

Our Reference: 64076/WBCPSN1

12th September 2019

Mr Mike Taylor
Warrington Borough Council

Re: P/2019/34799 - Warrington Borough Council Highways Post Submission Note 1

Dear Mike

This note has been prepared to address the various comments raised by Warrington Borough Council (WBC) Highways in their response to Planning Application Reference P/2019/34799, dated 15th August 2019 and 30th August 2019.

Many of the comments in the response confirm acceptance of the submitted information, whilst also acknowledging a comprehensive Transport Assessment. However, there are comments that require a response and to assist Curtins attended a meeting with WBC Highways on the 28th August 2019. The meeting was very useful and Curtins has attempted to capture the key points of that discussion in this note.

1. Pedestrian and Cycle Infrastructure

The WBC Highways response acknowledges that the proposed pedestrian and cycle improvements on Grappenhall Lane will offer benefits, but requests further information on connectivity to the wider area.

For clarity, Curtins can confirm that the development proposals include circa 1.2km of new 3.5m wide shared pedestrian/cycle infrastructure on Grappenhall Lane along the site frontage. The proposed infrastructure extends from the Cliff Lane/Grappenhall Road roundabout in the east to the western terminus of the proposed development. This is considered to be a significant enhancement of the existing situation as there are currently no footways or cycle lanes on Grappenhall Lane in the vicinity of the site. It also provides a significant proportion of a new continuous link between the proposed residential elements of the proposed Garden Village in the west and the A50 in the north. It was envisaged that other sections of the route would be provided as other parts of the Garden Village come forward.

Notwithstanding the above, WBC Highways have expressed a desire to extend the shared pedestrian/cycle infrastructure further to the west so that it better connects to the Broad Lane roundabout. This would necessitate an additional 175m of infrastructure.

Curtins has examined the feasibility of this and is of the view that existing highway land to the south of Grappenhall Lane could be used to continue the pedestrian/cycle infrastructure to the Broad Lane roundabout.

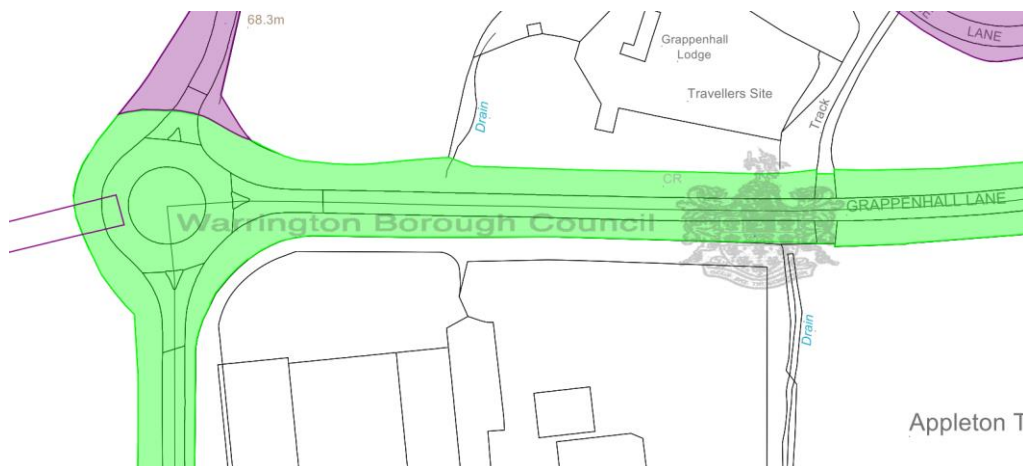


Figure 1 - Highway Boundary on Grappenhall Lane

The presence of street furniture and vegetation in this area and the width of the adopted verge may require a reduction of the 3.5m width, but an acceptable link is considered to be achievable, if WBC Highways want to pursue this.

It is understood that WBC would also like to see a new pedestrian/cycle crossing facility at the Broad Lane roundabout. This would further enhance connectivity with Broad Lane in the north and/or the southern section of Grappenhall Lane where the recently approved Stobart scheme is implementing a series of pedestrian and cycle enhancements. To fully tie into the Stobart infrastructure a new pedestrian/cycle link would also be required on the western side of the highway between the Broad Lane roundabout and Barleycastle Lane. This is a distance of circa 220m.

As the land required to extend the infrastructure between the site boundary and the Broad Lane roundabout or Barleycastle Lane falls outside of the applicant's control, a financial contribution could be used to secure the additional 175m and 220m links. The principle of this is acceptable to the applicant.

During the recent meeting, there was also discussion regarding an extension of the pedestrian and cycle link to the east and north of the proposed development.

Curtins is of the view that demand to the east is likely to be naturally limited by the presence of the M6 Junction 20. There are also existing highway and land constraints that would prohibit enhanced pedestrian/cycle links in this direction. Notwithstanding, it was agreed by all parties that should people wish to travel in this direction the enhanced PROW through the site and existing infrastructure at J20 does provide a continuous link.

With regard to connectivity to the north, it is understood that WBC Highways would ideally like to see new pedestrian and cycle infrastructure on the A50. Curtins has considered this and based on a review of the highway boundary information there appears to be insufficient space to accommodate a continuous off road footway or cycle lane of adequate width. The introduction of such infrastructure is likely to require significant amounts of hedge removal and agreement with third party land owners, that would only be possible when other Local Plan sites that border this corridor come forward.

Notwithstanding the above, the proposed mitigation of the Cliff Lane/Grappenhall Lane roundabout does allow sufficient space for new pedestrian/cycle crossing facilities and these can be developed further as part of the S278 detailed design.

In summary, Curtins is of the view that the delivery of circa 1.5km of new pedestrian and cycle infrastructure and upgrades to the existing PROW network, would offer significant benefits over the existing situation. This infrastructure would enhance connectivity between the site and existing/proposed residential areas to the west, connectivity to Broad Lane, connectivity to the M6 Junction 20 and beyond in the east and finally connectivity to the A50 Knutsford Road.

2. Public Transport

The WBC response requests further information on proposals to enhance public transport connectivity to the site and particularly the extent of any financial contribution to support this.

For clarity, the submitted TA recognised that the Stobart application was seeking to provide a Section 106 financial contribution to support new bus services and stated that a similar arrangement was likely to be necessary for the Six:56 development.

At the recent meeting, WBC Highways suggested that £600,000 would be a suitable sum. This level of funding is comparable to the Stobart contribution and as part of that scheme it was agreed that the money could fund 3 shuttle buses from different directions (Warrington, Runcorn and Cadishead). No specific details were agreed beyond this and it seems logical that a similar approach be adopted for Six:56 i.e. there is no requirement to identify any specifics until more information is known on the work force origins/destinations and the operational times.

On the above basis, the applicant is content with the principle of this contribution.

3. Traffic Forecasting/Growth

The WBC response acknowledges that the traffic generation, committed development and HGV distribution parameters adopted in the Transport Assessment are acceptable.

However, the WBC Highways response queries the TEMPro growth rates that have been applied to the 2029 future year and specifically whether these should have been adjusted, as per the details set out in the submitted TA. WBC has suggested the adjustment is unnecessary as the Six:56 and Stobart developments are not specifically included in the planning assumption data that is used to inform TEMPro.

For clarity, TEMPro is a software tool that utilises the National Trip End Model (NTEM) enabling the calculation of traffic growth factors for specified time periods for selected areas. In developing the NTEM, the following datasets are considered:

- Population projections (by age and gender) in each control area. The change in the number of people of driving age in an area and their gender will influence car ownership and usage;
- Household projections (by size) for the study area. The change in the number of people living in a household will influence travel demand for that household and the propensity for people in that household to travel;
- Employment projections (by sector, gender and working status in each control area). At a simple level more jobs lead to more travel. However, NTEM considers the types of jobs and the locations of these relative to skills. It also considers the propensity of different types of worker to travel by car or other modes; and
- Zonal growth factors for employment in the period modelled (by sector).

It is clear from the above that whilst planning data and assumptions in the form of job prediction may be used to inform NTEM, it is not the only factor which affects growth and can only ever be an estimate. NTEM recognises that even if there was no new housing or employment planned, it would be expected that travel demand would change over time due to a myriad of reasons including, change in population age, change in location of employment outside of the zone, change in household size etc. The growth factors are therefore not solely reliant on the planning assumptions (which in the case of NTEM are circa 6 year old) and the inclusion or exclusion of the Six:56 or Stobarts is only a small part of the picture.

Curtins is of the view that discounting the 2029 growth rates from circa 13% to circa 9% is acceptable and necessary to avoid potential double counting. This is primarily on the basis that the submitted TA individually considers a significant quantum of committed development including over 1200 dwellings to the west of the site and the recently approved Stobart scheme. This accounts for almost 1000 PCU's assigned to the network in the vicinity of the site, some of which would undoubtedly be included in the full TEMPro outputs, albeit not specifically assigned to a certain planning assumption.

It is Curtins view that considering individual development traffic increases, based on flows extracted from approved TA's is considered to be a more accurate methodology for determining likely increases in background traffic, than the application of blanket growth estimates applied to all arms of every junction, based on a series of forecasts using planning assumptions that are circa 6 years old.

Finally, it must also be noted that the application of the 2029 growth factor only affects the 2029 figures in the Transport Assessment. The 2021 assessment which is the key test for Highways England and decision making purposes assumes full build out of Six:56, Stobarts and the committed residential sites to the west of the development. This is therefore an exceptionally robust assessment as the actual build out is likely to take significantly longer than this.

4. WMMTM Distribution and Assessment

The WBC Highways response acknowledges that the distribution of staff related trips using census data is acceptable in principle, but it requests clarity on how these trips have been assigned and how this relates to the Warrington Multi Modal Transport Model (WMMTM).

For clarity, the staff distribution contained in the Curtins TA is based on journey to work data from the 2011 Census, assigned to the network using journey planning tools in Google maps. This is the same methodology adopted by Stobart and the overall results are very similar subject to a few very minor variations.

On the basis that the Stobart application has now been approved, it is considered that applying the same distribution and assignment is a logical and reasonable approach.

Notwithstanding the above, and as set out in the TA, the WMMTM has also been used to consider the impact of the development. The model focuses on the whole of Warrington and is such is very useful for providing an overview of possible development impacts at junctions that are more remote from the site. It is designed to inform strategic decisions and general themes, rather than focus on individual junction operation.

The model outputs are contained in Tables 7.1, 7.2, 7.3 and 7.4 of the submitted TA and the results suggest that in some scenarios more traffic may travel to the west and north of the site than is indicated by the agreed Stobarts and submitted Six:56 distribution.

Curtins is of the view that the differences are largely due to the nature of the model and the fact that the WMMTM is a wide area model, with limited detail at the local level. For example, there are local HGV restrictions to the west of the site that are not included in the model and the actual location of the Six:56 site within the model is further to the west than its actual location.

The lack of HGV restrictions does not affect the overall use or validity of the model for strategic decisions, but it does have a material impact when focusing on smaller areas within the model.

WBC Highways accept the above points, but they also confirmed at the recent meeting that the results cannot be simply dismissed. They have therefore asked for a description of the potential impacts at the locations where the WMMTM predicts increases of 30 two-trips or more in the peak hour. This is provided below for each junction not considered in detail within the TA.

Stretton Road/Barleycastle Lane

The WMMTM predicts an additional 35 and 170 trips through this junction in the 2021 AM and PM peak periods as a result of the development. By 2031 the model predicts 5 in the AM peak period and 70 in the PM peak period.

These results are higher than the flows forecasted by the census data/approved Stobart distribution (less than 70 six:56 two-way trips per peak period) and it is likely that this is largely due to the location of the site within the model, which is placed to the south of the junction. In reality, the site is circa 500m to the north east of the junction and any vehicles travelling to and from the north or east would not travel through the junction.

It must also be noted that the above figures do not consider the junction improvements to the east of the site at the M6 Junction 20 or any of the proposed improvements that are envisaged to come forward as part of the Local Plan Garden Village allocation. The Local Plan strategy for this area includes a new link road that would potentially reduce the number of vehicles that travel through the junction in a westerly direction. Whilst there can be no guarantees of delivery at this stage, it is envisaged that the link road could be in place prior to full build out of the development and much of the Local Plan allocation.

Finally, it is considered that if this junction was improved to enhance capacity, it could have a detrimental effect by attracting additional trips along the corridor. This is not something that should be encouraged and a strategy which encourages more sustainable trips or diversion of traffic to alternative routes should be pursued.

On the above basis, it is considered that the conclusions of the TA remain valid and the impact predicted by the WMMTM is not severe.

Cat and Lion Staggered Crossroads

The WMMTM predicts an additional 126 and 114 trips through this junction in the 2021 AM and PM peak periods as a result of the development. By 2031 the model predicts 12 in the AM peak period and 220 in the PM peak period.

As above, the results are significantly higher than the flows forecasted by the census data/approved Stobart distribution (less than 70 six:56 two-way trips) and again it is likely that this is partly due to the location of the site within the model, and the fact that the model includes the Local Plan sites but none of the proposed highways mitigation that is envisaged as part of the Garden Village allocation, the Six:56 development or the Stobart development.

It is likely that significant highway improvements will come forward in advance of 2031, as part of the wider Local Plan and if they don't it is unlikely that the Local Plan growth could be accommodated. The WMMTM figures are therefore unlikely to reach these levels or have these impacts at this location.

The WMMTM predictions equate to an increase of between 0.6% and 11.6% at the junction. 10% is considered to be the variation that can occur day to day as a result of natural changes in traffic patterns and it is clear that the results are no worse than this potential daily variation. This is evidenced in the Institute of Environmental Management and Assessment Guidelines for the Environmental Assessment of Road Traffic which states that

'Any increases in traffic flows of less than 10% are generally accepted as having no discernible environmental impact as daily variance in traffic flows can be of equal magnitude.'

Also as per the above junction, improvements at this junction have been considered, but there is potential to draw more traffic along the Grappenhall Lane corridor thus having an overall detrimental effect on the corridor as a whole.

On the above basis, it is considered that the conclusions of the TA remain valid and the results of the WMMTM are not considered to be severe.

London Road/Lyons Lane junction

The WMMTM predicts an additional 82 and 43 trips through this junction in the 2021 AM and PM peak periods as a result of the development. By 2031 the model predicts 26 in the AM peak period and 41 in the PM peak period.

This level of traffic is considered to be minimal with the percentage impact of additional traffic ranging from 1.5% to 5.6%. It is Curtins view that increases of this magnitude are likely to be comparable to daily fluctuations in traffic that naturally occur on any network and on this basis the number of trips could not be considered as severe.

Witherwins Lane/Lyons Lane

The WMMTM predicts an additional 50 and 51 trips through this junction in the 2021 AM and PM peak periods as a result of the development. By 2031 the model predicts 54 in the AM peak period and 72 in the PM peak period.

It is Curtins view that this is a relatively convoluted route for traffic to take and may be a function of the site's location within the model and the exclusion of potential mitigation measures. Notwithstanding, Curtins has visited the junction on a number of occasions and it is considered that this level of traffic is unlikely to result in any significant impact, given the scale of the existing junction and the capacity that appears to be available at present. This is evidenced by the modelled flows which suggest less than 1000 vehicles through the junction.

On the above basis, the results of the WMMTM do not result in a severe impact.

A49/A56 Stockton Heath

The WMMTM predicts an additional 10 and 32 trips through this junction in the 2021 AM and PM peak periods as a result of the development. By 2031 the model predicts 26 in the AM peak period and 63 in the PM peak period.

This level of traffic is considered to be minimal with the percentage impact of additional traffic being below 4% in all scenarios. As above, it is Curtins view that increases of this magnitude are likely to be comparable to daily fluctuations in traffic that naturally occur on any network and on this basis the number of trips could not be considered as severe. The level of additional trips is also less 30 or less in three of the four modelled scenarios.

5. Capacity Assessments

The WBC Highways response requests information on Practical Reserve Capacity and Average Delay per Vehicle for the modelling assessments. A summary of this is provided below:

The response also points out a labeling discrepancy in Table 8.14 which has been corrected below:

		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		DoS	MMQ	DoS	MMQ
2017 Observed Scenario					
1/2+1/1	Stockport Road Left Ahead	81.7 : 81.7%	9.6	89.1 : 89.1%	11.1
1/3	Stockport Road Right	63.2%	6.8	87.2%	10.7
2/2+2/1	Chester Road Ahead Left	78.1 : 78.1%	9.5	90.8 : 90.8%	14.2
2/3	Chester Road Right	58.8%	6.5	32.1%	3.5
3/1+3/2	Knutsford Road south Right Ahead Left	55.9 : 55.9%	11.3	91.0 : 91.0%	30.8
4/1+4/2	Knutsford Road north Left Ahead Right	80.8 : 80.8%	20.0	50.7 : 50.7%	7.7
Cycle Time (s)		115		120	
PRC (%)		10.1		-1.2	
Delay (pcuhr)		28.36		37.68	
2021 Base					
1/2+1/1	Stockport Road Left Ahead	83.7 : 83.7%	10.6	94.0 : 94.0%	13.7
1/3	Stockport Road Right	61.5%	6.9	84.1%	10.3
2/2+2/1	Chester Road Ahead Left	81.9 : 81.9%	10.8	95.1 : 95.1%	17.2
2/3	Chester Road Right	57.5%	6.6	31.3%	3.5
3/1+3/2	Knutsford Road south Right Ahead Left	59.2 : 59.2%	12.2	95.9 : 95.9%	36.9
4/1+4/2	Knutsford Road north Left Ahead Right	85.4 : 85.4%	22.5	53.3 : 53.3%	8.2
Cycle Time (s)		115		120	
PRC (%)		5.4		-6.6	
Delay (pcuhr)		31.36		46.31	
2029 Base					
1/2+1/1	Stockport Road Left Ahead	89.1 : 89.1%	12.4	99.8 : 99.8%	17.8
1/3	Stockport Road Right	65.7%	7.5	89.9%	12.1
2/2+2/1	Chester Road Ahead Left	87.2 : 87.2%	12.3	101.3 : 101.3%	23.4
2/3	Chester Road Right	61.4%	7.1	33.4%	3.8
3/1+3/2	Knutsford Road south Right Ahead Left	63.4 : 63.4%	13.6	102.5 : 102.5%	57.2
4/1+4/2	Knutsford Road north Left Ahead Right	91.4 : 91.4%	27.9	56.8 : 56.8%	8.9
Cycle Time (s)		115		120	
PRC (%)		-1.5		-13.9	
Delay (pcuhr)		37.90		74.26	
2021 Base plus Development					
1/2+1/1	Stockport Road Left Ahead	85.7 : 85.7%	11.2	94.9 : 94.9%	14.3
1/3	Stockport Road Right	61.5%	6.9	84.1%	10.3
2/2+2/1	Chester Road Ahead Left	85.9 : 85.9%	11.5	99.3 : 99.3%	20.2
2/3	Chester Road Right	60.3%	6.7	32.7%	3.6
3/1+3/2	Knutsford Road south Right Ahead Left	60.0 : 60.0%	12.5	98.3 : 98.3%	42.3
4/1+4/2	Knutsford Road north Left Ahead Right	87.4 : 87.4%	24.5	54.0 : 54.0%	8.4
Cycle Time (s)		115		120	
PRC (%)		3.0		-10.4	
Delay (pcuhr)		33.45		53.91	
2029 Base plus Development					

1/2+1/1	Stockport Road Left Ahead	91.1 : 91.1%	13.2	100.7 : 100.7%	18.8
1/3	Stockport Road Right	65.7%	7.5	89.9%	12.1
2/2+2/1	Chester Road Ahead Left	91.5 : 91.5%	13.6	105.8 : 105.8%	29.2
2/3	Chester Road Right	64.5%	7.3	35.0%	3.9
3/1+3/2	Knutsford Road south Right Ahead Left	64.0 : 77.1%	14.0	104.7 : 104.7%	67.9
4/1+4/2	Knutsford Road north Left Ahead Right	93.2 : 93.2%	30.6	57.4 : 57.4%	9.1
Cycle Time (s)		115		120	
PRC (%)		-3.6		-17.5	
Delay (pcuhr)		41.55		90.86	
2021 Base plus Development + Stobbarts					
1/2+1/1	Stockport Road Left Ahead	85.7 : 85.7%	11.2	94.9 : 94.9%	14.3
1/3	Stockport Road Right	61.5%	6.9	84.1%	10.3
2/2+2/1	Chester Road Ahead Left	85.9 : 85.9%	11.5	99.3 : 99.3%	20.2
2/3	Chester Road Right	60.3%	6.7	32.7%	3.6
3/1+3/2	Knutsford Road south Right Ahead Left	60.1 : 60.1%	12.5	98.5 : 98.5%	43.1
4/1+4/2	Knutsford Road north Left Ahead Right	87.6 : 87.6%	24.6	54.0 : 54.0%	8.4
Cycle Time (s)		115		120	
PRC (%)		2.7		-10.4	
Delay (pcuhr)		33.55		54.35	
2029 Base plus Development + Stobbarts					
1/2+1/1	Stockport Road Left Ahead	91.1 : 91.1%	13.2	100.7 : 100.7%	18.8
1/3	Stockport Road Right	65.7%	7.5	89.9%	12.1
2/2+2/1	Chester Road Ahead Left	91.5 : 91.5%	13.6	105.8 : 105.8%	29.2
2/3	Chester Road Right	64.5%	7.3	35.0%	3.9
3/1+3/2	Knutsford Road south Right Ahead Left	64.1 : 78.5%	14.0	104.9 : 104.9%	68.9
4/1+4/2	Knutsford Road north Left Ahead Right	93.5 : 93.5%	30.9	57.4 : 57.4%	9.1
Cycle Time (s)		115		120	
PRC (%)		-3.8		-17.5	
Delay (pcuhr)		41.76		91.82	

Table 1 – Stockport Road / Chester Road/Knutsford LinSig Assessment

With regard to the Grappenhall Lane/A50 and M6 Junction 20 signalised junctions, please refer to Curtins Post Submission Response to Highways England. This note includes details of minor modelling amendments taking account of HE comments and the latest results.

6. Road Safety Audits and Swept Path Analysis

Road Safety Audits and Swept Path Analysis

The WBC Highways response states that the access points are acceptable subject to the findings of a Stage 1 Road Safety Audit and Swept Path Analysis.

The swept path analysis is provided to the rear of this note as Appendix A and the Road Safety Audits will be provided in due course once completed.

7. Grappenhall Lane Corridor

The WBC Highways response requests clarity on the applicant's position regarding the protection a 25m corridor along Grappenhall Lane for future highway improvements.

This matter was discussed in the summer of 2018 and at that time Curtins provided a sketch which demonstrated that a 22.6m corridor consisting of 4 x 3.65m lanes, 1 x 2m central reserve and 2 x 3m cycleway/footways could be provided by utilising the existing adopted highway and a small part of the applicant's land.

This was again discussed at the recent meeting with WBC Highways and at this time WBC requested an additional 2m of land to make a total corridor of 24.6m. Curtins explained that the northern part of the site adjacent to the adopted highway was envisaged as a landscaped area and there would be no physical structures or buildings in this area that would prohibit the Council's future aspirations. It was agreed that no further action was required at this time as long as this area was kept clear.

8. Grappenhall Lane/A50/M6 J20 mitigation

Finally, the WBC Highways response requests clarity on the Grappenhall Lane/A50/M6 J20 mitigation scheme with regard to the footway provision and visibility from the Bradley Hall Cottages.

With regard to the footway, Curtins can confirm that the proposed mitigation scheme does not impact on the existing footway width on the stretch of highway between the A50 and the M6 Junction 20. It should also be noted that pedestrian movement on this footway is very low and it is unlikely that the development will generate a significant level of pedestrian activity in this area.

Notwithstanding, the lane widths in the central section of the link between the A50 and the M6 Junction 20 have been widened as part of the mitigation to provide almost 5m lanes. There is an opportunity to reduce the lane widths if a widened footway on the northern side of the carriageway was desirable. It is Curtins view that this is unnecessary but it was agreed at the recent meeting with WBC Highways that it could form part of the S278 detailed design if required.

With regard to the visibility query, Curtins can confirm that a wider lane width on the section of highway between the M6 Junction 20 and the A50/Grappenhall Lane Roundabout necessitates the removal of highway verge in the vicinity of the Bradley Hall Farm access.

It is Curtins view that the amendments do not affect visibility to the east as the applicant has full ownership of the land in question. Visibility to the west is not considered to be a concern, as white double yellow lines are proposed to prohibit vehicles turning right out of the junction. It is envisaged that the small number of vehicles that do use this junction would need to travel west to the roundabout and then back on themselves. This is a relatively standard procedure for this type of access.

Notwithstanding the above, if WBC were concerned regarding visibility in this area the carriageway widening could be reduced to the nearer the original width. This would also enable street furniture in this location, albeit there are already plenty of other opportunities for street furniture along the corridor.

9. Travel Choices Team

In addition to the formal response from WBC Highways, Curtins has also received correspondence which sets out four comments raised by the WBC Travel Choices Team. Each of these comments is considered below.

WBC have stated that as with Omega, they will require an overarching framework Travel Plan which the developer is conditioned to take responsibility for. This needs to include more specific obligations than are in the submitted version, and needs to include a section which compels future occupiers to develop their own bespoke travel plans.

Curtins can confirm that the submitted Framework Travel Plan is the first part of the travel planning process and a condition to secure a more detailed Travel Plan when more information is available, is fully accepted.

WBC have suggested, again like Omega, that they collect a S106 contribution to fund the council to be the Travel Plan Coordinator. A figure of £50k (£10k per year over 5 years) has been suggested and Curtins can confirm that this acceptable to the applicant.

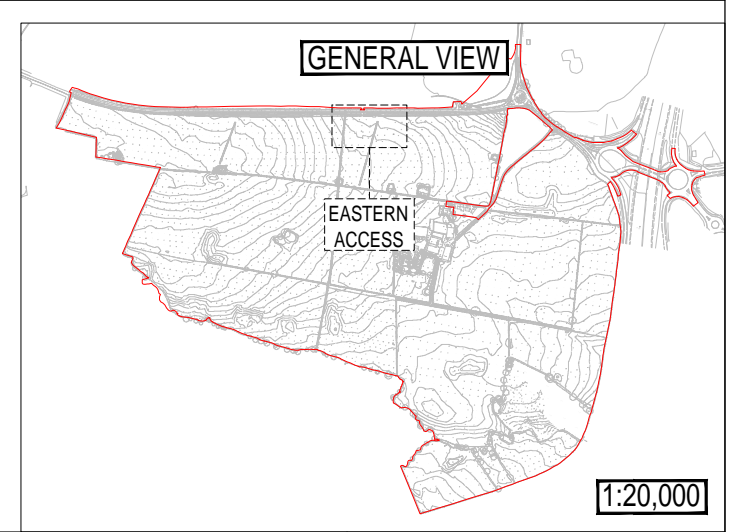
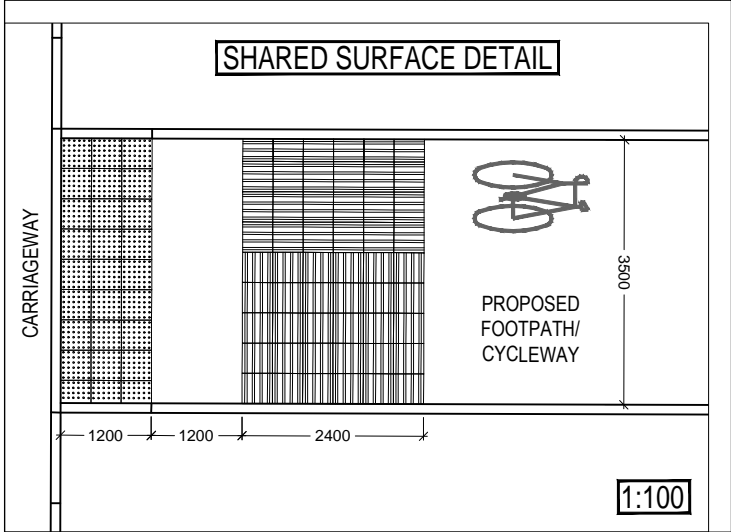
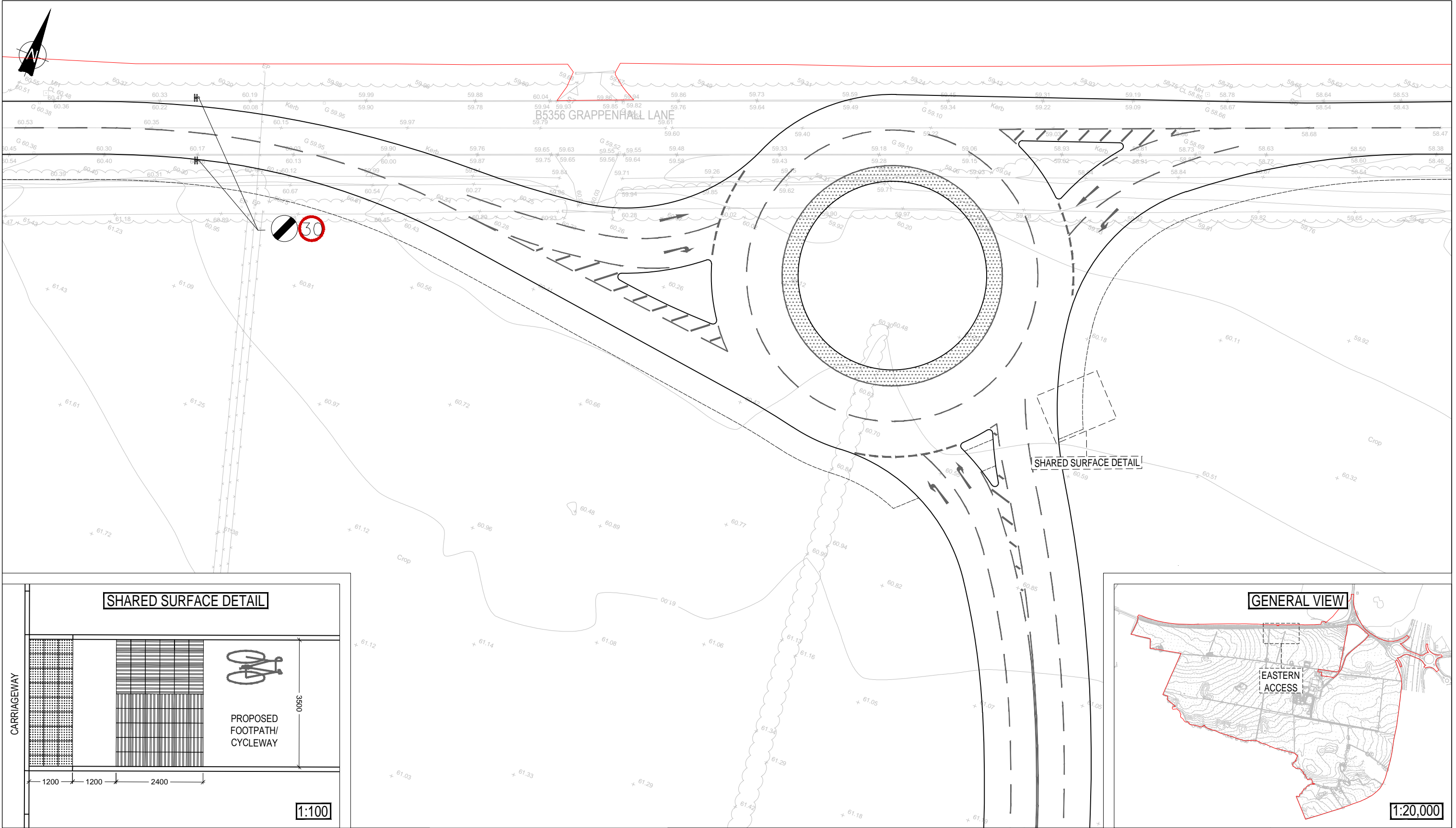
The WBC Travel Choice Team has requested an enhancement of the pedestrian and cycle network that is proposed as part of the development. This is already considered in the above response.

Finally, the WBC Travel Choices Team have suggested a contribution of £600,000 towards public transport as per the Stobart application. This is again covered above and is considered to be acceptable to the applicant.

10. Conclusion

It is Curtin's view that the above does not alter the conclusions on the previously submitted Transport Assessment and we trust that the above alleviates the concerns raised in the consultation response.

Appendix A - Swept Path Analysis



KEY:				INDICATIVE SITE BOUNDARY
				PROPOSED KERB LINE
				PROPOSED FOOTWAY/CYCLEWAY
				PROPOSED ROAD MARKINGS
				PROPOSED OVERRUNNING AREA
GENERAL NOTES:				

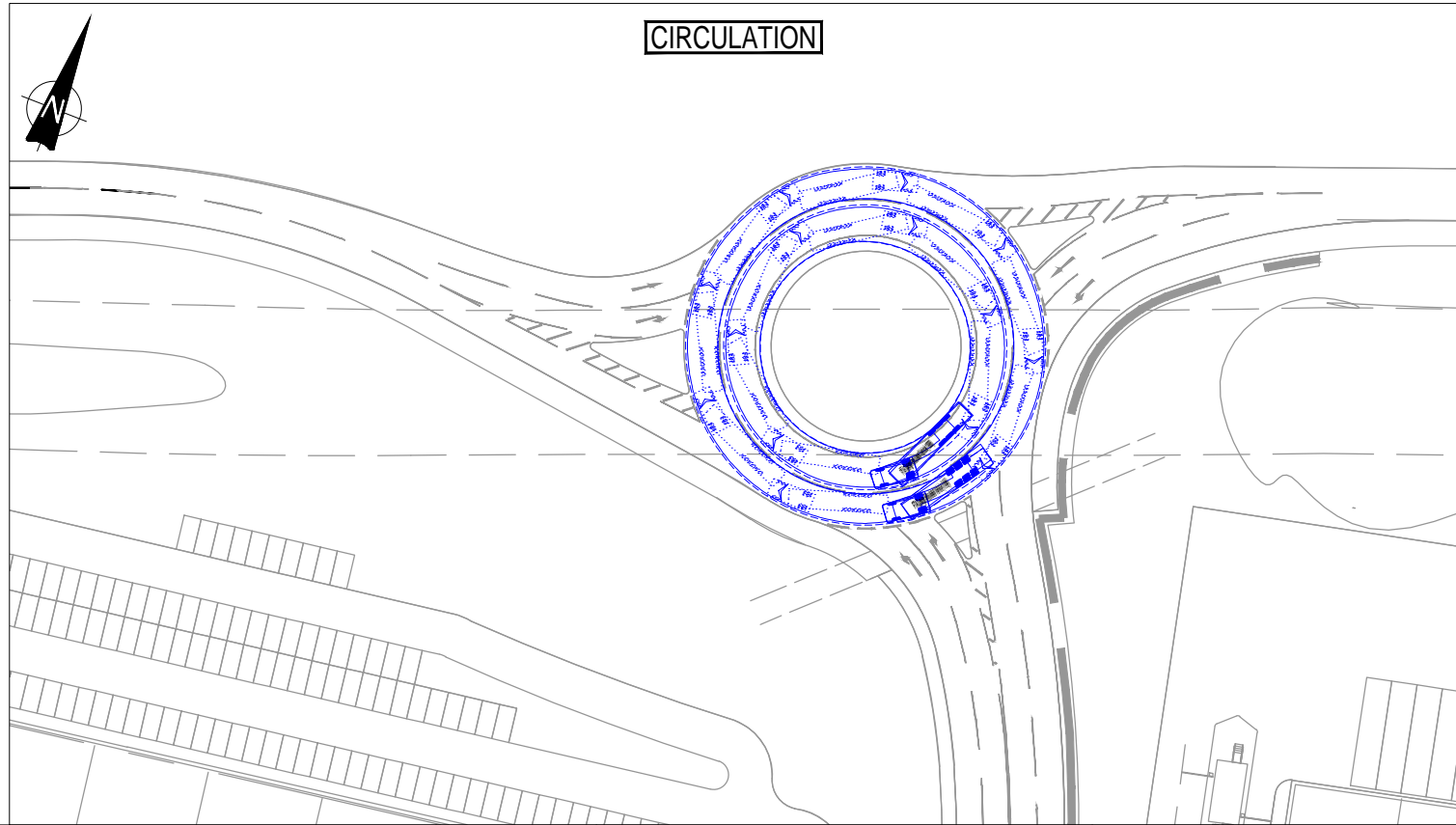
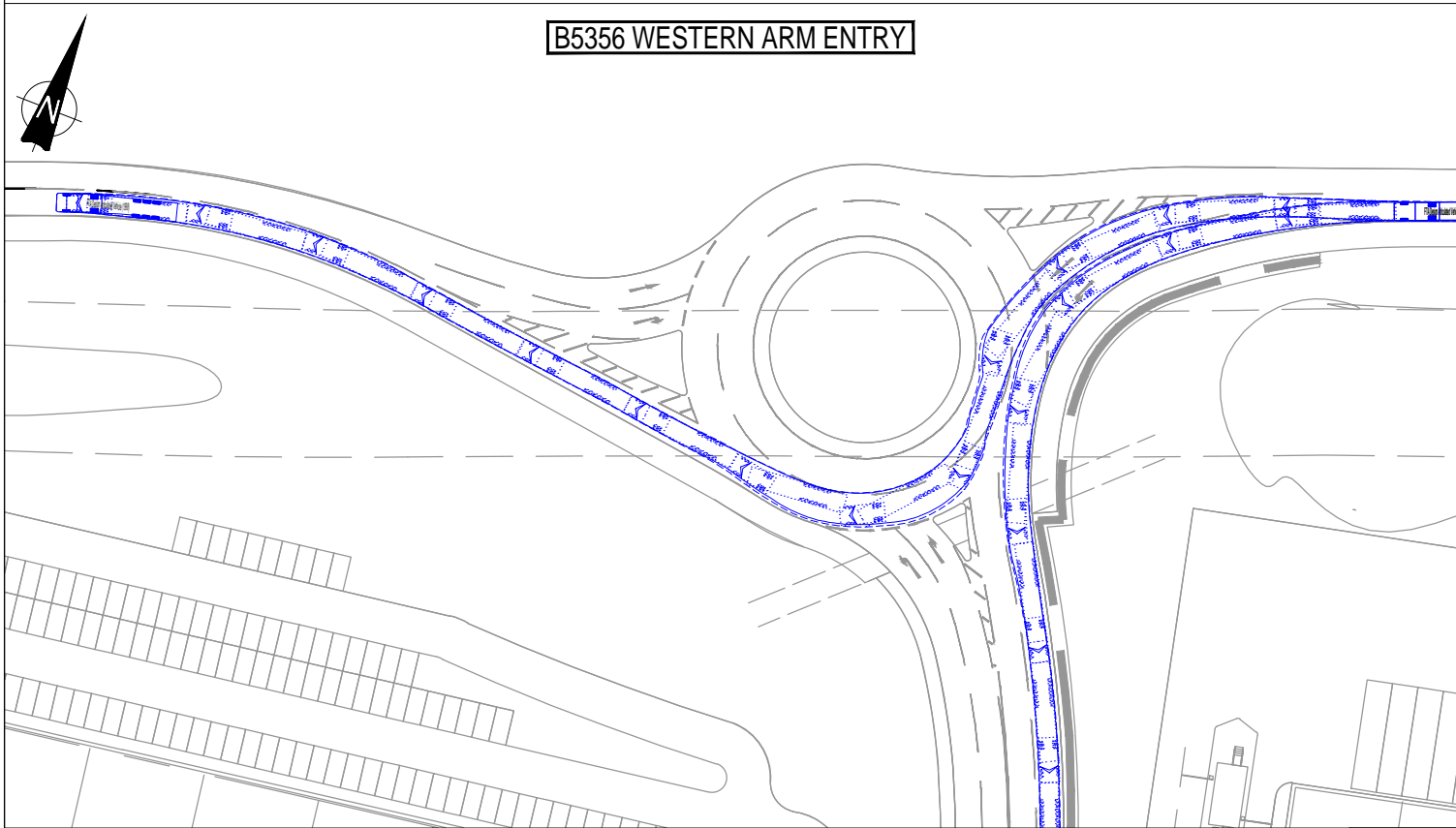
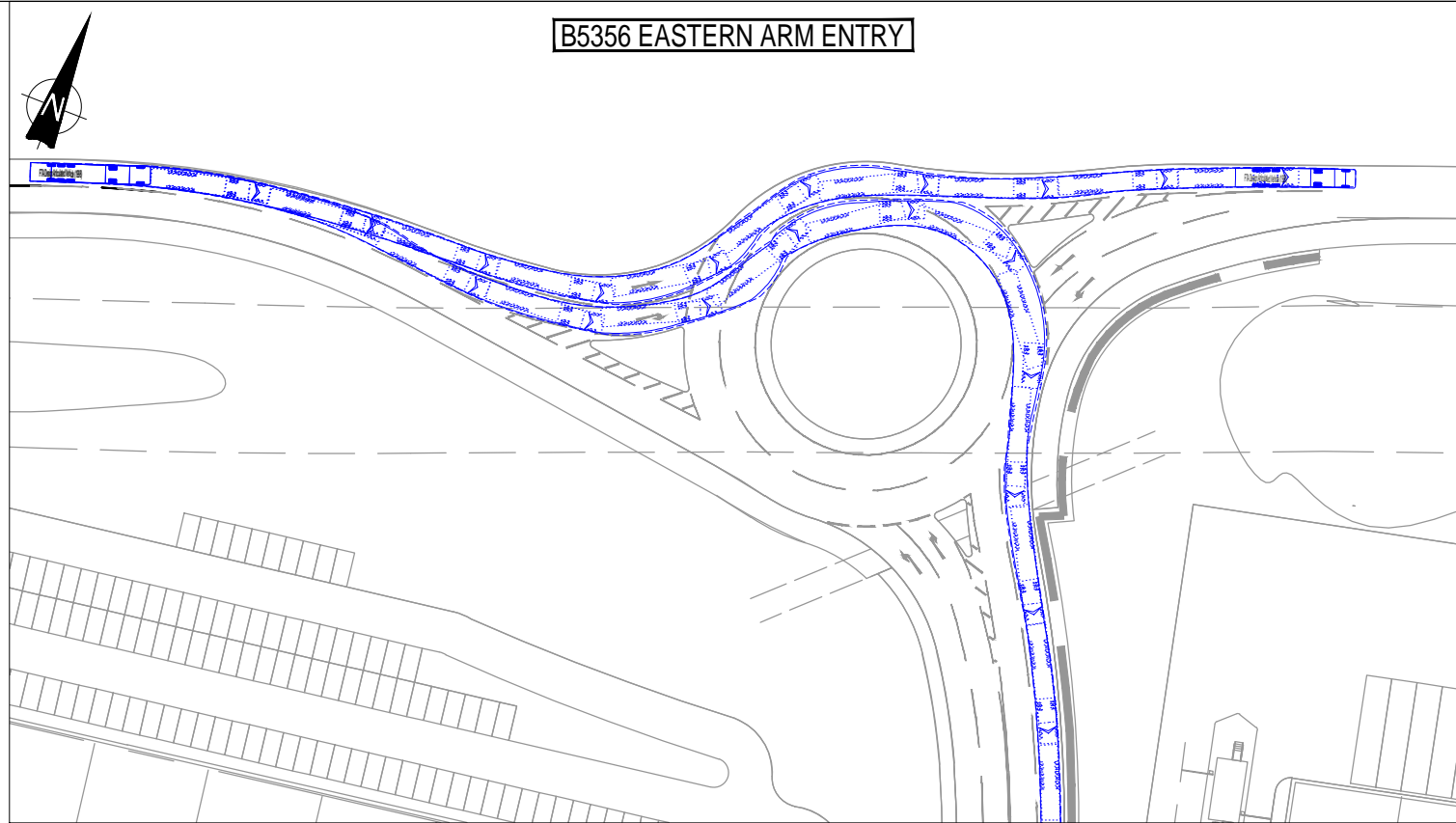
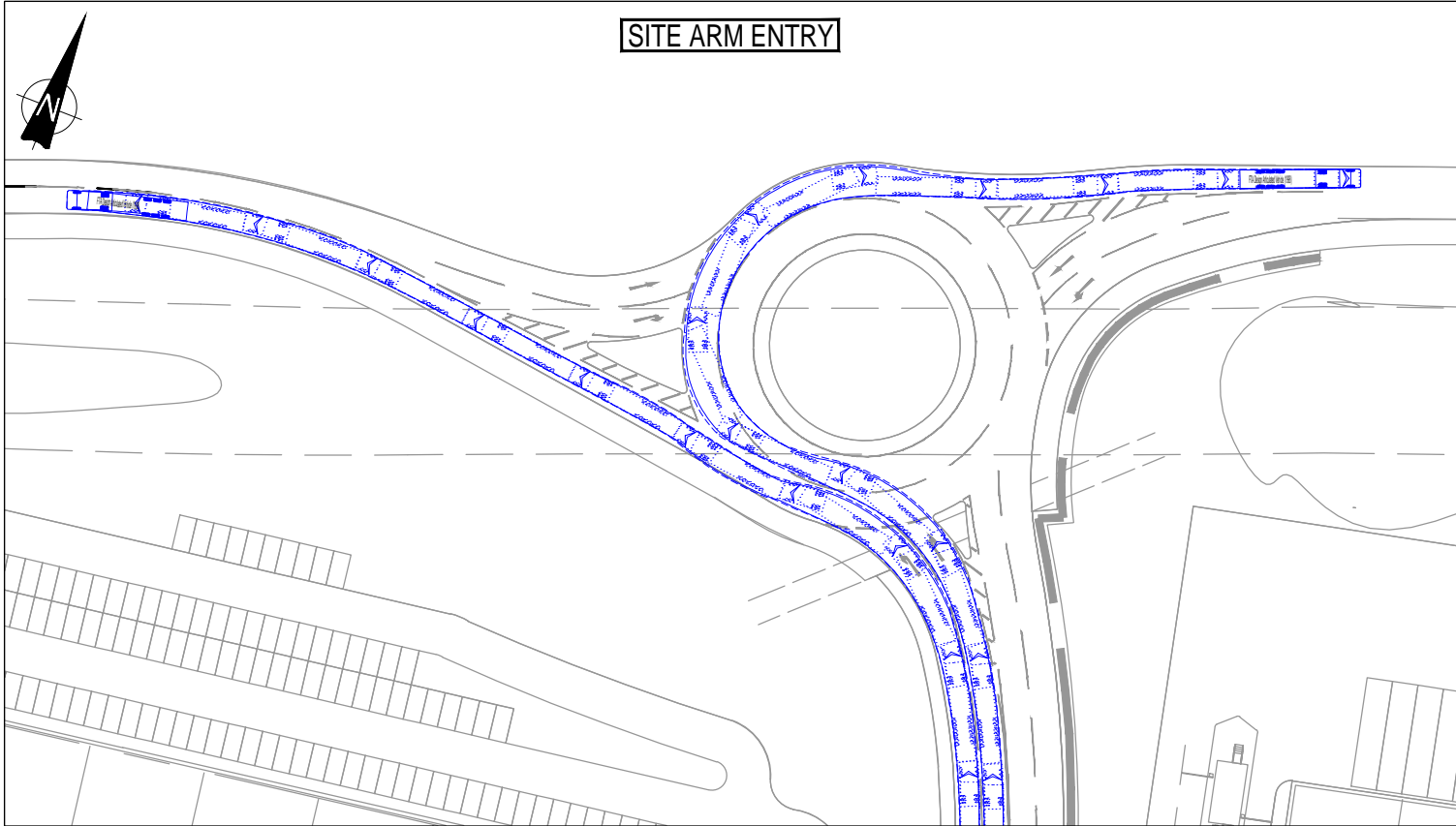
P02	Roundabout updated	08/01/19	DD
Rev:	Description:	Date:	By:



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Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Project: WARRINGTON INTERCHANGE		Status: PRELIMINARY	
Drg Title: POTENTIAL EASTERN ACCESS ROUNDABOUT		Drawn By: DD	Checked By: LK
		Designed By: DD	Date: 06/07/18
		Scale: AS INDICATED	
Project No:	Originator:	Zone:	Level:
Type:	Discipline:	Category / Number:	Rev:
64076 - CUR - 00 - XX - DR - TP - 75001 -P02			



VEHICLE PROFILE:

FTA Design Articulated Vehicle (1998)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.570m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.550m

P02	Layout updated	12/09/19	DD
Rev:	Description:	Date:	By:

GENERAL NOTES:

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Project: WARRINGTON SIX 56		Status: PRELIMINARY					
Drg Title: ROUNABOUT ACCESS SWEPT PATH ANALYSIS 16.5m ARTICULATED HGV		Drawn By: DD	Checked By: LK				
		Designed By: DD	Date: 01/09/19				
		Scale: 1:1000					
Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076 - CUR - 00 - XX - DR - TP - 05001 -P02							



GENERAL NOTES:

- KEY:
- INDICATIVE LAND OWNERSHIP BOUNDARY
 - INDICATIVE EXTENTS OF PUBLIC HIGHWAY
 - PROPOSED KERB LINE
 - PROPOSED FOOTWAY
 - PROPOSED ROAD MARKINGS
 - PROPOSED TRAFFIC SIGNAL

P04	Road markings updated	29/07/19	DD	AV
P03	Footways updated	08/01/19	DD	AV
P02	Cliff Lane Roundabout: Northern arm entry updated	28/11/18	DD	AV
Rev:	Description:	Date:	By:	Chkd:



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Status: PRELIMINARY

Project: WARRINGTON SIX 56

Orig Title: POTENTIAL IMPROVEMENTS

Size:	Date:	Drawn By:	Designed By:	Checked By:			
A1	15/11/18	DD	DD	AV			
Scale:	1:1,000						
Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
64076 - CUR - 00 - XX - DR - TP - 75011 - P04							

\\msa02\Projects\64001 - 06000064076 - Warrington Interchange TPMAE - Drawings\2.0\DWG\5

CLIFF LANE ROUNDABOUT ARRANGEMENT

GENERAL VIEW

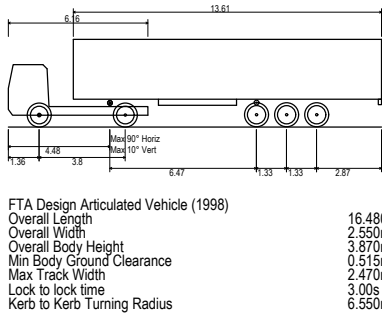
CLIFF LANE
ROUNDAABOUT
ARRANGEMENT

1:5,000

GENERAL NOTES:

KEY: — PROPOSED KERB LINE
- - - PROPOSED FOOTWAY
- - - - - PROPOSED ROAD MARKINGS

VEHICLE PROFILE:



47.9m

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P02	Layout updated	12/09/19	DD	FF
Rev:	Description:	Date:	By:	Chkd:



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Status: PRELIMINARY

Project: WARRINGTON INTERCHANGE

Orig Title: CLIFF LANE ROUNDABOUT
PROPOSED IMPROVEMENTS
SWEEP PATH ANALYSIS
16.5m ARTICULATED HGV

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	22/10/18	DD	DD	AV

Scale: AS STATED

Project No: 64076 - CUR - 00 - XX - DR - TP - 05002 - P02

1:500

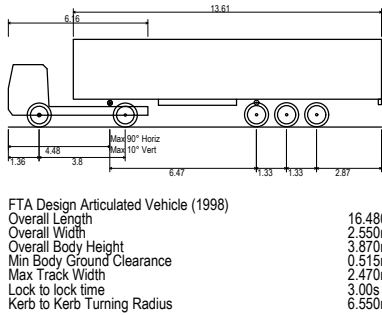
M6 J20 WESTERN ROUNDABOUT ARRANGEMENT

GENERAL VIEW

GENERAL NOTES:

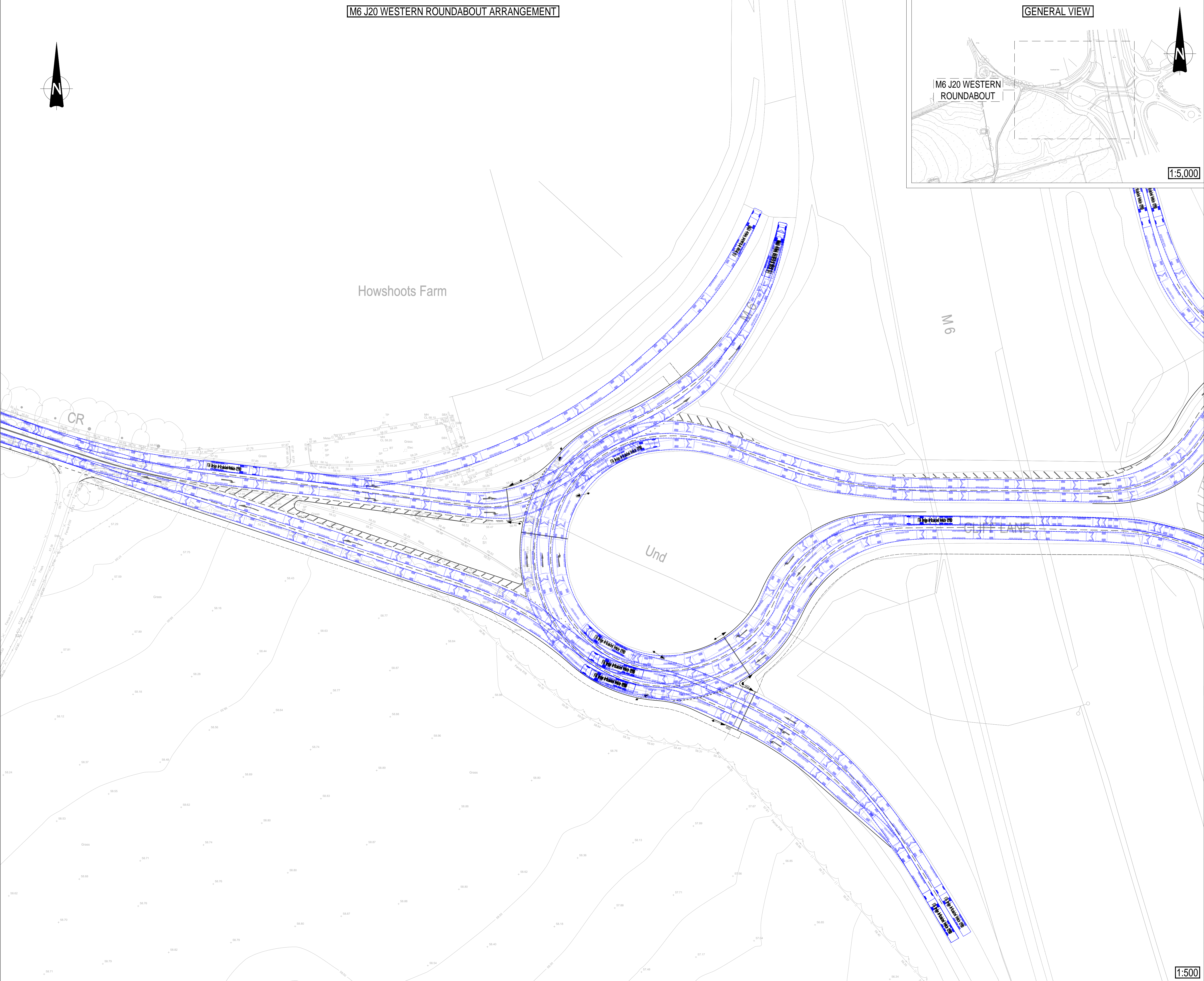
KEY: — PROPOSED KERB LINE
- - - PROPOSED FOOTWAY
- - - - - PROPOSED ROAD MARKINGS

VEHICLE PROFILE:



1:5,000

1:500



P02	Layout updated	12/09/19	DD	FF
Rev:	Description:	Date:	By:	Chkd:



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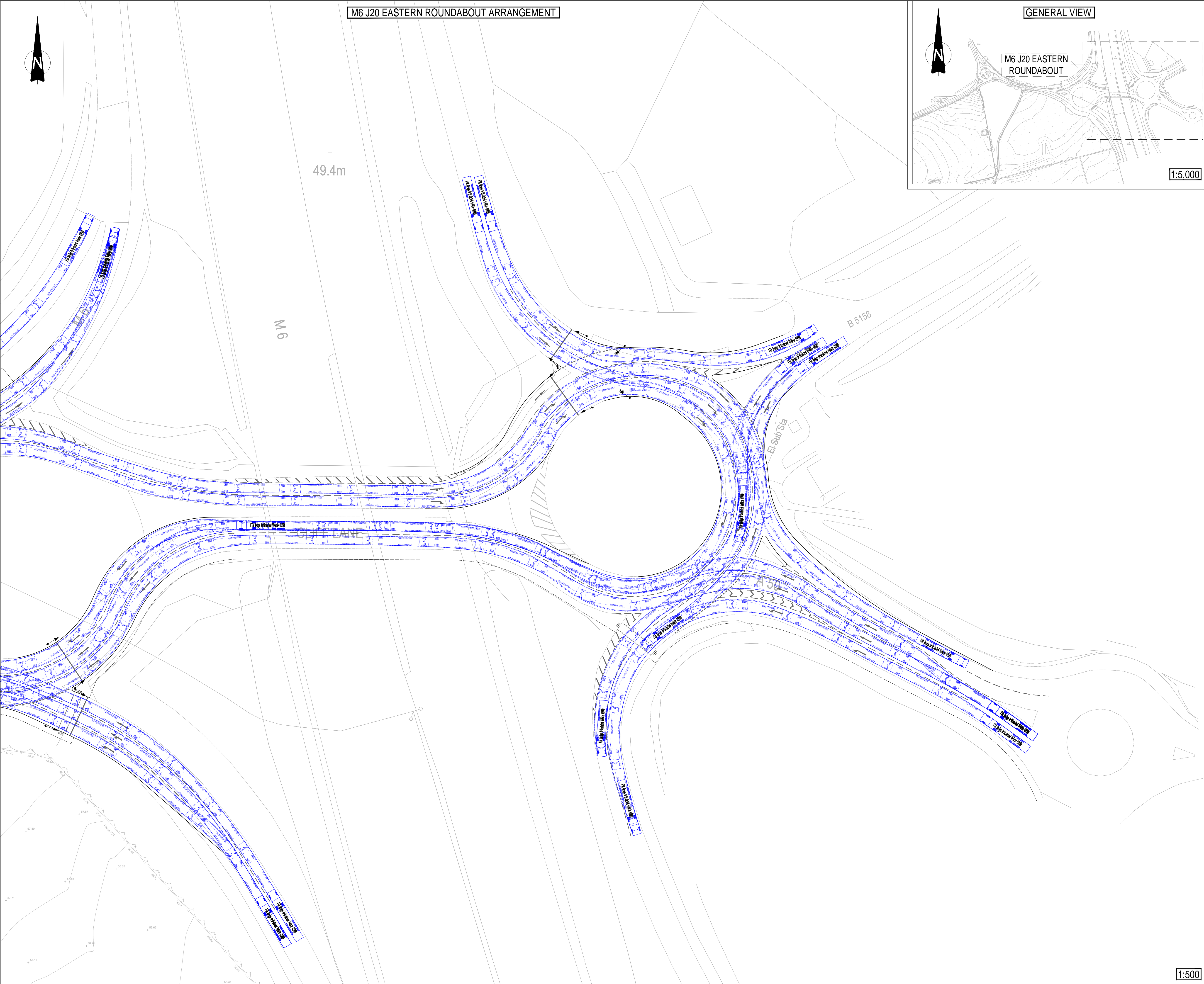
Status: PRELIMINARY

Project: WARRINGTON INTERCHANGE

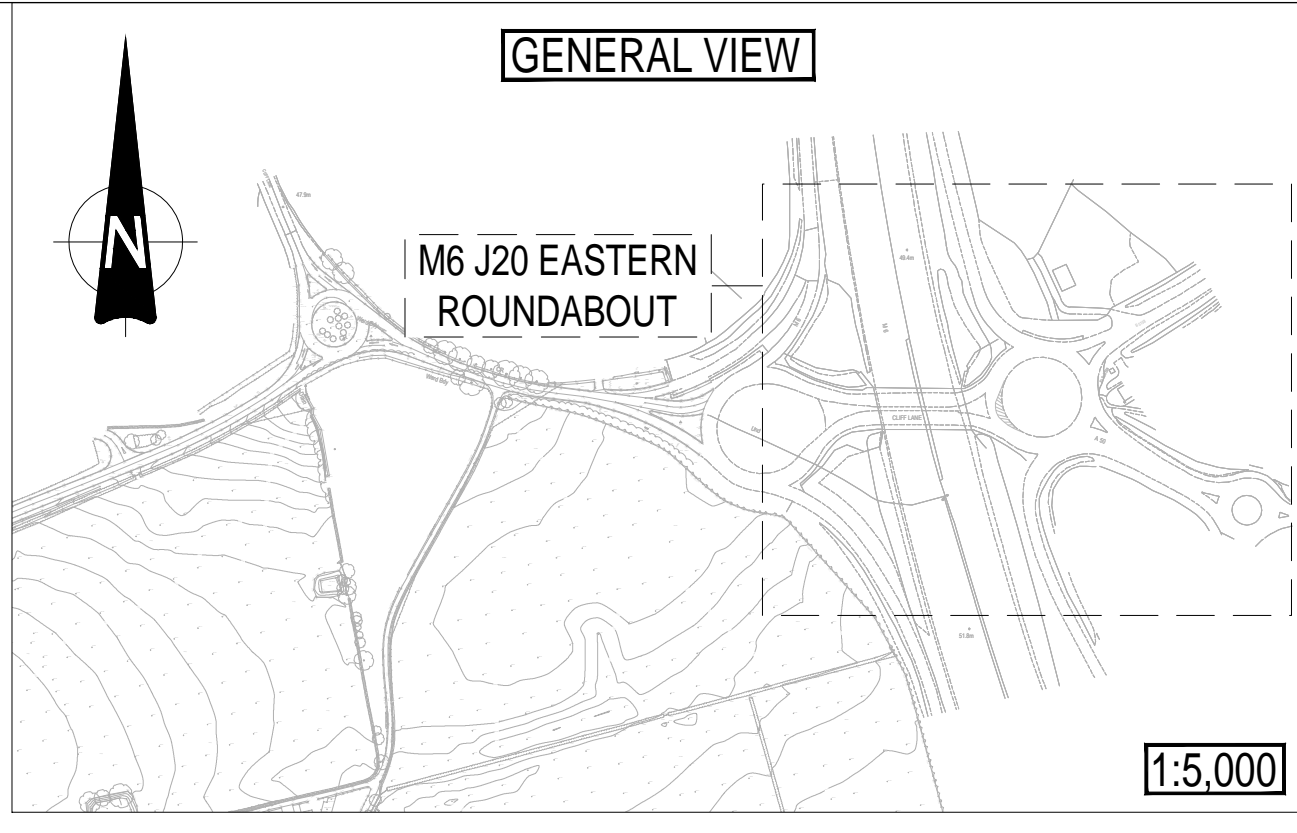
Orig Title: M6 J20 - WESTERN ROUNDABOUT
POTENTIAL IMPROVEMENTS
SWEPT PATH ANALYSIS
16.5m ARTICULATED HGV

Size:	Date:	Drawn By:	Designed By:	Checked By:			
A1	23/10/18	DD	DD	AV			
Scale: AS STATED							
Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:

64076 - CUR - 00 - XX - DR - TP - 05003 - P02



M6 J20 EASTERN ROUNDABOUT ARRANGEMENT



GENERAL VIEW

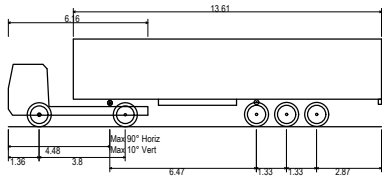
M6 J20 EASTERN ROUNDABOUT

1:5,000

GENERAL NOTES:

- KEY:
- PROPOSED KERB LINE
 - PROPOSED FOOTWAY
 - PROPOSED ROAD MARKINGS

VEHICLE PROFILE:



FTA Design Articulated Vehicle (1998)

Overall Length	16.450m
Overall Width	2.550m
Overall Height	3.870m
Min Body Ground Clearance	0.110m
Max Body Height	2.470m
Lock to lock time	3.00s
Wheel to wheel Turning Radius	6.500m

P02	Layout updated	12/09/19	DD	FF
Rev:	Description:	Date:	By:	Chkd:



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Status: PRELIMINARY

Project: WARRINGTON INTERCHANGE

Orig Title: M6 J20 - EASTERN ROUNDABOUT
POTENTIAL IMPROVEMENTS
SWEEP PATH ANALYSIS
16.5m ARTICULATED HGV

Size:	Date:	Drawn By:	Designed By:	Checked By:			
A1	23/10/18	DD	DD	AV			
Scale: AS STATED							
Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:

64076 - CUR - 00 - XX - DR - TP - 05004 - P02

1:500

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