new secondary access into the central development parcel off the B4560 Swansea Road and an existing fieldgate access into the norther development parcel, northwest of the A484/B4560 Swansea Road roundabout.

Audit Report Reference Parc Solar Caenwydd, Gowerton, S. Wales. Proposed Highway Works. Road Safety Audit – Stage 1. (Preliminary Design).

Details of **Overseeing Organisation** Swansea Council
Personnel:
Road Safety Audit Team A. R. J. Setter – BA (Hons), MSc CMLT, MCIHT, AMICE, MSoRSA, National Highways RSA Certificate of Competency 2015, Badingham Limited
D. F. Rogers – JP Ceng Beng (Hons) MICE, MSoRSA, FIHE, Ashburn Partnership
Design Organisation Alex Snartt, Senior Transport Planner
Katie Stock, Director (Transport)

RSA Problem		RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
Audit Ref	Problem				
3.1	It is unclear if the farm shop is to remain open. Passing space is available in places. However, a 16.5m articulated vehicle may need to pass an opposing vehicle where space is limited and there is a potential for collisions between vehicles resulting in possible injuries to occupants.	It is recommended that large vehicle arrivals are notified in advance and banksmen employed to ensure clear and safe passage over the access route.	Agreed. As set out in the CTMP, a call ahead system will be implemented with banksmen deployed in strategic locations to assist arriving HGVs. An alternative route has been provided for construction vehicles which avoids routing HGVs through the farm shop parking area. This is shown in Figure 3.1 Revision B .		
3.2	The swept path appears to conflict with the farm pond. There is potential for large vehicles to tip into the pond resulting in possible injuries to occupants.	It is recommended that measures are introduced to enable large vehicles to efficiently and safely access the site.	Agreed. An alternative route has been provided for construction vehicles which avoids the farm pond. This is shown in Figure 3.1 Revision B .		
3.3	There is potential for vehicles seeking to access the site encountering egressing vehicles where there is insufficient access width to enable the vehicles to pass safely. Accessing vehicles may be required to reverse back into the public highway. There is a risk of collisions between vehicles resulting in possible injuries to occupants.	It is recommended that access control measures are introduced to ensure two opposing vehicles do not meet at the proposed junctions.	Agreed. As set out in the CTMP, a call ahead system for arriving HGVs will be implemented ensuring that no oncoming vehicles meet at the proposed junction.		
3.4	Notwithstanding that the swept path assessment appears to show a large rigid vehicle rather than the 16.5m articulated vehicle labelled, the left-turn egress movement overruns the existing pedestrian refuge island. There is a potential for collisions between vehicles and pedestrians resulting in possible injuries to pedestrians.	It is recommended that measures are introduced to ensure the safety of pedestrians in this location.	Agreed. It is proposed that the refuge island will be temporarily removed and re-instated post-construction. Banksmen will be located at the access to assist with turning manoeuvres and will inform pedestrians of incoming and outgoing vehicles. Appropriate signage advising of HGV manoeuvres will be placed within the vicinity of the access. A call ahead system for arriving HGVs will be implemented ensuring that no oncoming vehicles meet at the proposed junction. The label on the drawing has been updated to confirm that 10m Rigid Vehicles are anticipated to be the largest vehicle type to use the access. These measures are included in Figure 3.3 Revision B .		
3.5	The drawings show the access to be provided with a kerbed arrangement. No tactile paving or dropped-kerb facility is provided for pedestrians and the crossing width is to be increased. There is a risk of tips, trips, and falls, particularly involving the visually impaired resulting in possible injuries to pedestrians.	It is recommended that tactile paving and dropped kerbs are introduced in this location.	Agreed. Tactile paving and dropped kerbs have been incorporated into the access arrangement. This is shown in Figure 3.3 Revision B .		
DESIGN ORGANISATION AND OVERSEEING ORGANISATION STATEMENTS		On behalf of the design organisation I certify that: 1) the RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the Overseeing Organisation.		On behalf of the Overseeing Organisation I certify that: 1) the RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the design organisation; and 2) the agreed RSA actions will be progressed.	
Name:		Alex Snartt		Name:	
Signed		A. SNARTT		Signed	
Position:		Senior Transport Planner		Position:	
Organisation:		Pegasus Group		Organisation:	
Date:		22/09/2023		Date:	



Appendix H



Appendix i



1. Temporary Construction Traffic signage (Diagram 7301 'WORKS TRAFFIC' in the TSRGD)

Bristol

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