CD 6.10

Town and Country Planning Act 1990

Acquisition of Land Act 1981

Local Government (Miscellaneous Provisions) Act 1976

The Highways Act 1980

Inquiry into:

THE CORNWALL COUNCIL (LANGARTH GARDEN VILLAGE, THREEMILESTONE) COMPULSORY PURCHASE ORDER 2022

and

THE CORNWALL COUNCIL (TRURO NORTHERN ACCESS ROAD) (CLASSIFIED ROAD) (SIDE ROADS) ORDER 2022

Appendices to the Proof of Evidence

of

Tim Wood

Project Director – Truro Northern Access Road

2 January 2024

TW1 Cormac 'Side Road Design Technical Note' 1892-CSL-HSR-00MZ-RP-D-0001-P04

APPENDIX TW1

Cormac 'Side Road Design Technical Note' 1892-CSL-HSR-00MZ-RP-D-0001-P04

CORMAC

Truro Northern Access Road (NAR)

Side Road Design Technical Note

1892-CSL-HSR-00MZ-RP-D-0001-P04

Cormac Solutions Ltd

PART OF THE CORSERV GROUP
A CORNWALL COUNCIL COMPANY

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P04	31.08.23	RMH	DE	GR	Approval	General update

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3.4 Willow Green side road 30

DRAWINGS

1665-CSL-HSR-00MZ-DE-CH-0009	**Side Roads Plan and Profile Key Plan**
1665-CSL-HSR-01MZ-DE-CH-0010	**Side Roads Plan and Profile Sheet 01 of 05**
1665-CSL-HSR-02MZ-DE-CH-0011	**Side Roads Plan and Profile Sheet 02 of 05**
1665-CSL-HSR-05MZ-DE-CH-0015	**Side Roads Plan and Profile Sheet 05 of 05**
1892-CSL-GEN-XXZ2-DE-CH-0138	**Langarth Square Vehicle Swept Path Analysis**
1892-CSL-GEN-XXZ2-DE-CH-0139	**Langarth Farm Vehicle Swept Path Analysis**

1 Introduction

1.1.1 The purpose of this technical note is to summarise the design of the following side roads:

- Access from the plot B6 road to the existing lane between the A390 and West Langarth;
- Langarth Farm side road, the connection from the NAR to the existing C0290 road;
- Langarth Square side road, the connection from the NAR to the existing C0360 road; and
- Willow Green side road, the connection from the NAR to the existing lane between the A390 and Willow Green Farm.

1.1.2 The location of these side roads is shown on drawing number: EDG1665-CSL-HSR-00MZ-DE-CH-0009.

1.1.3 The general design philosophy of the side roads listed in paragraph 1.1.1 above is to:

- Provide continued access for all permitted road users and their vehicular requirements;
- Tie-in to the existing lanes or roads at the earliest opportunity to minimise the impact on the environment, the proposed development and to reduce costs; and
- Accommodate development preferences.

1.1.4 This report does not cover the immediate side road junctions with the NAR as these have already been covered in the main alignment design and departures report, document reference: 1665-CSL-HGN-00MZ-RP-CH-0003 and the cross-section report, document reference: 1665-CSL-HML-00MZ-RP-CH-0002.

1.1.5 This report does not cover the Interim link road, the plot B6 access road, the Petrol Filling Station link road or the Oak Lane link road as these roads have been designed to separate standards and are covered in the below documents:

	Document reference	Document title
Interim link road	-	Truro – Interim Link Road – Departures from Standard Report
B6 access road	Design is currently being developed	

Petrol filling station link road	Design is currently being developed	
Oak Lane link road	1665_CSL_HGN_00MZ_RP_CH_0003	Truro Northern Access Road - Main Alignment Design and Departures Report

1.1.6 This technical note has been revised (P04) to comment on the points raised in the Sanderson Consulting Engineers Highway Statement document No. 0001 (January 2023) and Technical Note – Proposed Alteration document No. 152618-002-01 (June 2023) regarding the side road accesses to Bosvisack Farm (Langarth Farm side road, NAR SR7 and 7a) and Little Treworder Farm (Langarth Square side road, NAR SR9).

2 Standards

2.1.1 The following standards have been used for the design of the side roads:

- Department for Transport (2021) – Inclusive Mobility, A guide to best practice on access to pedestrian and transport infrastructure;
- Department for Transport (2021) – Guidance on the Use of Tactile Paving Surfaces;
- Department for Transport (2020) Cycle Infrastructure Design, Local Transport Note 1/20;
- Highways England (2021) CD 143 Designing for walking, cycling and horse-riding;
- HMG (Her Majesty's Government) (2016) - The Traffic Signs Regulations and General Directions 2016;
- Department for Transport (2019) - Traffic Signs Manual, Chapter 3, Regulatory Signs;
- Department for Transport (2019) - Traffic Signs Manual, Chapter 5, Road Markings;
- Department for Transport (2019) - Traffic Signs Manual, Chapter 6, Traffic Control;
- Department for Transport (2007) – Manual for Streets;
- CIHT (2010) – Manual for Streets 2;
- Cornwall Council (undated) – Streets for People Design Code – Delivering Quality of Life;
- Cornwall Council (2012) – Development Layout Design – General Design Considerations for Adoptable Highways; and
- Cornwall Council's highway construction details.

2.2 Design speed

2.2.1 As the side roads will ultimately be within a 20mph zone as part of the Langarth Garden Village the selected design speed is 20mph.

2.3 Horizontal and Vertical Design

2.3.1 Manual for Streets 2 (MfS2) recommends a minimum horizontal curve radius of 16m for a 30kph (18.64mph) design speed.

2.3.2 Regarding vertical alignment, MfS2 states that for design speeds of 50kph and below, where it can be expected that drivers will reduce speed in response to changes of alignment, forward visibility to achieve minimum Stopping Sight Distance (SSD) should be used as the basis of design, but as with forward visibility around horizontal curves, there will be locations where it is appropriate to restrict forward visibility in order to help reduce traffic speeds.

2.3.3 Cornwall Council's Development Layout Design guide specifies that the maximum gradient for residential estate roads shall be 8% but 10% may be acceptable in some instances if it can be demonstrated that 8% is not reasonably achievable.

2.4 Stopping Sight Distance (SSD)

2.4.1 MfS Table 7.1 sets out guidance for SSD. The recommended SSD for a speed of 20mph is 25m.

2.4.2 The eye and object heights selected for forward visibility are shown in the below table. These values have been taken from MfS, LTN 1/20 and DMRB CD 143.

	SSD	Eye height	Object height
Vehicular	25	1.05 – 2.00	0.60 – 2.0
Cyclist	25	0.80 – 2.20	0.00 – 2.40

Table 2.1 – Eye and object heights for forward visibility

2.5 Visibility Standards at Junctions and Crossings

2.5.1 The selected visibility standards at junctions and crossings are shown in the below table. These values have been taken from MfS, LTN 1/20 and DMRB CD 143.

	X distance	Y distance	Eye height	Object height
Vehicular	2.4	25	1.05 – 2.00	0.60 – 2.0
Pedestrian crossing	1.5	25	0.90 – 2.00	0.26 – 2.0
Cyclist crossing	2.4	25	0.80 – 2.20	0.26 – 2.0

Table 2.2 - Visibility Standards at Junctions and Crossings

2.5.2 The 'X' distance in Table 2.2 above for pedestrians and cyclists are absolute minimum values rather than the desirable minimum values. Absolute minimum values are felt to be acceptable considering the proposed slow speed environment.

2.5.3 The ‘x’ distance is the distance measured from the give way line or crossing point measured back along the centre line of the side road or crossing. The ‘y’ distance is the stopping site distance, stated as 25m in paragraph 2.4.1. The ‘y’ distance is measured along the edge of the highway from the centre line of the side road or crossing, refer to Figure 2.1. for an illustration of ‘x’ and ‘y’ distances.

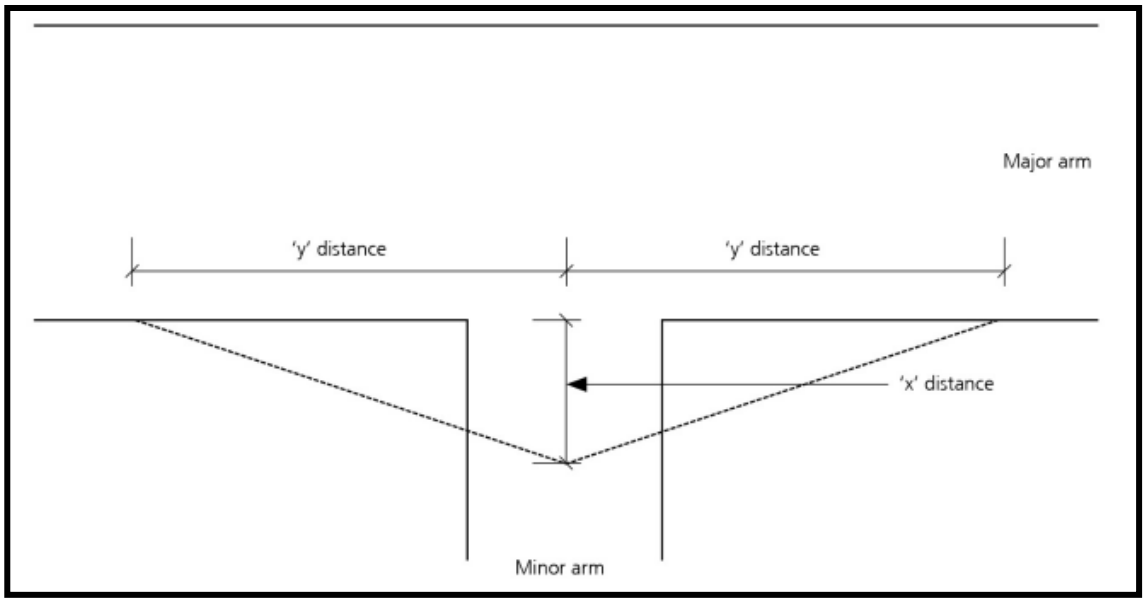


Figure 2.1 Visibility X and Y distances at Junctions and crossings

2.6 Vehicle Swept Path Analysis

2.6.1 The design vehicles for swept path analysis have been agreed with the client, Cornwall Council, and are set out in the below table:

Side road	**Design vehicle**
Access from the plot B6 road	4x4 vehicle and caravan – overall length 12.99m
Langarth Farm side road	Tractor and hay wagon – overall length 19.02m Maximum legal length articulated HGV – overall length 16.5m
Langarth Square side road	Tractor and hay wagon – overall length 19.02m Maximum legal length articulated HGV – overall length 16.5m
Willow Green side road	4x4 vehicle and caravan – overall length 12.99m

Table 2.3 – Swept path analysis design vehicles

2.6.2 The 4x4 vehicle and caravan has been used as a substitute for a tractor and medium length trailer as there is no such combination in the vehicle tracking software library.

2.6.3 To make some turning manoeuvres for the side roads the vehicles will need to encroach into opposing lanes which has been agreed with Cornwall Council. This is felt to be acceptable because of the low speed environment and appropriate intervisibility between turning vehicles and those approaching the junction along the NAR.

2.6.4 The junction radii have been deliberately kept as tight as possible to control the speeds of smaller vehicles such as cars turning into and leaving the side roads. This will provide a safer environment for pedestrians and cyclists.

2.6.5 The encroachment of larger vehicles into opposing lanes at the side road junctions was covered in the NAR Main Alignment Design and Departures Report, document reference: EDG1665-CSL-HGN-00MZ-RP-CH-0003. This report was submitted, along with detail design drawings to road safety experts as part of the road safety audit process. The audit is carried out by road safety experts who are independent from the design team. Any safety concerns the auditors may have, are raised in the report together with recommendations to address the issues. The auditors raised no concerns with the encroachment of larger vehicles into opposing lanes when manoeuvring into or from the side roads.

2.6.6 Large vehicles crossing the centre line of the NAR to drive into or exit the side roads will be visible to approaching vehicles on the NAR over at least the adopted stopping sight distance on the main alignment of 33m, in most cases this will be exceeded.

2.7 Parking Control

2.7.1 Current proposals are for all side roads to be covered by no waiting and no loading at any time parking restrictions. These restrictions will be indicated by double yellow lines and yellow dashes marked on the kerbs. Whilst disabled badge holders may park on double yellow lines for up to three hours they are not permitted to park where loading is prohibited. These combined restrictions should therefore deter any parking that may otherwise obstruct the side roads, particularly for larger vehicles.

3 Side Road Design

3.1 Access from the plot B6 road (B6 Rosedene Access North)

3.1.1 **Horizontal and vertical design –** For details of the horizontal and vertical alignment refer to drawing number: 1665-CSL-HSR-01MZ-DR-CH-0010. The horizontal alignment is straight. The vertical alignment has a maximum gradient of 12.4% which is steeper than the 10% gradient that has been adopted as the design standard. The Plot B6 access road is approximately 350mm higher than the existing lane at the junction and therefore the 12.4% gradient is necessary to tie into the existing lane which itself is at a gradient of 9%. Although the proposed centre line gradient is at 12.4% the swept path of the design vehicle (4x4 vehicle and a caravan) has been tracked vertically and there appears to be no issues of grounding as shown in the below figure:

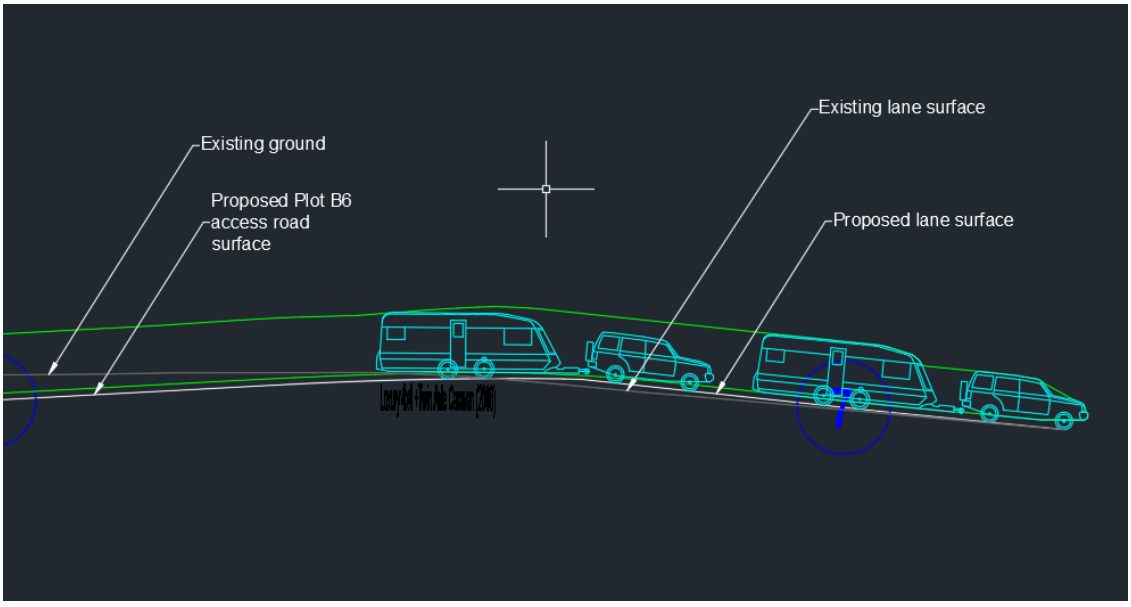


Figure 3.1 – Vertical clearance analysis

3.1.2 **Visibility at junctions and crossings –** The adopted junction visibility standards are met. The adopted pedestrian crossing visibility standards are met as the existing hedges bounding the lane will be removed to provide the required visibility as shown in the below figure:

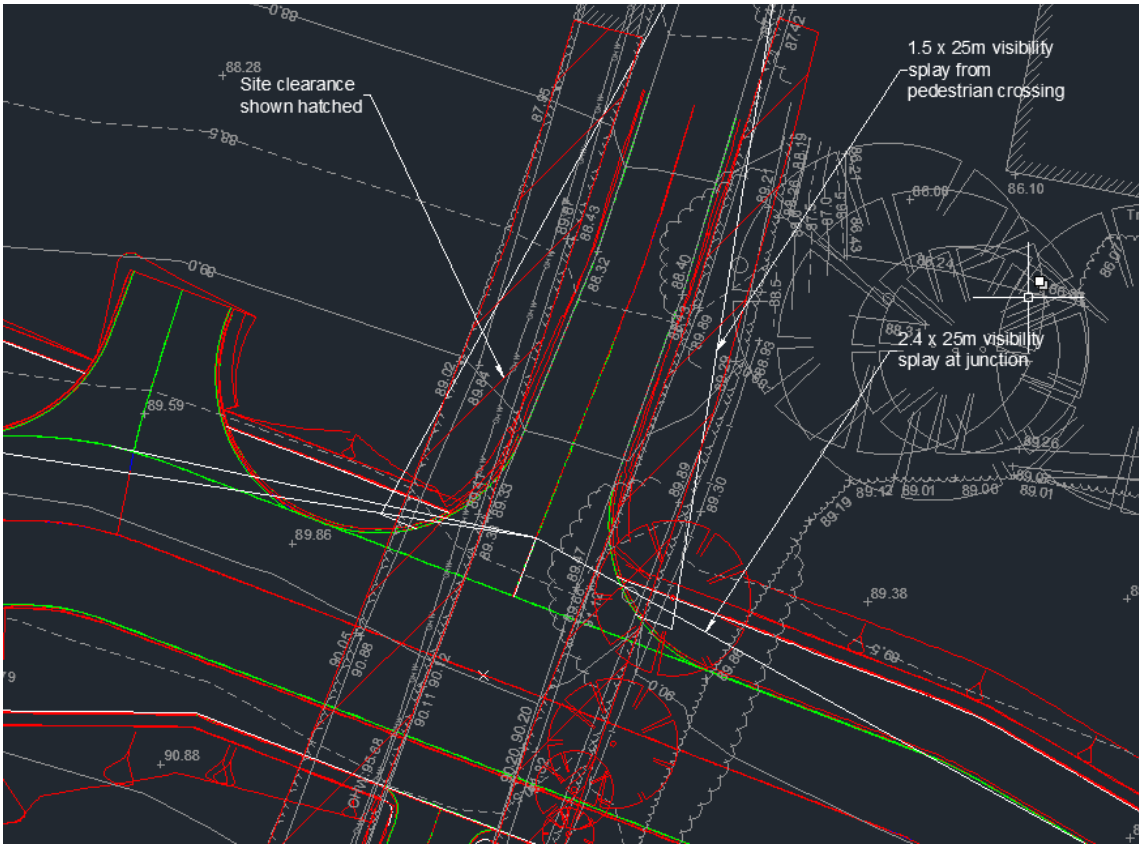


Figure 3.2 – Visibility at junction and pedestrian crossing

3.1.3 **Swept paths -** Figures 3.3 & 3.4 below demonstrate that the current layout for the access from the plot B6 road to the existing lane will accommodate a 4x4 vehicle and a caravan:

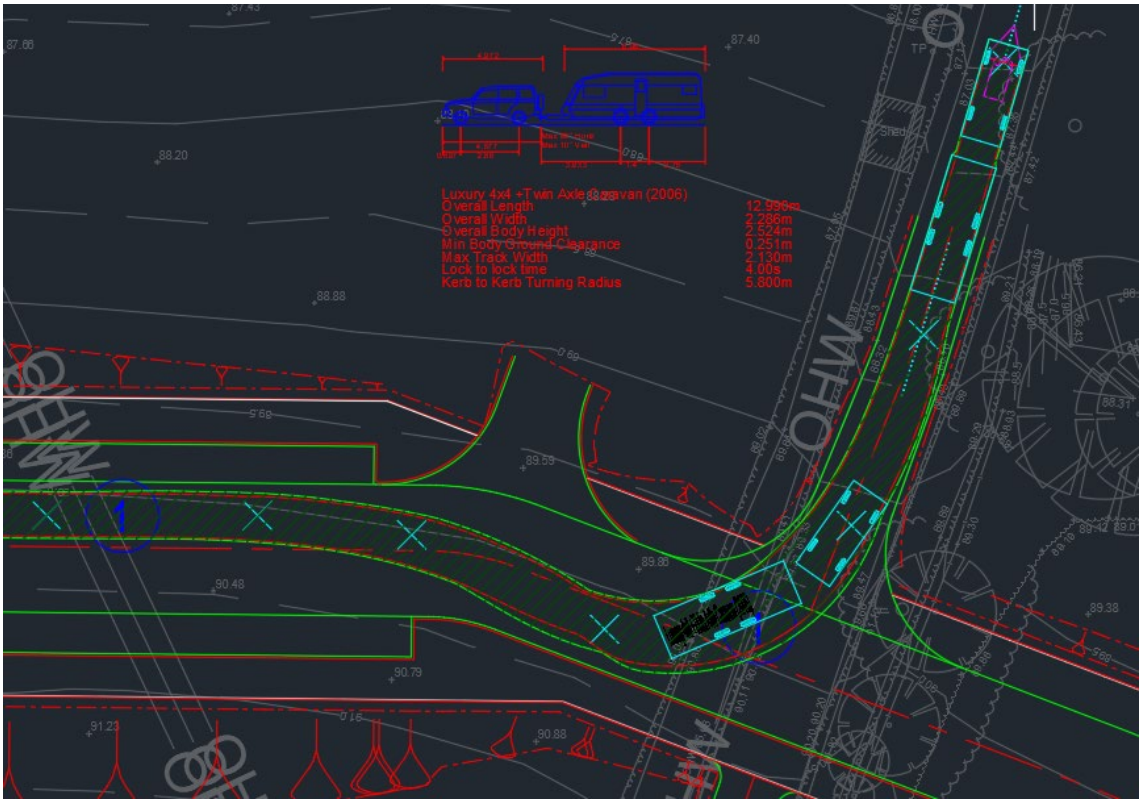


Figure 3.3 – Swept path analysis access from plot B6 road

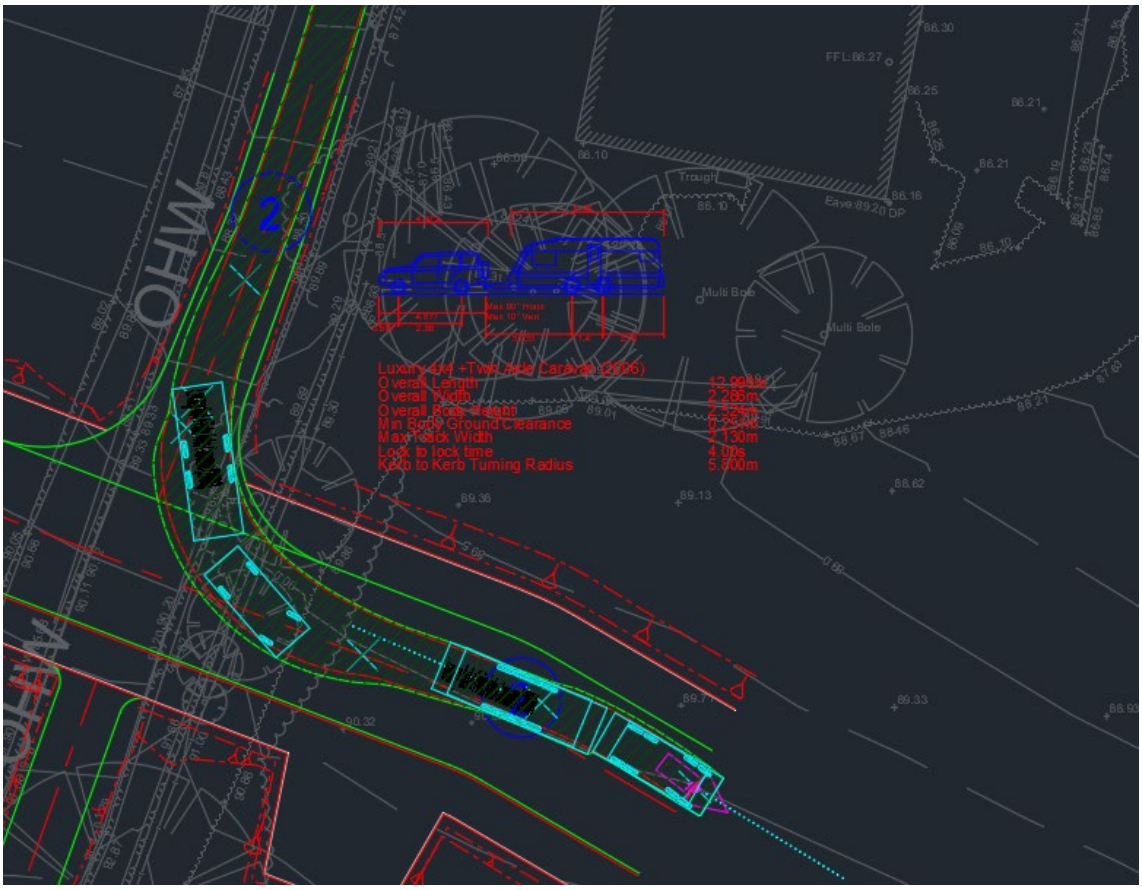


Figure 3.4 – Swept path analysis access from plot B6 road

3.2 Langarth Farm side road (NAR SR7 and SR7a CL)

3.2.1 **Horizontal and vertical design –** For details of the horizontal and vertical alignment refer to drawing number: 1665-CSL-HSR-05MZ-DR-CH-0015. The horizontal alignments are straight. The maximum gradient for these alignments is approximately 6% which is less steep than the adopted maximum of 10%.

3.2.2 **Stopping sight distance -** The minimum SSD of 25m has been met.

3.2.3 **Swept paths –** The Langarth Farm side road will accommodate the design vehicles which are a tractor and hay wagon and a maximum legal length articulated HGV. This is shown on drawing number: 1892-CSL-GEN-XXZ2-DE-CH-0139.

3.2.4 The following paragraphs and figures of section 3.2 have been added to this revision of the technical note (P04) in response to the Sanderson report documents referred to in paragraph 1.1.6.

3.2.5 For ease of reference, the concerns raised in the Sandersons documents are reproduced in the following paragraph and are followed with a response from Cormac.

3.2.6 **Sanderson comments:** With regard to drawing 1892-CSL-GEN-XXZ2-DE-CH-0139 rev P01 we have some concerns as large vehicles have to use the whole road width to turn left from the NAR to the side road and stay on the wrong side of the side road to then negotiate the turn on to the existing road. This is in conjunction with traffic on the NAR and also increased traffic on the road leading to Bosvisack Farm, which is a rural road accommodating single-file traffic only. Furthermore, there would be an increase in people using the road on foot and by cycle from the development plots C2 & C3 to the north. In this case, it also appears that the side road would be extended to join a secondary road serving plots C4, C5 and C10 and in this situation, there would be traffic leaving the development plots head-on into large vehicles or tractors with trailers as depicted by the swept paths. It should also be noted that there is vehicular communication, in both directions, between the two farms which would need to join the NAR and then shortly after (circa 350m) turn off the NAR onto the side road leading to Little Treworder Farm.

3.2.7 Figures 3.5 and 3.6 illustrate the concerns raised in the Sanderson report.

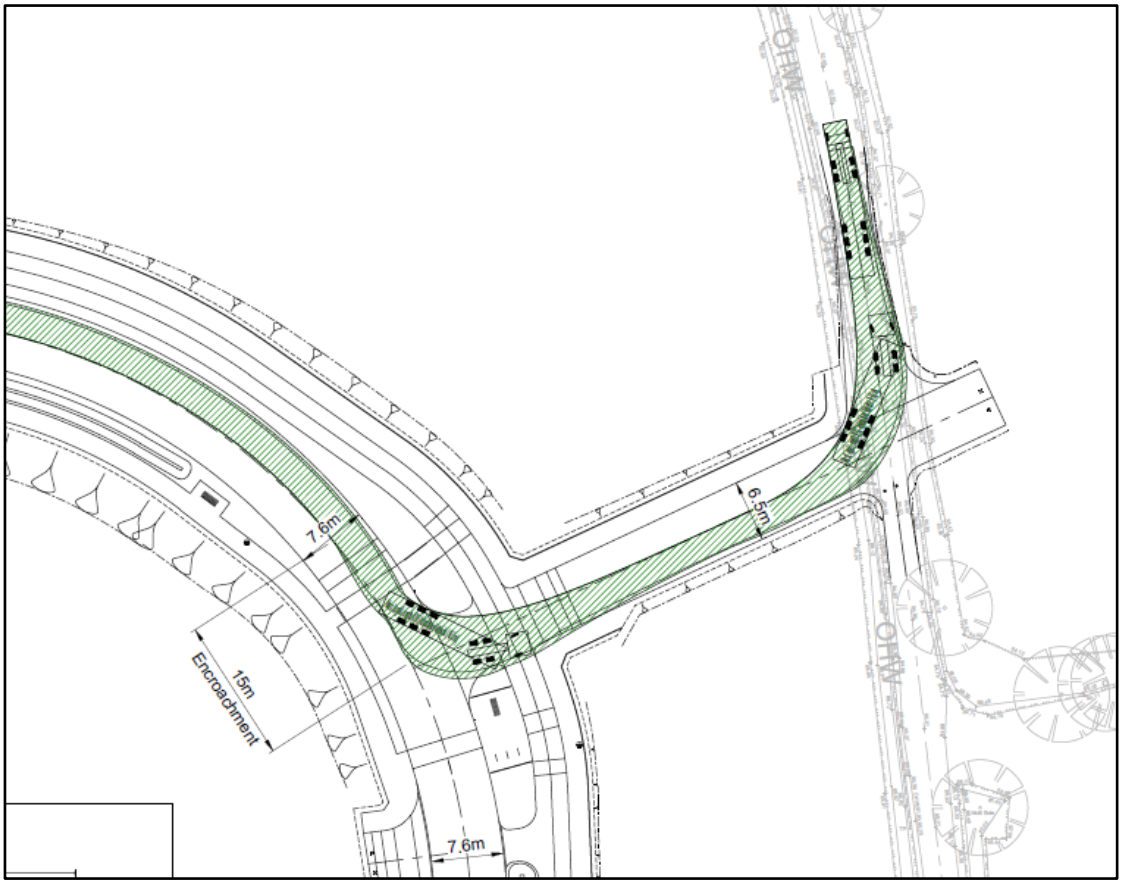


Figure 3.5 – Extract from Cormac drawing number: 1892-CSL-GEN-XXZ2-DE-CH-0139

Figure 3.6 – Extract from Sanderson technical note document number: 152618-002-01

3.2.8 **Cormac response** – The alternative design shown in Figure 3.7 is considered to address the concerns.

Figure 3.7 – Alternative design

3.2.9 The alternative design consists of the following:

- Side road width increased from 6.5 to 7.5m;
- NAR/side road northern radius increased from 4 to 5m; and
- Vehicular priority given to the existing lane rather than to development plots C4, C5 and C10 (see Figure 3.6 for plot locations).

3.2.10 The following figures illustrate the alternative design and the swept path of HGVs.

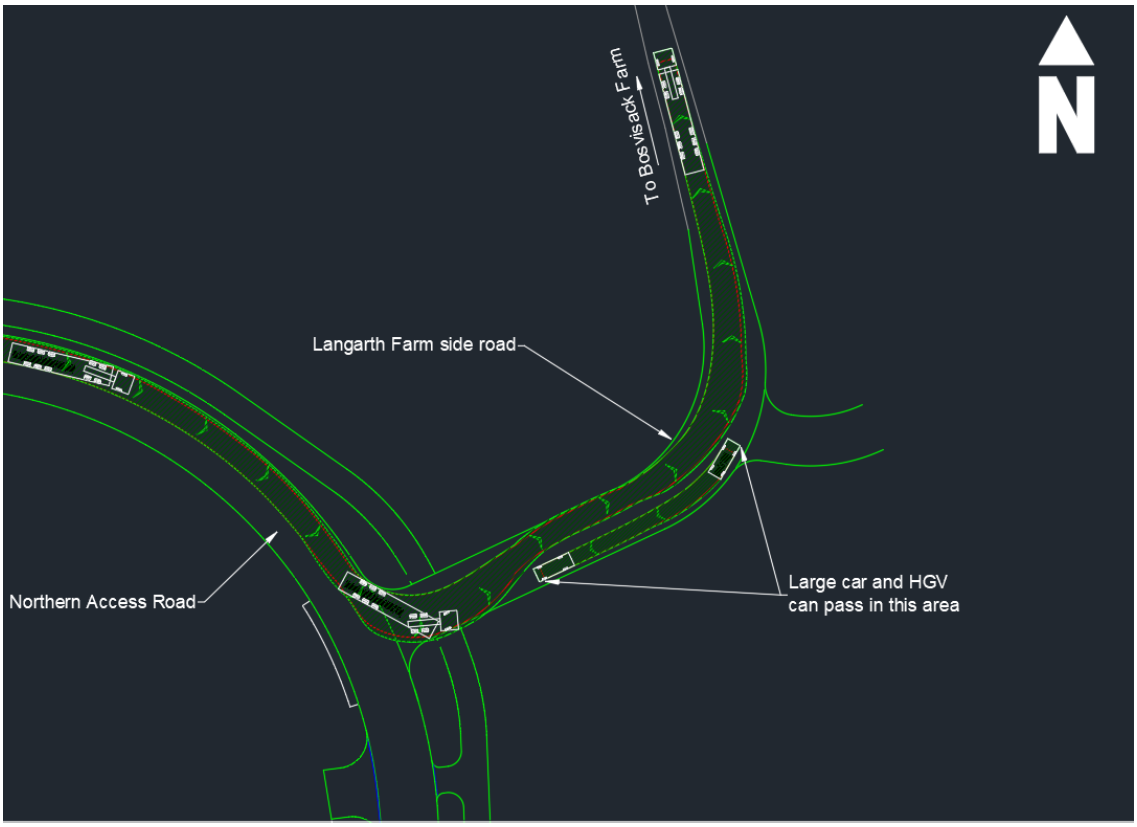


Figure 3.8 – Swept path analysis 16.5m long articulated HGV – NAR to Langarth Farm side road

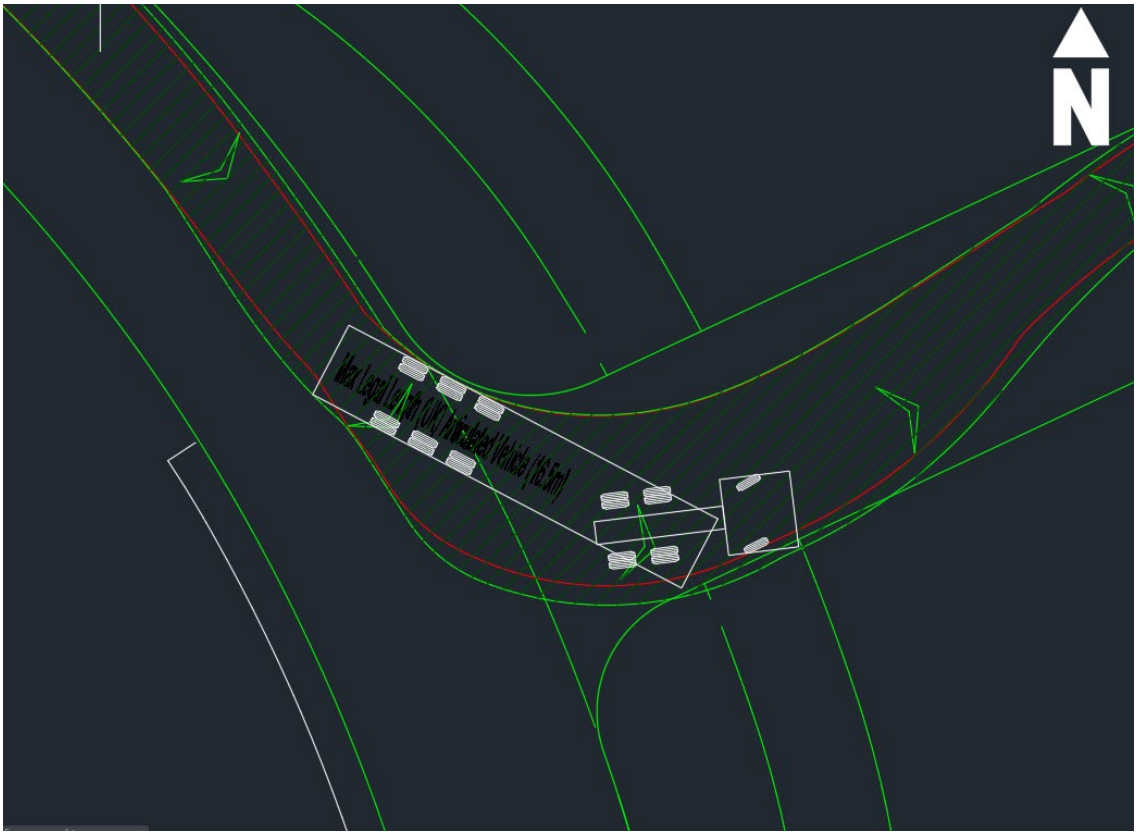


Figure 3.9 – Swept path analysis 16.5m long articulated HGV – NAR to Langarth Farm side road

Figure 3.10 – Swept path analysis 16.5m long articulated HGV – Langarth Farm side road to NAR

Figure 3.11 – Swept path analysis 16.5m long articulated HGV – Langarth Farm side road to NAR

Figure 3.12 – Swept path analysis 16.5m long articulated HGV – HGVs passing each other in Langarth Farm side road

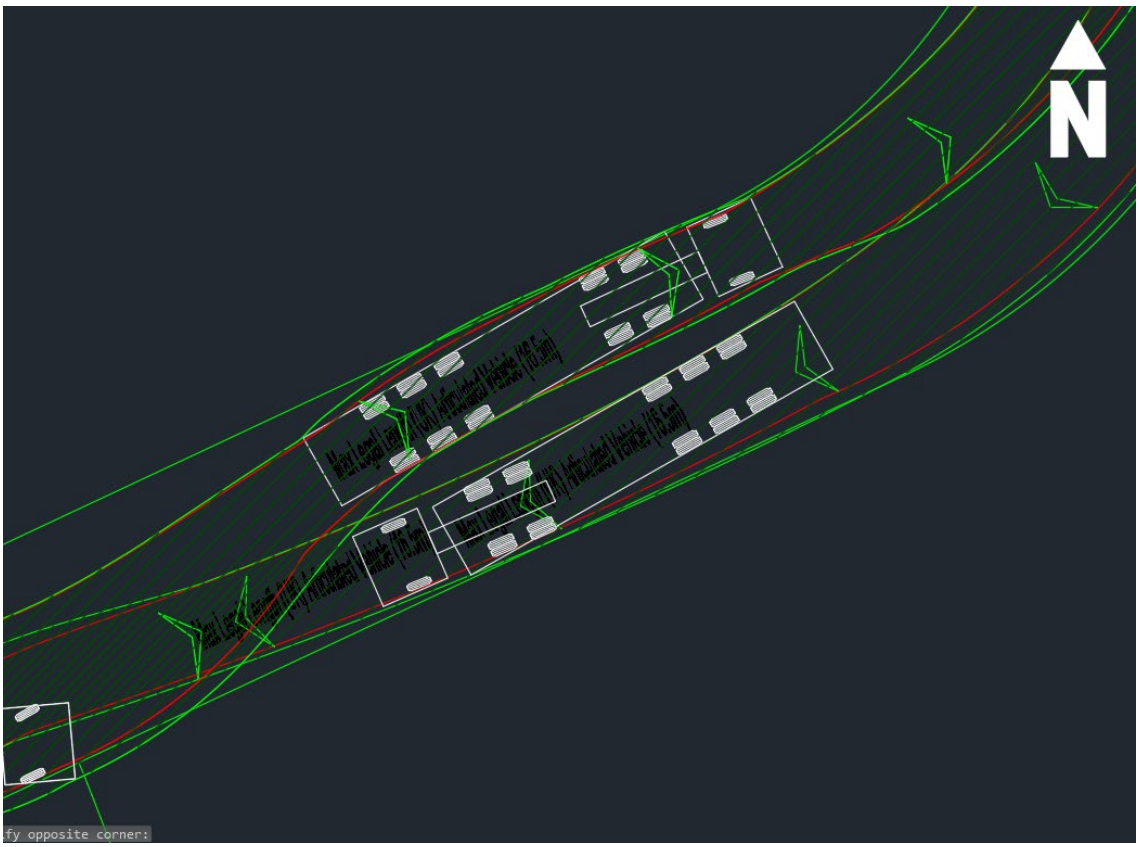


Figure 3.13 – Swept path analysis 16.5m long articulated HGV – HGVs passing each other in Langarth Farm side road

Figure 3.14 – Swept path analysis 16.5m long articulated HGV – NAR towards Bosvisack Farm, minimum forward stopping sight distance of 25m achieved. Driver eye height 1.05m, object height 0.6m

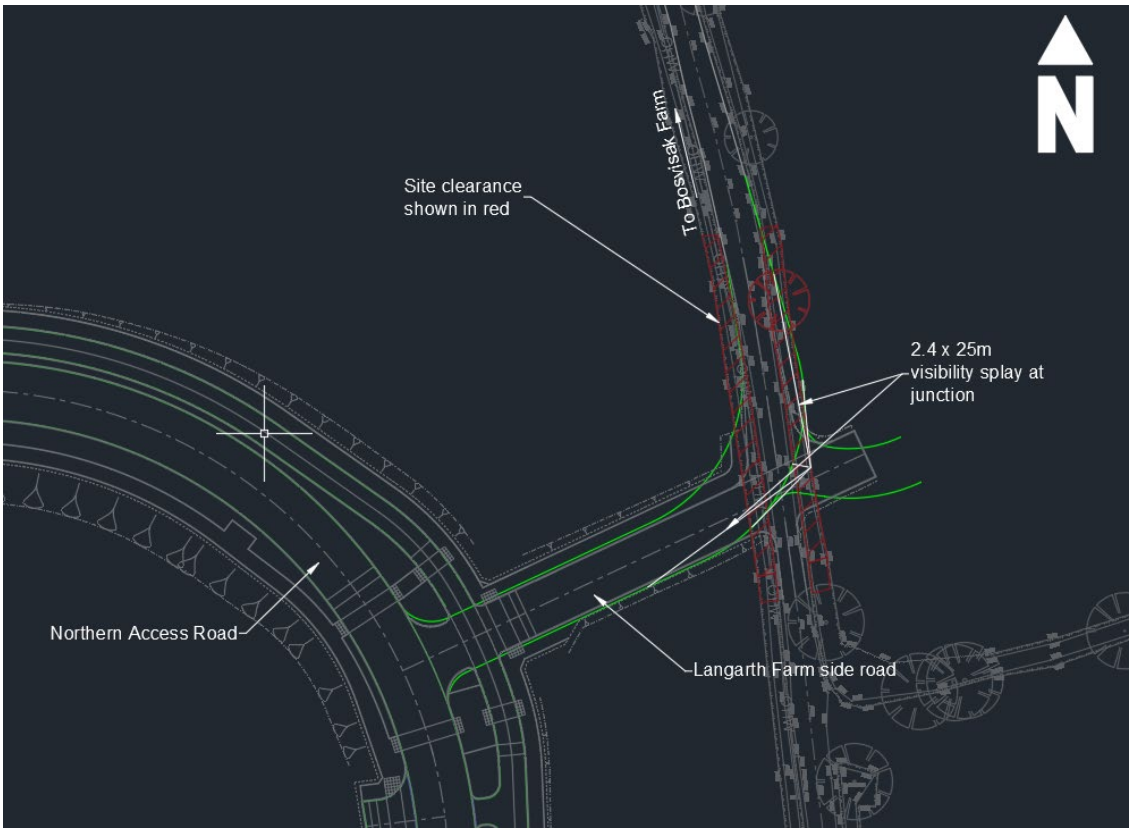


Figure 3.15 – Visibility at junction

3.2.11 The adopted junction visibility standards are met. Should this alternative design be adopted the footways and crossings will need to be designed.

3.3 Langarth Square side road (NAR SR9 CL)

3.3.1 **Horizontal and vertical design -** For details of the horizontal and vertical alignment refer to drawing number: 1665-CSL-HSR-05MZ-DR-CH-0011. The minimum horizontal curves for this alignment are 10m which is less than the 16m adopted as the design standard. The reason for these tighter curves is to enable a quicker tie-in to the existing road. The maximum gradient for this alignment is approximately 9% which is less steep than the adopted maximum of 10%.

3.3.2 **Stopping sight distance –** The minimum SSD of 25m has been met and is demonstrated in the below figure. The green lines indicate that the required visibility is achieved. This analysis has been carried out for a car travelling from the side road towards the NAR. The driver eye height has been set at 1.05m and the object height at 0.6m in line with the adopted standards stated in paragraph 2.4.2 above. It is likely that the visibility for HGV drivers would be better as they have a higher eye height. To ensure this visibility is not obstructed by the proposed trees, the one nearest the visibility splay will be relocated as shown in the below figure:

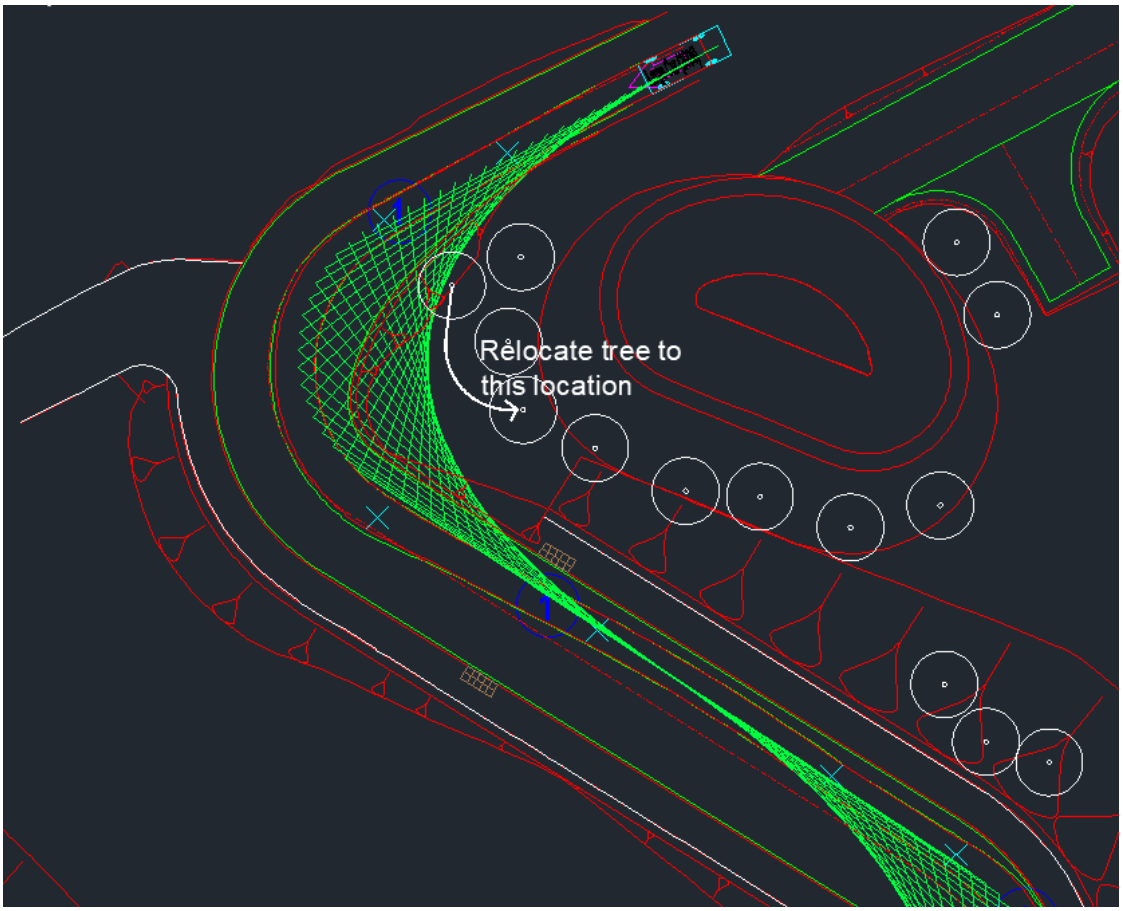


Figure 3.16 – Forward SSD analysis

3.3.3 **Swept paths –** The Langarth Square side road will accommodate the design vehicles which are a tractor and hay wagon and a maximum legal length articulated HGV. Due to the anticipated higher numbers of HGVs using this junction the originally designed radius of 4m will be increased to 5m (see Figure 3.17). This avoids encroachment into the opposing lane on the NAR for the design vehicles turning left from the NAR into the side road junction.

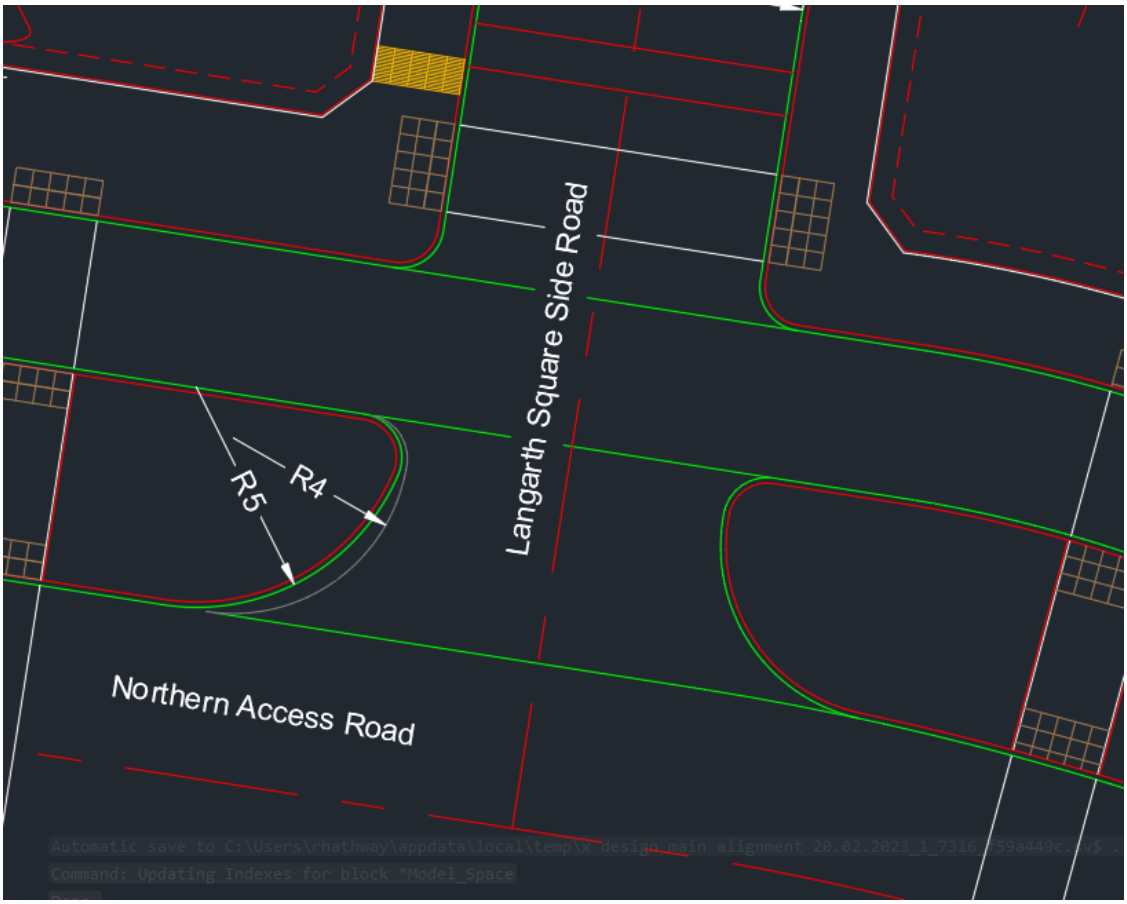


Figure 3.17 – Junction radius increased

3.3.4 This amendment avoids encroachment of the design vehicles into the opposing lane as shown on drawing number: 1892-CSL-GEN-XXZ2-DE-CH-0138 and in the below figures:

Figure 3.18 – Swept path analysis tractor and hay wagon

Figure 3.19 – Swept path analysis Maximum legal length articulated HGV

3.3.5 The design vehicles turning left from the side road onto the NAR will encroach into the opposing lane. This is considered acceptable because of the slow speed environment and good visibility. The visibility from the side road to vehicles approaching on the NAR from the left (east) is slightly in excess of twice the NAR SSD of 33m. This is shown on drawing number: 1892-CSL-GEN-XXZ2-DE-CH-0138 and in the below figure:

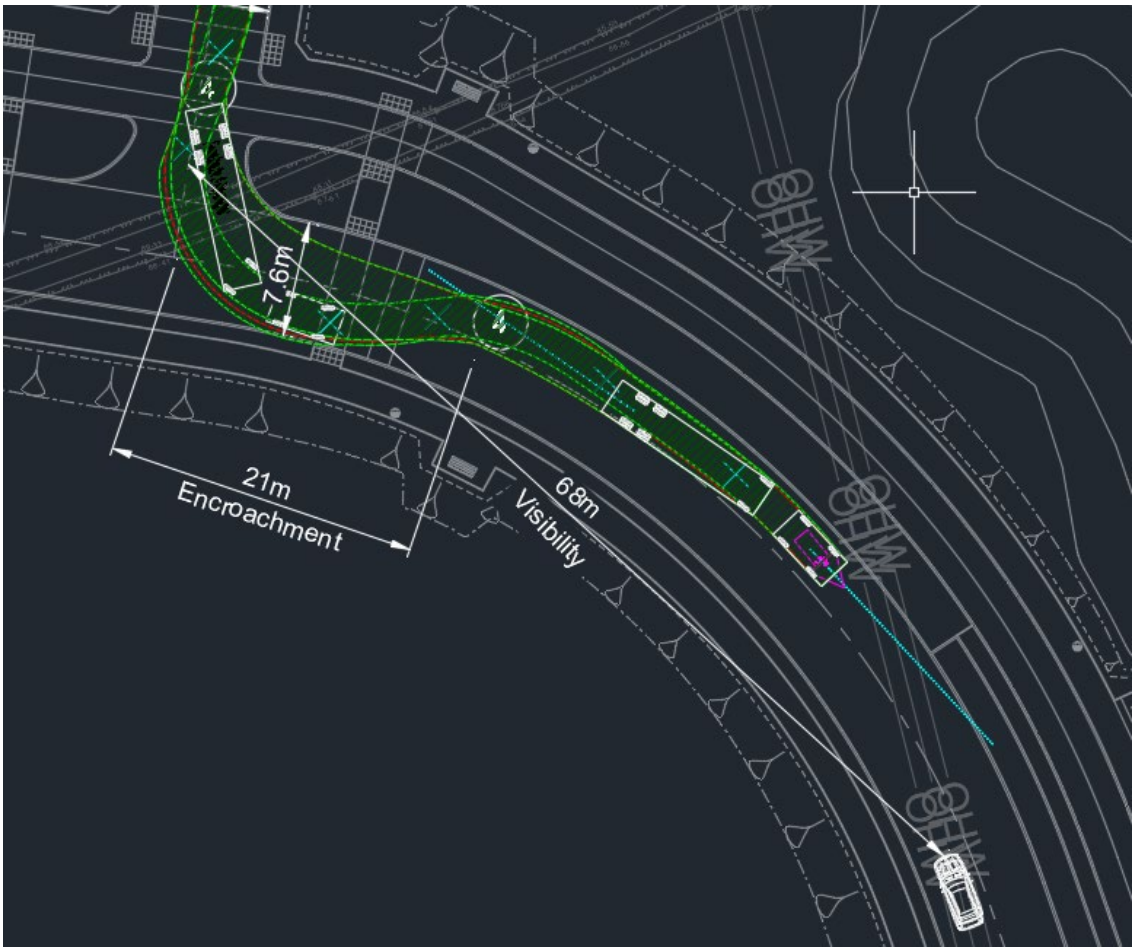


Figure 3.20 – Swept path analysis tractor and hay wagon left turn from side road

3.3.6 The following paragraphs and figures of section 3.3 have been added to this revision of the technical note (P04) in response to the Sanderson documents referred to in paragraph 1.1.6.

3.3.7 For ease of reference, the concerns raised in the Sandersons documents are reproduced in the following paragraphs and are followed with a response from Cormac.

3.3.8 **Sanderson comment** - The new side road has a 'S' shaped alignment with tight radii and small junction radii with the NAR. The proposed changes to the scheme at this junction comprise of increasing the kerb radii. The swept path of an articulated HGV was provided in the email and can be seen below for reference.

Figure 2: Extract from drawing 1892-CSL-GEN-XXZ2-DE-CH-0138 P03

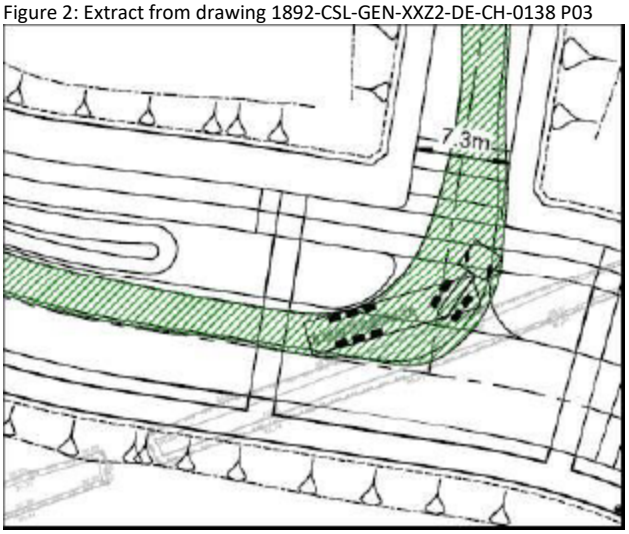


Figure 3.21 – Extract from Sanderson document

3.3.9 As can be seen the vehicle does not cross into the opposing lane on the NAR but to complete the turn into the side road relies on no vehicles exiting at the same time. The vehicle body overhangs the verge and partially the footway/cycleway on the right hand side with the wheels tight against the kerb line which could lead to constant overriding of the verge as the vehicle driver would need to traverse a precise line on every occasion to also avoid overriding the left and right hand kerb radii.

3.3.10 As stated previously in Section 4.0 of our Highway Statement for a large vehicle to successfully complete this movement means that the full carriageway width needs to be clear along the side road until a point where two vehicles can pass with associated vehicle inter-visibility. Clearly it would be contrary to the Highway Code (rule 201) for a vehicle to reverse on to the NAR (clear of the side road junction) to create space for two vehicles to pass and a vehicle to exit from the side road. Therefore, space needs to be created for this eventuality where there is a vehicle exiting in conjunction with a large vehicle entering and vice-versa. Sufficient vehicle inter-visibility should be provided. It should be noted that vehicular, pedestrian and cycle activity is likely to increase along the access route because of development at plots C11, D1, D2, and D8 and community allotments adjacent to plot D8.

3.3.11 There are no proposed changes to address the potential for a low loader grounding as it manoeuvres from the NAR on to the side road (see section 3 paragraph 3.2.4 of our Highway Statement).

3.3.12 **Cormac response** – The alternative design shown in Figure 3.21 is considered to address the concerns.

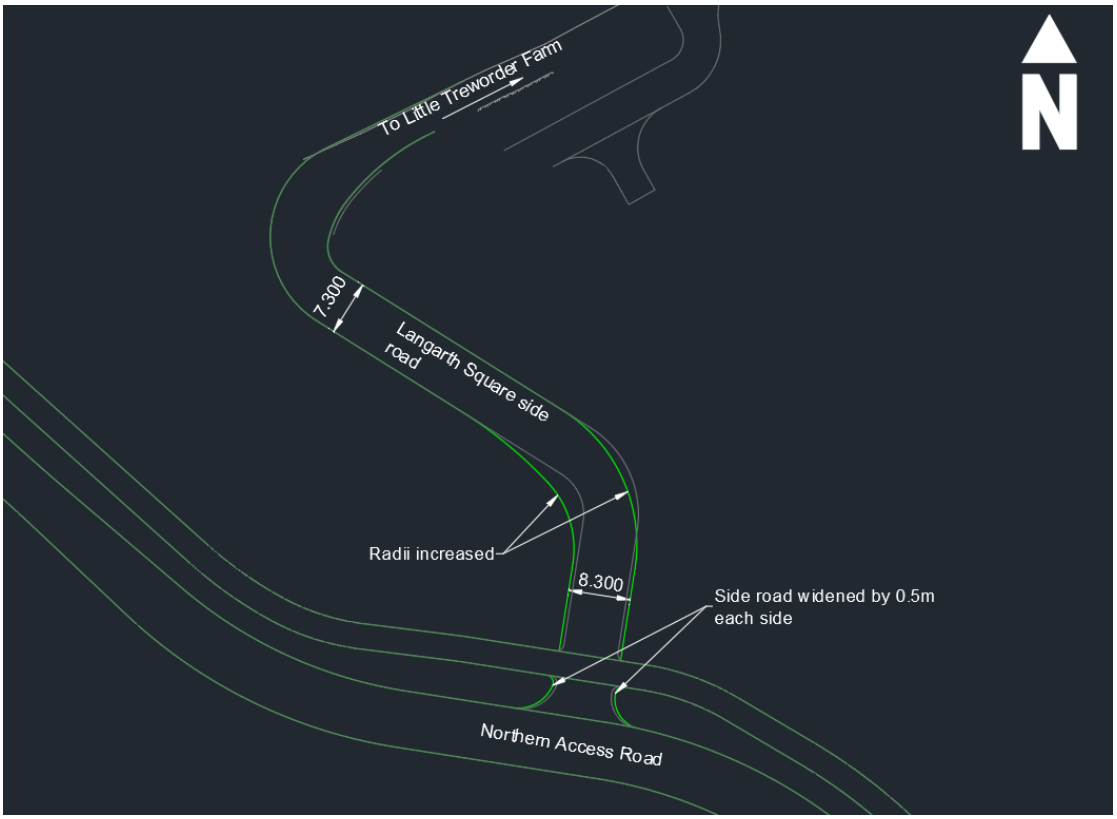


Figure 3.22 – Alternative design

3.3.13 The alternative design consists of the following:

- Side road width increased from 7.3 to 8.3m; and
- Side road radii increased.

3.3.14 The following figures illustrate the alternative design and the swept path of HGVs.

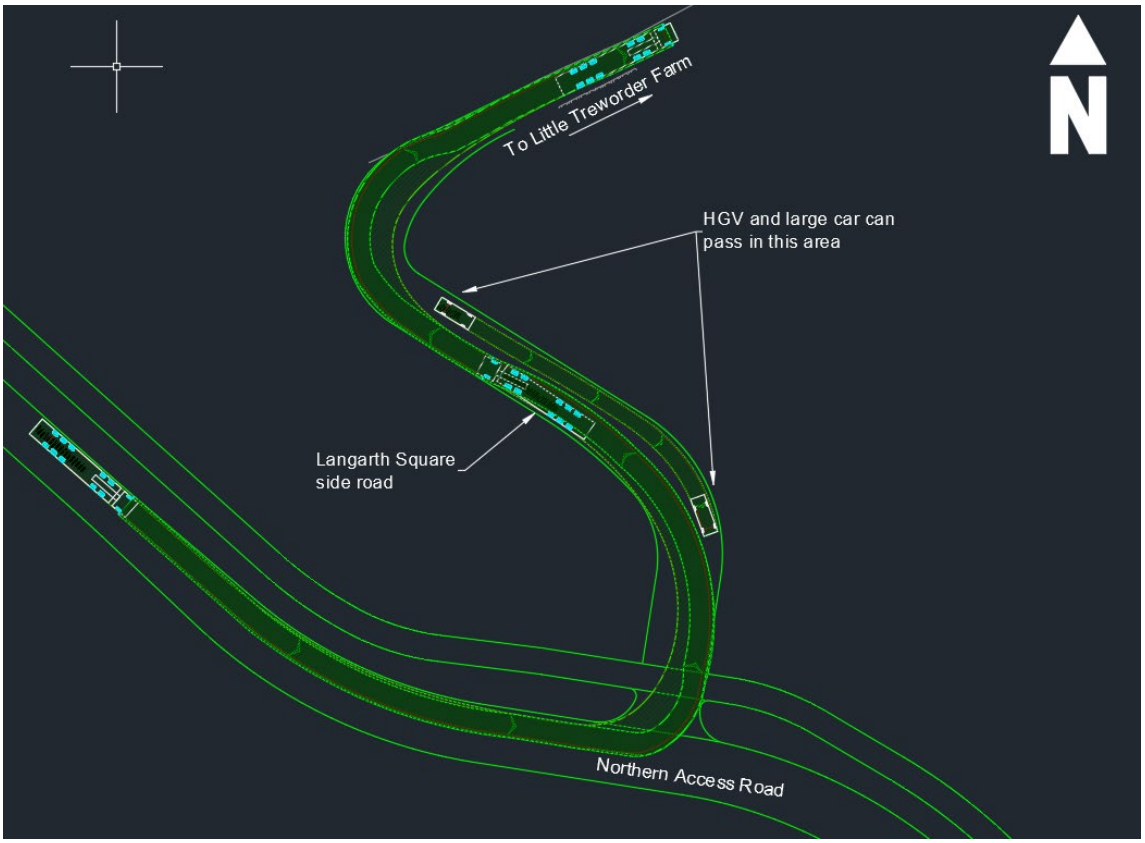


Figure 3.23 – Swept path analysis 16.5m long articulated HGV – NAR to Langarth Square side road

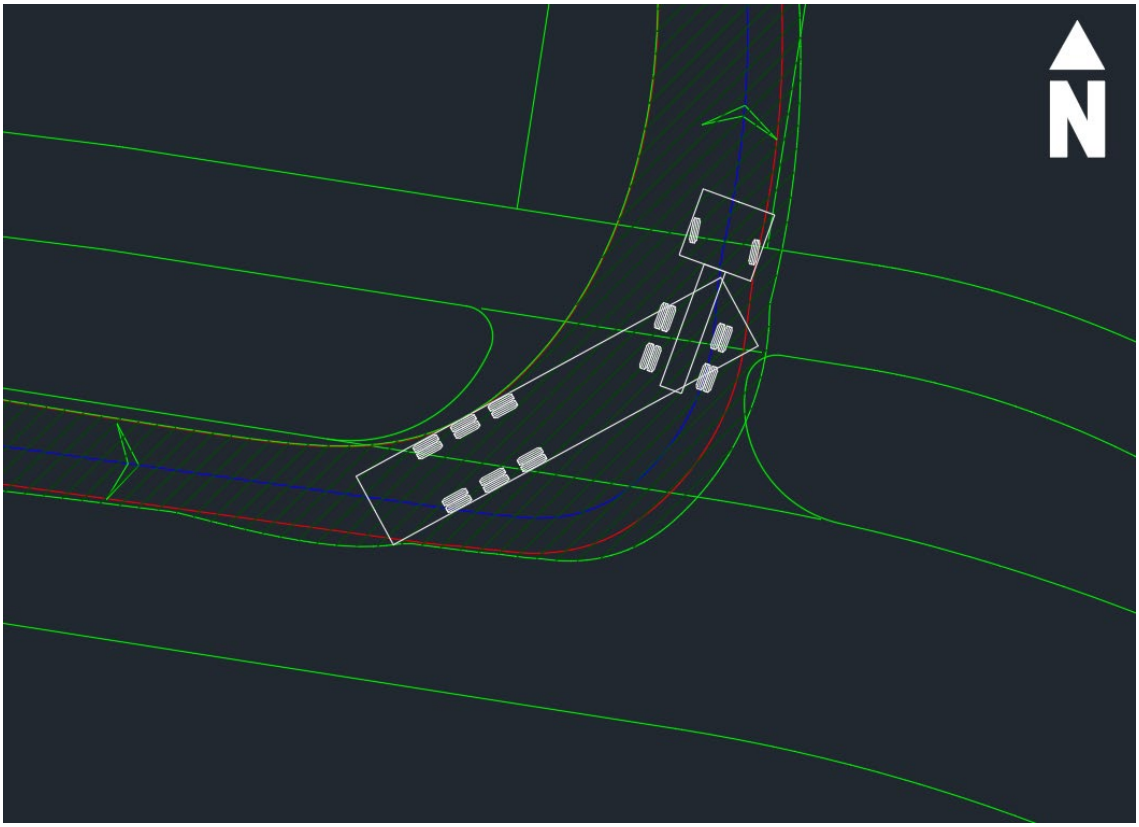


Figure 3.24 – Swept path analysis 16.5m long articulated HGV – NAR to Langarth Square side road

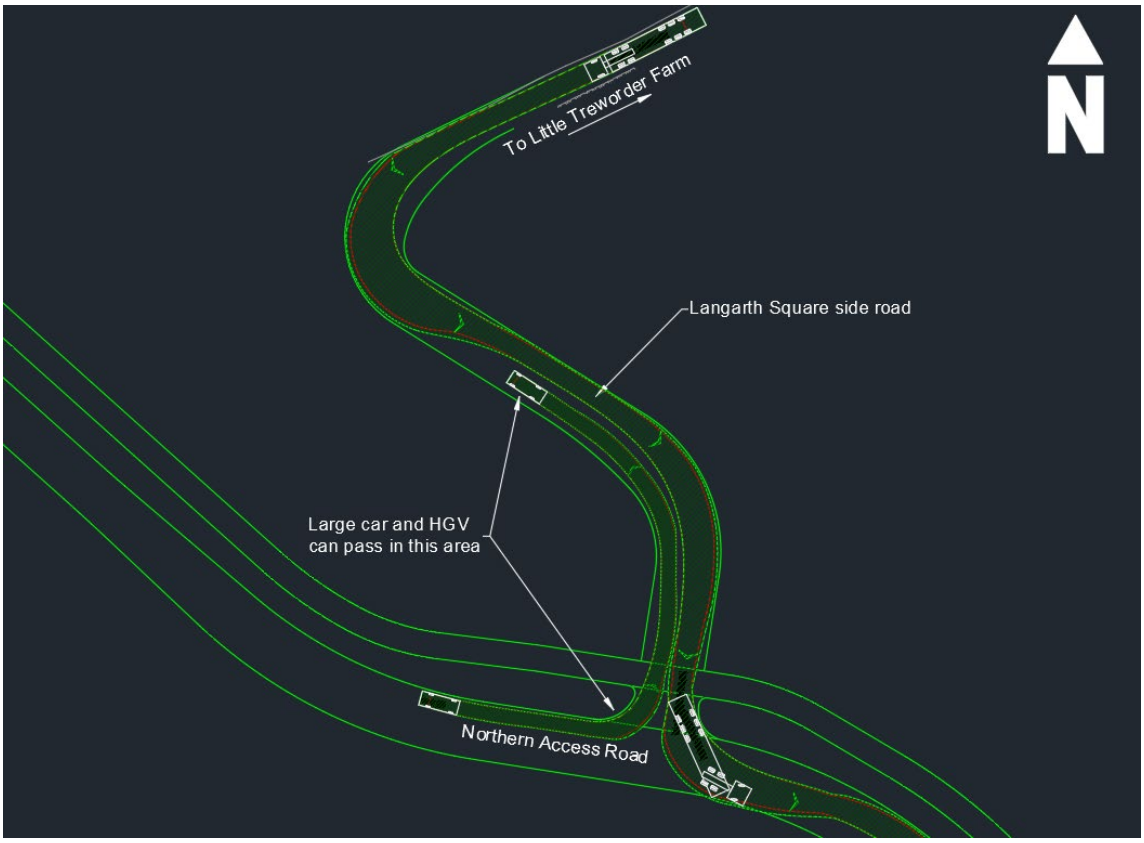


Figure 3.25 – Swept path analysis 16.5m long articulated HGV – Langarth Square side road to NAR

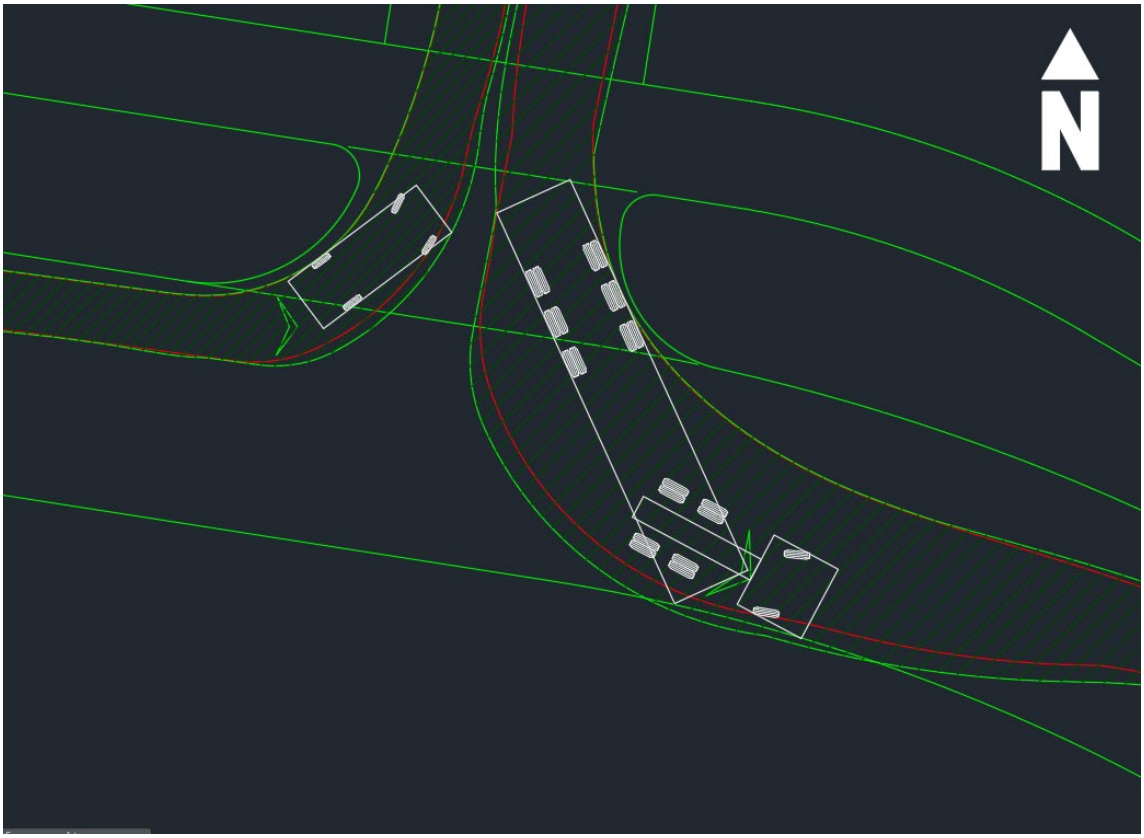


Figure 3.26 – Swept path analysis 16.5m long articulated HGV – Langarth Square side road to NAR

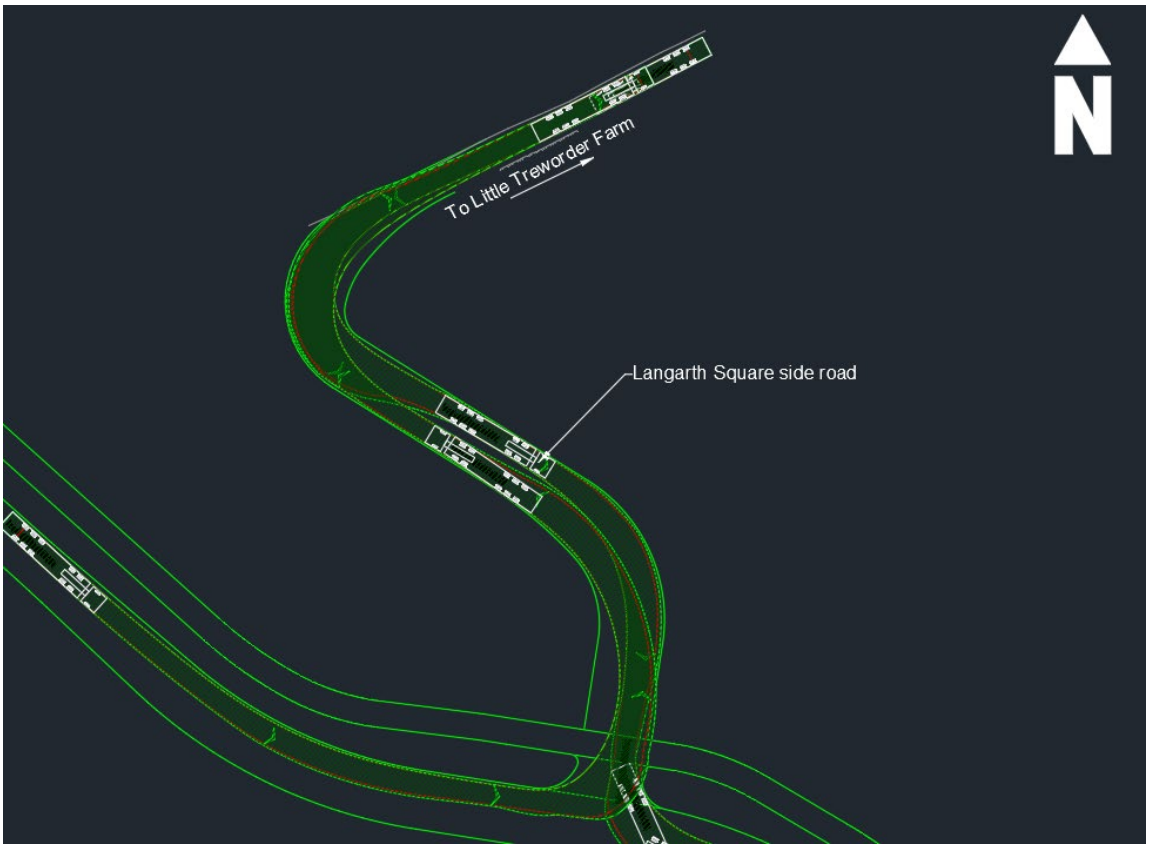


Figure 3.27 – Swept path analysis 16.5m long articulated HGV – HGVs passing each other in Langarth Square side road

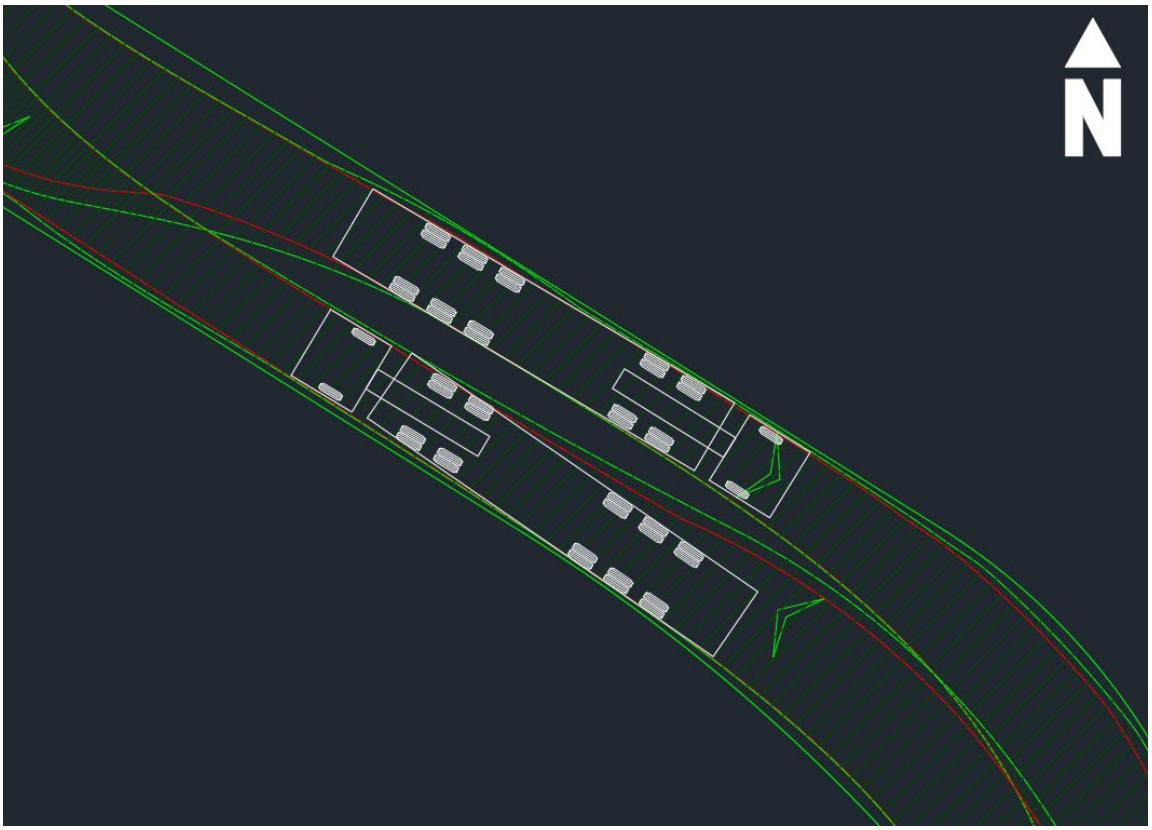


Figure 3.28 – Swept path analysis 16.5m long articulated HGV – HGVs passing each other in Langarth Square side road

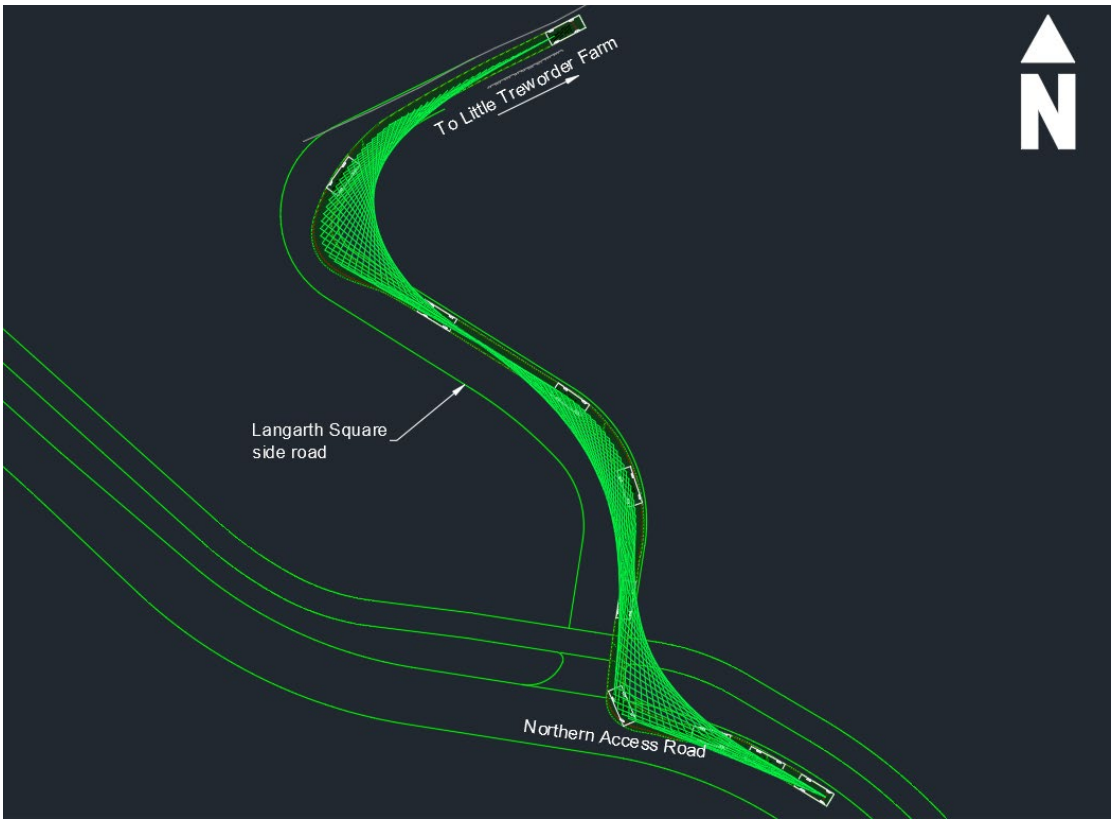


Figure 3.29 – Swept path analysis large car – Langarth Square side road to NAR forward stopping sight distance of 25m achieved. Eye height 1.05, object height 0.6m

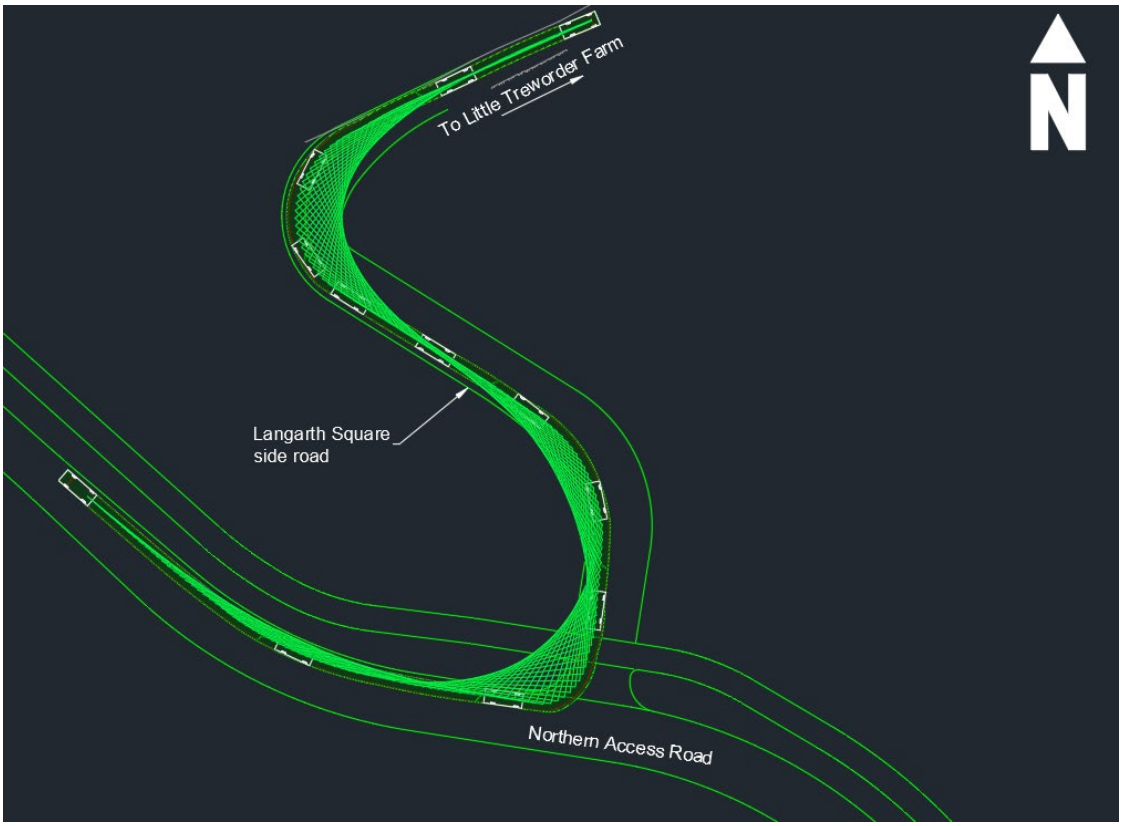


Figure 3.30 – Swept path analysis large car – NAR to Langarth Square side road forward stopping sight distance of 25m achieved. Eye height 1.05, object height 0.6m

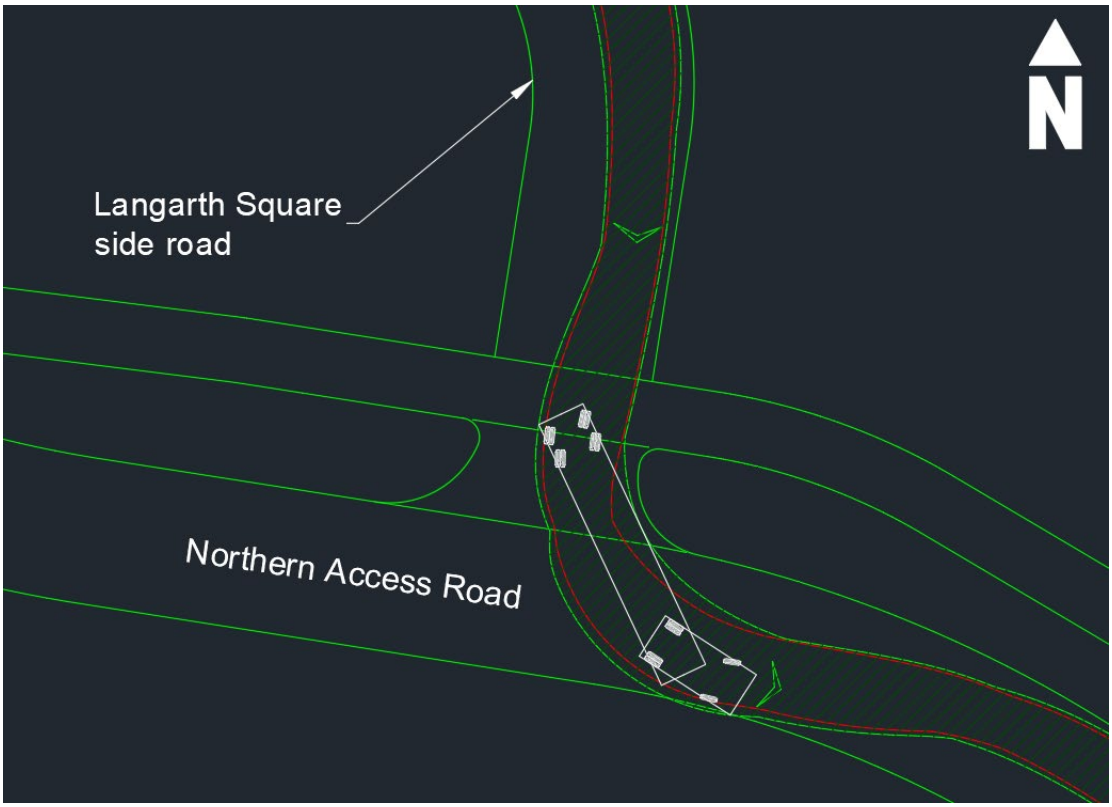


Figure 3.31 – Swept path analysis 18m long low loader HGV – Langarth Square side road to the NAR

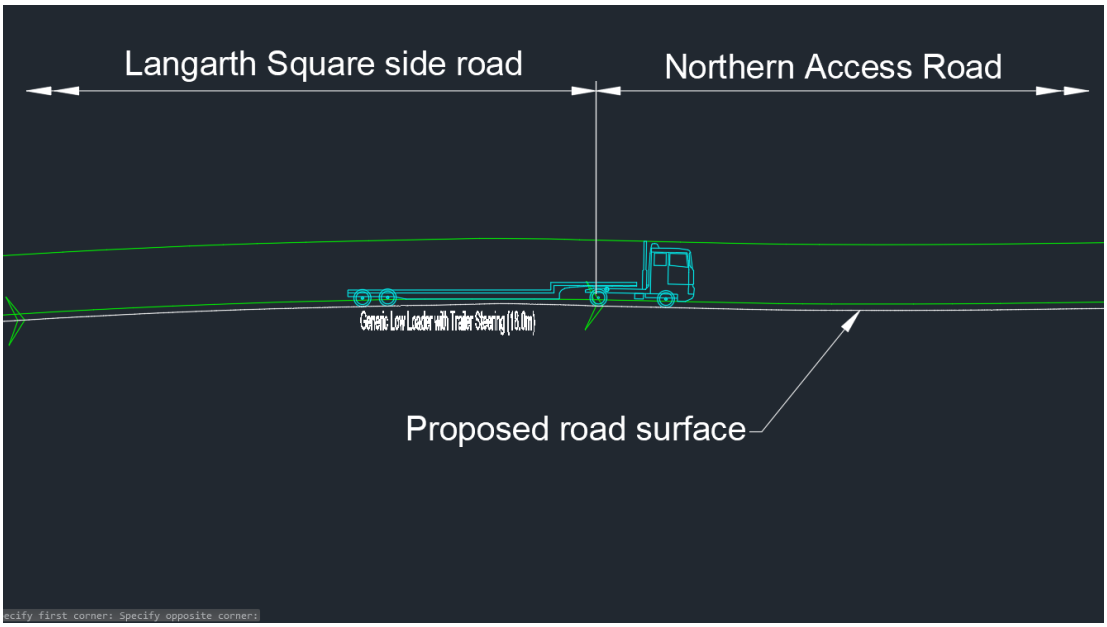


Figure 3.32 – Vertical clearance analysis 18m long low loader HGV – Langarth Square side road to the NAR

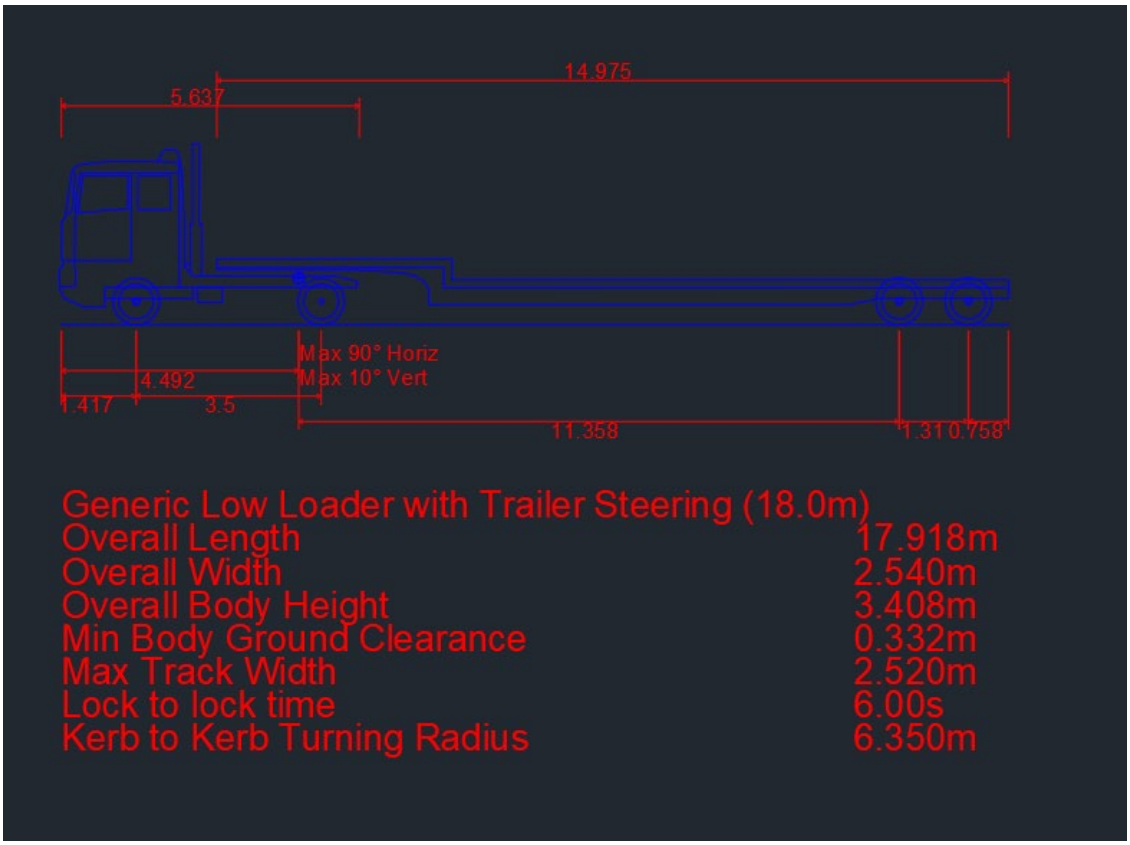


Figure 3.33 – Low loader HGV details

3.3.15 The centre line of the low loader swept path has been checked vertically against the proposed road surface and there would appear to be no issues of grounding at the junction of the side road and the NAR.

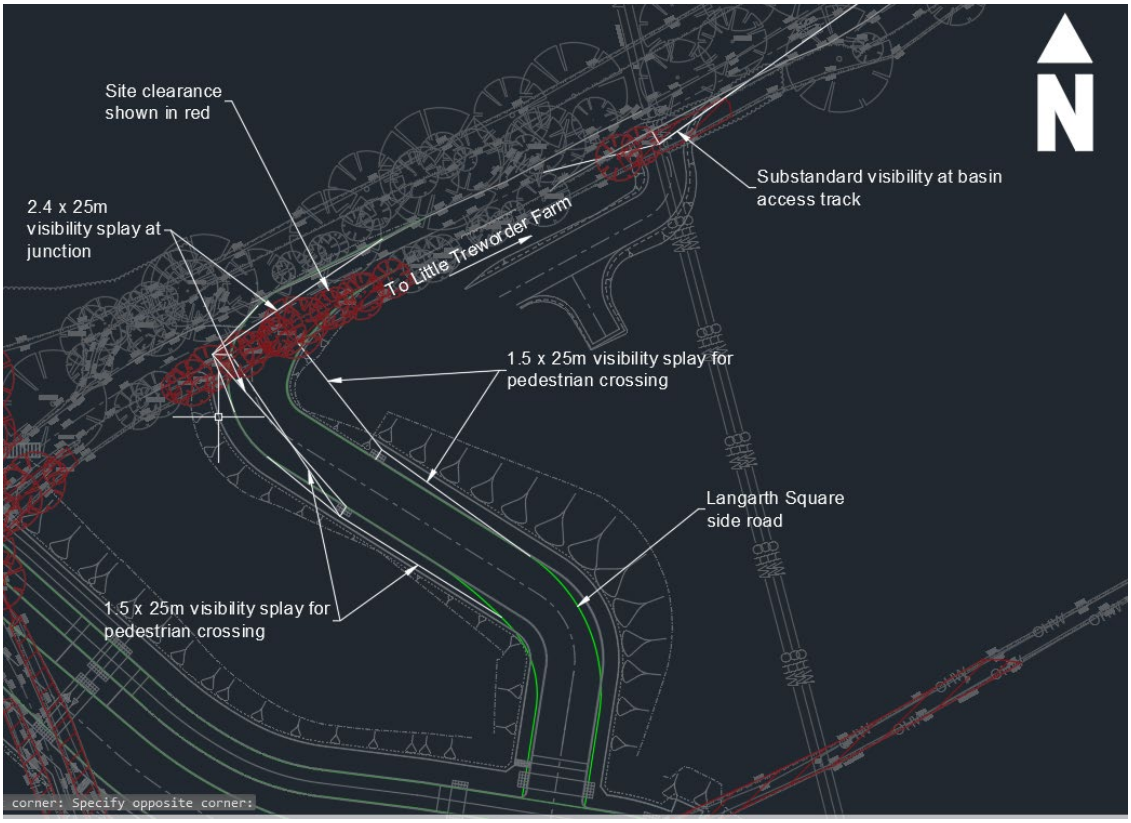


Figure 3.34 – Visibility at junctions and pedestrian crossing

3.3.16 The adopted junction and pedestrian crossing visibility standards are met with the exception of the basin access track. At this junction the visibility to the east, measured in accordance with the standards is 2 x 15m. However, the actual visibility to approaching vehicles is 32m. The visibilities to the west are 2 x 7m measured in accordance with the standards and 16m actual. These visibilities are considered acceptable considering the low frequency of usage, possibly once a year or less. In addition, vehicles approaching from the west are likely to travelling slowly due to the tight corner. The maintenance vehicle driver emerging from the basin access track will need to do so with care. The benefit of reduced standards at this location is that less of the existing hedge will need to be removed. MfS states that an X distance of 2m may be considered in some very lightly-trafficked and slow-speed situations.

3.4 Willow Green side road

3.4.1 **Horizontal and vertical design -** For details of the horizontal and vertical alignment refer to drawing number: 1665-CSL-HSR-05MZ-DR-CH-0011. The horizontal alignments are straight. The maximum gradient for this alignment is approximately 2% which is less steep than the adopted maximum of 10%.

3.4.2 **Stopping sight distance -** The minimum SSD of 25m has been met.

3.4.3 **Visibility standards at junctions and crossings –** The required visibilities at junctions and crossings have been met.

3.4.4 Figures 3.35 and 3.36 demonstrate that the current layout for the Willow Green Farm side road will accommodate a 4x4 vehicle and a caravan:

Figure 3.35 – Swept path analysis Willow Green Farm side road

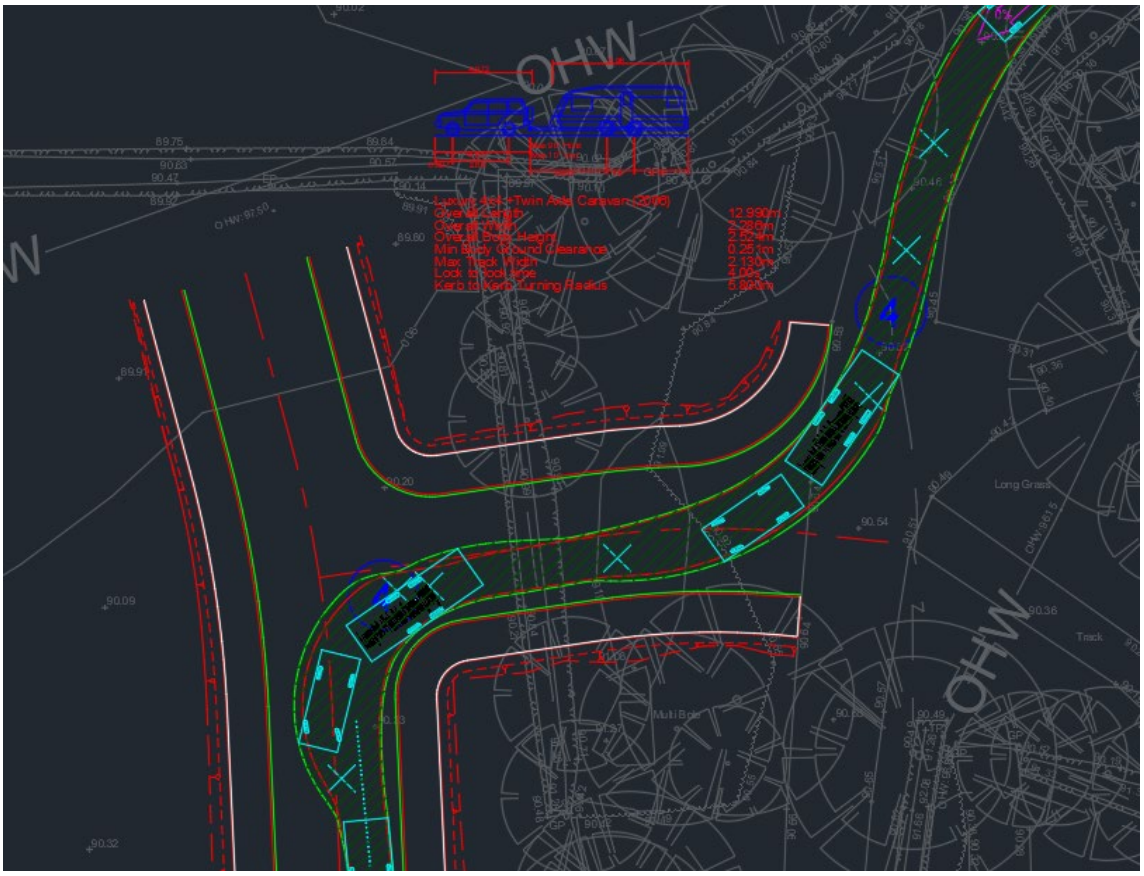
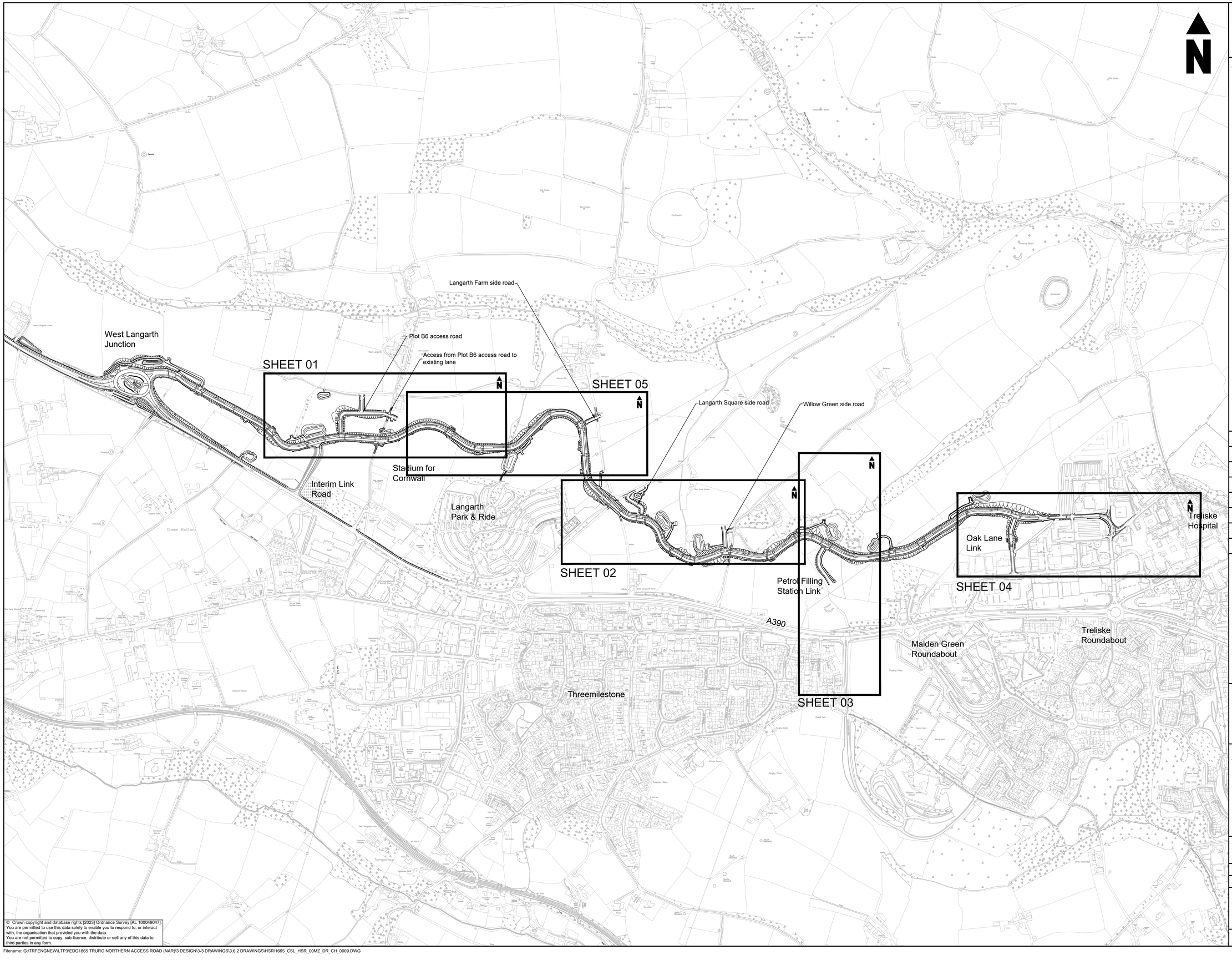


Figure 3.36 – Swept path analysis Willow Green Farm side road

DRAWINGS



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NOTES:

1. All dimensions are in metres unless otherwise stated.
2. Do not scale from this drawing for construction purposes.
3. For plan and profiles of the NAR Side Roads and the Eastern End RCHT Area refer to drawing numbers: 1665_CSL_HSR_XXXX_DR_CH_0010 to 0015.

REV	DATE	NATURE OF REVISION
P06	08.02.23	SIDE ROADS LABELED
P05	13.08.21	EASTERN END ALIGNMENT UPDATED
P04	24.06.21	RE-ISSUE FOR PLANNING
P03	09.11.20	MINOR AMENDMENTS
P0	30.10.20	NOTE AMENDED
P01	02.10.20	First Issue

REVISIONS

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CORNWALL COUNCIL

CORMAC SOLUTIONS
RADNOR ROAD
SCORRIER
CORNWALL TR16 5EH
www.cormacltd.co.uk 01872 323 313

PROJECT TITLE:
TRURO NORTHERN ACCESS ROAD

DRAWING TITLE:
SIDE ROADS
PLAN AND PROFILE
KEY PLAN

SCALE: 1:5000 @ A1

PROJECT MANAGER: E. MAGUIRE		DRAWN BY: RMH	
CHECKED: GR	08.02.23	APPROVED: JE	08.02.23

DRAWING NO:

PROJECT	ORIGINATOR	VOLUME	LOCATION
1665 -	CSL -	HSR -	00MZ -
TYPE	ROLE	NUMBER	
DE -	CH -	0009	

PROJECT REF.:	DRAWING STATUS:	SUITABILITY:	REVISION:
EDG1665	PLANNING	S2	P06

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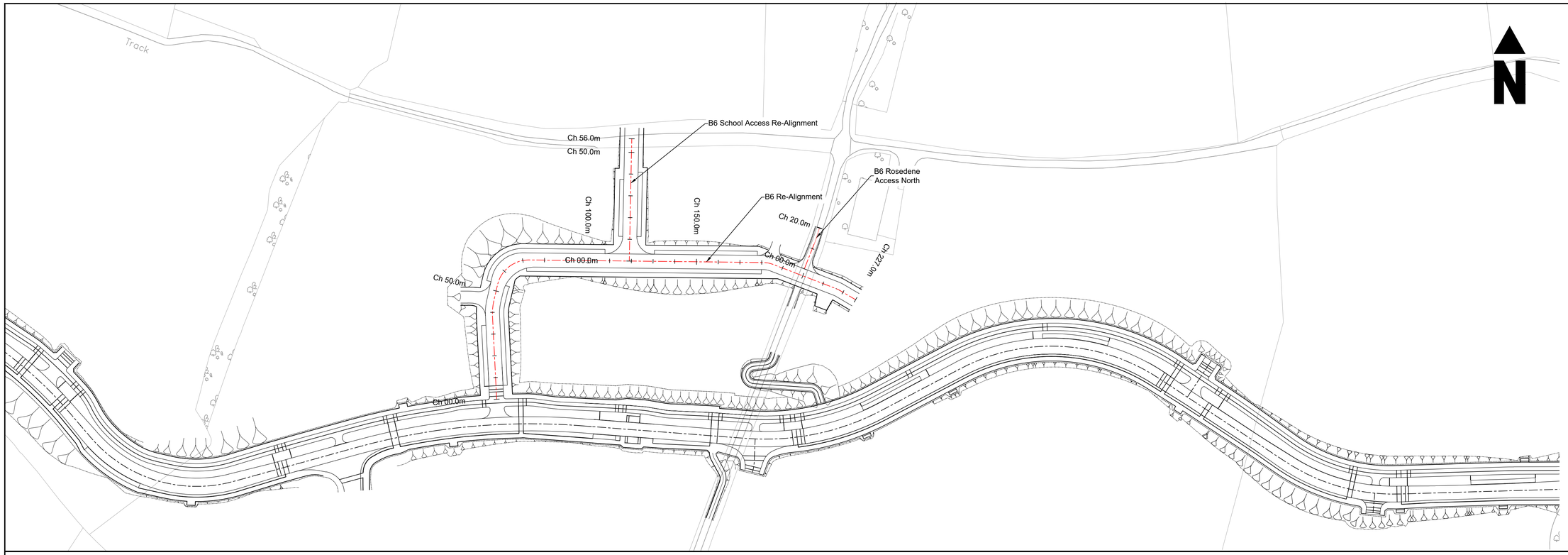
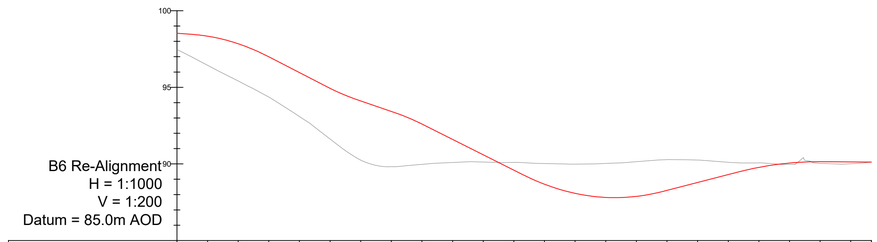
Filename: G:\TRFENGNEW\LTP3\EDG1665 TRURO NORTHERN ACCESS ROAD (NAR)\3 DESIGN\3-3 DRAWINGS\3.6.2 DRAWINGS\HSR\1665_CSL_HSR_00MZ_DR_CH_0009.DWG

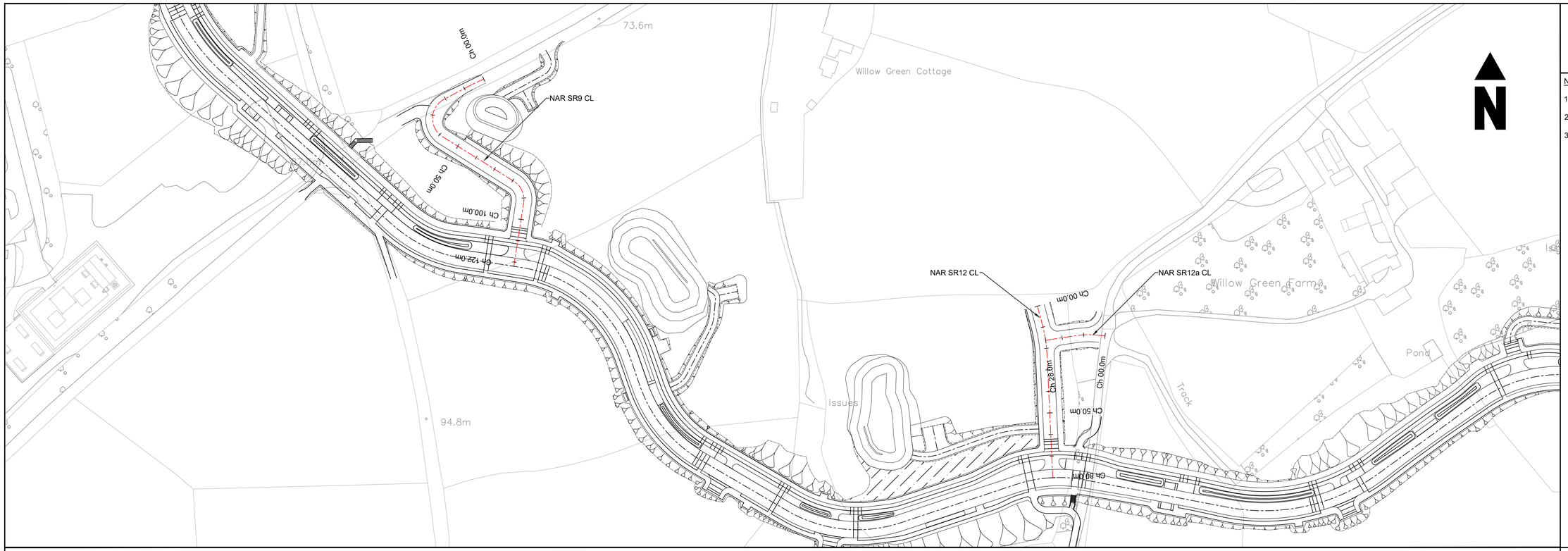
Plot Date: 8 February 2023

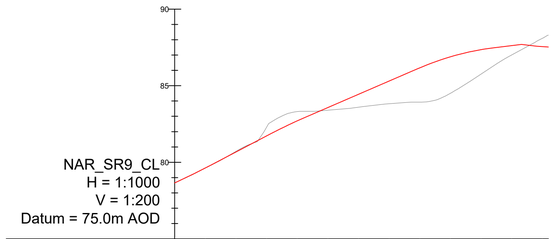




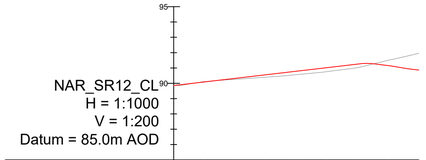
B6 Re-Alignment
H = 1:1000
V = 1:200
Datum = 85.0m AOD

| | | |

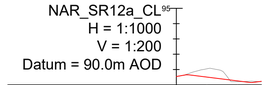




Existing Ground Level	78.654	79.621	80.712	82.267	83.309	83.388	83.565	83.822	83.926	84.501	85.756	87.002	88.091
Design Level	78.654	79.631	80.674	81.720	82.706	83.575	84.439	85.303	86.166	86.884	87.352	87.617	87.553
Level Difference	0.00	0.010	-0.037	-0.568	-0.604	0.18	0.844	1.481	2.241	2.383	1.60	0.615	-0.539
Horizontal Geometry	R = 64	L =13	R = 10.000 L = 20.973	L =38.924	K = 10.000 L = 11.670	L =29.714							
Vertical Geometry	G = 9%	K = 10 L = 11	G = 10.451% L = 19.789	K = 6.000 L = 10.854	G = 8.642% L = 36.710	K = 4.000 L = 24.714	G = 2%	G = -2%	G = -1%				
Chainage	00.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	110.0	120.0



Existing Ground Level	89.870	90.109	90.258	90.401	90.560	90.762	91.024	91.499	91.951
Design Level	89.851	90.085	90.319	90.553	90.787	91.021	91.255	91.157	90.861
Level Difference	-0.02	-0.024	0.061	0.152	0.227	0.26	0.230	-0.341	-1.09
Horizontal Geometry	=9.176	R = 64.000 L = 13.651	L =57.198						
Vertical Geometry	G = 2.340% L = 60.715	G = -3%	G = -2%	G = -2.5%					
Chainage	00.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0



Existing Ground Level	90.550	91.050	90.207	90.259	
Design Level	90.550	90.512	90.262	90.230	
Level Difference	0.00	-0.538	0.055	0.02	
Horizontal Geometry	L =2.389	R = 44	L =13.808		
Vertical Geometry	G = 1%	K = 10	G = -2%	G = 2.5%	
Chainage	00.0	10.0	20.0	27.8	

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NOTES:

1. All dimensions are in metres unless otherwise stated.
2. Do not scale from this drawing for construction purposes.
3. Please refer to drawing: 1665_CSL_HSR_00MZ_CH_0009 for Key Plan.

PLAN KEY:

Profiled centreline

PROFILE KEY:

Proposed design

Existing ground

REV	DATE	NATURE OF REVISION
P06	08.02.23	GENERAL UPDATE
P05	13.08.21	RE-ISSUE FOR PLANNING
P04	24.06.21	RE-ISSUE FOR PLANNING
P03	09.11.20	MINOR AMENDMENTS
P02	30.10.20	NOTE AMENDED
P01	02.10.20	First Issue

REVISIONS

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CORNWALL COUNCIL

CORMAC SOLUTIONS
RADNOR ROAD
SCORRIER
CORNWALL TR16 5EH
www.cormacltd.co.uk 01872 323 313

PROJECT TITLE:
TRURO NORTHERN ACCESS ROAD

DRAWING TITLE:
SIDE ROADS
PLAN AND PROFILE
SHEET 02 OF 05

SCALE:
1:1000 @ A1
PROFILE AS SHOWN

PROJECT MANAGER: EJM		DRAWN BY: RMH	
CHECKED: GR	08.02.23	APPROVED: JE	08.02.23

DRAWING NO:

PROJECT	ORIGINATOR	VOLUME	LOCATION
1665	CSL	HSR	02MZ

TYPE	ROLE	NUMBER
DR	CH	0011

PROJECT REF.:	DRAWING STATUS:	SUITABILITY:	REVISION:
EDG1665	PLANNING	S2	P06

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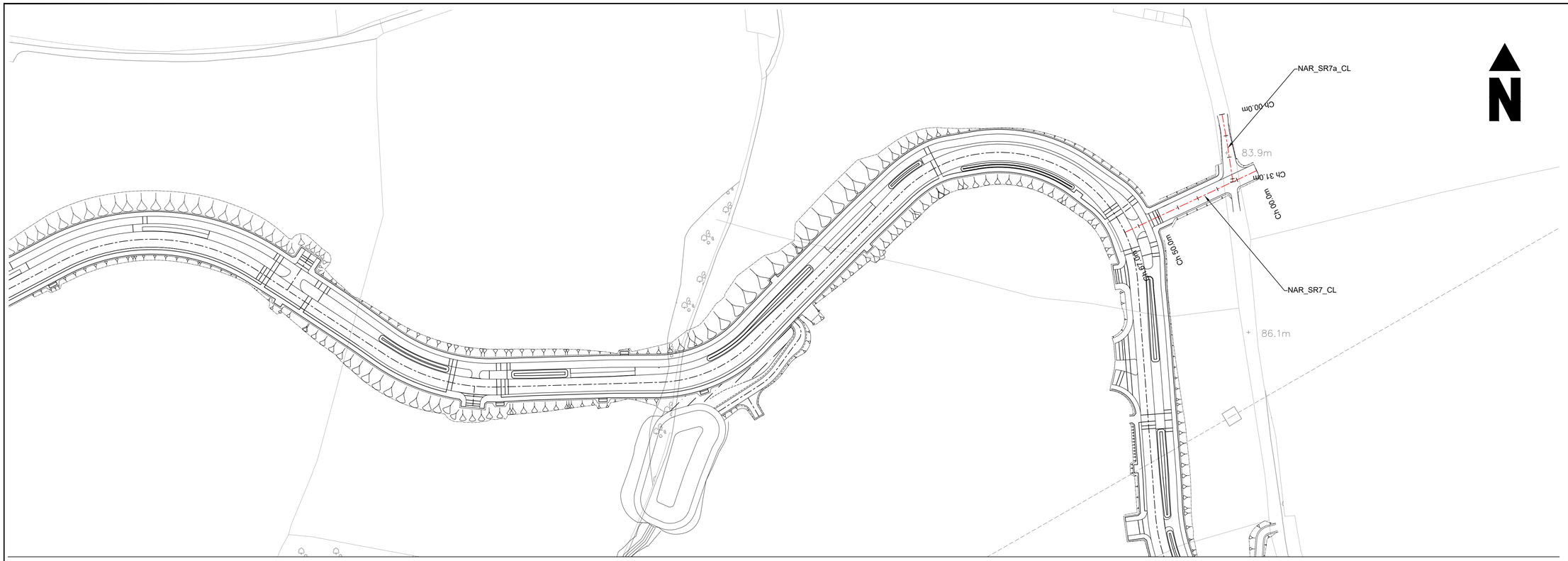
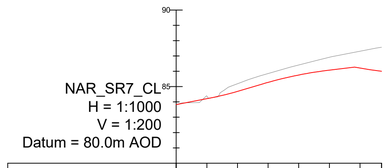
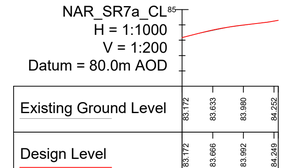
Filename: G:\TRFENGNEWLTP3\EDG1665 TRURO NORTHERN ACCESS ROAD (NAR)\3 DESIGN\3-3 DRAWINGS\3.6.2 DRAWINGS\HSR\1665_CSL_HSR_03MZ_DR_CH_0011.DWG

Plot Date: 22 February 2023





Existing Ground Level	83.825	84.382	85.190	85.852	86.468	86.915	87.307	87.571
Design Level	83.825	84.214	84.686	85.278	85.757	86.070	86.210	86.004
Level Difference	0.00	-0.168	-0.504	-0.574	-0.651	-0.84	-1.097	-1.57
Horizontal Geometry	L =67.014							
Vertical Geometry	G = 4%	K = 5	G = 6%	K = 6.000 L = 21.166	G = 2%	G = -3%	G = -2.5%	
Chainage	00.0	10.0	20.0	30.0	40.0	50.0	60.0	67.0



Existing Ground Level	83.172	83.633	83.980	84.292
Design Level	83.172	83.666	83.992	84.249
Level Difference	0.00	0.034	0.012	-0.002
Horizontal Geometry	R = 314	L =4	L =13	
Vertical Geometry	G = 5.1%	K = 5	G = 5%	G = 4%
Chainage	00.0	10.0	20.0	30.0

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NOTES:

1. All dimensions are in metres unless otherwise stated.
2. Do not scale from this drawing for construction purposes.
3. Please refer to drawing: 1665_CSL_HSR_00MZ_CH_0009 for Key Plan.

REV	DATE	NATURE OF REVISION
P03	08.02.23	GENERAL UPDATES
P02	13.08.21	MINOR AMNEDMENTS
P01	24.06.21	First Issue

REVISIONS

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CORMAC SOLUTIONS
RADNOR ROAD
SCORRIER
CORNWALL TR16 5EH
www.cormacltd.co.uk 01872 323 313

PROJECT TITLE:
TRURO NORTHERN ACCESS ROAD

DRAWING TITLE:
SIDE ROADS
PLAN AND PROFILE
SHEET 05 OF 05

SCALE:
1:1000 @ A1
PROFILE AS SHOWN

PROJECT MANAGER: EJM		DRAWN BY: RMH	
CHECKED: GR	08.02.23	APPROVED: JE	08.02.23

DRAWING NO:

PROJECT	ORIGINATOR	VOLUME	LOCATION
1665 -	CSL -	HSR -	05MZ -
TYPE	ROLE	NUMBER	
DR -	CH -	0015	

PROJECT REF.:	DRAWING STATUS:	SUITABILITY:	REVISION:
EDG1892	PLANNING	S2	P03

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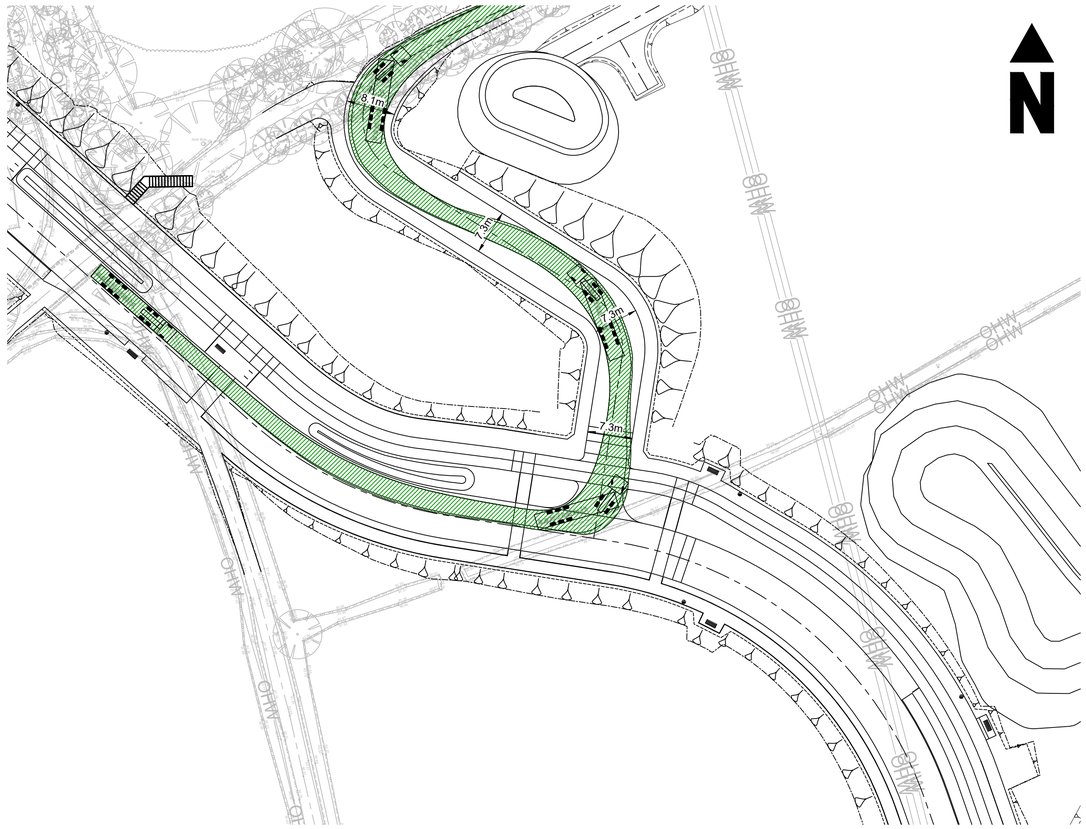
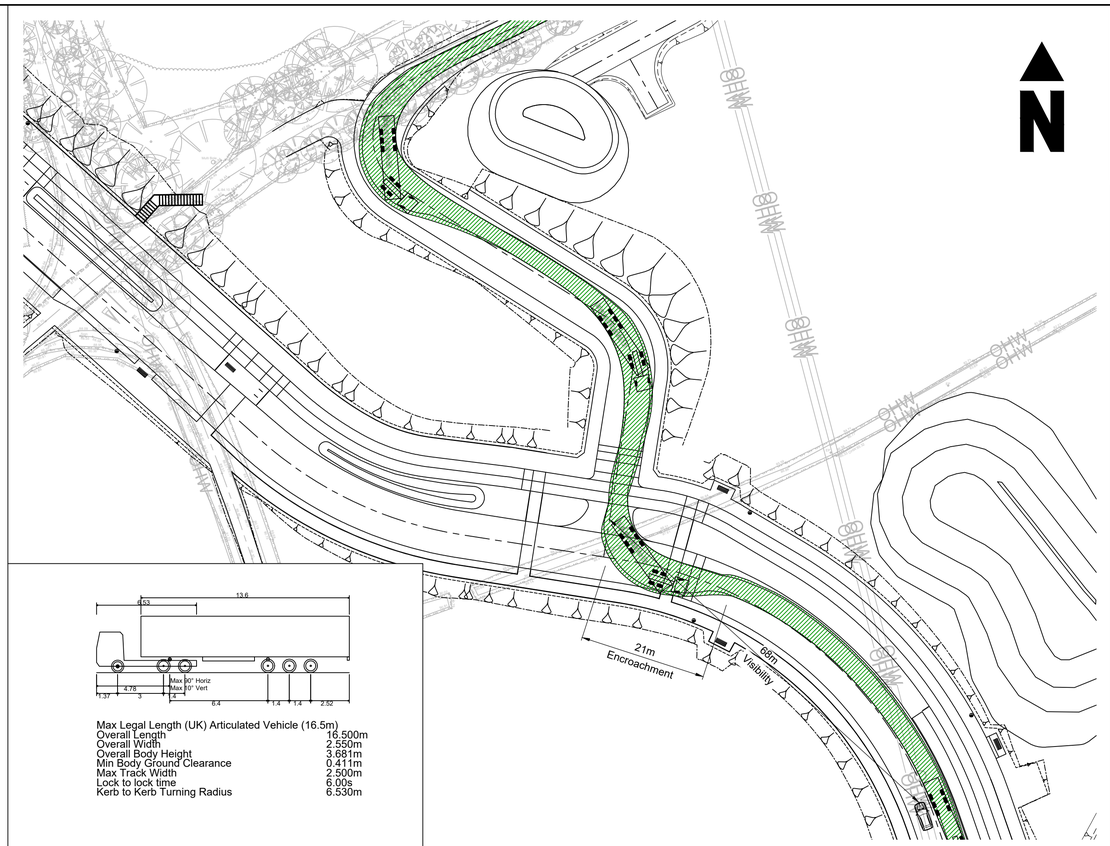
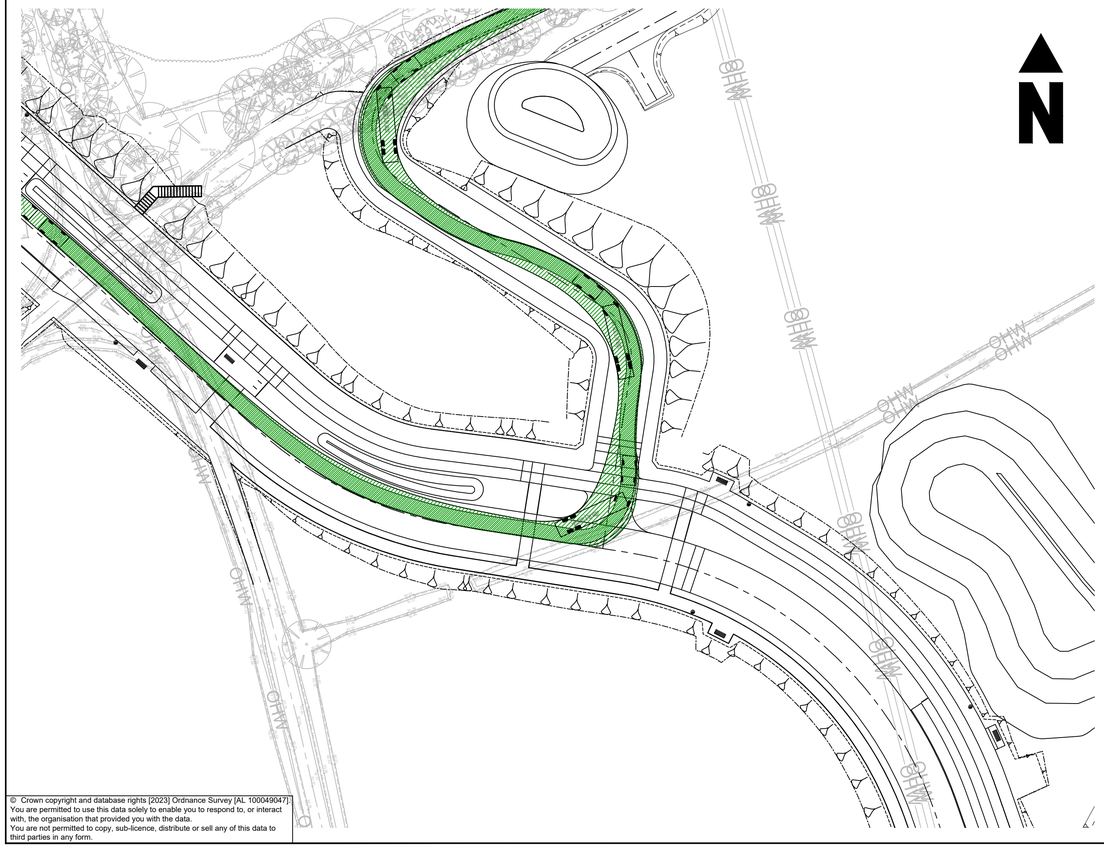
Plot Date: 23 February 2023

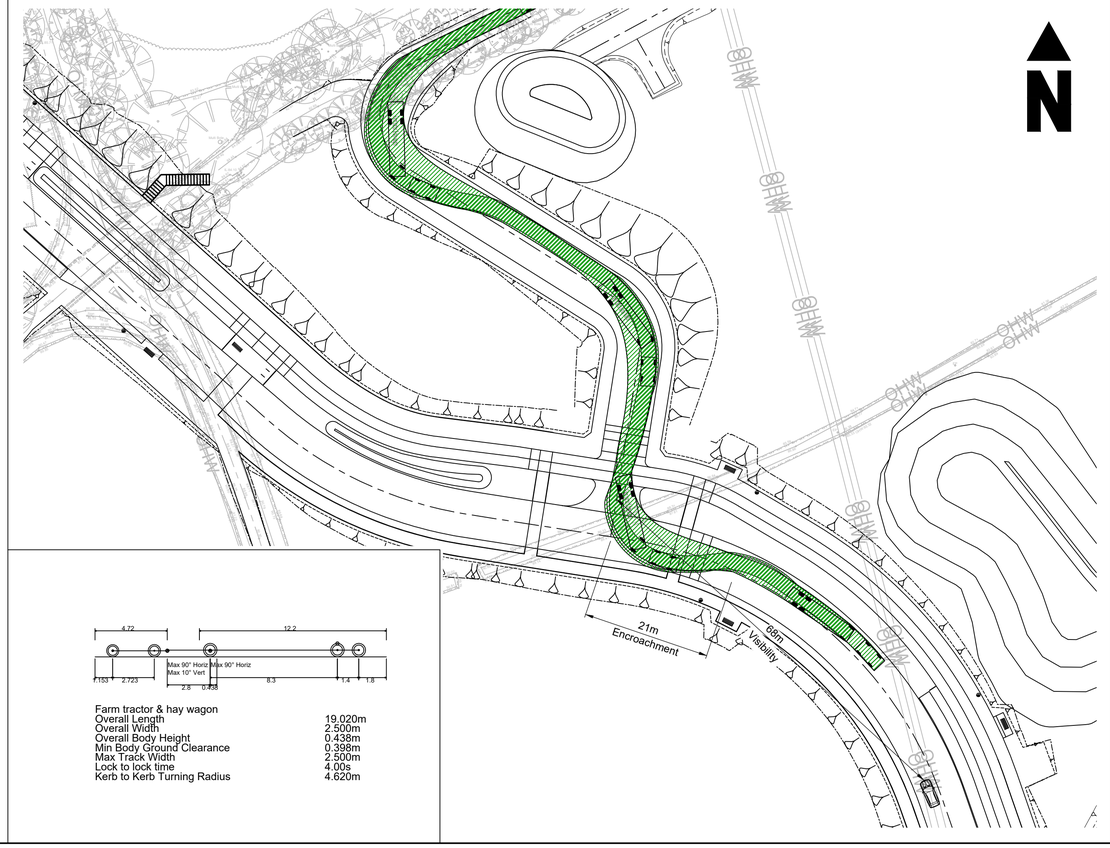




Max Legal Length (UK) Articulated Vehicle (16.5m)

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





Farm tractor & hay wagon

Overall Length	19.020m
Overall Width	2.500m
Overall Body Height	0.438m
Min Body Ground Clearance	0.398m
Max Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	4.620m

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NOTES:

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2. Do not scale from this drawing for construction purposes.
3. The vehicle tracking analysis has been undertaken at a speed of 4mph with dynamic effects turned off.

REV	DATE	NATURE OF REVISION
P03	23.02.23	SWEPT PATHS UPDATED
P02	21.02.23	SWEPT PATHS UPDATED
P01	25.11.22	First Issue

REVISIONS

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CORNWALL COUNCIL

CORMAC SOLUTIONS
RADNOR ROAD
SCORRIER
CORNWALL TR16 5EH
www.cormacltd.co.uk 01872 323 313

PROJECT TITLE:
TRURO NORTHERN ACCESS ROAD

DRAWING TITLE:
LANGARTH SQUARE
VEHICLE SWEPT PATH ANALYSIS

SCALE: 1:500 @ A1

PROJECT MANAGER: EM		DRAWN BY: RMH	
CHECKED: GR	23.02.23	APPROVED: JE	23.02.23

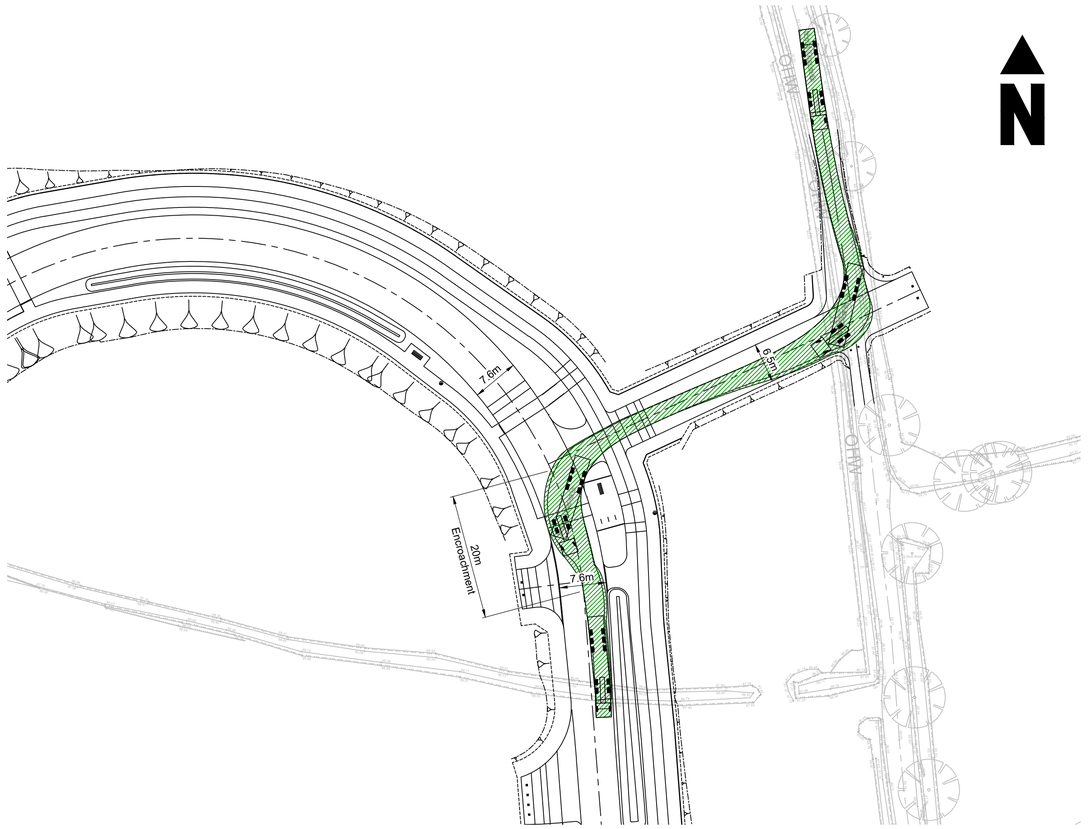
DRAWING NO:

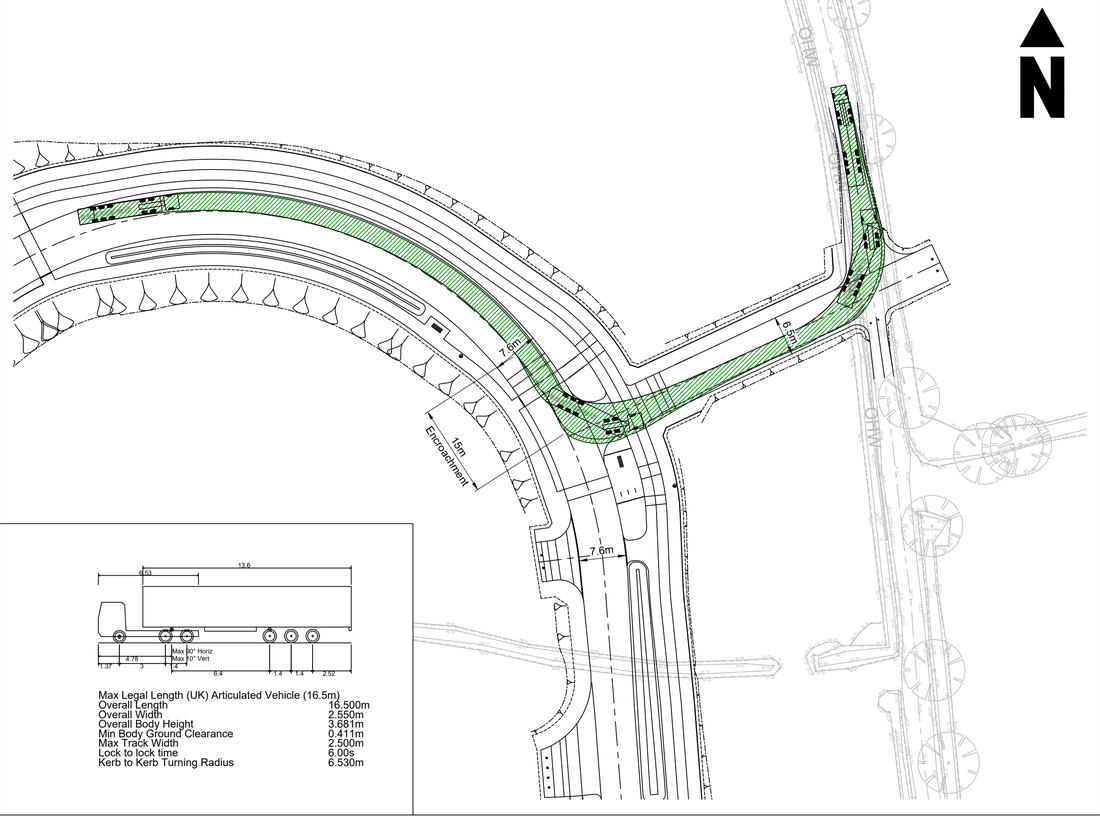
PROJECT	ORIGINATOR	VOLUME	LOCATION
1892 -	CSL -	GEN -	XXZ2 -
TYPE	ROLE	NUMBER	
DE -	CH -	0138	

PROJECT REF.:	DRAWING STATUS:	SUITABILITY:	REVISION:
EDG1892	DETAILED	S2	P03

Filename: G:\TRFENGNEWLTP3\EDG1892 TRURO NAR DESIGN & BUILD\3 DESIGN\3-3 DRAWINGS\3.6.2 DRAWINGS\GEN\1892_CSL_GEN_XXZ2_DE_CH_0138.DWG

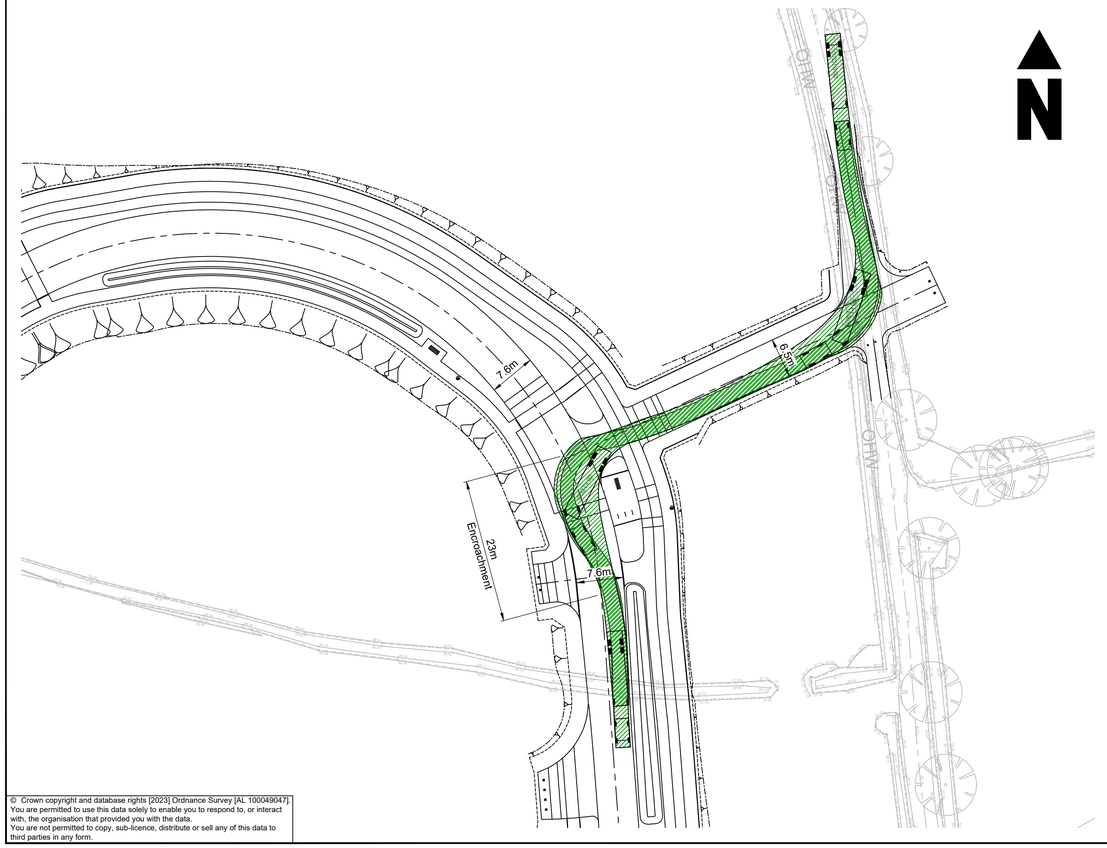
Plot Date: 23 February 2023

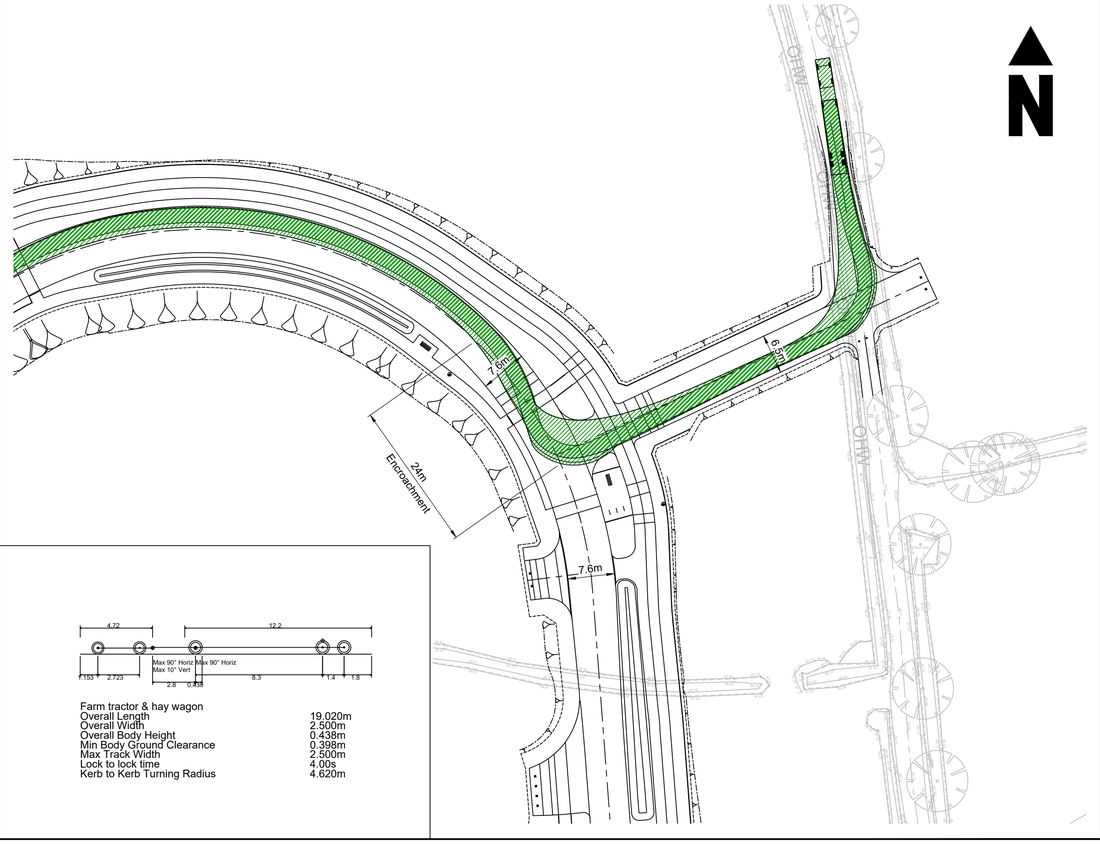




Max Legal Length (UK) Articulated Vehicle (16.5m)

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





Farm tractor & hay wagon

Overall Length	19.020m
Overall Width	2.500m
Overall Body Height	0.438m
Min Body Ground Clearance	0.398m
Max Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	4.620m

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REV	DATE	NATURE OF REVISION
P02	21.02.23	SWEPT PATHS UPDATED
P01	29.11.22	First Issue

REVISIONS

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PROJECT TITLE:
TRURO NORTHERN ACCESS ROAD

DRAWING TITLE:
LANGARTH FARM
VEHICLE SWEPT PATH ANALYSIS

SCALE: 1:500 @ A1

PROJECT MANAGER: EM		DRAWN BY: RMH	
CHECKED: GR	21.02.23	APPROVED: JE	21.02.23

DRAWING NO:

PROJECT	ORIGINATOR	VOLUME	LOCATION
1892	CSL	GEN	XXZ2

TYPE	ROLE	NUMBER
DE	CH	0139

PROJECT REF.:	DRAWING STATUS:	SUITABILITY:	REVISION:
EDG1892	DETAILED	S2	P02

Filename: G:\TRFENGNEWLTP3\EDG1892 TRURO NAR DESIGN & BUILD\3 DESIGN\3-3 DRAWINGS\3.6.2 DRAWINGS\GEN\1892_CSL_GEN_XXZ2_DE_CH_0139.DWG

Plot Date: 21 February 2023