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Development Planning Limited

Proposed Highway Works Associated with Dewsbury Riverside Development

Stage 1 Road Safety Audit

November 2022

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Client Commission			
Client:	Development Planning Ltd	Order No:	
Commissioned By:	David Sagstad	Date Commissioned:	September 2022

LTP Quality Control					
Job No:	LTP/22/5240		File Ref:	5240 Dewsbury Riverside RSA 1 - Final Issue 1	
Issue	**Revision**	**Description**	**Originated**	**Checked**	**Date**
1	-	Final Report	RP	TK	02/11/2022
			Authorised for Issue:		TK

LTP PROJECT TEAM

As part of our commitment to quality the following team of transport professionals was assembled specifically for the delivery of this project. Relevant qualifications are shown and CV's are available upon request to demonstrate our experience and credentials.

Team Member	LTP Designation	Qualifications
Tony Kirby	*Director*	*IEng MSc FIHE MCIHT RegRSA*
Ryan Penn	*Associate*	*BA(Hons) IEng FIHE MCIHT MSoRSA*

PROPOSED HIGHWAY WORKS ASSOCIATED WITH DEWSBURY RIVERSIDE DEVELOPMENT

STAGE 1 ROAD SAFETY AUDIT

CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Development Planning Limited, as the Scheme Designer, has commissioned Local Transport Projects Ltd (LTP) to carry out a Stage 1 Road Safety Audit of the highway works associated with the first phase of the 'Dewsbury Riverside Development' which is understood to consist of approximately 350 dwellings. As the Highway Authority, Kirklees Metropolitan Borough Council (KMBC) is the Overseeing Organisation. A Road Safety Audit Brief was provided and is included as Appendix 1.

1.2 The phase 1 highway works that are subject to this Road Safety Audit consist of:

- Alteration of the Ravensthorpe Road / Forge Lane / Lees Hall Road three-arm mini-roundabout junction to provide a signalised four-arm 'CYCLOPS' junction at the northern end of the new link road;
- Provision of a new compact roundabout with circulatory off-road cycle track at southern end of link road;
- Provision of new link road to between the above two new junctions. The link road will include a number of controlled and uncontrolled pedestrian crossing points;
- Provision of a new access road to Ravenshall School and a number of residential properties from the north western side of the link road. Once the overall scheme is fully constructed, this access road will form a pedestrian/cycle link only at its northern end; and
- A number of active travel access improvements on the southern side of Ravensthorpe Road.

1.3 It is noted that this Road Safety Audit only covers the highway works identified above and does not include any of the residential streets that would be accessed from the above infrastructure. It is anticipated that subsequent phases of the Dewsbury Riverside Development would be subject to relevant Road Safety Audits.

1.4 The Audit was carried out between Thursday 13th October and Wednesday 2nd November 2022 and was based on an examination of the drawing supplied as summarised within Table 1.

Table 1 – Drawings Considered by the Road Safety Audit

Drawing №	Rev	Drawing Title	Issued By
DPL SK161	C	Site Access Layout Plan Preliminary Site Access Prior To Link Road Construction	DPL
DPL SK162	C	Site Access Layout Plan Preliminary Site Access Articulated HGV	DPL
DPL SK163	C	Site Access Layout Plan Preliminary Site Access Swept Path – Rigid HGV	DPL
DPL SK164	C	Site Access Layout Plan Wide Area and Key	DPL
DPL SK165	C	Site Access Layout Plan Central Gateway Signal Junction	DPL
DPL SK166	C	Site Access Layout Plan Preliminary Access Following Link Road Construction	DPL

Drawing Nº	Rev	Drawing Title	Issued By
DPL SK167	C	Site Access Layout Plan Link Road	DPL
DPL SK168	C	Site Access Layout Plan Compact Roundabout	DPL
DPL SK169	C	Site Access Layout Plan Allotment Active Travel Access	DPL
DPL SK170	-	Site Access Layout Plan Western Active Travel Access	DPL
DPL SK171	-	Site Access Layout Plan Link Road Showing Future Bus Stop Option *(Not to be subject to Audit)*	DPL
DPL SK175	C	Site Access Layout Plan Preliminary Site Access Swept Path – Turning Head	DPL
DPL SK176	C	Site Access Layout Plan Central Gateway Signal Junction Swept Path – Industrial Access	DPL
DPL SK177	C	Swept Path Analysis Articulated HGV	DPL
DPL SK178	C	Swept Path Analysis Articulated HGV	DPL
DPL SK179	C	Swept Path Analysis Articulated HGV	DPL
DPL SK180	C	Swept Path Analysis Articulated HGV	DPL
DPL SK181	C	Swept Path Analysis Single Decker Bus	DPL
DPL SK182	C	Swept Path Analysis Single Decker Bus	DPL
DPL SK183	C	Swept Path Analysis Single Decker Bus	DPL
DPL SK184	C	Swept Path Analysis Single Decker Bus	DPL
DPL SK185	C	Swept Path Analysis Articulated HGV	DPL
DPL SK186	C	Swept Path Analysis Single Decker Bus	DPL

1.5 Personal Injury Collision (PIC) data for Ravensthorpe Road within the vicinity of the Ravensthorpe Road / Forge Lane / Lees Hall Road junction was examined on '*www.crashmap.co.uk*' (a website which utilises collision information provided by the Department for Transport) for the five-year period 01/07/2017 to 30/06/2022. During this period, 3 PICs (slight in severity) have been recorded, as follows:

- September 2018 – PIC recorded at Lees Hall Road by Ouzlewell Lane. The PIC involved 1 vehicle and resulted in a single casualty;
- July 2019 – PIC recorded at junction of Ouzlewell Lane and Ouzlewell Road. The PIC involved 2 vehicles and resulted in a single casualty; and
- September 2020 – PIC recorded at Ravensthorpe Road west of Lees Hall Road. The PIC involved 2 vehicles and resulted in a single casualty.

1.6 An '*Access Layout Report*' (DPL, 2022) has been supplied to the Audit Team and this contains some traffic flow information for the traffic signal junction at the northern end of the proposed link road. However, it is not possible to determine the level of traffic flows that would be expected to be associated with the phase 1 proposals only. It is noted that the '*Access Layout Report*' outlines that traffic modelling shows that "*the site access junction* [the junction at the northern end of the link road" *could accommodate in excess of 1,000 residential unts prior to a secondary access being required to be delivered. With a secondary access delivered, the traffic modelling forecasts that the traffic signals could accommodate (the equivalent of) in excess of 1,500 residential units. This assessment has been based upon 50% of the traffic flows between Ravensthorpe Road and Forge Lane diverting along the new link road (between Calder Road and Forge Lane). The 1,500 units is not the capacity of the site, as the secondary (Calder Road) access would also accommodate residential units. The capacity of the Calder Road access is being assessed by others*" (DPL, 2022).

1.7 No details of existing/projected vehicle speeds of non-motorised user flows have been supplied to the Audit Team.

1.8 A site inspection was carried out on Thursday 13th October 2022 between 14:15-15:30. Consistent motor vehicle flows, including a number of heavier vehicles, were observed on Ravensthorpe Road and Lees Hall Road at the time of the site visit and pedestrian/cycle flows were generally low. Weather conditions and the road surface were dry during the site inspection.

1.9 The Audit Team comprised the following people:

- Tony Kirby IEng MSc FIHE MCIHT RegRSA (Audit Team Leader) and;
- Ryan Penn BA(Hons) IEng FIHE MCIHT MSoRSA (Audit Team Member).

1.10 The Audit Team was not made aware of any specific departures or relaxations from standard.

1.11 No signing, drainage, site clearance or street lighting details were made known to the Audit Team and so it has not been possible to comment on these aspects of the design.

1.12 It is understood that no previous Road Safety Audits of the scheme proposals have been undertaken.

1.13 The Audit was carried out with reference to '*GG 119 Road Safety Audit*' (Highways England, 2020).

1.14 The Audit Team has examined and reported only on the road safety implications of the scheme using the information provided and has not examined or verified the compliance of the design to any other criteria.

1.15 The problems identified in this report are considered by the audit team to require action in order to improve safety and reduce the risk of collisions occurring.

2.0 ITEMS RAISED BY THIS STAGE 1 ROAD SAFETY AUDIT

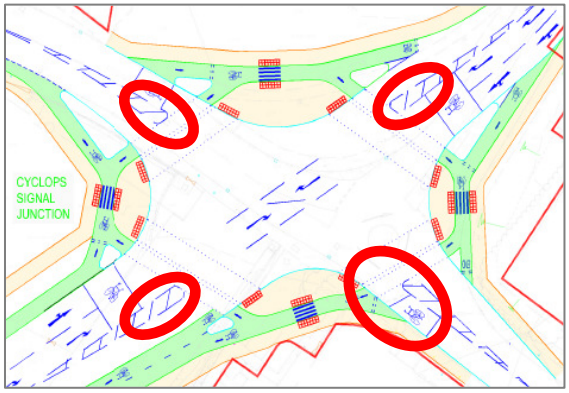
Problems applying to: Ravensthorpe Rd / Forge Ln / Lees Hall Rd / Link Road Junction

2.1 **Problem**

Location: Ravensthorpe Road / Forge Lane / Lees Hall Road / Link Road traffic signal junction

Summary: Risk of late braking/rear end shunt collisions and collisions with pedestrian crossing users due to positioning of traffic signal heads

The supplied drawing does not indicate where the traffic signal heads are to be positioned. Although traffic islands are provided on three arms of the junction (within which it may be possible to provide primary traffic signal heads), it is not clear where the primary traffic signal heads on Lees Hall Road would be positioned. In addition, the lack of physical central islands means that any duplicate primary signal heads will need to be provided on the offsides of the approaches. Visibility of these signal heads is likely to be particularly important in situations when high-sided vehicles mask the primary signal heads. If suitable visibility of the traffic signals is not provided, an increased risk of late braking and rear end shunt collisions, as well as possible collisions with pedestrian crossing users could be expected.



Recommendation

1) It is recommended that the positioning of the traffic signal heads is suitably established; and

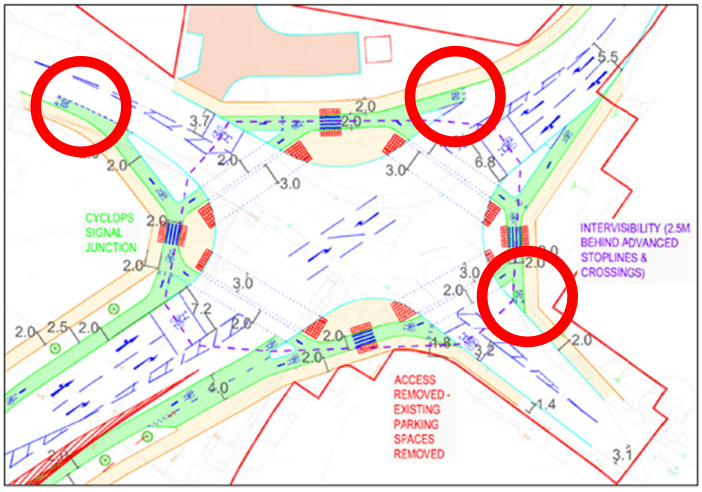
2) It is recommended that an appropriate forward visibility envelope is provided at all traffic signal head locations and that the visibility distance is commensurate with expected vehicle approach speeds.

2.2 **Problem**

Location: Ravensthorpe Road / Forge Lane / Lees Hall Road / Link Road traffic signal junction

Summary: Risk of vehicle/cyclist collisions due to discontinuation of cycle facilities at the junction exits

Although the traffic signal junction provides dedicated facilities for cyclists around the junction, on three of the four exit arms (northern, eastern and western) cyclists are required to exit the junction directly onto the carriageway and share road space with motorised users. It is acknowledged that constraints on existing roads are likely to limit the ability to continue with protected cycle facilities, but in attempting to re-join the carriageway, cyclists are likely to be vulnerable to side-swipe collisions from vehicles travelling through the junction. The northern and eastern cycle slips bring cyclists onto the carriageway very close to the controlled area of the junction. The western cycle slip would bring cyclists onto carriageway close to a location where on-street car parking takes place and is likely to require cyclists to make sharp movements to avoid the parked vehicles, which may bring them into conflict with other road users.



Recommendation

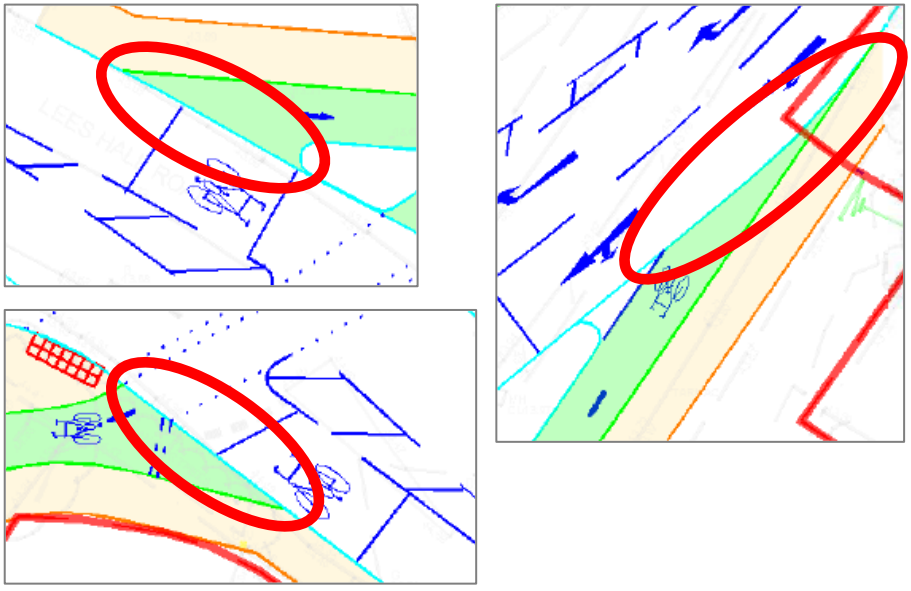
It is recommended that the arrangements which require cyclists to re-join the carriageway upon exiting the junction are reviewed, with suitable design enhancements made which offer improved safety benefits for cyclists.

2.3 **Problem**

Location: Locations on Ravensthorpe Road / Forge Lane / Lees Hall Road where cyclists transition from the carriageway to off-road provision

Summary: Risk of cyclists losing control and falling from their bicycle as they negotiate a kerb upstand at an acute angle

At a number of locations across the scheme, cyclists will be required to transition from on-road to off-road cycle provision. At these transition points a generally acute angle of approach is provided and if even a minimal kerb upstand is provided, it is likely to form a loss of control hazard for cyclists (particularly those on narrow wheeled bicycles). Kerb check at the transition points is referenced as being half height. A cyclist negotiating an upstand at an acute angle would be likely to fall from their bicycle and potentially sustain injury.



Recommendation

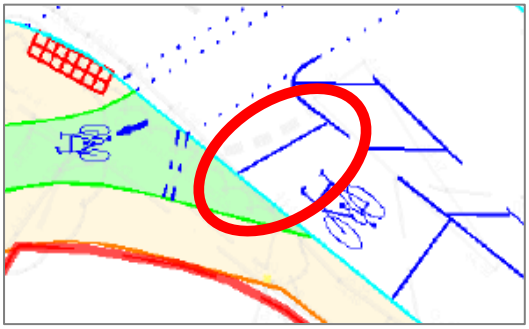
It is recommended that a flush kerb arrangement is provided at all locations where cyclists transition from on-road to off-road areas.

2.4 **Problem**

Location: Lees Hall Road approach to the Ravensthorpe Road / Forge Lane / Lees Hall Road / Link Road traffic signal junction

Summary: Increased general collision risk due to alignment of the traffic signal stop line

The stop line on the Lees Hall Road approach to the Ravensthorpe Road / Forge Lane / Lees Hall Road junction is shown as not being perpendicular to the kerb. This could be confusing for road users and increase general collision risk.



Recommendation

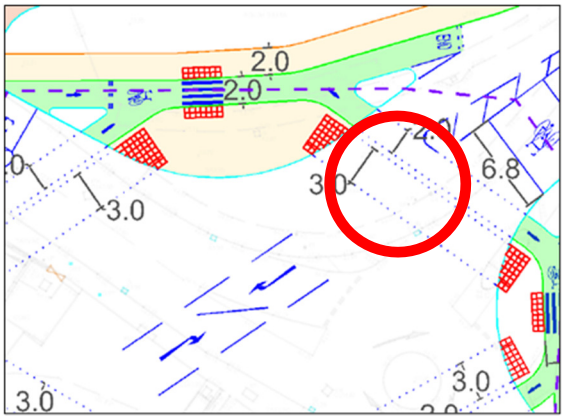
It is recommended the design is amended to show the stop line as being perpendicular to the kerb.

2.5 **Problem**

Location: Forge Lane, heading northbound

Summary: Risk of HGVs colliding with the low bridge due to lack of warning signing, resulting in potential injuries to vehicle occupants

An existing low bridge ahead warning sign is currently provided on Forge Lane for northbound drivers. The existing sign would be removed as part of the scheme proposals and no information has been supplied to state that the sign would be suitably replaced. If not replaced, drivers of large vehicles may not be aware of the low bridge ahead and an increased risk of large vehicle collisions with the bridge could be expected which in turn could lead to vehicle occupant injuries. A reasonable number of HGVs were observed on Ravensthorpe Road and Lees Hall Road during the site visit which indicates the importance of re-providing the low bridge warning signing.



Recommendation

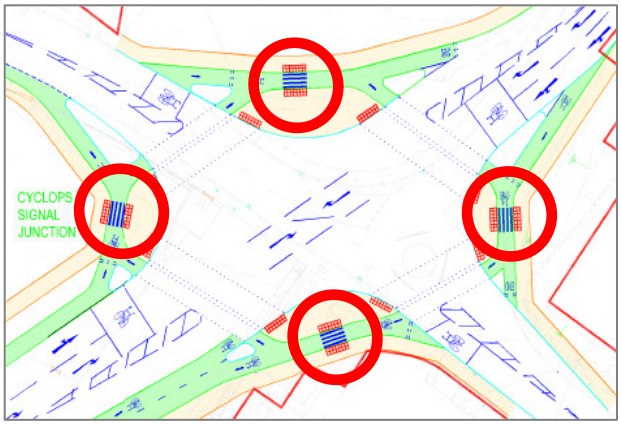
It is recommended that suitable low bridge ahead warning sign is incorporated into the scheme design.

2.6 **Problem**

Location: Ravensthorpe Road / Forge Lane / Lees Hall Road / Link Road traffic signal Junction

Summary: Risk of pedestrian/cyclist collisions due to tactile paving arrangements at the crossing facilities

'Cyclops' junctions are relatively new junction designs and tactile paving layouts at these junctions are generally not well defined. Tactile paving crossing points are provided across the cycle facilities at the junction. However, on the outer tactile paving, no stem is provided to guide blind/visually impaired pedestrians to the crossing. This may mean that blind/visually impaired pedestrians are unable to locate the crossing effectively, therefore increasing their risk of unintentionally walking out into the cycle facility where they would be at increased risk of collision with approaching cyclists. Generally, at 'Cyclops' junctions, the use of 'L' shaped tactile paving (i.e.; tactile paving with a stem) shows the start and end points of a complete crossing of the junction, with the remaining tactile points being 'uncontrolled'.



Recommendation

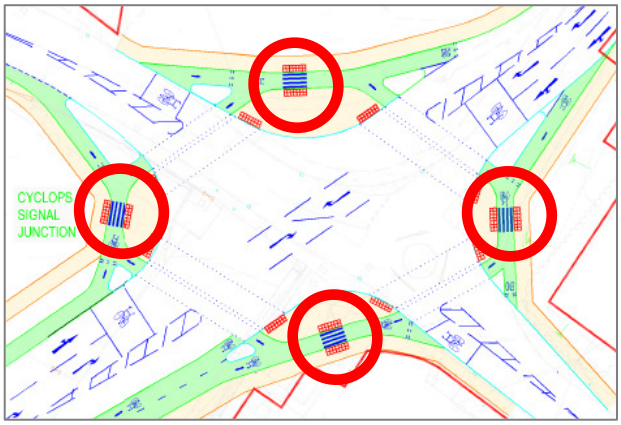
It is recommended that the design is suitably amended to include stems on the outer most tactile paving at the cycle facility crossings.

2.7 **Problem**

Location: Ravensthorpe Road / Forge Lane / Lees Hall Road / Link Road traffic signal Junction

Summary: Risk of pedestrian trip/fall injuries when crossing the cycle facility

A half height kerb is shown at the pedestrian crossing points and is likely to represent a trip/fall hazard for pedestrians attempting to cross the cycle facility.



Recommendation

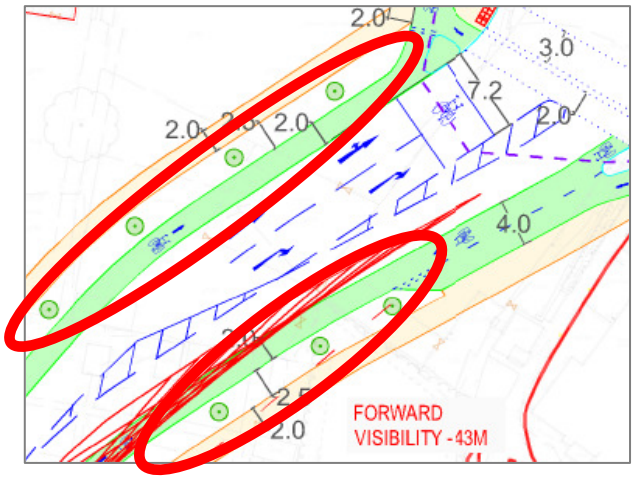
It is recommended that flush kerbs are provided at all pedestrian crossing points.

2.8 **Problem**

Location: Link road (full extents) and roads leading off the proposed roundabout

Summary: Risk of cyclist skid/loss of control collisions due to the presence of leaves within the cycle track

The proposals show indicative planting locations for trees within the verge area between the footway and cycle track. When the leaves fall from the trees in autumn/winter, they are likely to gather within the cycle facility and could form a skid/loss of control hazard for cyclists.



Recommendation

It is recommended that, once constructed, a suitable highway maintenance regime is implemented to maintain the cycle facility free of leaves and gathered debris.

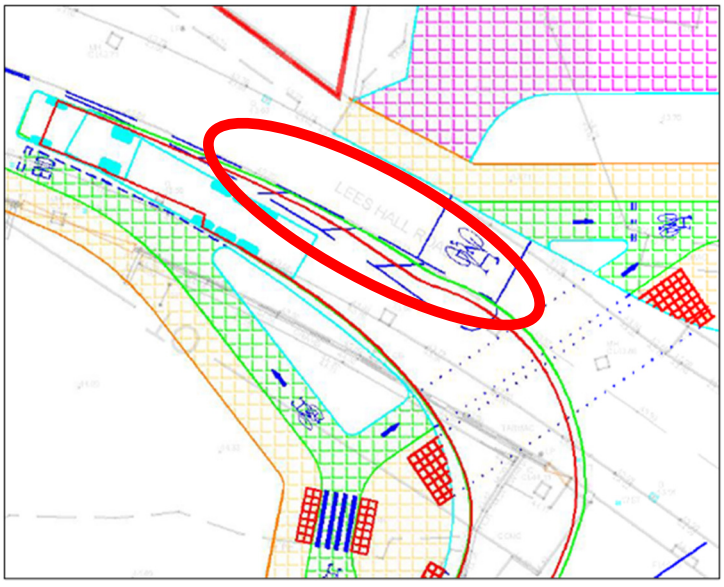
2.9 **Problem**

Location: Ravensthorpe Road / Forge Lane / Lees Hall Road / Link Road traffic signal Junction

Summary: Risk of collisions between HGVs and other road users due to turning requirements at the junction

Vehicle swept path information has been supplied for the junction and demonstrates that, although there is very little margin for error, a large articulated vehicle is expected to be able to manoeuvre through the junction. There are some movements (such as the south to west articulated vehicle movement shown below) where the vehicle body of the turning articulated vehicle is very close to an opposing traffic lane/ASL. The simulated speed of the vehicle tracking has not been provided. If a particularly low simulated speed has been used (e.g.; less than 5mph) this produces a tighter tracking profile. A vehicle turning in excess of this speed (which is likely) would have a slightly wider tracking profile and may be encroach into the into opposing lane/ASL, increasing the risk of collisions with road users using these spaces.

It is also noted that as a number of large vehicle turning movements at the junction over-run central hatched areas, it is unlikely to be possible to provide physical islands in these locations to install any duplicate primary traffic signal heads.



Recommendation

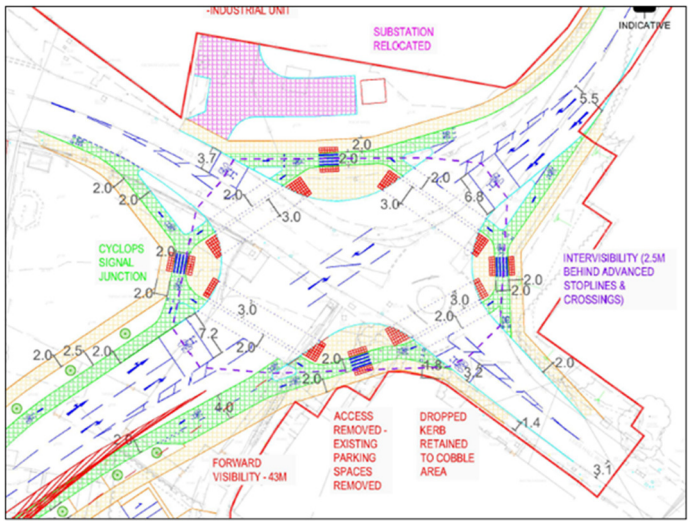
It is recommended that the simulation speeds of the HGV swept paths are checked at the junction to ensure that the required large vehicle turning movements can be appropriately accommodated. If the swept paths cannot be suitably accommodated, then the junction design should be modified accordingly.

2.10 **Problem**

Location: Ravensthorpe Road / Forge Lane / Lees Hall Road / Link Road traffic signal Junction

Summary: Risk of collisions involving maintenance operatives at the junction

The proposed traffic signal junction is likely to require occasional maintenance. There are no facilities shown to allow traffic signal maintenance vehicles to safely park during such maintenance visits. Parking vehicles on the carriageway risks obstructing the junction and potential collisions with other vehicles, with the possibility of injury to vehicle occupants. Additionally, maintenance operatives walking in the carriageway or crossing the carriageway would be at risk of collision with passing vehicles.



Recommendation

It is recommended that appropriate facilities for maintenance vehicles are provided as part of the scheme.

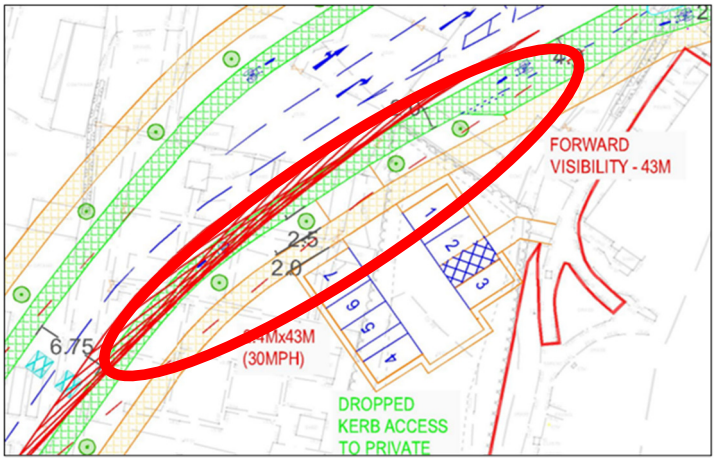
Problems applying to: Link Road

2.11 **Problem**

Location: Link road / private car park junction

Summary: Risk of failure to give way collisions due to restricted visibility

The scheme proposals show 2.4 x 43m visibility splays from the car park access. However, the visibility splays run behind the proposed trees, meaning that approaching vehicles and cyclists that are closer to the junction could be masked by trees, thereby increasing the risk of failure to give way collisions.



Recommendation

It is recommended that the trees are located outside of the visibility splay and away from the junction.

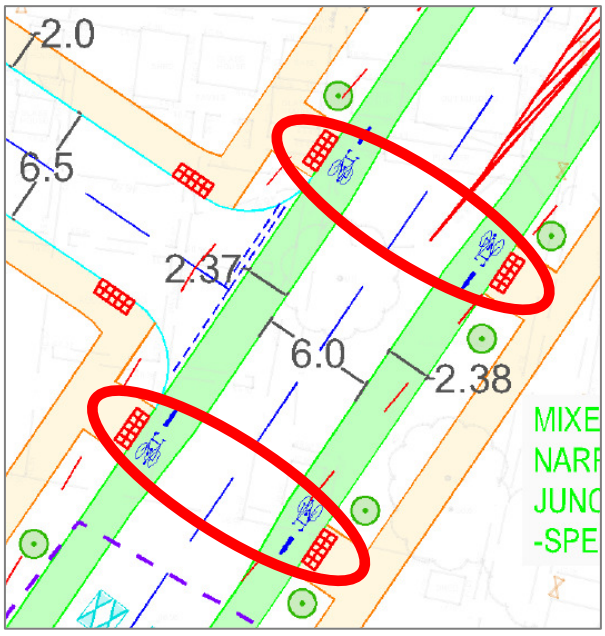
2.12 **Problem**

Location: Junction on link road

Summary: Risk of cyclists/pedestrian collisions and pedestrian trip/fall injuries due to proposed pedestrian crossing arrangements.

Two uncontrolled pedestrian crossings are proposed across the link road within the vicinity of the side road junction. Pedestrians are required to cross two cycle lanes and a two-lane carriageway. It is likely that whilst waiting/looking for a crossing gap, some pedestrians would wait within the extents of the cycle facility. In doing so, they would be at an increased risk of collision with approaching cyclists.

In addition, half height kerbs are shown at the pedestrian crossing points and are likely to represent a trip/fall hazard for pedestrians attempting to cross the cycle facility. As a general note, it is difficult to determine from the scheme drawings the extent of any level difference between the cycle facility and the adjacent footway/carriageway areas (i.e.; is the cycle facility at carriageway level, footway level or an intermediate level).



Recommendation

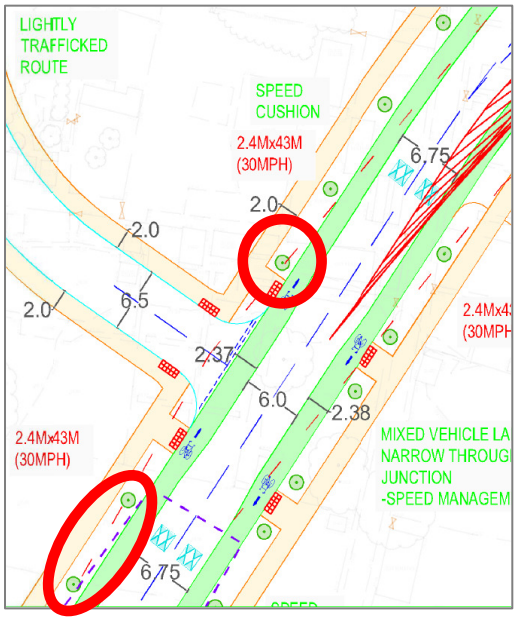
It is recommended that the design of the crossing points is modified so that pedestrians can cross the cycle facility and carriageway in separate stages and that flush kerbs are provided at all pedestrian crossing points.

2.13 **Problem**

Location: Link road / side road junction

Summary Risk of failure to give way collisions due to restricted visibility

The scheme proposals show 2.4 x 43m visibility splays from the side road junction. However, the visibility splays run through/behind proposed trees and approaching vehicles/cyclists are likely to be masked. This is likely to increase the risk of failure to give way collisions within the vicinity of the junction.



Recommendation

It is recommended that trees are located outside of the visibility splays and away from the junction.

2.14 **Problem**

Location: Northern parallel crossing on link road

Summary: Risk of various collision types due to the design of the crossing facility

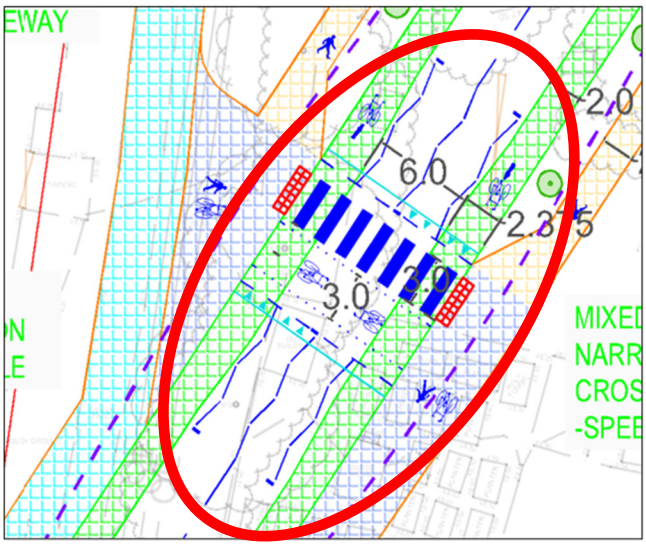
A raised parallel crossing is proposed approximately mid-way along the link road. As it is a controlled crossing, a tactile paving stem on the pedestrian section of the crossing should extend to the back of the footway so as to guide blind/visually impaired pedestrians to the crossing. A stem has not been provided and may mean that blind/visually impaired pedestrians are unable to locate the crossing effectively, therefore increasing their risk of unintentionally walking out into the carriageway where they would be at increased risk of collisions with approaching vehicles/cyclists.

The carriageway ramps either side of the raised crossing appear to be the same length as those on the cycle track. This suggests that an excessively steep ramp could be provided for vehicles, increasing the risk of loss of control collisions.

The link road cycle facilities also run straight through the parallel crossing facility, with no requirement for cyclists to give way to waiting pedestrians/cyclists. As such, it is likely that some pedestrians/cyclists waiting to cross the link road would wait within the extents of the link road cycle facility. In doing so, they would be at an increased risk of collision with approaching cyclists.

The kerbing arrangement at the crossing facility is also unclear. The crossing appears to be flush (as is on a raised facility) but a half height kerb is shown on the cycle facility and is likely to represent a trip/fall hazard for pedestrians attempting to cross the cycle facility.

The crossing proposals also only show four zig zag markings instead of the standard eight marks.



Recommendation

It is recommended that the design of the crossing is suitably amended taking into account the identified points.

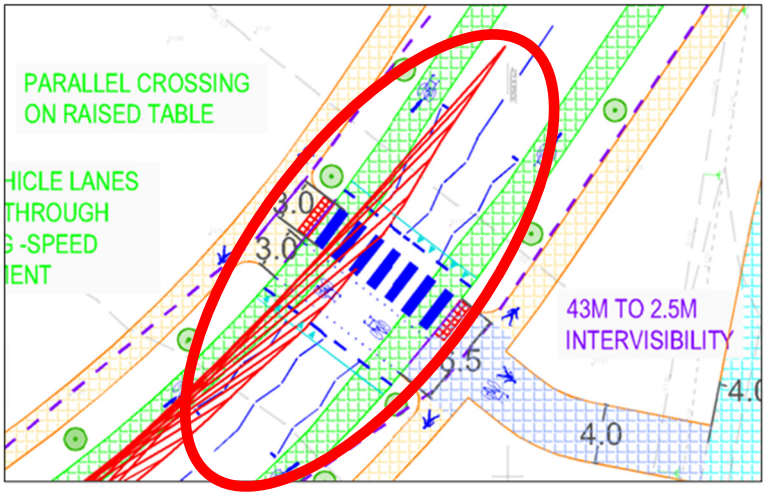
2.15 **Problem**

Location: Southern parallel crossing on link road

Summary: Risk of various collision types due to the design of the crossing facility

The problems identified above at the northern parallel crossing, also apply at the southern zebra crossing:

- Incorrect tactile paving at the crossing point;
- Excessively steep ramps for vehicles at the crossing;
- Link road cycle facilities continuing through the crossing facility;
- Unclear kerbing arrangement at the crossing facility; and
- Reduced number of zig zag road markings.



Recommendation

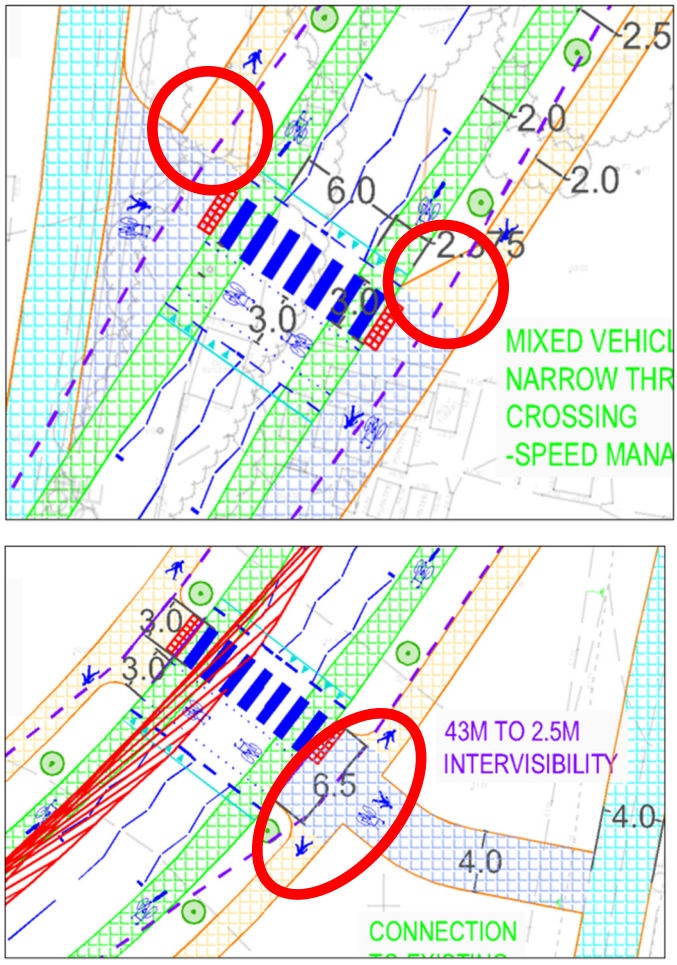
It is recommended that the design of the crossing is suitably amended taking into account the identified points.

2.16 **Problem**

Location: Bridleway diversion along the link road

Summary: Risk of cyclist/pedestrian collisions as pedestrians are unaware that they are entering shared pedestrian/cycle areas

At a number of locations, footways join unsegregated shared use pedestrian/cycle areas. No tactile paving is provided at the transition points to inform blind/visually impaired pedestrians that they are entering an area used by cyclists. The absence of tactile paving could therefore be expected to increase the risk of cyclists/pedestrian collisions as blind/visually impaired pedestrians are unlikely to be aware that they have entered a shared use area.



Recommendation

It is recommended that appropriate corduroy tactile paving is provided where footway areas meet unsegregated pedestrian/cycle shared areas.

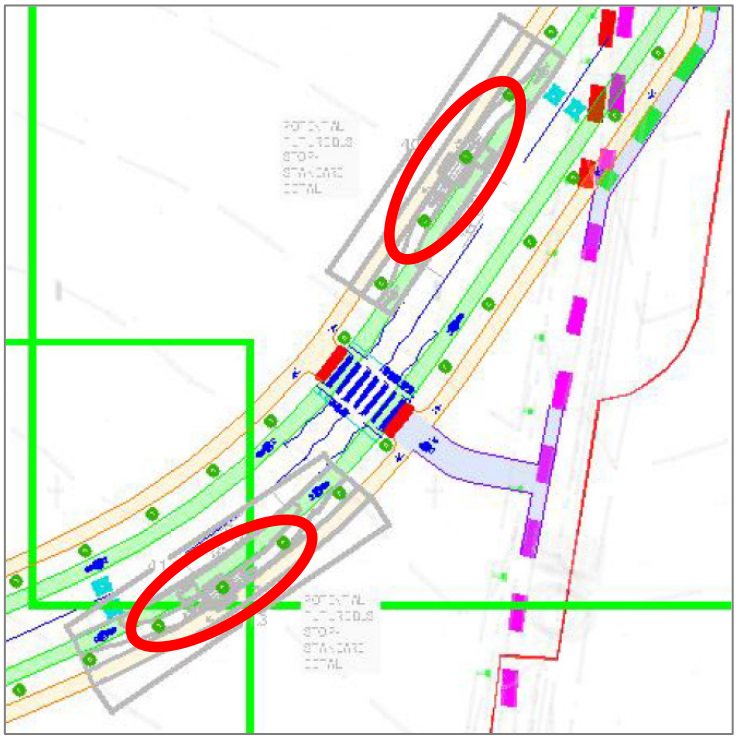
2.17 **Problem**

Location: Link road

Summary: Risk of collisions involving pedestrians or cyclists due to bus stop arrangements

It is unclear what the proposals for bus stop provision is on the link road. Drawing SK164 shows bus stop bypass treatments on the exit sides of the southern parallel crossing. However, these bus stops are not shown on Drawing SK167.

If bus stop bypasses are to be provided an increased risk of pedestrian/cyclist collisions could be expected as pedestrians must cross the cycle track in order to reach the island. Whilst cyclists may not realise it, they need to give way to pedestrians crossing. '*LTN 1/20*' (DfT, 2020) recommends the cycle track be brought to footway level at the pedestrian crossing to help reduce this conflict. As previously outlined, half height kerbs appear to be shown at the crossing points, which would be a trip/fall hazard for pedestrians. Further, the tactile paving is not provided with a stem which is likely to cause issues for the blind/visually impaired.



Recommendation

It is recommended that the proposed bus stop arrangements for the link road are confirmed and, if bus stop bypasses are to be provided, then their layout should be in accordance with '*LTN 1/20*' (DfT, 2020).

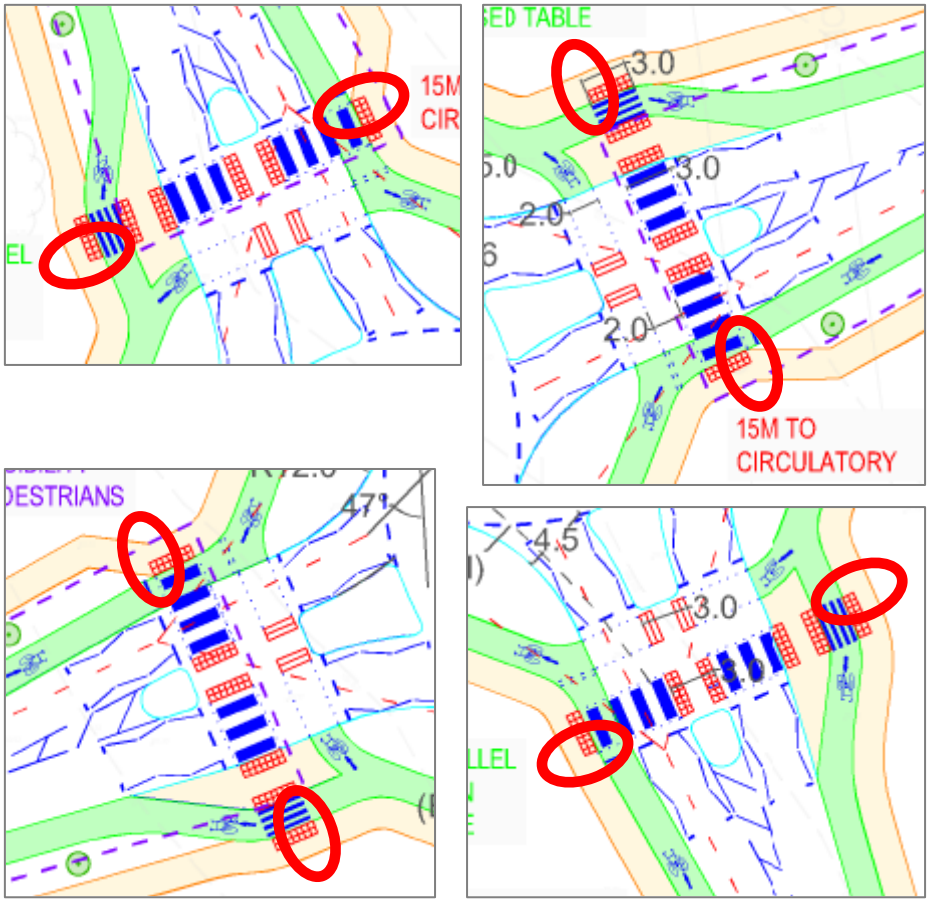
Problems applying to: Link Road Roundabout

2.18 **Problem**

Location: Crossings on approaches to link road roundabout

Summary: Risk of blind/visually impaired pedestrians unintentionally walking into the carriageway and colliding with vehicles due to tactile paving layout

As the proposed crossings at the link road roundabout are controlled crossings, the tactile paving should have a stem which extends to the back of the footway so as to guide blind/visually impaired pedestrians to the crossing. A stem has not been provided and may mean that blind/visually impaired pedestrians are unable to locate the crossing effectively, therefore increasing their risk of unintentionally walking out into the carriageway where they would be at increased risk of collisions with approaching vehicles/cyclists.



Recommendation

It is recommended that the design is suitably amended to include stems on the outer most tactile paving at the crossings.

2.19 **Problem**

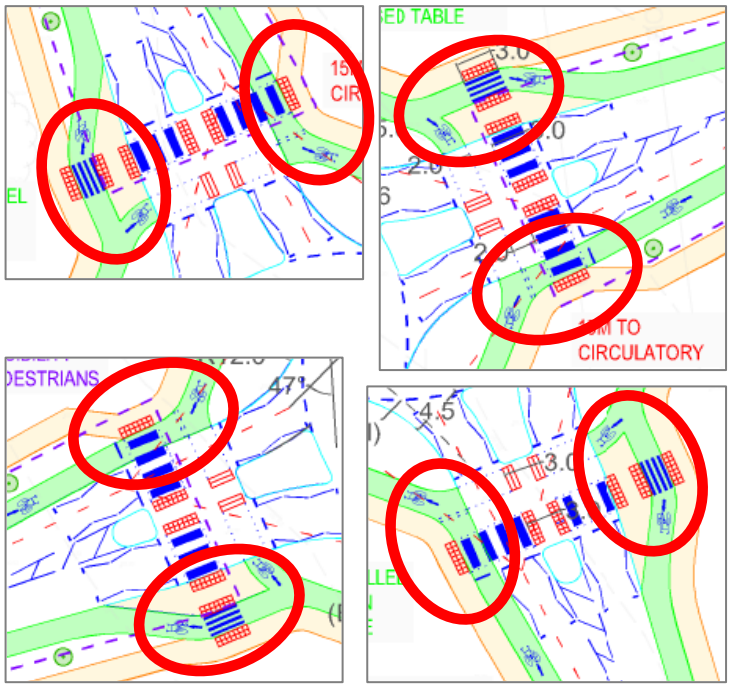
Location: Parallel crossings on approaches to the link road roundabout

Summary: Risk of collisions involving pedestrians as a result of the proposed crossing arrangements

The proposals show pedestrians crossing the cycle track and approach traffic lane in one movement on all four approaches to the roundabout. It is likely that whilst waiting/looking for a crossing gap, some pedestrians would wait within the extents of the cycle facility. In doing so, they would be at an increased risk of collision with approaching cyclists. It is unclear why on the exit arms, a different method of crossing which includes separate crossings of the cycle facility and traffic lane is provided. Whilst this method is considered preferable to the crossing method on the approach arms, the differences in provision are likely to confuse users as it would be reasonable to expect the same crossing method on both sides of the road.

As previously outlined, the half-height kerbs where pedestrians cross the cycle track would form a trip/fall hazard.

It is also noted that the offset distance between the pedestrian and cyclist parts of the parallel crossing appears excessive. This may lead to motorists considering the second half of the crossing as a separate facility or not to see it. TSRGD shows the layout of a parallel crossing (Schedule 11, Part 2 Item 53) with 0.4m offset between the two crossings.



Recommendation

It is recommended that the design of the proposed crossings are suitably amended taking into account the points identified above.

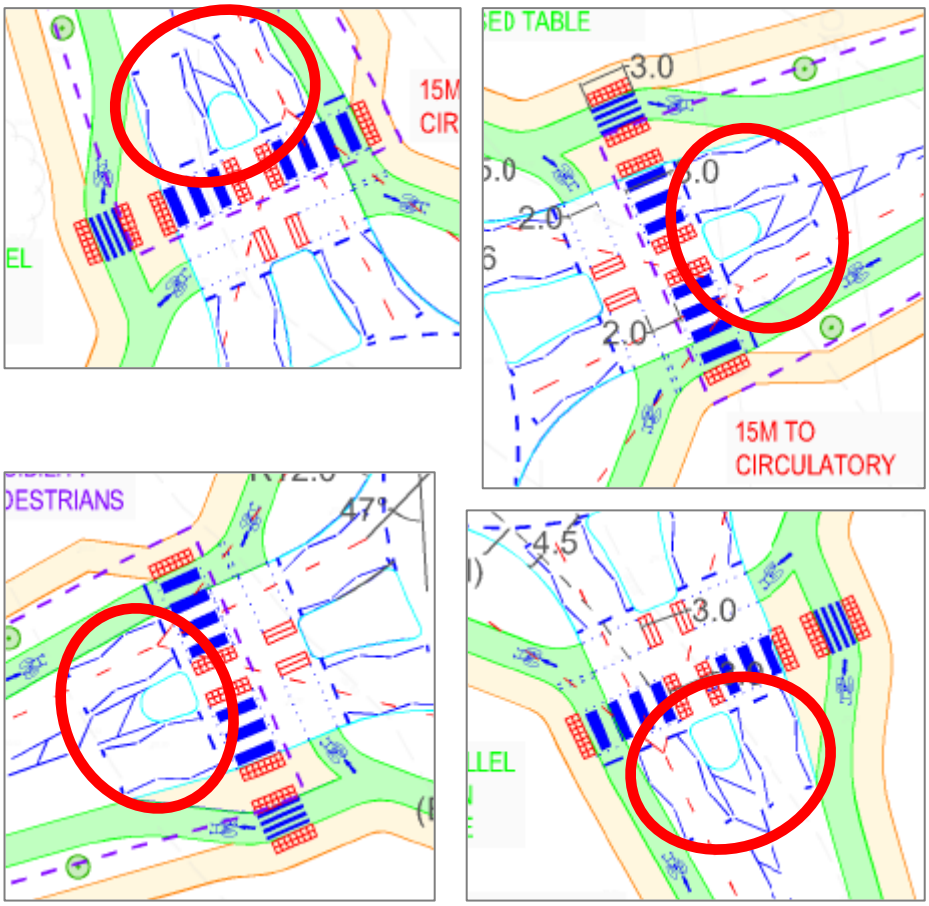
2.20 **Problem**

Location: Approaches to link road roundabout

Summary: Risk of loss of control collisions due to road markings guiding motorists into, rather than around, traffic islands

The central hatched road markings on the approaches to the roundabout run into the central islands, rather than around them. This lining arrangement, particularly in poor weather/lighting conditions, is likely to guide motorists towards the islands, increasing the risk of drivers striking the islands and potentially losing control.

It is also noted that the proposals only show three zig zag markings at the crossings, rather than the standard eight markings. These provide road users with limited advance warning of the crossing.



Recommendation

It is recommended that the central hatched lining is suitably amended so that motorists are guided around (rather than into) the central islands and that the number of zig zag markings at the crossing is appropriately increased.

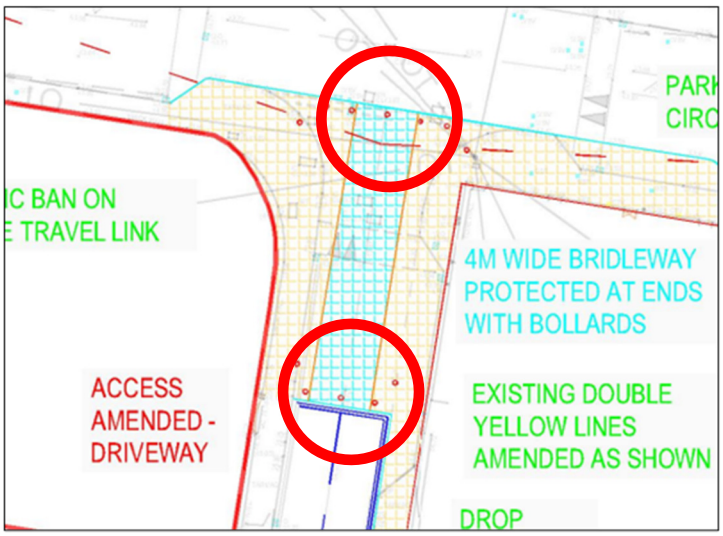
Problems applying to: Link Road and Ravensthorpe Road Connection

2.21 **Problem**

Location: Ravensthorpe Road junction

Summary: Kerb detail at transition points between proposed cycle track and Ravensthorpe Road carriageway – risk of loss of control collisions

The kerb detail is shown as being full height at either end of the cycle track across the stopped-up section of carriageway at the Ravensthorpe Road junction, rather than being a flush kerb. Any upstand is likely to pose a loss of control risk to cyclists, particularly those entering the cycle track at an oblique angle.



Recommendation

It is recommended that flush kerbs are provided at the northern and southern ends of the link.

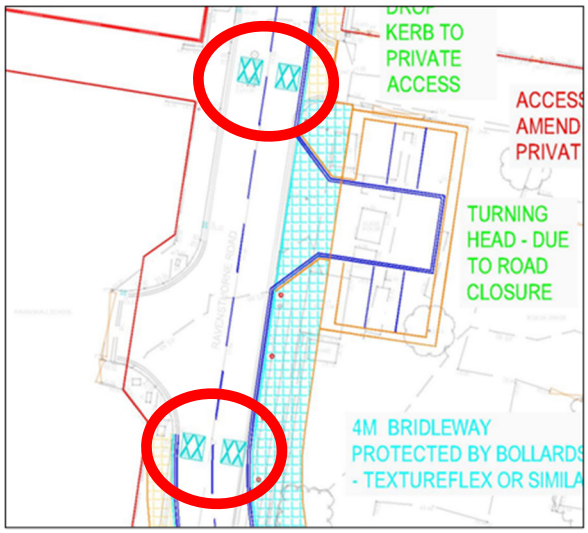
2.22 **Problem**

Location: Ravensthorpe Road / Link Road connection

Summary: Risk of loss of control collisions, particularly for two-wheelers due to traffic calming arrangements

It is not possible to scale from the drawings provided, but the gaps between the speed cushions and the kerb may be insufficient to allow a two-wheeler to safe navigate between the two, without losing control and potentially falling from their motorcycle/cycle. '*LTN 1/07*' suggests that *"the gap between the lower edge of a cushion and the nearside kerb should be no less than 750 mm (1000 mm preferred)"* (DfT, 2007).

Linked to the above, the southern set of speed cushions appear to be parallel to the northern set rather than being parallel to the adjacent kerb.



Recommendation

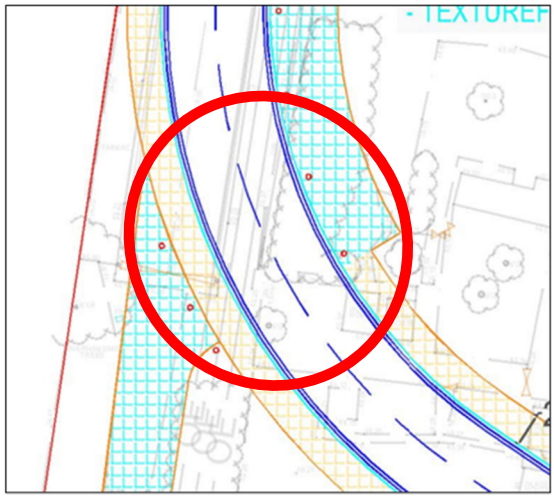
It is recommended that the speed cushions are positioned with gaps that are in line with the requirements of '*LTN 1/07*' (DfT, 2007) and that they are positioned parallel to the adjacent kerbs.

2.23 **Problem**

Location: Bridleway connection to Ravensthorpe Road / Link Road connection

Summary: Risk of cyclist loss of control collisions and pedestrian trip/fall injuries

The scheme proposals show the Bridleway joining the Ravensthorpe Road / Link Road connection at an acute angle. At the transition point between carriageway/Bridleway, a generally acute angle of approach is provided and if even a minimal kerb upstand is provided, it is likely to form a loss of control hazard for cyclists (particularly those on narrow wheeled bicycles). It is noted that kerb check at the transition is referenced as being full height kerbs. There is also no crossing point between the two sides of the Bridleway. This is likely to result in an increased risk of pedestrian trip/fall injuries and cyclists losing control as they have to 'bump' up and down kerbs.



Recommendation

1) It is recommended that a flush kerb arrangement is provided at all locations where cyclists transition from on-road to off-road areas; and

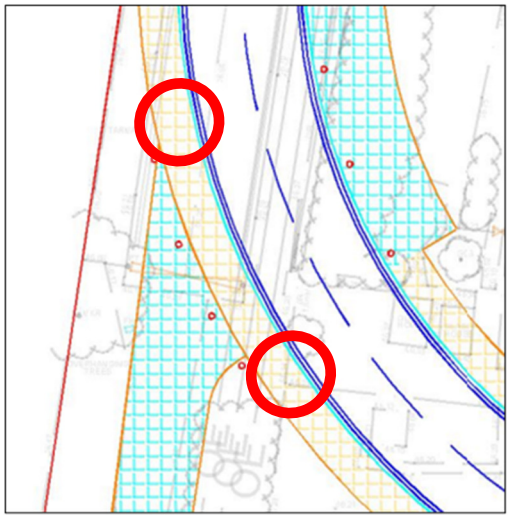
2) It is recommended that a suitable crossing facility is provided to connect both sides of the Bridleway.

2.24 **Problem**

Location: Bridleway connection to Ravensthorpe Road / Link Road connection

Summary: Risk of cyclist/pedestrian collisions as pedestrians are unaware that they are entering a shared pedestrian/cycle area

No tactile paving is proposed where the shared use path forming the Bridleway joins the footway provision along the link road. The absence of tactile paving could therefore be expected to increase the risk of cyclist/pedestrian collisions as blind/visually impaired pedestrians are unlikely to be aware that they have entered a shared use area.



Recommendation

It is recommended that appropriate corduroy tactile paving is provided within the footway to warn of the shared use route ahead.

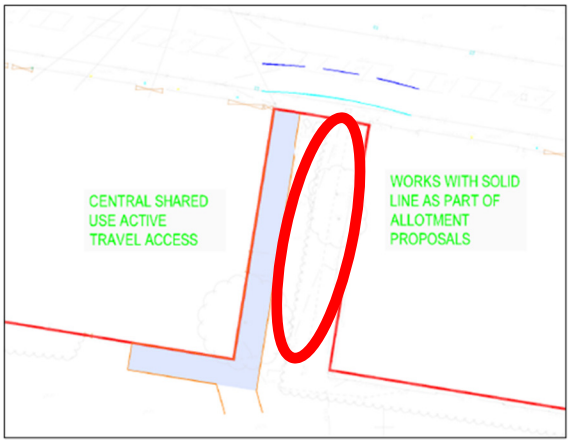
Problems applying to: Ravensthorpe Road

2.25 **Problem**

Location: Eastern access link from Ravensthorpe Road

Summary: Risk of vehicle side-swipe collisions due to limited carriageway width

The eastern access link from Ravensthorpe Road has been provided on site. It is assumed that the carriageway is to be used on a two-way basis, but it measures only 4.0m in width and is without radii at its junction with Ravensthorpe Road. This is not considered a sufficient width to comfortably cater for two-way vehicle flows and, as such, an increased risk of vehicle side-swipe collisions is expected. Although an area which could be used as a passing place has been provided at the southern end of the link, it is some distance from Ravensthorpe Road and is likely to be of limited use due to limited visibility of vehicles turning in from Ravensthorpe Road.



Recommendation

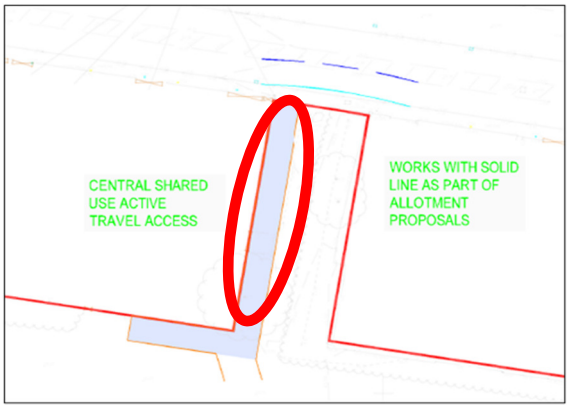
It is recommended that, if the access road is intended to be used on a two-way basis, it is suitably increased in width to accommodate such use.

2.26 **Problem**

Location: Eastern access link from Ravensthorpe Road

Summary: Risk of cyclists losing control and pedestrians slipping/falling due to surface conditions

The surface that has been provided for active travel users (the area closest to the wall/fence) consists of loose stone and is considered to form a potential loss of control risk for cyclists and a slip risk for pedestrians. The risk is greatest in the south-to-north direction given the downhill gradient. The surface is also likely to deteriorate over time and form a greater road safety risk in wet conditions.



Recommendation

It is recommended the loose stone surface for pedestrians/cyclists is replaced with a bound surface.

2.27 **Problem**

Location: Western access link from Ravensthorpe Road

Summary: Risk of collisions involving cyclists exiting the link failing to give way to motorists on Ravensthorpe Road due to potentially restricted visibility

The proposed active travel link appears to be provided through an existing wooded area. It is unclear if sufficient visibility will be provided out of the link for cyclists due to adjacent vegetation and the stone wall. If insufficient visibility is available then an increased risk of collisions involving cyclists existing the link and failing to give way to motorists on Ravensthorpe Road could be expected.

Recommendation

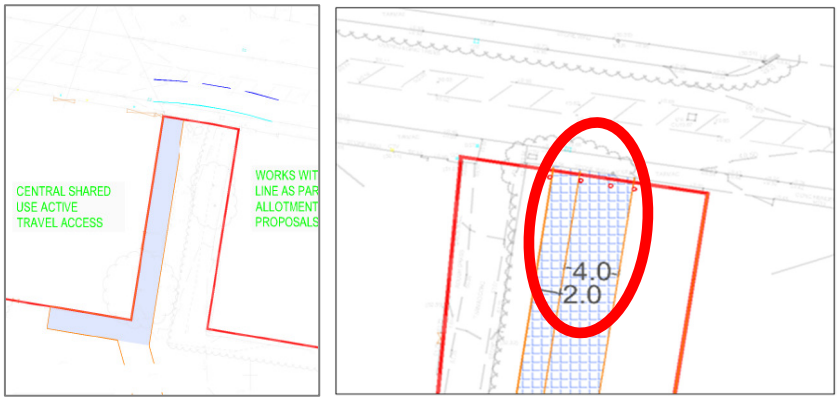
It is recommended that an appropriate level of visibility from the active travel link onto Ravensthorpe Road is provided.

2.28 **Problem**

Location: Eastern and western access links from Ravensthorpe Road

Summary: Risk of cyclist/pedestrian collisions as pedestrians are unaware that they are entering a shared pedestrian/cycle area

No tactile paving is proposed where the active travel links join the footway provision along Ravensthorpe Road. The absence of tactile paving could be expected to increase the risk of cyclist/pedestrian collisions as blind/visually impaired pedestrians on Ravensthorpe Road are unlikely to be aware that they are entering an area that also accommodates cyclists.



Recommendation

It is recommended that appropriate corduroy tactile paving is provided within the Ravensthorpe Road footway to warn of the shared use route ahead.

3.0 AUDIT TEAM STATEMENT

3.1 The Audit was carried out with reference to '*GG 119 Road Safety Audit*' (Highways England, 2020). We certify that we have examined the site taking into account the documents provided by the Project Manager (set out in Table 1) and carried out a Road Safety Audit with the sole purpose of identifying any feature of the design which could be removed or modified to improve the safety of the highway environment within the extents of the scheme. The problems that we have identified have been noted in this report together with suggestions for improvement, which we recommend should be studied for implementation.

3.2 No-one on the Audit Team has been involved with the design of the proposals.

AUDIT TEAM LEADER:

Signed	**T. Kirby**	**Tony Kirby IEng MSc FIHE MCIHT RegRSA** **Director** **Local Transport Projects** **The Flemingate Centre, Armstrong House** **Armstrong Way, Beverley** **HU17 0NW.** **Tony.Kirby@ltp.co.uk** **01482 679911**
Dated	02/11/2022	

AUDIT TEAM MEMBER:

Signed	**R. Penn**	**Ryan Penn BA(Hons) IEng FIHE MCIHT MSoRSA** **Associate** **Local Transport Projects** **The Flemingate Centre, Armstrong House** **Armstrong Way, Beverley** **HU17 0NW.** **Ryan.Penn@ltp.co.uk** **01482 679911**
Dated	02/11/2022	

Appendix 1 – Road Safety Audit Brief

DEWSBURY RIVERSIDE (PHASE 1)

STAGE 1 ROAD SAFETY AUDIT – AUDIT BRIEF (ISSUED: 26/10/2022)

Scheme Details

Project Title	Dewsbury Riverside	
Stage of Audit		Stage 1
Design Team	Design Team Leader	David Sagstad
	Organisation	Development Planning Limited
	Address	Old Barn, 418 Aberford Road, WF3 4AA
	Telephone	01924 684 000
	Email	David.sagstad@devplanning.co.uk
Client	Contact	Thomas Fish
	Organisation	KMBC
	Address	Market Street, Huddersfield, HD1 9WJ
	Telephone	01484 22100
	Email	Thomas.fish@kirklees.gov.uk
Overseeing Organisation	Contact	Adam Darwin
	Organisation	KMBC
	Address	As above
	Telephone	01484 221000 (Ext 77596)
	Email	Adam.darwin@kirkless.gov.uk

Programme, Approval and Issue

Proposed Programme	Timescales are to be agreed.
Approvals Required	Overseeing Organisation to review/approve the Audit Brief.
Document Distribution	1 electronic copy to the client.
I APPROVE THE RSA BRIEF AND INSTRUCT THE RSA TO TAKE PLACE ON BEHALF OF THE OVERSEEING ORGANISATION:	
Name:	
Signed:	
Organisation:	
Date:	

Terms of Reference

Audit required to be in accordance with 'GG 119'?	Yes
Any specific local policy terms of reference?	
Description of Scheme and Scope of Audit	

Signalised site access and internal link road to internal compact roundabout. To include active travel links shown across the submitted plans.

Drawings Subject to Audit

Scheme Drawings	DPL SK161C, DPL SK162C and DPL SK163C - Preliminary Site Access
	DPL SK164C Wide Area Plan
	DPL SK165C – Traffic Signal Access
	DPL SK166C – Ravensthorpe Road Access (link road implemented)
	DPL SK167C – Link Road
	DPL SK168C – Compact Roundabout
	DPL SK169C – Allotment Active Travel Access
	DPL SK170C – Western Active Travel Access
	DPL SK171C – Future Bus Stop (Not to be audited)
	DPL SK175C – Preliminary Access Turning Head Swept Path
	DPL SK176C – Industrial Access Infrequent Use Swept Path
	DPL SK177C to DPL SK184C – Traffic Signal Swept Path
	DPL SK185C and DPL SK186C – Swept Path Roundabout
	Any revisions to the supplied plans that are made prior to the Audit start are to be supplied to the Audit Team.

Scheme Context/Available Data

Description of Locality	Ravensthorpe Road, Dewsbury
Design Standards Applied on Scheme	Manual for Streets LTN 1/20 DMRB Kirklees Highway Design Guide SPD and S38 Guidance Notes
Departures / Relaxations from Standard	None .
Design Speeds	30MPH, except Ravensthorpe Road Visibility splays @28mph based on survey
Existing / Proposed Speed Limits	30mph
Traffic Speed Data	28MPH on Ravensthorpe Road, near preliminary site access. Speed data to be provided.
Existing Traffic Flow / Queue Data	No flows to/ from the site at present. Traffic counts available at Forge Lane and provided along with LINSIG file.
Forecast Traffic Flows	LINSIG file provided with forecasts at signals. Juncitons file provided with forecasts at roundabout.
NMU Data	No data available.
Collision Data	Provided – none near access.
Adjacent Development	This is the first phase of circa 350 units of a total of around 4,000 units.
Site Access Constraints	Redline shown on plans.

Description of Locality	Ravensthorpe Road, Dewsbury
Additional Information	
Previous Road Safety Audits	No previous Road Safety Audits of the scheme proposals have been undertaken.

Maintaining Agent and Police Authority

Contact details of the managing agent to whom any identified maintenance defects should be notified	Name	N/A
	Address	
	Telephone	
	Email	
Police	Name	N/A
	Address	
	Telephone	
	Email	

Proposed Audit Team

Audit Team Leader	Tony Kirby – IEng, MSc, FIHE, FCIHT, RegRSA Director, Local Transport Projects Ltd Tony.Kirby@ltp.co.uk / 01482 679911
Audit Team Member	Ryan Penn - BA (Hons), IEng, FIHE, MCIHT, MSoRSA Associate, Local Transport Projects Ltd Ryan.Penn@ltp.co.uk / 01482 679911

Document control:
Version 1 – Original document, issued 22/09/2022.
Version 2 – This version, issued 26/10/2022.