



Technical Appendix 5: Construction Traffic Management Plan

Derril Water Solar Farm

01/03/2021



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EXECUTIVE SUMMARY

- 5.1. This CTMP outlined the overall framework for managing the movement of construction and delivery traffic to and from the Proposed Development, as well as considering the type of traffic it will generate. The traffic assessment for the operational and decommissioning phases were also considered.
- 5.2. Impacts from the operational phase of the site, consisting of between 10-15 LGVs per year, is not considered to be 'significant' and therefore a full Transport Assessment is not required. However, elements of the NPPG which are relevant to this project, namely, to include details of the existing conditions and issues relating to the Proposed Development, have been considered in this CTMP.
- 5.3. Increased volumes of traffic will be generated by the Proposed Development during the construction period. However, the overall volumes of traffic generated are considered to be quite low. During the anticipated six-month construction period, a total of 783 HGV deliveries will be made to the Application Site. During the peak construction period there will be an approximate maximum of 20 daily HGV deliveries.
- 5.4. The haulage route will likely be from the A386 to the east of the Application Site. The delivery vehicles will exit the A386 at Hatherleigh to join the A3072 and continue along the A3072 until joining the A388 at Holsworthy. From here they will travel north along the A388 into Holsworthy, turning left onto Bodmin Street, where they will follow this two-lane road out towards North Tamerton until they reach Thorndon Cross. Once there they will turn right onto this single lane road and follow this for approximately 1.3 miles to reach the Application Site.
- 5.5. An Automatic Traffic Count (ATC) survey took place on the unnamed road that the Application Site is accessed from at three different points. The survey equipment was set up on the 23rd January 2021 and was left in place for one week. These were within the vicinity of each of the proposed site entrances. The purpose was to collect real time data to determine the speed of road users at each point. Four visibility splays (See **Figures 5.5 – 5.8: Appendix 5A**) were created, one for each entrance. The survey concluded the following:
- The 85th percentile speed along the road at Route Analysis 1 (See **Figure 5.1: Appendix 5A**) averaged 42.2mph eastbound and 42.8mph westbound. As these speeds were similar, the worst-case westbound speed of 42.8mph was used in standard Stopping Distance (SSD) calculations. This equates to a required visibility splay dimension of 115m in the 'y' direction and 2.4m in the 'x' direction. For this access point, the hedgerow will require 26.7m to be trimmed back and 4.25m to be removed.
 - The 85th percentile speed along the road at Route Analysis 2 (See **Figure 5.1: Appendix 5A**) was 37.4mph eastbound and 37.5mph westbound. As these speeds were similar, the

worst-case westbound speed of 37.5mph was used in standard Stopping Distance (SSD) calculations. This equates to a required visibility splay dimension of 70m in the 'y' direction and 2.4m in the 'x' direction. For the entrance at Route Analysis point 2, 56.4m of hedgerow will need to be trimmed back and 2.5m to be removed to achieve the required visibility.

- The 85th percentile speed along the road at Route Analysis 3 and 4 (See **Figure 5.1: Appendix 5A**) averaged 36.8mph eastbound and 39.8mph westbound. Using standard Stopping Distance (SSD) calculations, this equates to a required visibility splay dimension of 65m in the 'y' direction for eastbound traffic and 105m in the 'y' direction for westbound traffic, and 2.4m in the 'x' direction for both. For the entrance at Route Analysis point 3, 89.3m of hedgerow needs to be trimmed back and 3.4m to be removed to achieve the required visibility. For the entrance at Route Analysis point 4, 40.5m of hedgerow will need to be realigned to achieve the required visibility.
- 5.6. Although it is proposed to utilise existing entrance points, they will all have to be upgraded so that the largest construction vehicles can manoeuvre into the Application Site. Initial swept path analysis was used in the design of the entrance points and therefore they are all suitable for the largest construction vehicles to access the Application Site once the upgrades have been completed (see **Figures 5.2 – 5.4: Appendix 5A**).
- 5.7. A dedicated person will be appointed for the management of the delivery booking system during the construction stage. The developer will also appoint a community liaison officer to liaise with locals during the construction phase.
- 5.8. The Applicant will conduct a pre- and post-construction condition survey of the unnamed local road that the Application Site is accessed from, from the most western access point to the existing substation entrance point (approximately 1.1km), with the Applicant liable to repair any damage to the road attributed to the construction of the Proposed Development.
- 5.9. The CTMP sets out a variety of specific mitigation measures that will be implemented during construction that will minimise the impact of the construction traffic on the environment and local communities; these include:
- Limitations on working times and HGV scheduling;
 - Site security and signage; and,
 - Measures to control emissions of dust and other airborne contaminants.
- 5.10. This Construction Traffic Management Plan conforms to the policies and objectives of the DP, adopted by North Devon and Torridge Council and the Design Manual for Roads and Bridges.

INTRODUCTION

Background

- 5.11. Neo Environmental Ltd has been appointed by Renewable Energy Systems (RES) Ltd (the “Applicant”) to complete a Construction and Transport Management Plan for a proposed 42MW solar farm and associated infrastructure (the “Proposed Development”) on lands circa 1.2km southwest of the village of Pyworthy, Devon (the “Application Site”).
- 5.12. Please see **Figure 4 of Volume 2: Planning Application Drawings** for the layout of the Proposed Development.

Development Description

- 5.13. The Proposed Development will consist of the construction of bi-facial solar photovoltaic (PV) panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, a temporary construction compound, substation and all ancillary grid infrastructure and associated works.
- 5.14. The Proposed Development will result in the production of clean energy from a renewable energy resource (daylight) and will also involve additional landscaping including hedgerow planting and improved biodiversity management.

Site Description

- 5.15. The Application Site is located on lands circa 1.2km southwest of the village of Pyworthy and c. 1.8km southeast of Bridgerule in Torridge, Devon; the approximate centre point of which is Grid Reference E229936, N101914. Comprising 28 agricultural fields, the Application Site measures 66.33 hectares (ha) in total. See **Figure 1 of Volume 2: Planning Application Drawings** for details.
- 5.16. Land within the Application Site itself is gently undulating, ranging between 95 - 125m AOD and consists of fields typically of medium scale and generally well enclosed by a mixture of dense treelines, hedgerows and woodland shelter belt, limiting visibility for local settlements and receptors (See **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).
- 5.17. The Application Site is in an area with existing electricity infrastructure, with a solar farm present c. 0.3km southeast and another c. 1.2km to the southwest. Additionally, the electrical Pyworthy Substation is located c. 75m from the northern parcel’s eastern boundary, adjacent to Field 16, where the Proposed Development will connect.
- 5.18. The local area is generally agricultural in nature, punctuated by individual properties and farmsteads; the nearest residential areas are Hopworthy and Yeomadon, located 0.7km



northeast and southeast respectively. Recreational Routes include two Public Rights of Way (PRoW); one which passes the southeastern boundary of the Application Site (linking Crinacott Farm and Northmoor Farm, both outside the Application Site) and another which passes east of the adjacent substation.

- 5.19. While there are a number of drains and water courses throughout the Application Site, it is mostly contained within Flood Zone 1, an area described as having a “Low probability” of flooding. The exception to this is a small part of the Application Site within Flood Zone 2 and 3, towards the eastern boundary of Field 16. These areas have been avoided within the Proposed Development footprint.

- 5.20. The Application Site will be accessed from four existing entrance points on the unnamed minor road which splits the site into northern and southern parcels. From the western boundary of the site, the road runs in a southwestern direction for c. 0.5km before turning in a general east-northeast direction through the eastern section of the Application Site.

Scope of the Assessment

- 5.21. The purpose of this CTMP report is to provide a framework for managing the movement of traffic to and from the Application Site, and to minimise the impact on the local road network during the construction period of the Proposed Development. The potential impact of traffic during the operation and decommissioning periods are also assessed.
- 5.22. This CTMP will provide details of:
- Traffic route identification and assessment;
 - Swept path analysis; and
 - Construction traffic management procedures.
- 5.23. This report is supported by the following appendices:
- **Appendix 5A: Figures**
 - Figure 5.1: Proposed Haul Route
 - Figure 5.2: Swept Path Analysis 1
 - Figure 5.3: Swept Path Analysis 2
 - Figure 5.4: Swept Path Analysis 3
 - Figure 5.5: Visibility Splay 1

- Figure 5.6: Visibility Splay 2
- Figure 5.7: Visibility Splay 3
- Figure 5.8: Visibility Splay 4

Statement of Authority

- 5.24. This Construction Traffic Management Plan has been produced by Michael McGhee and Tom Saddington of Neo Environmental Ltd. Having completed a civil engineering degree in 2012, Michael has worked on over 1.5GW (approximately 50 individual sites) of solar farm Construction Traffic Management Plans across the UK and Ireland, as well as more detailed transport statements for major developments. Tom has an undergraduate degree in Bioengineering and graduated with an MSc in Environmental and Energy Engineering in January 2020. He has been working on various technical assessments for numerous solar farms in Ireland and the UK.

CONSULTATION

- 5.25. A pre-application request was submitted to the Council on the 1st September 2020 and a response was received on the 10th November 2020. With regards to transport, the response stated:

“Policy ST10 sets out the transport strategy for the District which notes that the function and safety of the road network will be protected and enhanced. Policy DM05 states that all development must ensure safe and well designed vehicular access and egress, adequate parking and layouts which consider the needs and accessibility of all highway users including cyclists and pedestrians. Developments should also protect and enhance existing public rights of way.

No details of the proposed access points into the site, the construction management details or likely traffic routes for larger vehicles have been provided at this stage for comment, although all would be required within a Transport Statement to accompany any formal application of this nature.

Comments have been received from the County Council’s Highways Officer in relation to the proposed development.

DCC Highways:

‘We are unlikely to have an objection to a proposal such as this subject to adequate site entrance(s) being formed which is likely to require improved visibility splays and hardening of the site access to avoid mud being dragged onto the road. A compound within the site shall be

required so that there is no parking or unloading on the highway. Creation of additional passing places on the application land might be required.”

- 5.26. During further consultations with local parish councils, it was agreed that a community liaison officer would be appointed by the developer for the construction phase.

LEGISLATION

- 5.27. The National Planning Policy Framework (NPPF)¹ seeks to promote sustainable transport within all new developments. However, the Government recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas.
- 5.28. All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:
- the opportunities for sustainable transport modes have been considered, depending on the nature and location of the site, to reduce the need for major transport infrastructure;
 - safe and suitable access to the site can be achieved for all people; and
 - improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development.
- 5.29. It is noted that development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are “severe”.

National Planning Practice Guidance (NPPG)² Travel Plans, Transport Assessments and Statements in Decision Taking

- 5.30. This NPPG seeks to provide clarification on the issues raised within the NPPF in relation to Transport Statements and is a material consideration in the determination of applications.
- 5.31. The NPPG defines Transport Assessments and Statements as ways of ‘*assessing and mitigating the negative transport impacts of development in order to promote sustainable development*’. As set out within the guidance, this Transport Statement primarily focuses on evaluating the potential transport impacts of a development proposal and proposes mitigation measures where these are necessary to avoid unacceptable or “severe” impacts.
- 5.32. The guidance highlights a number of principles to be taken into account during the preparation of the Transport Statement, these include:

¹ Ministry of Housing, Communities & Local Government, National Planning Policy Framework, Feb 2019. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

² Ministry of Housing, Communities & Local Government, National Planning Practice Guidance, Travel Plans, Transport Assessments and Statements, March 2014. Available at <https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements>

- Proportionality to the size and scope of the proposed development to which they relate and build on existing information wherever possible;
 - Tailoring to particular local circumstances; and
 - Works being brought forward through collaborative ongoing working between the Local Planning Authority/ Transport Authority, transport operators, Rail Network Operators, Highways Agency where there may be implications for the strategic road network and other relevant bodies.
- 5.33. NPPG identifies that the scope and level of detail in a Transport Assessment or Statement will be site specific and the following has been considered when setting the scope of the assessment:
- Information about the proposed development, site layout, (particularly proposed transport access and layout across all modes of transport);
 - Information about neighbouring uses, amenity and character, existing functional classification of the nearby road network;
 - Data about existing public transport provision, including provision/ frequency of services and proposed public transport changes;
 - An analysis of the injury accident records on the public highway in the vicinity of the site access for the most recent three-year period, or five-year period if the proposed site has been identified as within a high accident area; and
 - A description of parking facilities in the area and the parking strategy of the development.
- 5.34. The trip generation from the operational phase of the Proposed Development will not reach a high enough level to be described as ‘significant’ as it will be limited to maintenance visits approximately once per month. As the guidance states a Transport Statement or Assessment is only necessary when the Proposed Development generates a ‘significant’ amount of movement, it was felt that a CTMP would be sufficient to support this application.
- 5.35. This CTMP will consider elements of the NPPG which are relevant to this project, namely to include details of the existing conditions and issues relating to the Proposed Development.

Local Plan Policies

- 5.36. The North Devon and Torridge Local Plan 2011 - 2031³ (the “LP”) is the adopted plan.
- 5.37. Chapter 4 ‘Spatial Strategy – Transport Strategy’, of the existing LP contains policies and objectives in relation to transport; with the below policies relating directly to this Proposed Development. Policy ST10 states:

“Reduce the environmental and social impacts of transport by:

(a) reducing the need to travel by car and enabling alternative sustainable travel

options as supported by the Local Transport Plan;

(b) improving transport connectivity between rural communities and the main towns where viable;

(c) requiring a Transport Assessment or a Transport Statement and a Travel Plan for developments that generate significant traffic movements;

(d) actively managing car parking provision through type, capacity and charging to influence demand patterns;

(e) developing traffic management schemes in the main towns;

(f) maximising safety on transport networks through improvements to physical infrastructure design whilst conserving historic environment assets;

(g) ensuring that access to new development is safe and appropriate; and

(h) protecting the landscape character and ecological interest along the main and minor route(s).”

- 5.38. Chapter 13 ‘Development Management Strategies – Highways’ also contains a policy on transport. Policy DM05 states:

“(1) All development must ensure safe and well designed vehicular access and egress, adequate parking and layouts which consider the needs and accessibility of all highway users including cyclists and pedestrians.

³ North Devon and Torridge Council. North Devon and Torridge Local Plan 2011 - 2031. Available at <https://consult.torridge.gov.uk/portal/planning/localplan/adoption/interactive?pointId=5051463>

(2) All development shall protect and enhance existing public rights of way, footways, cycleways and bridleways and facilitate improvements to existing or provide new connections to these routes where practical to do so."

- 5.39. This Construction and Transport Management Plan will ensure that the Proposed Development adheres to the policies outlined above.

TRAFFIC ROUTE IDENTIFICATION AND ASSESSMENT

5.40. The chosen delivery route and subsequent CTMP is based upon information provided by the Applicant as well as a thorough review of the local and national roads in the vicinity of the Application Site.

Site Access

5.41. The Application Site will be accessed from four existing farm access points off the unnamed road which dissects the Application Site. The speed limit on this unnamed road is likely to be 60mph, however no signs were noted on the site visit. It was observed that vehicles are highly likely to travel at speeds lower than the statutory speed limit due to it being a single carriageway with limited visibility and an ATC survey carried out on the road confirms this. This section of road (near the site entrance points) contains no carriageway edge or centre markings and is not lit by public lighting, with this road being approximately 3m wide. There are no pedestrian facilities along this section of road and the carriageway is in good condition.

5.42. An Automatic Traffic Count (ATC) survey took place on the unnamed road that the site is accessed from at three different points. These were within the vicinity of each of the site entrances and the survey equipment was set up on the 23rd January 2021 and was left in place for one week. The purpose was to collect real time data to determine the speed of road users at each point. Four visibility splays (See **Figures 5.5 – 5.8: Appendix 5A**) were created, one for each entrance. The survey concluded the following:

- The 85th percentile speed along the road at Route Analysis 1 (See **Figure 5.1: Appendix 5A**) averaged 42.2mph eastbound and 42.8mph westbound. As these speeds were similar, the worst-case westbound speed of 42.8mph was used in standard Stopping Distance (SSD) calculations. This equates to a required visibility splay dimension of 115m in the 'y' direction and 2.4m in the 'x' direction. For this access point the hedgerow will require 26.7m to be trimmed back and 4.25m to be removed.
- The 85th percentile speed along the road at Route Analysis 2 (See **Figure 5.1: Appendix 5A**) was 37.4mph eastbound and 37.5mph westbound. As these speeds were similar, the worst-case westbound speed of 37.5mph was used in standard Stopping Distance (SSD) calculations. This equates to a required visibility splay dimension of 70m in the 'y' direction and 2.4m in the 'x' direction. For the entrance at Route Analysis point 2, 56.4m of hedgerow will need to be trimmed back and 2.5m to be removed to achieve the required visibility.

- The 85th percentile speed along the road at Route Analysis 3 and 4 (See **Figure 5.1: Appendix 5A**) averaged 36.8mph eastbound and 39.8mph westbound. Using standard Stopping Distance (SSD) calculations, this equates to a required visibility splay dimension of 65m in the 'y' direction for eastbound traffic and 105m in the 'y' direction for westbound traffic, and 2.4m in the 'x' direction for both. For the entrance at Route Analysis point 3, 89.3m of hedgerow need to be trimmed back and 3.4m to be removed to achieve the required visibility. For the entrance at Route Analysis point 4, 40.5m of hedgerow will need to be realigned to achieve the required visibility.
- 5.43. Although it is proposed to utilise existing entrance points, they will all have to be upgraded so that the largest construction vehicles can manoeuvre into the Application Site. Initial swept path analysis was used in the design of the entrance points and therefore they are all suitable for the largest construction vehicles to access the Application Site once the upgrades have been completed (see **Figures 5.2 – 5.4: Appendix 5A**).
- 5.44. The Applicant will conduct a pre- and post-construction condition survey of the unnamed local road that the site is accessed from, from the most western access point to the existing substation entrance point (approximately 1.1km), with the Applicant liable to repair any damage to the road attributed to the construction of the Proposed Development.

Internal Site Tracks

- 5.45. Additional and upgraded access tracks will be constructed to allow access for the construction, operation, maintenance and decommissioning of the solar panels and associated infrastructure.
- 5.46. Tracks will measure 4m wide with a 3.5m running width, however, this increases at bends. All new tracks will be unpaved and constructed from local stone. Geosynthetic reinforcement or soil stabilisation may be used to reduce the depth of track construction. The surface will be a compacted granular material (crushed rock) up to an approximate thickness of 0.3m, dependent on the ground conditions. Details of the access track construction can be found in drawing **Figure 6 of Volume 2: Planning Application Drawings**.
- 5.47. Load bearing crane hardstanding areas are required during construction to support the cranes as they lift the inverter stations from the delivery vehicles. The site tracks can be used for this purpose, with some localised widening where required.
- 5.48. The access tracks will be left in situ after completion of the solar farm construction, as they will provide:
- Access for the Proposed Development maintenance and repair works;
 - Access for the Landowner; and

- Access for decommissioning of the Proposed Development.

5.49. Once the solar farm is decommissioned, unless required by the landowner and agreed with the council, all new access tracks will be removed.

Proposed Haul Route

5.50. The proposed haul route has been identified by considering the ability of the route to physically accommodate the required vehicles, in addition to the sensitivity of the route to potential disruption by the movements of traffic to and from the Application Site.

5.51. The haulage route will likely be from the A386 to the east of the Application Site. The delivery vehicles will exit the A386 at Hatherleigh to join the A3072 and continue along the A3072 until joining the A388 at Holsworthy. From here they will travel north along the A388 into Holsworthy, turning left onto Bodmin Street, where they will follow this two-lane road out towards North Tamerton until they reach Thorndon Cross. Once there they will turn right onto this single lane road and follow this for approximately 1.3 miles to reach the Application Site.

5.52. A map showing the proposed local access route is presented in **Figure 5.1: Appendix 5A**.

5.53. Autotrack analysis was carried out at four junctions on the haul route for a 16.5m articulated vehicle representing the largest vehicle that will be used to access the Application Site for the Proposed Development (**Figures 5.2 – 5.4: Appendix 5A**).

Route Assessment

5.54. This route assessment was conducted as a desk-based exercise. Where required, swept path analysis has been conducted using Autotrack software to model the movement of the most onerous load to determine what actions are required to address any issues identified.

5.55. As per the specifications provided, the most onerous loads for the purpose of the swept path are the deliveries of the modules and mounting systems. As part of the swept path analysis, the following vehicle was used:

- UK Max Length Articulated Vehicle of 16.5m in total length

5.56. The exact dimensions of this vehicle and turning details can be found on the drawing in **Figures 5.2 - 5.4: Appendix 5A**.

5.57. The analysis was conducted using Ordnance Survey (OS) mapping and topographic data.

5.58. No allowances have been made for the provision of independent driver-operated rear steering. The approved haulage operator for the project will confirm final vehicle types prior to construction.

- 5.59. The load bearing capacity of any bridges or structures has not been measured. As the Proposed Development will not require abnormal loads, the consultation point regarding the protection of bridges, culverts and other structures will not apply and any bridges on the main transport network should be capable of carrying all the transport loads.
- 5.60. All traffic management and safety implications will be considered by suitably qualified and experienced personnel when arranging the transit of the loads and can be agreed through a suitably worded condition following planning approval.
- 5.61. **Table 5-1** provides a brief commentary of the route analysis at specific points on the haul route. These points can also be viewed on **Figures 5.2 – 5.4 Appendix 5A**.

Table 5 - 1: Route Analysis

Ref	Manoeuvre Required	Analysis	Required Action	Swept Path Drawings
1	Vehicles will need to take a left-hand turn from the unnamed road the site entrance.	The existing site entrance will have to be widened slightly to accommodate the movement of the larger construction vehicles.	Existing gate and minor sections of hedgerow will need to be removed, top soil stripped, and land clearing to prepare for new surface.	Figure 5.2 of Appendix 5A
2	Vehicles will need to take a right-hand turn from the unnamed road the site entrance.	The existing site entrance will have to be widened slightly to accommodate the movement of the larger construction vehicles.	Existing gate and minor sections of hedgerow will need to be removed, top soil stripped, and land clearing to prepare for new surface.	Figure 5.3 of Appendix 5A
3	Vehicles will need to take a right-hand turn from the unnamed road the site entrance.	The existing site entrance will have to be widened slightly to accommodate the movement of the larger construction vehicles.	Existing gate and minor sections of hedgerow will need to be removed, top soil stripped, and land clearing to prepare for new surface.	Figure 5.4 of Appendix 5A

4	Vehicles will need to take a left-hand turn from the unnamed road the site entrance.	The existing site entrance will have to be widened slightly to accommodate the movement of the larger construction vehicles.	Existing access track surface will be upgraded.	Figure 5.4 of Appendix 5A
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Summary of Enabling Works

- 5.62. As can be seen in the table above, enabling work will be required for access into the Application Site. This will include top soil strip and land clearing as well as the removal of some small lengths of hedgerow and existing gates. Design details of the access track can be found in drawing **Figure 6 of Volume 2: Planning Application Drawings**.
- 5.63. To enable the required visibility at Site Entrance 1 the following will be required:
- 26.7m of hedgerow trimming.
 - 4.25m of hedgerow removal
- 5.64. To enable the required visibility at Site Entrance 2 the following will be required:
- 56.4m of hedgerow trimming.
 - 2.5m of hedgerow removal
- 5.65. To enable the required visibility at Site Entrance 3 the following will be required:
- 89.3m of hedgerow trimming.
 - 3.4m of hedgerow removal
- 5.66. To enable the required visibility at Site Entrance 4 the following will be required:
- 40.5m of hedgerow realigned
- 5.67. All work required to achieve the visibility splays will be contained within the Application Site boundary.

CONSTRUCTION TRAFFIC MANAGEMENT

Construction Programme

- 5.68. Construction of the Proposed Development is anticipated to occur over a six-month period. During this period, there will be a combination of HGVs (for the component and material deliveries) and cars/vans (for construction staff) on site. HGV movements are expected to be the most intense during the first few weeks of construction, reducing in numbers towards the final weeks. Car/van movements are expected to be constant throughout.
- 5.69. **Table 5-2** shows the estimated amount of deliveries and movements for the main infrastructure.

Table 5 - 2: Estimates HGV Deliveries for construction equipment and infrastructure

TRANSPORT	ESTIMATED NUMBER OF VEHICLES	MOVEMENTS
Delivery of Mounting Frames	82	164
Delivery of Modules	190	380
Delivery of Cabinets	15	30
Delivery of Cables	41	82
Delivery of Plant Equipment	25	50
Delivery of Gravel Hard Core Material	410	820
Delivery of Fencing / CCTV	20	40
Total	783	1566

- 5.70. Additional site visits may be required due to site conditions, weather restrictions, and due to unforeseen circumstances and therefore, these numbers should be treated as a guideline for planning purposes only. In total, the construction of the solar farm is expected to give rise to 783 HGV deliveries over the six-month construction period. A daily maximum of approximately 20 HGV deliveries (40 HGV movements) is anticipated.
- 5.71. The expected HGV volumes are based on best estimates of trips generated for similar sized solar farms and will be subject to amendments based on local conditions and contractor working practices.

Delivery Booking System

- 5.72. On a weekly basis, the appointed Site Manager will evaluate details of the daily profile of deliveries proposed for the upcoming week. Through discussions with hauliers, the Site Manager will ensure that that construction deliveries are managed in an efficient manner, with minimal disruption and delays.
- 5.73. It is proposed that temporary signage would be used to highlight the entrance to the Application Site and to direct construction traffic to the site via the public road network. The Applicant will provide banksmen to assist with the manoeuvring of delivery vehicles to and from the site, as well as internal site movements.
- 5.74. Hauliers will be required to contact the Site Manager to give an indicative delivery time, to ensure that the delivery space and banksmen are ready for their arrival on site.
- 5.75. To avoid any vehicles waiting, sufficient time will be provided between deliveries to allow for any delays (such as loading/unloading taking longer than expected).
- 5.76. Deliveries will be managed and scheduled to ensure that no vehicles would have to wait on the surrounding road network.
- 5.77. A community liaison officer will also be appointed for the construction phase who will liaise with local residents.

Timing Restrictions

- 5.78. All traffic movements will be carried out between the hours of 07.00 to 19.00 on Monday to Friday and 08.00 to 16.00 on Saturdays. Outside of these times works are limited to a) commissioning and testing and b) Works required in an emergency where there is the potential of harm or damage to personnel, plant, equipment, or the environment, provided the developer retrospectively notifies the Council of such works within 24 hours of their occurrence.
- 5.79. Deliveries, where possible, will be scheduled to avoid peak times where relevant, e.g. avoiding rush hours and after school drop off and pick up times.

Temporary Site Construction Compound

- 5.80. Two temporary construction compounds (see **Figure 7 of Volume 2: Planning Application Drawings**) will be required during the construction phase of the Proposed Development. The proposed location of the compounds are shown on the indicative infrastructure layout (**Figure 4 of Volume 2: Planning Application Drawings**) and consists of an area of approximately 50m by 60m each, in a rectangular shape. The compounds will 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;
- Chemical toilets;
- Adequate parking area for cars, construction vehicles and machinery;
- Designated skips for construction waste; and
- Wheel washing facility.

Construction Parking

- 5.81. It is forecast that there will be approximately 50 staff on site at any one time during the construction period, although this will vary subject to the overall programme of works. It is likely that there will be a degree of vehicle sharing by staff and therefore, less than 50 staff vehicles (estimated maximum at 25-30 per day at peak construction periods) are expected to arrive on site each day. Labour vehicle sharing will be actively encouraged to reduce vehicular movements.
- 5.82. Upon entrance/exit to and from the Application Site, workers vehicles will report directly to the area of hard standing at one of the temporary site construction compounds (see **Figure 7 of Volume 2: Planning Application Drawings**), where there will be sufficient space for parking and turning. Site opening and closing will be outside morning and evening peak traffic times, minimising local traffic disruption during busy periods.
- 5.83. No parking will be allowed for construction workers on the public road network in the vicinity of the site. A number of additional unscheduled visits may be required throughout the construction period for site inspections and due to unforeseen circumstances, which is accounted for in the existing car parking plans.

Turning Facilities

- 5.84. The construction compounds have been designed to provide adequate space for vehicle manoeuvring and turning, and all HGV deliveries will report here for unloading (see **Figure 7 of Volume 2: Planning Application Drawings**). The turning area will ensure that all vehicles will ingress and egress in a forward gear to maintain safety on the public highway.

Site Security

- 5.85. For security and safety purposes, the Proposed Development will be closed to the general public via security fencing and a locked gate. The security fence installed around the perimeter of the solar farm will be erected at the start of the construction programme and will remain for the duration of the operation until decommissioning of the solar farm (See **Figure 9 of Volume 2: Planning Application Drawings**).
- 5.86. Access to the construction site during construction hours will be controlled by personnel located at the entrance of the development. All visitors will sign in and out with security. Visitors to the site will be given a Health and Safety site induction, provided with Personal Protective Equipment (PPE), and will remain with an appropriately trained escort at all times.

Operational Period

- 5.87. The operational phase of the solar farm is anticipated to have negligible trip generation potential with approximately 10-15 Light Goods Vehicles (LGVs) expected every year for scheduled maintenance checks, with additional visits required to attend to remedial issues when necessary. The operational access point will use the same entrance to the site as during the construction period.

Decommissioning Period

- 5.88. The number of HGVs required for the decommissioning period will be slightly higher than the construction phase due to the materials not being as neatly packed as when shipped from factory conditions. Whilst the construction phase had a total of approximately 1,566 movements, the decommissioning phase will have a total of circa 1,722 movements (estimate includes a 10% increase on the construction stage). This increase is not considered to be significant.

MITIGATION

5.89. The impact of the Proposed Development has been identified as **temporary** in nature and associated with short construction and decommissioning phases only. It is still important that any impact is minimised as far as possible and, in light of this, the following mitigation measures have been considered:

- A dedicated Site Manager will be appointed for the management of the delivery booking system during the construction stage. It will also be this person's duty to make sure haulage companies use the chosen haul route (See **Figure 5.1: Appendix 5A**), without fail.
- The Applicant will conduct a pre- and post-construction condition survey of the unnamed local road that the site is accessed from, from the most western access point to the existing substation entrance point (approximately 1.1km), with the Applicant liable to repair any damage to the road attributed to the construction of the Proposed Development.
- Traffic movements will be limited to 07:00 - 19:00 on Monday to Friday and 08:00 – 16:00 on Saturdays, unless otherwise agreed in writing with North Devon and Torridge Council. Deliveries will be scheduled to avoid morning and evening peak hours. This will avoid HGV traffic arriving during the morning peak hours, creating conflict with local residents' commute or school run. Construction personnel will be encouraged to car-pool, or to travel to site in minibuses.
- During the construction phase, clear construction warning signs will be placed on the unnamed road leading to the Proposed Development access, on both approaches to each access point in accordance with Chapter 8 of the Traffic Signs Manual. The site entrances will also be appropriately signed. Access to the construction site will be controlled by onsite personnel and all visitors will be asked to sign in and out of the site by security/site personnel. Site visitors will receive a suitable Health and Safety site induction and Personal Protective Equipment (PPE) will be worn.
- To control, prevent and minimise dirt on the access route and emissions of dust and other airborne contaminants during the construction works, the following mitigation measures will also be implemented:

- Wheel washing equipment will be available and used onsite within the construction compound, as required, to prevent the transfer of dirt and stones onto the public highway. All drivers will be required to check that their vehicle is free of dirt, stones and dust prior to departing from the site;
 - Wheel washing facilities will consist of a water bowser with pressure washer.
 - The bowser will contain water only and no other additives.
 - Run-off from this activity will be directed to the drainage situated on the lower boundary of the construction compound.
- Dampening of site roads to minimise dust emissions;
- Any soil stockpiles will be covered and / or lightly tracked when left for extended periods of time;
- Drivers will adopt driving practices that minimise dust generation including a 5m/h internal access road speed limit; and,
- Any dust generating activities will be avoided or minimised, wherever practical, during windy conditions.
- Once construction of the Proposed Development is completed, all portacabins, machinery and equipment will be removed and hard standing excavated. The area will be regraded with the stockpiled topsoil to a natural profile.
- A community liaison officer will be appointed for the construction phase to liaise with local residents.

SUMMARY

- 5.90. This CTMP outlined the overall framework for managing the movement of construction and delivery traffic to and from the Proposed Development, as well as considering the type of traffic it will generate. The traffic assessment for the operational and decommissioning phases were also considered.
- 5.91. Impacts from the operational phase of the site, consisting of between 10-15 LGVs per year, is not considered to be 'significant' and therefore a full Transport Assessment is not required. However, elements of the NPPG which are relevant to this project, namely, to include details of the existing conditions and issues relating to the Proposed Development, have been considered in this CTMP.
- 5.92. Increased volumes of traffic will be generated by the Proposed Development during the construction period. However, the overall volumes of traffic generated are considered to be quite low. During the anticipated six-month construction period, a total of 783 HGV deliveries will be made to the Application Site. During the peak construction period there will be an approximate maximum of 20 daily HGV deliveries.
- 5.93. An Automatic Traffic Count (ATC) survey took place on the unnamed road that the site is accessed from at three different points. The survey equipment was set up on the 23rd January 2021 and was left in place for one week. These were within the vicinity of each of the site entrances and the purpose was to collect real time data to determine the speed of road users at each point. Four visibility splays (See **Figures 5.5 – 5.8: Appendix 5A**) were created, one for each entrance. The survey concluded the following:
- The 85th percentile speed along the road at Route Analysis 1 (See **Figure 5.1: Appendix 5A**) averaged 42.2mph eastbound and 42.8mph westbound. As these speeds were similar, the worst-case westbound speed of 42.8mph was used in standard Stopping Distance (SSD) calculations. This equates to a required visibility splay dimension of 115m in the 'y' direction and 2.4m in the 'x' direction. For this access point the hedgerow will require 26.7m to be trimmed back and 4.25m to be removed.
 - The 85th percentile speed along the road at Route Analysis 2 (See **Figure 5.1: Appendix 5A**) was 37.4mph eastbound and 37.5mph westbound. As these speeds were similar, the worst-case westbound speed of 37.5mph was used in standard Stopping Distance (SSD) calculations. This equates to a required visibility splay dimension of 70m in the 'y' direction and 2.4m in the 'x' direction. For the entrance at Route Analysis point 2, 56.4m of hedgerow will need to be trimmed back and 2.5m to be removed to achieve the required visibility.

- The 85th percentile speed along the road at Route Analysis 3 and 4 (See **Figure 5.1: Appendix 5A**) averaged 36.8mph eastbound and 39.8mph westbound. Using standard Stopping Distance (SSD) calculations, this equates to a required visibility splay dimension of 65m in the 'y' direction for eastbound traffic and 105m in the 'y' direction for westbound traffic, and 2.4m in the 'x' direction for both. For the entrance at Route Analysis point 3, 89.3m of hedgerow need to be trimmed back and 3.4m to be removed to achieve the required visibility. For the entrance at Route Analysis point 4, 40.5m of hedgerow will need to be realigned to achieve the required visibility.
- 5.94. Although it is proposed to utilise existing entrance points, they will all have to be upgraded so that the largest construction vehicles can manoeuvre into the site. Initial swept path analysis was used in the design of the entrance points and therefore they are all suitable for the largest construction vehicles to access the Application Site once the upgrades have been completed (see **Figures 5.2 – 5.4: Appendix 5A**).
- 5.95. A dedicated person will be appointed for the management of the delivery booking system during the construction stage.
- 5.96. The Applicant will conduct a pre- and post-construction condition survey of the unnamed local road that the site is accessed from, from the most western access point to the existing substation entrance point (approximately 1.1km), with the Applicant liable to repair any damage to the road attributed to the construction of the Proposed Development.
- 5.97. The CTMP sets out a variety of specific mitigation measures that will be implemented during construction that will minimise the impact of the construction traffic on the environment and local communities; these include:
- Limitations on working times and HGV scheduling;
 - Site security and signage; and,
 - Measures to control emissions of dust and other airborne contaminants.
- 5.98. This Construction Traffic Management Plan conforms to the policies and objectives of the DP, adopted by North Devon and Torridge Council and the Design Manual for Roads and Bridges.

APPENDICES

Appendix 5A - Figures

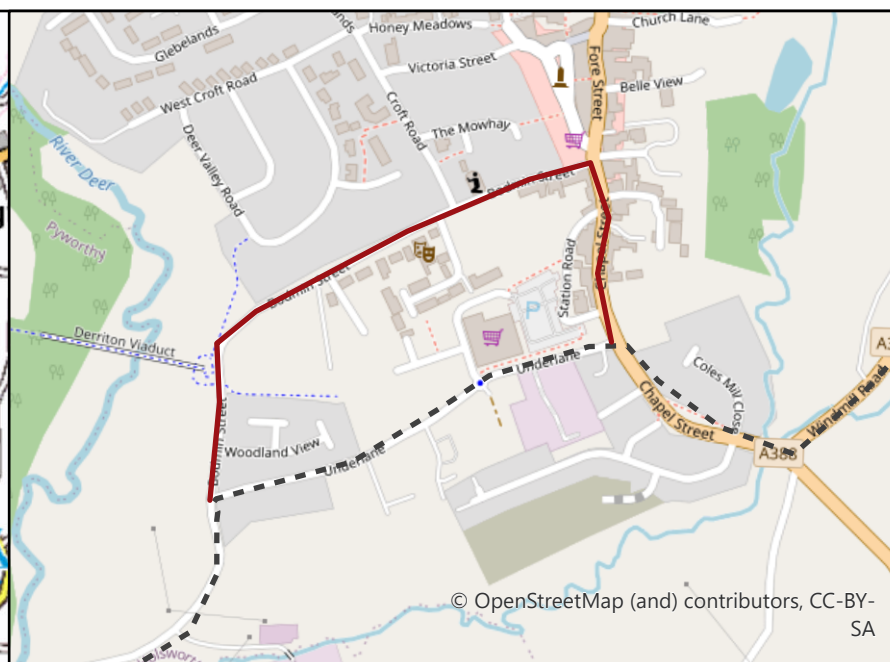
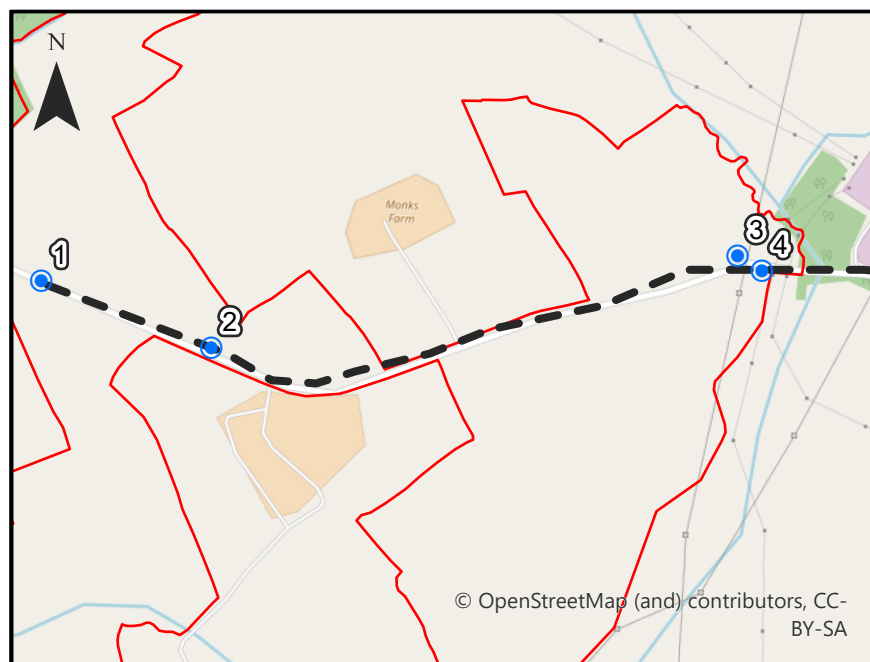
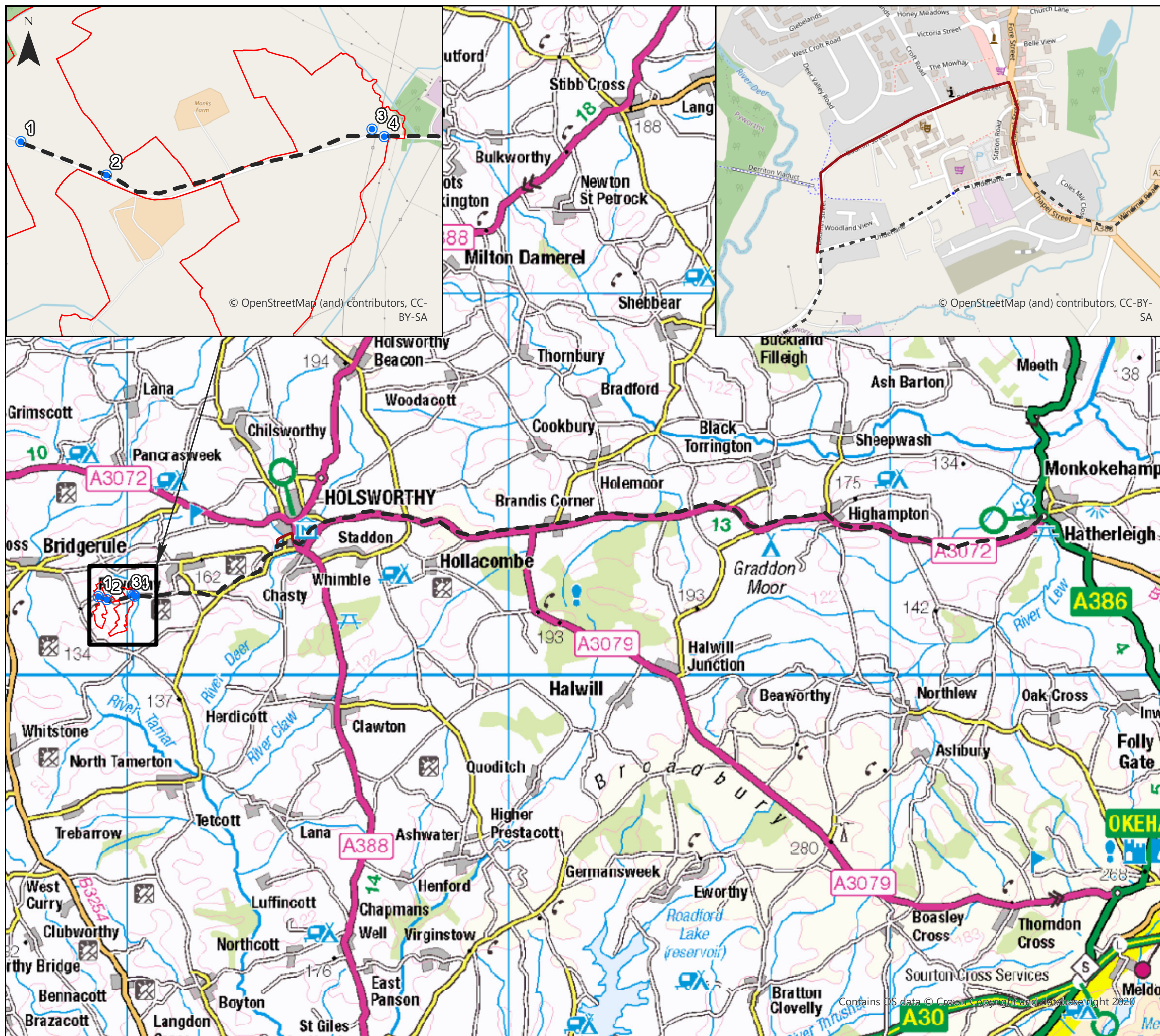
- Figure 5.1: Proposed Haul Route
- Figure 5.2: Swept Path Analysis 1
- Figure 5.3: Swept Path Analysis 2
- Figure 5.4: Swept Path Analysis 3
- Figure 5.5: Visibility Splay 1
- Figure 5.6: Visibility Splay 2
- Figure 5.7: Visibility Splay 3
- Figure 5.8: Visibility Splay 4



Appendix 5A: Figures



Derril Water Solar Farm Proposed Haul Route Figure 5.1



Key

- Proposed Haul Route
- Route Analysis
- Development Boundary
- Previous Route

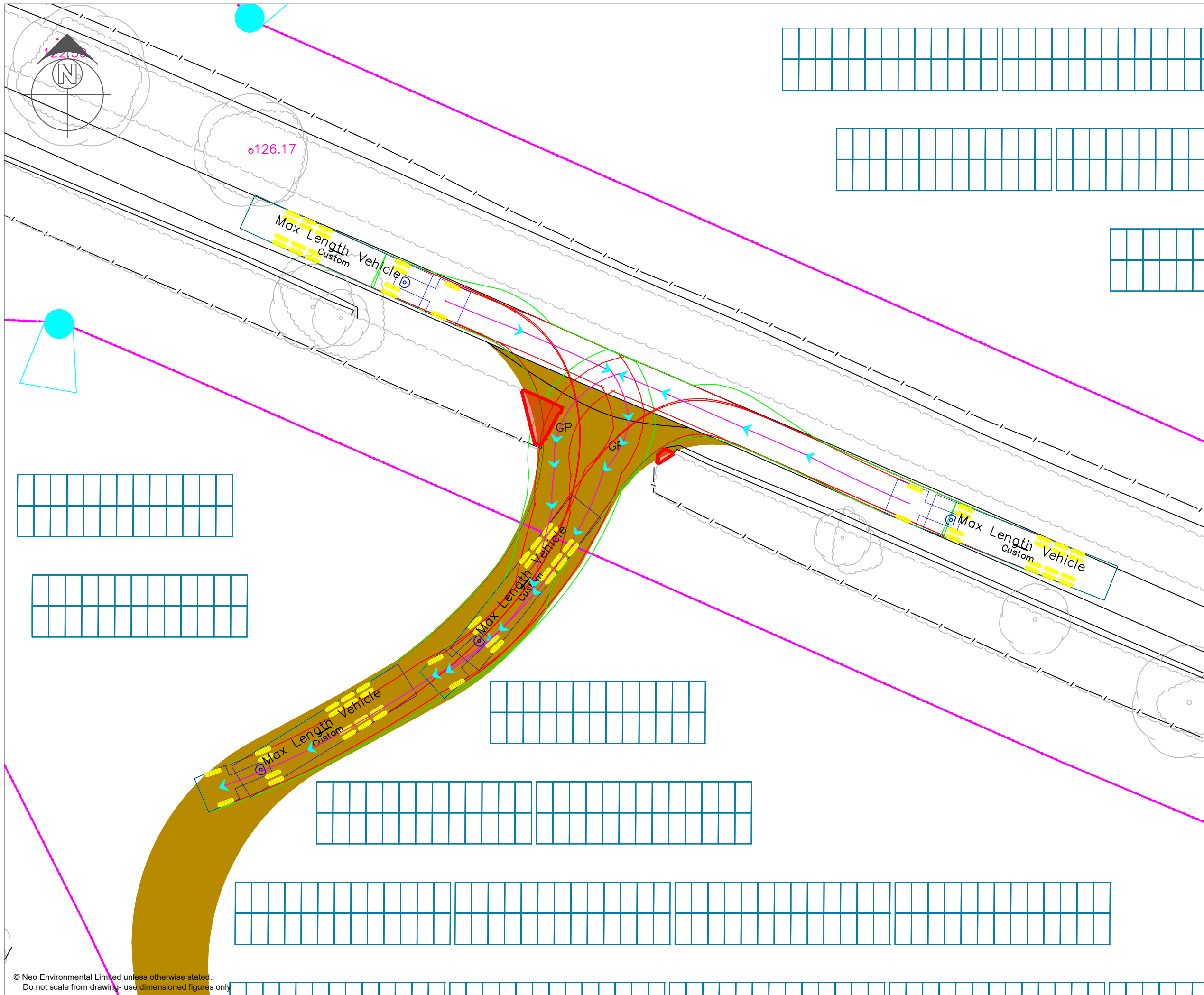
Neo Office Address:
Cinnamon House, Crab Lane, Warrington, WA2 0XP








Date: 29/06/2021
 Drawn By: Tom Saddington
 Scale (A3): 1:100,000
 Drawing No: NEO00738/0631/B



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Key

-  Wheel Swept Path
-  Vehicle Overhang Swept Path
-  Vehicle Centre Line
-  Vehicle
-  Hedgerow to be removed

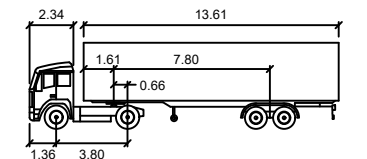
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 Address: Wright Business Centre
 1 Lonmay Road
 Glasgow
 G33 4EL

Notes:

- Simulated Speed - 5mph
- Actual vehicle dimensions may vary. Route should be assessed by haulier with regard to the vehicle combinations prior to transport.
- No allowances made for rear steering.
- Does not show load.

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Max Length Vehicle

Tractor Width	: 2.55	Lock to Lock Time	: 6.0
Trailer Width	: 2.55	Steering Angle	: 50.0
Tractor Track	: 2.55	Articulating Angle	: 70.0
Trailer Track	: 2.55		

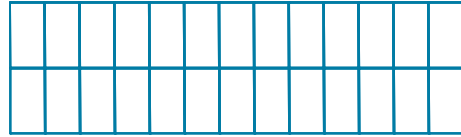
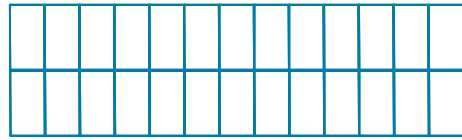
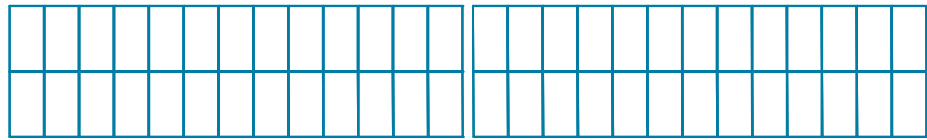
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 Ballymena Office: T:02890517092 E: info@neo-environmental.co.uk

Project:	Derril Water Solar Farm
Client:	RES
Drawing:	Swept Path Analysis 1
Project No.:	NEO00783
Drawing No.:	NEO00783_0661_A Figure 5.2
Drawn:	JM
Checked:	MM
Approved:	PN
Scale:	1:250 @ A3
Date:	03 February 2021
Revision:	A



Key

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-  Vehicle Overhang Swept Path
-  Vehicle Centre Line
-  Vehicle
-  Hedgerow to be removed

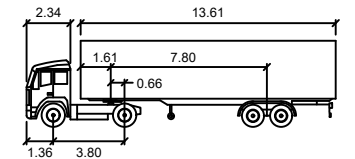
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Max Length Vehicle

Tractor Width	: 2.55	Lock to Lock Time	: 6.0
Trailer Width	: 2.55	Steering Angle	: 50.0
Tractor Track	: 2.55	Articulating Angle	: 70.0
Trailer Track	: 2.55		

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Client: RES

Drawing: Swept Path Analysis 2

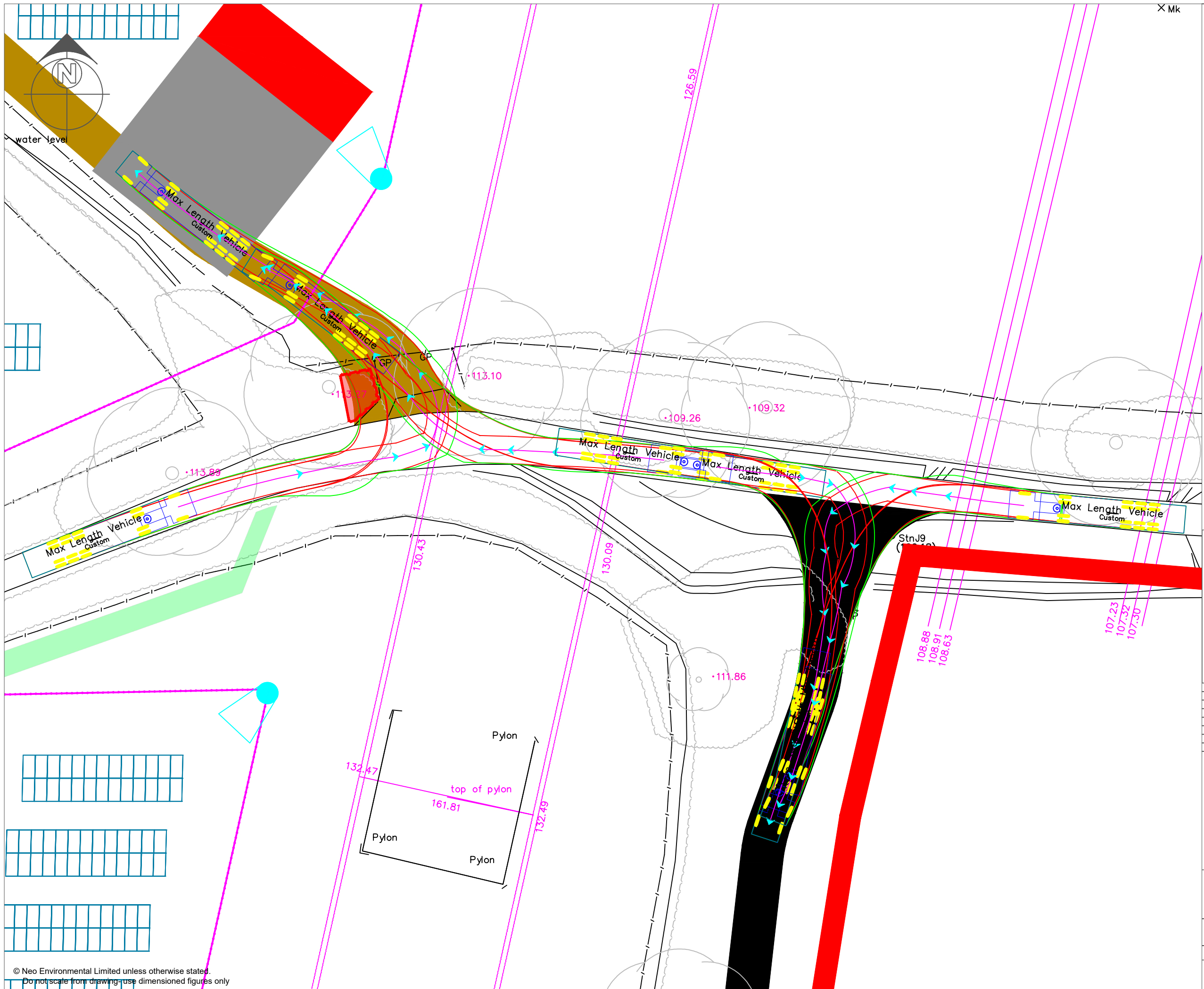
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




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Date: 03 February 2021



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-  Vehicle Centre Line
-  Vehicle
-  Hedgerow to be removed

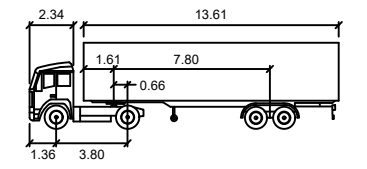
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Notes:

- Simulated Speed - 5mph
- Actual vehicle dimensions may vary. Route should be assessed by haulier with regard to the vehicle combinations prior to transport.
- No allowances made for rear steering.
- Does not show load.

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Max Length Vehicle

Tractor Width	: 2.55	Lock to Lock Time	: 6.0
Trailer Width	: 2.55	Steering Angle	: 50.0
Tractor Track	: 2.55	Articulating Angle	: 70.0
Trailer Track	: 2.55		

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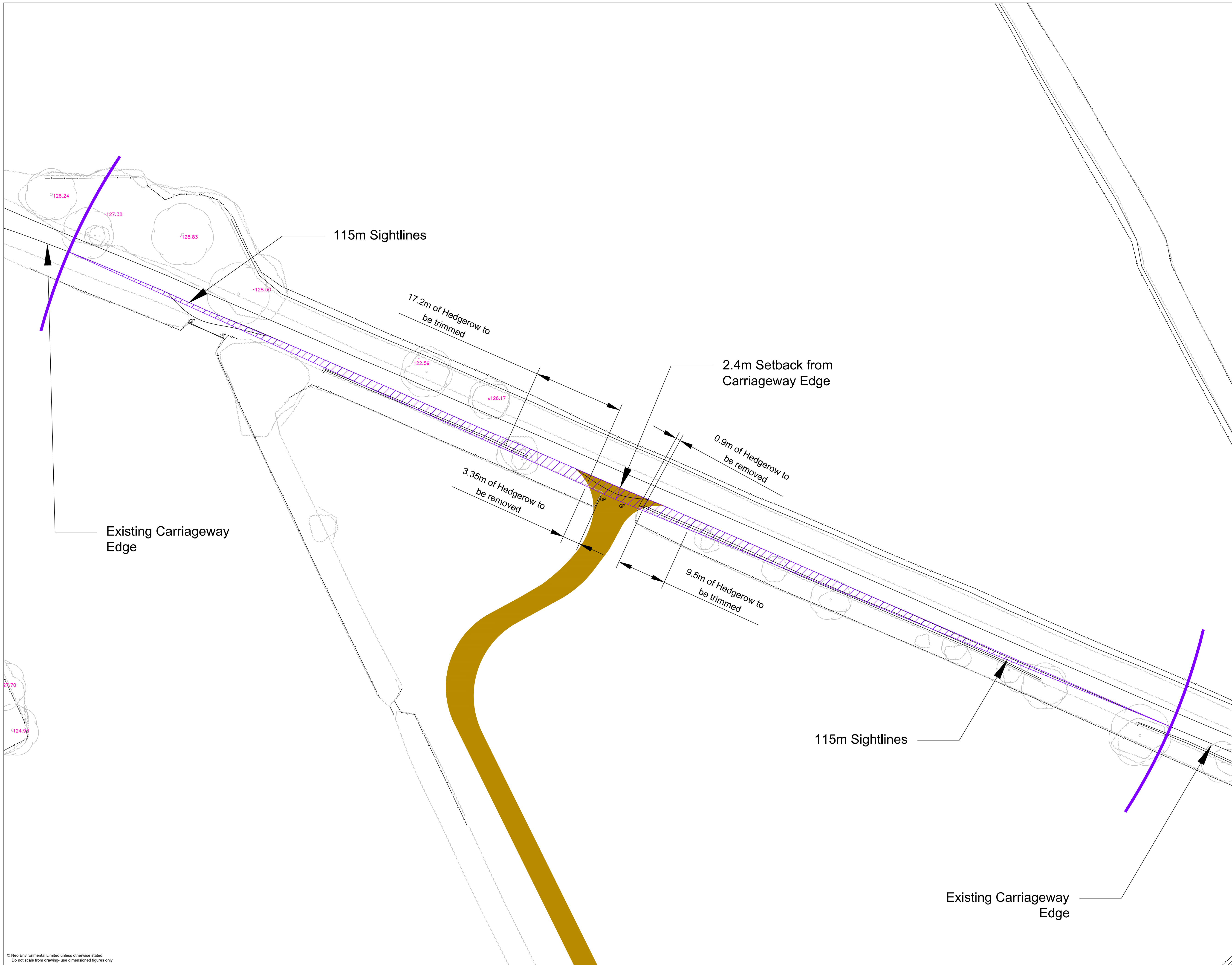
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 Client: RES

Drawing: Swept Path Analysis 3 & 4

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 Date: 03 February 2021



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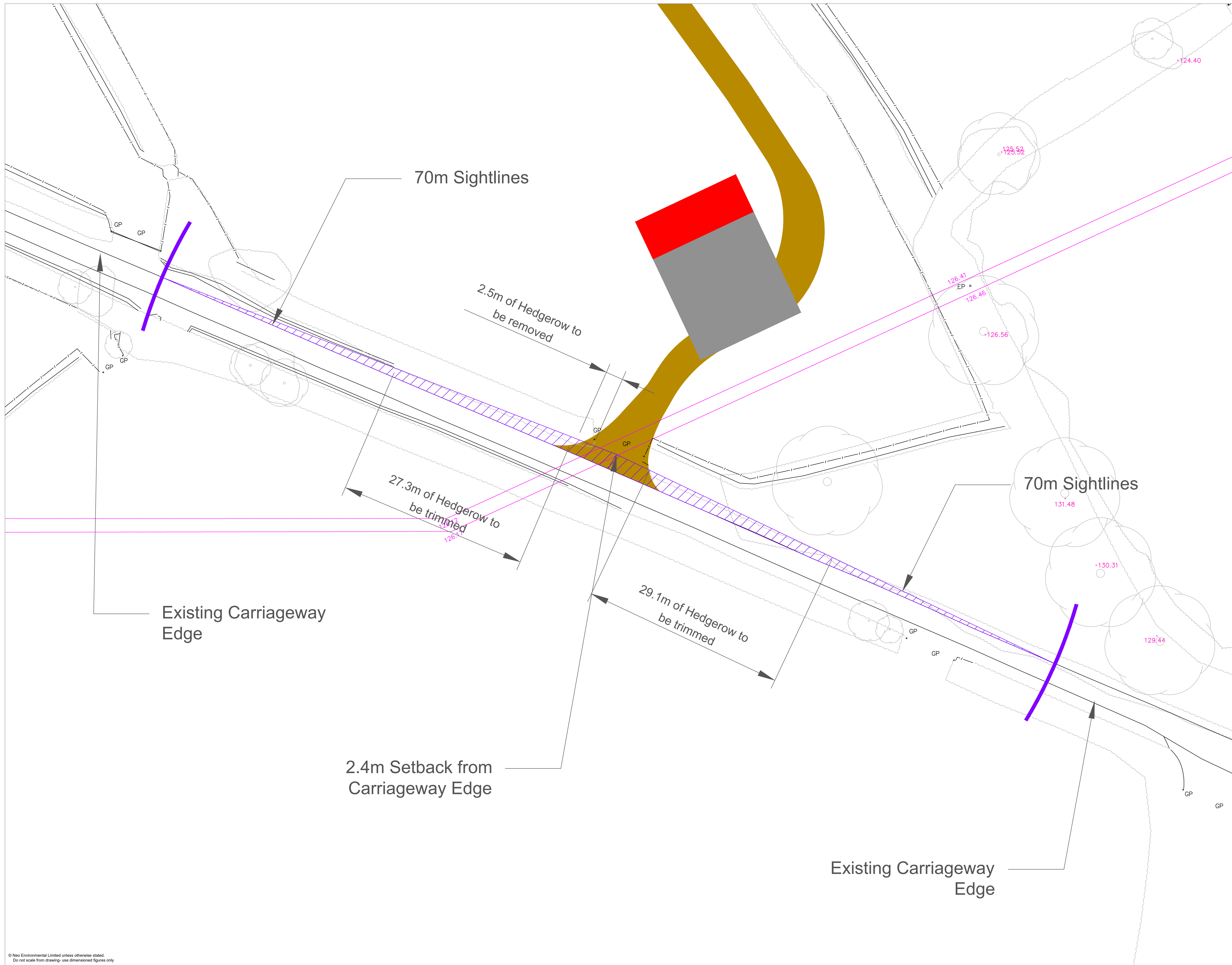
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Project: Derril Water Solar Farm
Client: RES
Drawing: Visibility Splay 1
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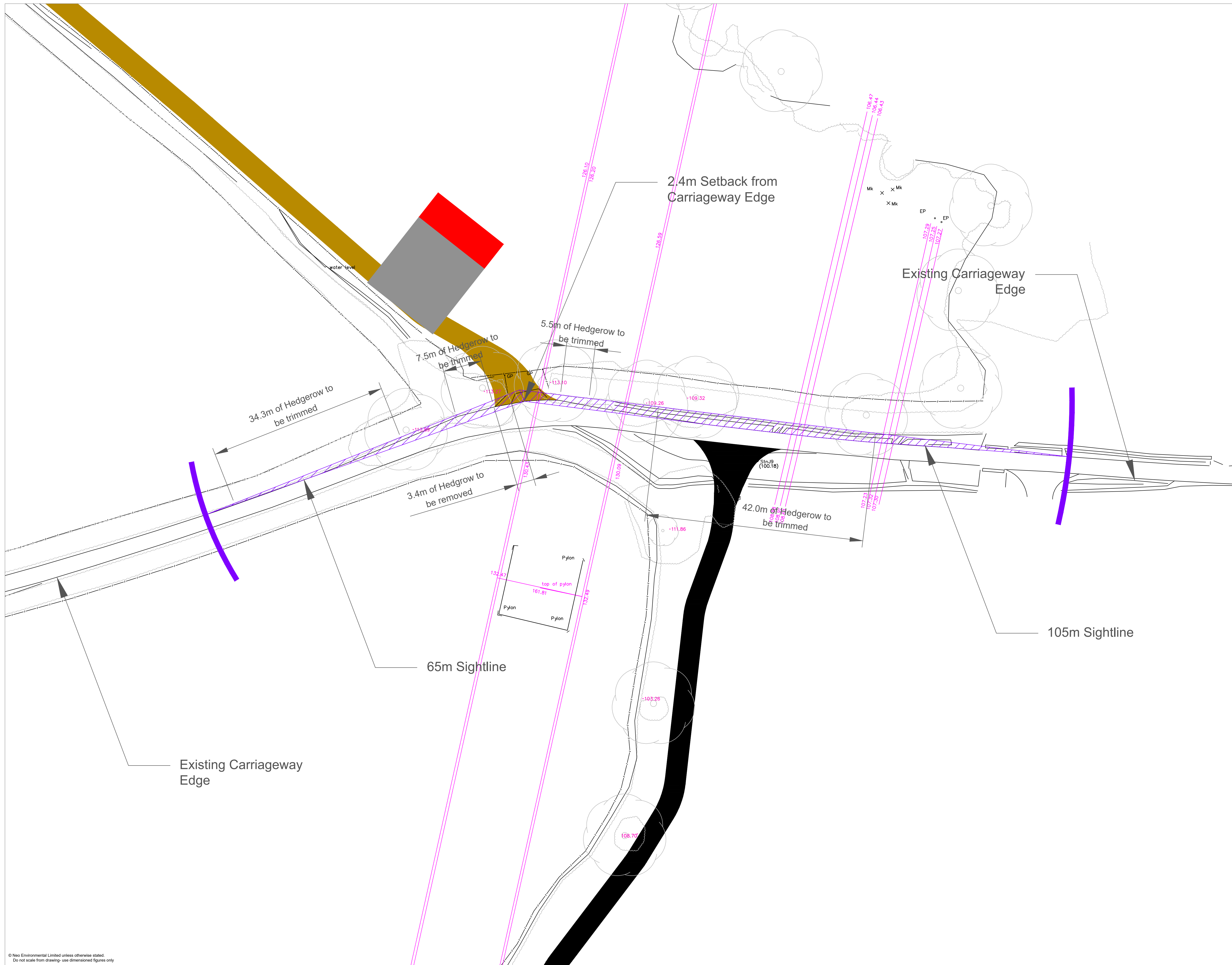
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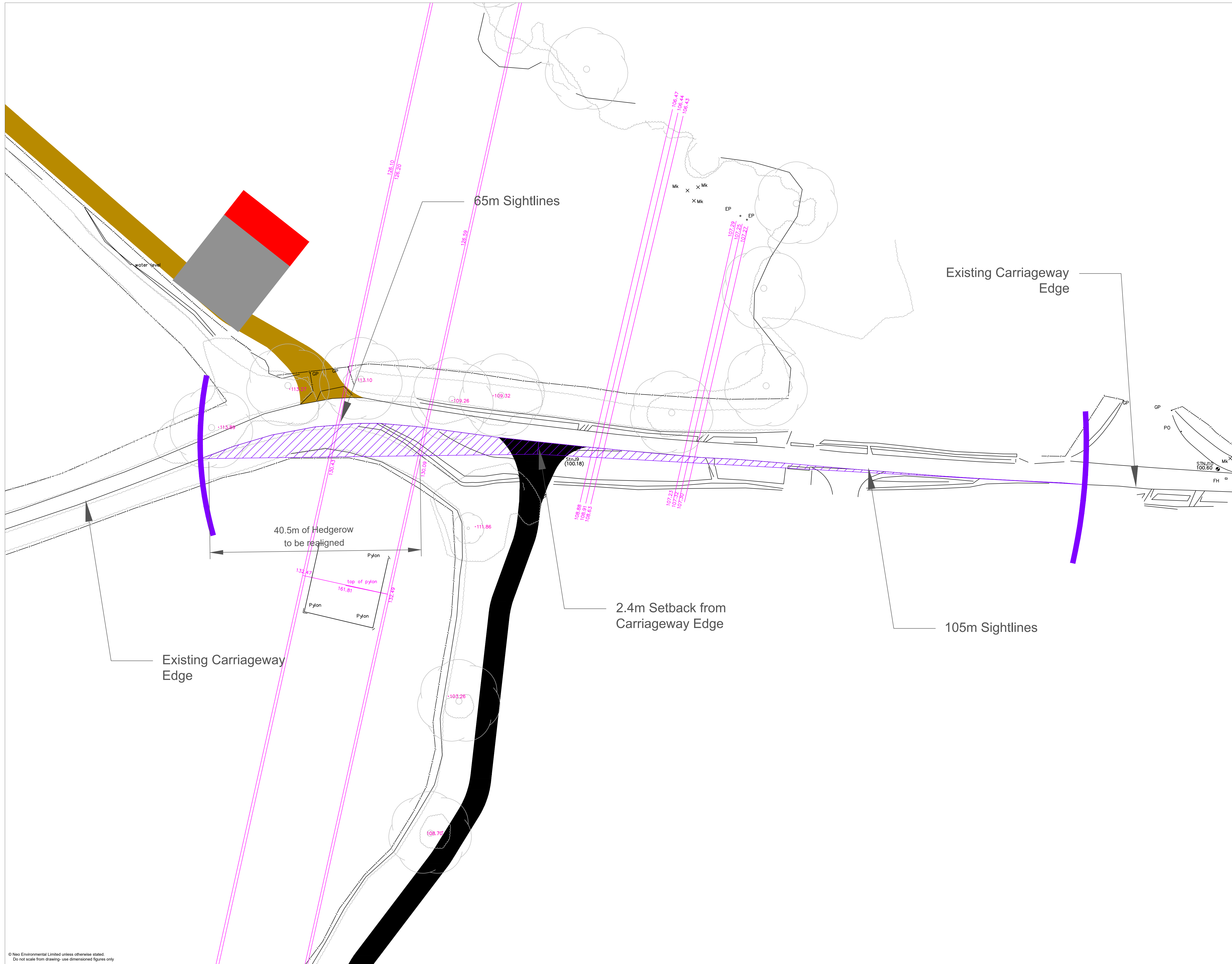
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