Final Report

For:
Stockport Metropolitan Borough Council

COPECAT Audit of A6 to Manchester Airport Relief Road Proposals

By: Transport Initiatives LLP *September 2013*

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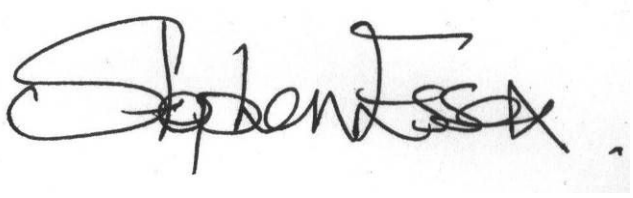
Signed 	*Date 26 September 2013*
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Introduction

This is a COPECAT cycle audit of the A555 at design freeze seven. It is a "level 4" audit although it could become part of a "level 5" one if Stockport Council deems it appropriate. The audit is based on a set of plans supplied by Stockport MBC, a meeting to discuss the scheme with Jim McMahon, Martin Rigby and Naz Huda, all of Stockport MBC, subsequent discussions with Naz Huda and attendance at a user group consultation meeting on 18th September 2013. No site visits were made specifically as part of this audit but visits were made to each location as part of an audit undertaken in 2005 and parts of the scheme have been visited subsequently. The plans supplied by Stockport MBC are drawings numbered 1007_3D_DF7_A6-MA_GA_201 to 209.

General.

There are some general points that apply to the whole scheme.

Path width

The proposed design provides a 2.5m wide shared pedestrian and cycle route alongside the entire length of the A6 to Manchester Airport scheme east of Styal Road (with the exception of the existing length of A555). On new sections of road it will be separated from the carriageway by a 2.0m wide grass verge.
Local Transport Note 1/12 para 7.34 says that 3.0m is the preferred minimum for unsegregated shared use. However it goes on to say that narrower paths work satisfactorily. Guidance on acceptable flows quoted in the document give a range of 62 to 450 users per hour for a 2.5m path which is more than would be expected on the new road. More important for safety is the verge. LTN 1/12 recommends 1.5m for roads with a 40mph speed limit, the proposed 2.0m is wider than this. There would be space in the scheme for a 3.0m cycle / pedestrian path and a 1.5m verge. Given that use is expected to be relatively low, safety and amenity would be improved by keeping cyclists further from the carriageway even if the path they use is technically substandard.
West of Styal Road the proposal is for a 3.0m wide path immediately adjacent to the kerb edge. If the outside edge has a notional verge (recommended 1.5m, absolute minimum 0.5m) then an effective path width of 1.5 – 2.5m remains. Clearly this is of a lower standard than the rest of the scheme and it would be better if it could be wider. In the draft version of this audit it was suggested that the cycle / pedestrian path could leave the line of the road here and join the old line of Ringway Road so as to be better integrated with south Wythenshawe. The opinion of the scheme designers was that this would be in conflict with the airport navigational system and metrolink. In the absence of plans for either a definite conclusion cannot be made. It is recommended that Manchester City Council consider the option of moving the path further away from the line of the road.
While street furniture location is a final design issue, lighting columns, sign poles, control cabinets and other street furniture should be kept clear of the cycle / pedestrian path. The clearance for any item higher than 600mm (for example sign poles) should be 500mm from the path edge.

Going Dutch

There is currently considerable interest in Dutch designs in this country. Consequently many cyclists would like to see features such as segregated cycle tracks and subways to cross major roads. Many of theses features are justified by high levels of cycle use in the Netherlands and although often assumed to be universal across the country, in practise are not found everywhere. The Dutch are usually much clearer in defining what is and is not a cycle route than we are and their designs usually make logical sense to the user. While there are not the flows, and in many cases the space, to provide the scheme to Dutch standards, if cyclists can clearly follow the Relief Road foot / cyclepath with confidence then part of the Dutch ethos will have found its way into the scheme. The lengths of cycle / pedestrian paths between junctions will be easy to follow; if cyclists get lost it will be at the junctions. At the final design stage care should be taken to ensure that the designs are coherent.

Access ramps

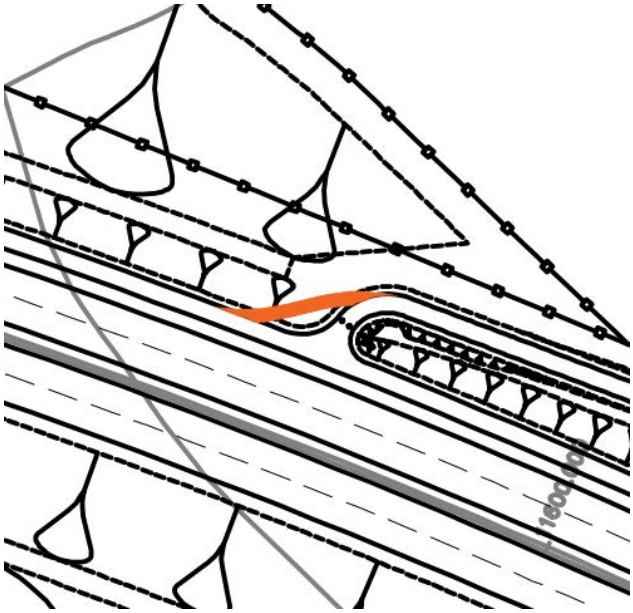


Diagram 1. Woodford Road

Cyclists prefer to make use of the speed they have gained going downhill rather than having to stop. The design of the road shows ramps leading down to the proposed cycletrack as turning sharply and meeting the cycle track almost at right angles. While this is a conventional highway design where motorists know they have to slow to give way, here cyclists will soon learn that the need to give way will be largely unnecessary and thus many will be tempted to use speed gained travelling down the ramp to help them along the cycle track. There is thus a possibility that they could overshoot the cycle path and verge to end up on the carriageway. It was originally recommended that the design should be altered to that shown in diagram 1. However, in subsequent discussions, Stockport Council expressed some reservations about this. It is recommended that the Council reconsiders altering the alignment at these junctions. It is also recommended that the bollards shown on the plan are relocated to a straight section of path. The gap between the bollards should be 1.2m minimum and the line of bollards should extend beyond the width of the path as vehicles will be able to pass around them.

Reducing pinch points and conflict at the ends of crossings

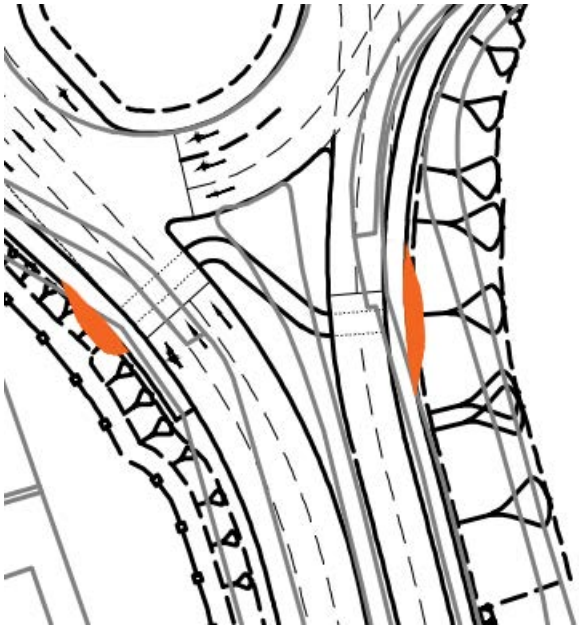


Diagram 2. Stanley Green

The drawings supplied show that the width of footways and cycletracks are the same at the ends of crossings as they are between them. Crossings can be conflict points as the signal poles use up some of the width and cyclists and pedestrians have to turn through 90 degrees to use the crossings. Often users travelling along the path will have to avoid those waiting thus, a wider path would be safer and more convenient to all users.
There are also some safety implications of having a tight turn onto the crossing. Where a cyclist (or pedestrian) is travelling in the same direction as general traffic before turning onto the crossing, a tight radius means they are less likely to be able to check whether traffic is actually stopping before they start to cross.
The minimum curve radii in DMRB should also apply to these situations.
It is therefore recommended that, where possible, paths should be locally widened. Where they are in cuttings or on embankments this may require a short length of retaining wall. Consideration should be given to using cranked rather than straight poles to gain additional room.

Transitions between cycletrack and carriageway

The points where the cycle route leaves or joins the carriageway should be designed so that it is clear where cyclists are going and cyclists can make the transition without losing more speed than is necessary. Where cyclists join the cycle path at right angles, particularly from a signalled crossing, there should be little need to hurry as they are protected by the signals. However, where cyclists join and leave the cycle / pedestrian path at a shallow angle away from a junction, conditions are different. Of particular concern are places such as Stanley Road where cyclists approaching the scheme on the carriageway transfer to the cycle and pedestrian path. At these points motorists are less likely to expect the cyclist they are following to slow down and so when leaving the carriageway it is safer if cyclists can reduce speed on the cycle track rather than on the carriageway. Clearly there is a trade-off between slowing on the carriageway with the danger of being hit from the rear by a vehicle and speeding on the foot/cycletrack with the danger of hitting a pedestrian. It is possible to design some form of transition but this will require additional footway width.

Where cyclists rejoin the carriageway they should do so onto a protected cycle ‘slip’ lane which should continue for at least 25m before terminating. There is an example of this good practice on Dan Bank in Marple.
It is recommended that the Council pay particular attention to the ability of cyclists to leave and join the carriageway safely, conveniently and comfortably at the ends of the scheme.

The scheme in detail

Plan 201

Western junction with Buxton Road.

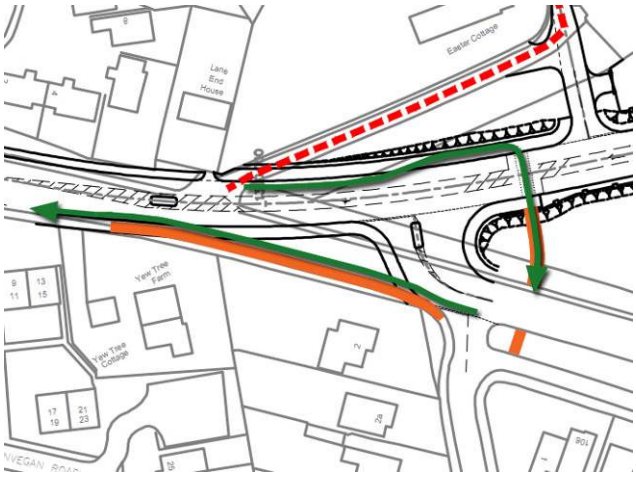


Diagram 3. Buxton Road West
Cyclists' routes shown in green
New path in orange

Some cyclists may prefer to use the new length of the A6, particularly in the eastbound direction. However most cyclists travelling east are likely to prefer to use the old line of the A6 or will be travelling to somewhere served by it. These cyclists will need to turn right at this junction. There is a crossing marked to the east of the junction. It is recommended that this is used as a toucan crossing to assist cyclists making the right turn. On the south east side of the junction there is no need for the footway to hug the kerb line. It could run straight across the grass area (subject to levels) thus giving cyclists and pedestrians a more direct, shorter route. Failure to provide for 'desire lines' usually results in informal, worn, muddy paths developing as path users make up for the design deficiencies of the original layout. Westbound cyclists could be allowed to join the new line in a protected cycle lane which could run to a point just west of the road serving the police station. The footway does not need to hug the kerbline.

Buxton Road Junction east.

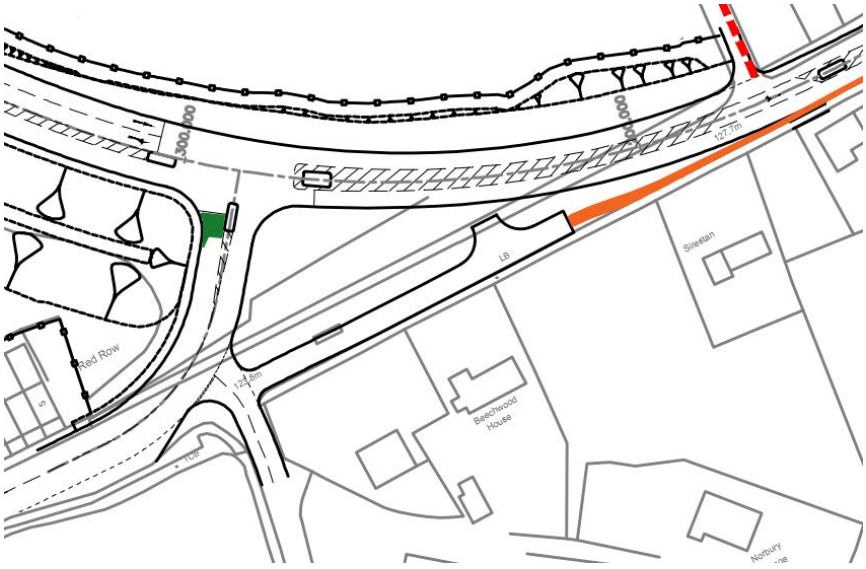


Diagram 4.
Buxton Road East

ASL shown in green, additional foot/cycle way in orange

There are two ways cyclists might want to continue east up the A6. The first is on carriageway. It is recommended that an advanced stop line (ASL) is installed at this junction to make this turn easier. In 2005 Transport Initiatives investigated possible improvements for cycling along the A6 between Mill Lane and the Middlewood Way. One option considered

was to convert the southside footway to joint pedestrian and cycle use. This would be a preferred way for some cyclists (particularly less confident ones) to continue east towards the Middlewood Way. This idea was not recommended at the time due to the narrowness of the footway in the vicinity of Middlewood Road. The SEMMMS proposals enable this issue to be overcome as cyclists can use the new cul de sac alongside the 'problem' footway. It is recommended that the footway is converted to joint pedestrian and cycle use from the end of this cul de sac to the Middlewood Way. Parts of the footway will require widening. Flush kerb detailing at the transition point and measures to stop inconsiderate parking should also be included in any final design.
The flow along Middlewood Road is likely to be higher than that along Buxton Road which it joins and so motorists turning out may not pay sufficient attention to cyclists proceeding along Buxton Road. It is recommended that a length of green coloured advisory cycle lane is laid across the mouth of the junction to highlight the presence of cyclists.

Plan 202

Old Mill Lane access.

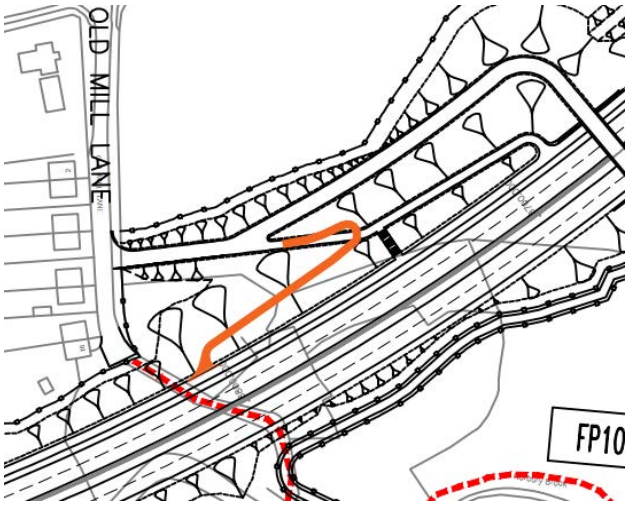


Diagram 5. Old Mill Lane

The ramp from Old Mill Lane to the A555 runs to the east. There is no benefit in cyclists using the Relief Road cycletrack to travel between Old Mill Lane and the eastern end of the scheme as remaining on the old road network is shorter and involves fewer gradients. While It is understood that the ramp's direction is dependant on more factors than just cycling, running the ramp in the other direction would shorten cycle journeys and add considerable convenience. It is therefore recommended that the Council review the direction of this ramp.
It is also appreciated that the most the ramp could run to the west is shown on the diagram left.

Macclesfield Road.

The Relief Road / Macclesfield Road junction provides for east west cycle movements on the cycle / pedestrian path, via four toucan crossings between various islands. North south movements are provided for on the carriageway. No specific provision is made for cyclists wishing to turn between the east west off highway route and the north south on carriageway one.
Of initial concern is the number of steps that the relief road cycle route uses to cross the junction in the preliminary design. This comment makes assumptions about the signal staging, but in similar junctions of this nature it is usually possible to reduce the number of steps cyclists take in crossing the junction. This will increase the convenience for cyclists and also reduce the incidence of non compliance with the signals. Logically, if it is assumed

that cyclists can cross the junction in the north south direction in one step then they should be able to make the broadly similar east west crossing in fewer than four steps, as proposed. At the Princess Road/Greenheys Lane junction in Hulme, Manchester, cyclists are able to cross the junction in two steps. It is anticipated that with the signal stage shown in diagram 6, cyclists would have sufficient time to make the manoeuvre shown in green. It is thus recommended that the north side of the Macclesfield Road junction should be redesigned so that the cycletrack along the line of the road crosses the junction in fewer steps.

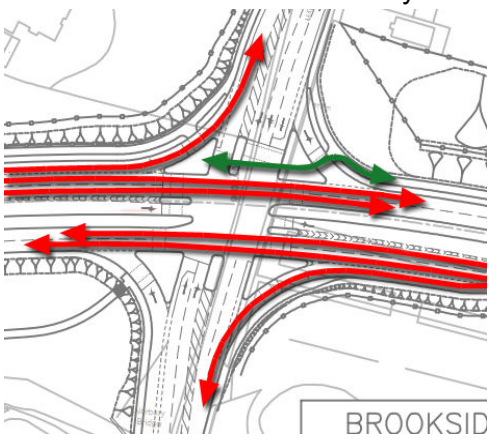


Diagram 6. One signal stage at Macclesfield Road

There is no need for the advanced stop lines for north and southbound cyclists as there will be no need for them to make right turns, nor will there be left turning vehicles crossing their path after the stop line. It is recommended that these be removed from the proposals

Both north and southbound cyclists cross the paths of vehicles turning left onto the new road. Judging by the long left turn lane it is expected that the northbound left turning flow will be substantial. Cyclists are likely to feel intimidated cycling on the long cycle lane between the left turning and straight ahead traffic. These long central lanes have also been associated with injury accidents to cyclists. It is recommended that the central cycle lane be abandoned and instead use a widened footway on the west side of the road, cross the left turning traffic using a cycle/pedestrian crossing where the proposed pedestrian crossing is and then be returned to the carriageway to cross the remainder of the junction as designed. A cycle lane could be marked across the junction in both directions to guide cyclists. A slow cyclist could take a long time to clear the junction. The designers should consider a separate stop line after the jug handle crossing of the left turn flow which could be returned to red before the signals for the main northbound general traffic flow. An example of a jug handle crossing of a left turn slip using common straight ahead signals is on the westbound side of Ashton Old Road, Manchester, at its junction with the Mancunian Way. An example of a separately signalled jug handle is the northbound side of the A538 at junction 6 of the M56 west of Manchester Airport.

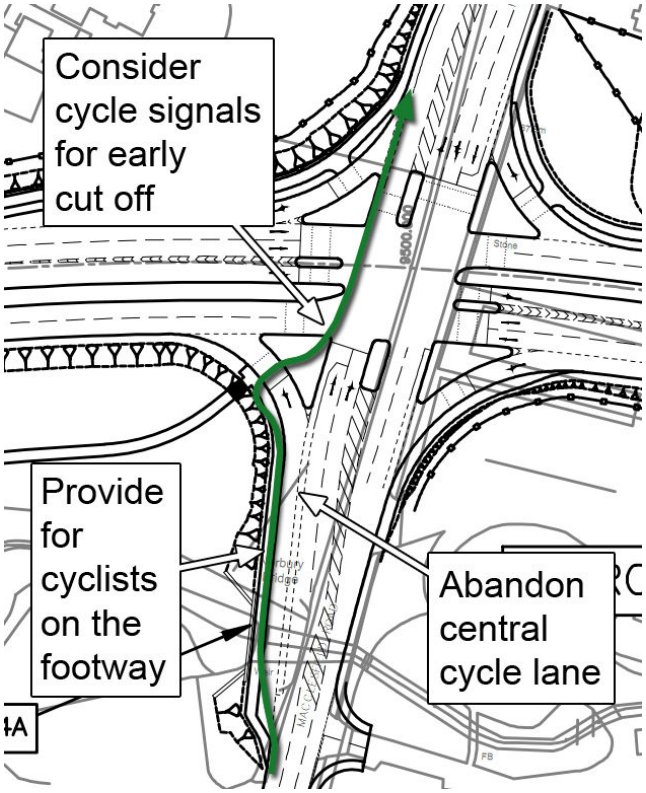


Diagram 7
Macclesfield Road – Northbound Cyclists

One issue that the current design fails to address adequately is that of cyclists on the east west cycle pedestrian path turning onto Macclesfield Road and vice versa. Coherent, convenient and legible facilities to enable cyclists to make these turns safely will need to be solved before the final design stage is completed. If this is not done, cyclists encountering the junction will need to devise their own, possibly dangerous ways to overcome the design shortcomings. It is recommended that the Council consider how these turns can be facilitated.

Plan 204.

Woodford Road Bridge.

This bridge is shown as having a wider footway on the north western side. It is understood that this is the result of a suggestion by users and is to provide a link across the road to a proposed bridleway on the south west side.
Guidance recommends that there should be a verge or other margin between the shared use path and the carriageway of at least 0.5m. A verge would be impractical on a bridge and so it is recommended that the first 0.5m is made from a contrasting material. The remaining width is 2.5m, the same as along the main scheme, although the presence of the parapet for the bridge means the “effective width” (LTN 1/12) is 2.0m. This width should be adequate for the expected use.

It is important that users can safely access the widened footway. Due to its short length it is unlikely to give benefit to cyclists travelling along Woodford Road. Thus we need to consider cyclists and pedestrians (and maybe equestrians) turning onto the path from Woodford Road or crossing to the bridleway. A dropped kerb should be provided at the top of the ramp to the Relief Road path for cyclists wishing to travel to or from the north east. At the south western end of the bridge it is recommended that the foot/cycleway be realigned to make it easier for cyclists and horse riders to position themselves at 90 degrees to Woodford in order to cross. Effectively this allows them to make a larger radius turn. The Council also need to consider the gradient of the field access that cyclists and equestrians will be using.

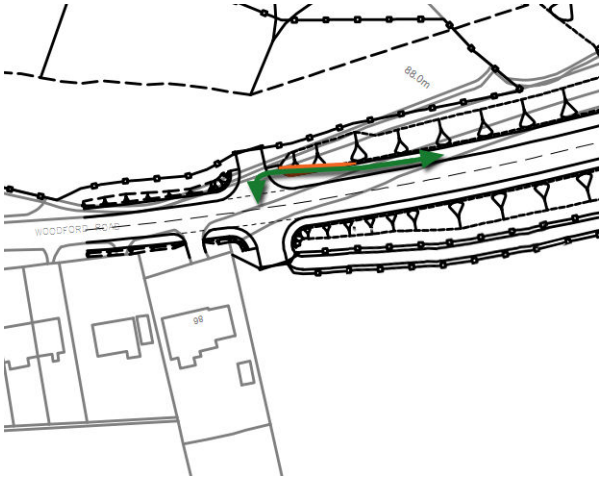


Diagram 8. Western end of Woodford Road bridge. New foot/cycleway shown in orange, cyclists and equestrian route in green.

The plan shows bollards at the ends of the access ramp. Presumably these are to prevent unauthorised use by motor vehicles. The clear space between the bollards should be 1.2m minimum. They should preferably be located on a straight section of the ramp and the line of bollards should be extended across any drivable verge.

The bottom end of the ramp is a location for the general suggestion that the design should allow east bound cyclists to join the ramp without losing speed and similarly that westbound cyclists using the ramp should be able to avoid braking more than necessary.

Plan 205

Oil Terminal Junction.

The design of this section includes a large number of chicanes, but not at all approaches to the pegasus crossing points. The Council needs to review this inconstency. The staggered barriers forming the chicanes should be arranged so that the user crossing the road faces towards the oncoming traffic. While the chicane at the bottom of diagram 9 is correct the associated chicane on the eastbound carriageway is the wrong way round. The chicane at the exit of the Oil Terminal road is the correct way around but is poorly aligned with the crossing and so users face away from oncoming vehicles. The drawing supplied does not show guard railing. This would need to be installed or else users would make their own shorter routes to the crossings avoiding the chicanes. It is recommended that the Council consider the need for guardrailing to enforce use of the chicanes or review the need for the chicanes themselves.

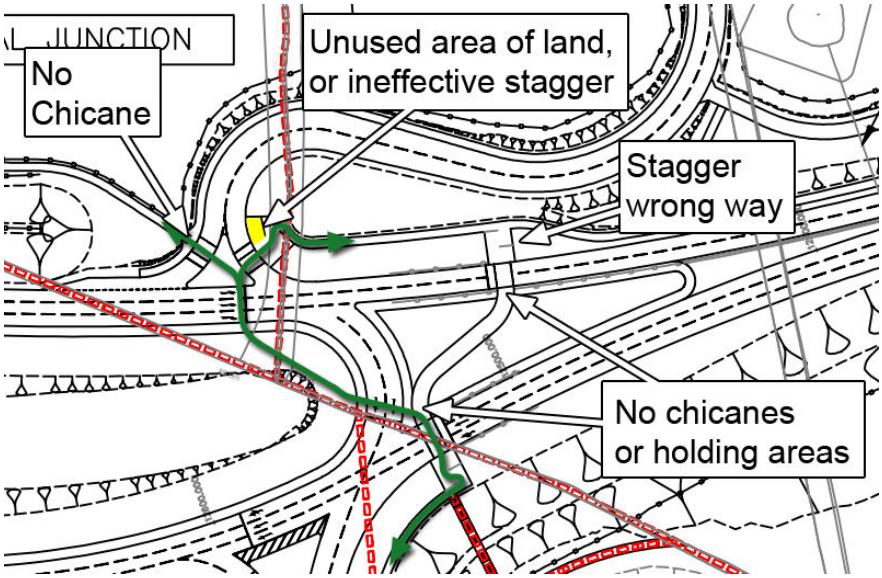


Diagram 9
Oil Terminal Junction Chicanes

Setting the path away from the road makes a more pleasant experience for users as well as ensuring horses are less likely to be 'spooked'.

There is concern about the crossing of the eastbound carriageway that is set away from the junction. This crossing is likely to be lightly used. Regular users of the Relief Road who would normally see the traffic lights on green are less likely to react when they see them on red. A path taking the route as shown left may be quicker to use than one via the offset crossing but the need for storage for horses needs to be set against loss of storage space for vehicles making the west to south turn towards Chester Road.

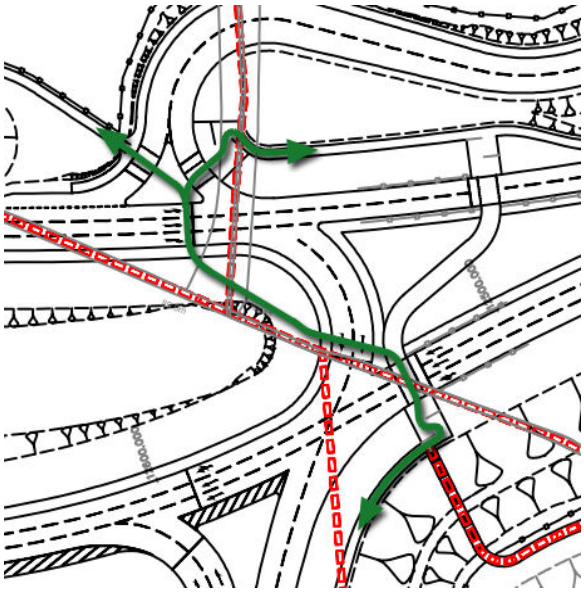


Diagram 10
Oil Terminal Junction
Alternative route

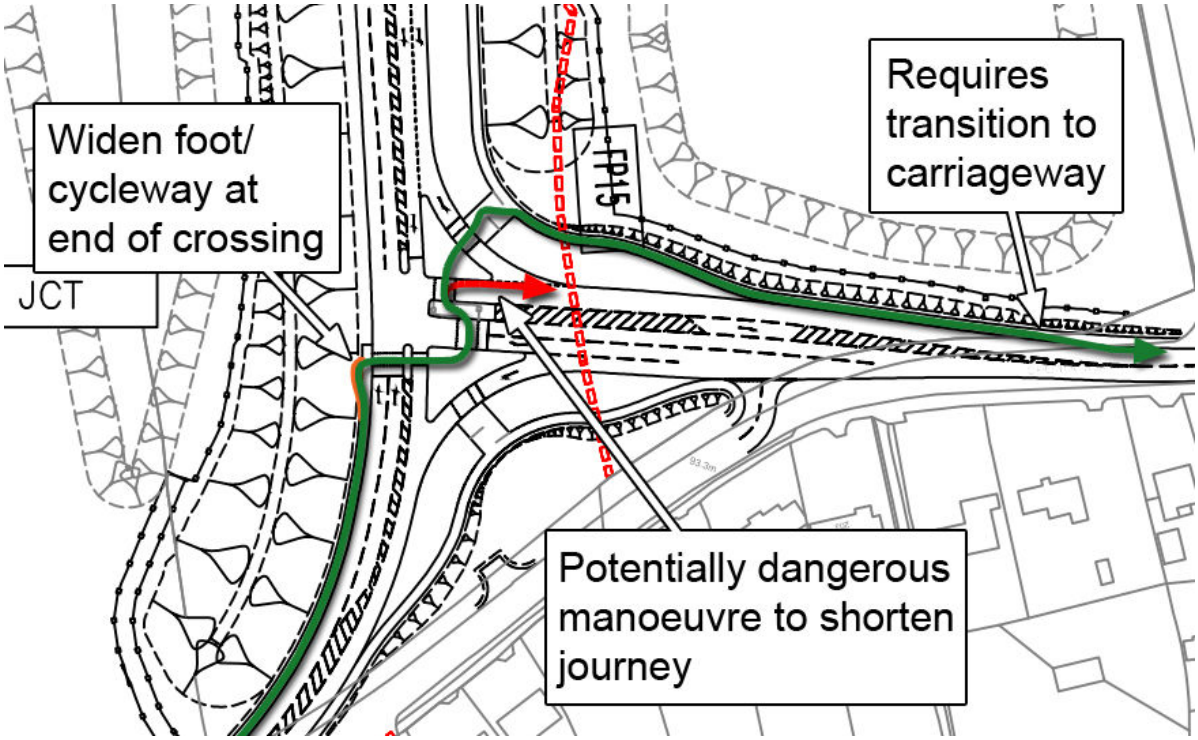
However, having said the above, it may well be that the oil terminal will be relatively lightly used and thus the comments made regarding the safety of the offset crossing would also apply to the eastbound stopline within the junction. The Council should consider the safety implications of having an additional stopline set away from the Oil Terminal junction.

Chester Road Link Junction

The cycle facilities at this junction consist of a shared pedestrian / cycle /equestrian route from the Oil Terminal junction with pegasus crossings to reach the old line of Chester Road and a shared footway on the northbound approach leading to a toucan crossing to the southern triangular island. In discussions with the Council it appears that westbound cyclists are expected to use the existing line of the road. While the westbound route is easy, provided that there is a gap in the footway to allow them to rejoin Chester Road west of the junction, the eastbound route is more difficult.

Two suggested design details are: firstly, that the turn from the foot/cyclepath on the northbound approach onto the toucan would be easier if the path was widened at the end of the crossing; and, secondly, there needs to be a point where cyclists are returned to the carriageway preferably by means of a protected cycle ‘slip’ and a short length of marked, on carriageway, cycle lane.

Of more concern is the number of steps that cyclists need to make to complete the right turn. There are various ways in which this junction could be signalled with different effects on the time taken for cyclists to get through it and some require more than one signal cycle. It would be expected that cyclists would treat the toucan and pegasus signals as “give ways” to reduce their delay and normally this does not give rise to accidents. However, designers should be wary of the turn shown in red in diagram11, particularly if the signal regime chosen includes a stage where the north to east turn is running but not the south to east. In such a situation regular users would not expect to have to give way to any vehicle and so a bicycle, often not usually looked for by drivers, could easily be missed.
To enable cyclists to make the right turn in one step would require a redesign of the junction. It is recommended that the Council reconsider the south west to east cycle right turn at the junction.



D*iagram 11. Chester Road junction – right turn issues*

Cyclists travelling south west to east on the carriageway could be assisted by an advanced stop line at the signals.

To enable westbound cyclists to rejoin Chester Road a gap in the footway would be required. There is however, space to construct a short length of cycle path ending in a cycle lane thus making it easier to rejoin the road without having to slow down more than necessary. The cycle lane would have to end at the point where the new alignment meets the old.

Some eastbound cyclists may prefer to avoid the junction altogether by following the line of the old road. In any case provision should be made for eastbound cyclists to use the old road as they may wish to visit a property on it. To assist eastbound cyclists to join the old section of road there should be a right turn lane in the area occupied by hatching, and further protected by an island. There will need to be a gap in the footway, this could be the same as the one used by westbound cyclists.

To rejoin Chester Road eastbound cyclists would have to cross 4½ traffic lanes. It would be safer to turn right in two stages where the road is narrower. It is therefore recommended that an additional island is constructed in the hatched area to the east of the proposed junction. The island should preferably be 2.5m wide. The exact position of the island will need to be determined at the final design stage; the further east it is, the easier the road will be to cross but the hatched area will be narrower. The link to this island should be constructed so that westbound cyclists can access and use it easily.

It is recommended that the Council improve the links between the old and new alignments.

There will need to be a link to the Pegasus crossing from the old line of road to enable cyclists to reach the link to the Relief Road.

There may need to be extensive guardrailing to prevent users avoiding the chicanes on the approaches to the Pegasus crossings.

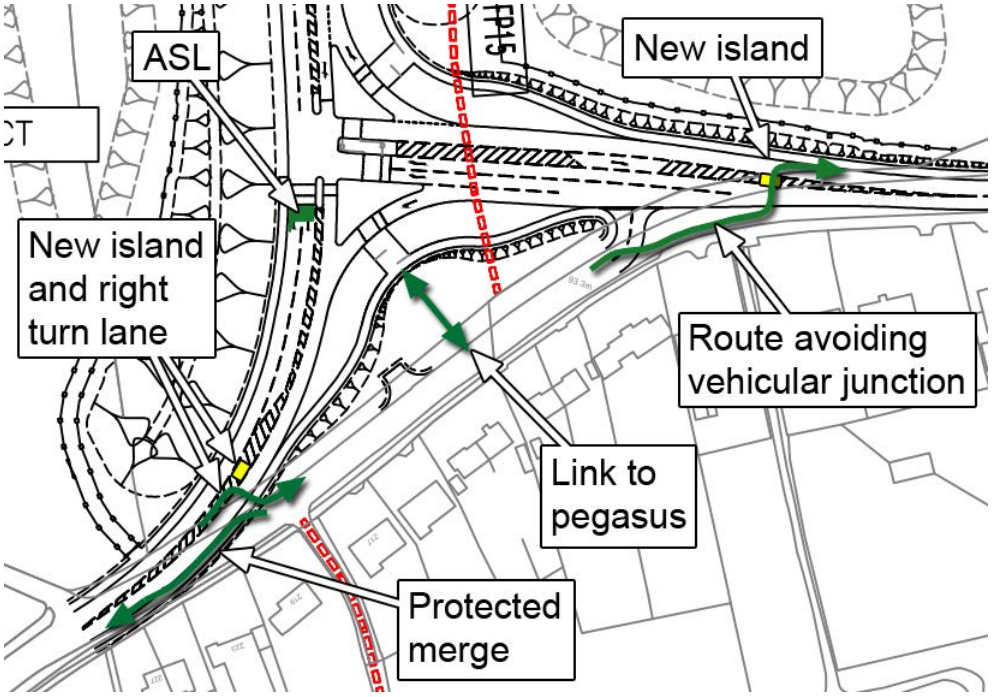


Diagram 12

Chester Road Junction. Alterations for cyclists using the current line of road

Path to Woodford Road junction from Oil Terminal Junction

This length of path will be a more attractive section to use as it is separated from the A555 by the embankment and at the top of the cutting. The Council will need to ensure that the forward visibility at the kink approaching the Woodford Road junction is adequate. The link to Albany Road is commended.

Woodford Road Junction

The Woodford Road junction is very tight with very little space for cyclists. The main issues for east west cyclists on the A555 route revolve around the crossing over Woodford Road. These are:

- a pinch point at the northern corner of the triangular island as the western half of the crossing is located very close to it
- a pinch point in the 'sheep pen' on the central island
- the tight dimensions of the cul de sac eastern arm of the junction means that there could easily be conflicting movements.

The path from the Oil Terminal junction runs parallel to the A555 whereas users are likely to want to take the natural direct line and cut the corner to get to the crossing.

It is recommended that the Council investigates the possibility of making the crossing over Woodford Road a one stage crossing rather than a two stage one. It could still run via an island upon which users could wait but cyclists could cross Woodford Road in one go. This would enable the western half of the crossing to be moved away from the corner of the triangular island.

East of the crossing, cyclists should use the carriageway of the cul de sac. They will need guiding both from the crossing and from the Oil Terminal direction, perhaps by short lengths of segregated path.

The path towards the Oil Terminal junction should be realigned to provide a shorter route.

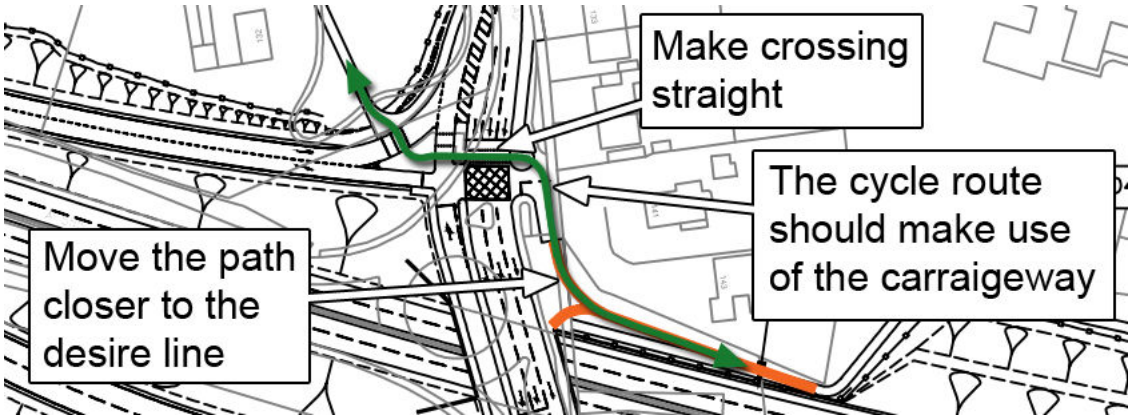


Diagram 13 Woodford Road junction

The main issues for cyclists travelling along Woodford Road are the restricted width and the northbound left turn flow onto the A555. Currently there is no simple, deliverable option to improve matters unless more space becomes available. If there is more carriageway space the Council is advised to provide for northbound cyclists on the carriageway and to consider either a short central cycle lane or 'jug handle' facilities to enable cyclists to avoid left turning traffic. It must be noted that replacing the existing roundabout with signals will be safer for northbound cyclists even in the absence of any additional facilities.

Plan 207

General

Cycle facilities are provided at both the A34/Stanley Road and A34/A555 junctions with a cycle track linking the two. The linking cycletrack does not form part of any longer route such as something along the A34 and exists solely to link the two roads. There is no reason why it has to be along the A34 if another alternative exists. This is raised because the design of the Stanley Road junction provides for eastbound cyclists around the north of the junction and westbound cyclists around the south side. There are no facilities linking the two sides of the junction. This design makes the west to south and south to east turns difficult as they are not provided for. However, there are two alternatives to the path along the A34: to the west there is Earl Road and to the east the private Longsight Lane. Both of these could make links between Stanley Road and the A555. Longsight Lane would be the safer and more pleasant option. It is recommended that the Council pursue the option of adopting Longsight Lane as a cycle link between Stanley Road and the A555.

Stanley Road / A34 Junction

Cycle movements along Stanley Road are catered for by uni-directional facilities north and south of the junction. The eastbound route on the north side of the junction includes an offset toucan crossing. This increases the length of cyclists and pedestrian journeys and involves an additional stop with associated capacity lost for motor vehicles and potential for shunt and other accidents including see-through problems. The drawing supplied shows that the western approach to the junction is divided into two lanes with the left hand lane marked for turning left and the right hand lane for all other manoeuvres. If this is the case the two flows can be split by a triangular island allowing the offset toucan to be incorporated into the junction giving shorter journeys, a safer crossing and a pedestrian cycle crossing opportunity per signal cycle. It is recommended that this be investigated.

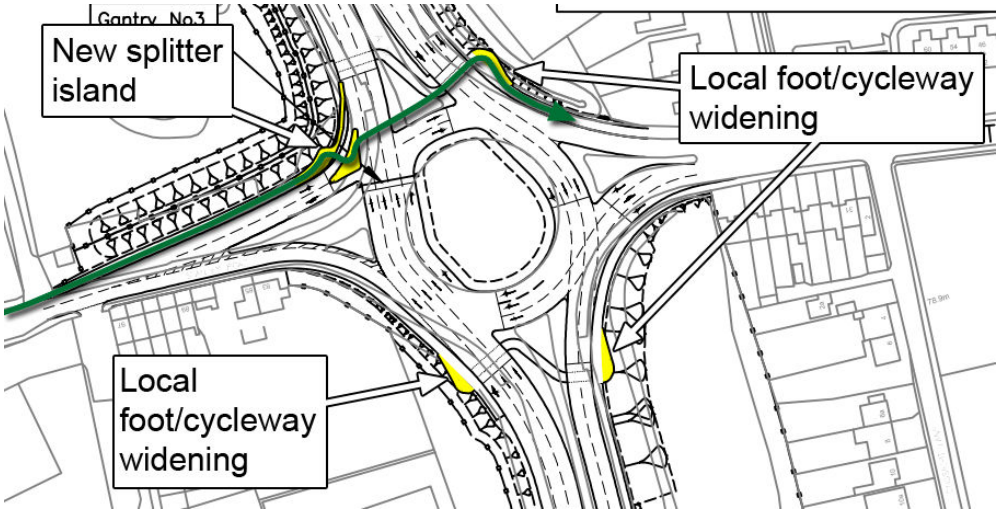


Diagram 14

Stanley Green Junction

The transitions between the carriageway and foot/cycleway should be smooth so that a cyclist can leave the carriageway without having to slow appreciably and return to the carriageway in a protected cycle 'slip' lane. The foot/cycleway should be locally widened at the ends of the toucan crossings by providing a short length of retaining wall. Additionally, cranked poles should be used to increase the available width.

A34/A555 junction

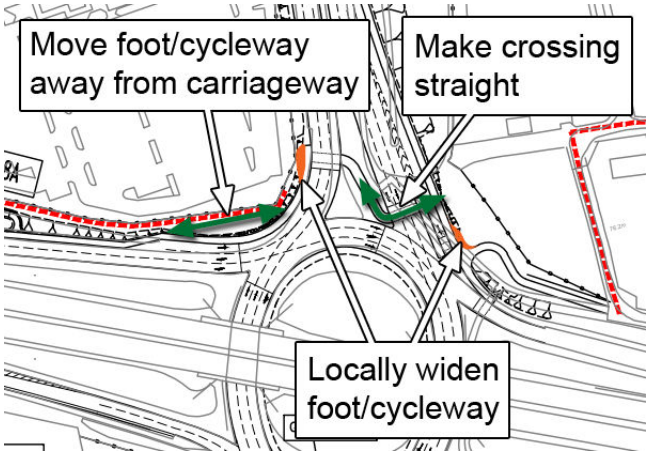


Diagram 15 A34/A555

The main concern with this junction is the stagger on the crossing of the southbound A34 approach. The 'sheep pen' on the island separating the left turn and straight ahead flows is long. Its width cannot be measured from the drawing supplied. Making the crossing straight has however, capacity implications.

The foot/cycleway should be locally widened at the ends of the toucan crossings.

The foot/cycleway could be moved away from the carriageway on the north west corner of the junction and combined with footpath 38A.

At the user group meeting held in Fred Perry House on Wednesday 18th September consultees expressed a view that the A34 junction is an appropriate place for a grade separated crossing. A bridge appeared to be the favoured option. However, with both Spath Lane and Earl Road being lower than the A34, a subway is likely to provide a better, more convenient crossing for cyclists and other route users. It would have shorter ramps than a bridge. It is recommended that the Council investigate a subway as well as a bridge at this point.

Plan 208

Wilmslow Road junction

The drawing supplied does not show any facilities to cross Wilmslow Road however, following discussions with Stockport Council, it is understood that a toucan will be provided. This toucan is a welcome addition to the proposals, though at this stage no comment on the details of its design can be made.

There are also no facilities shown for cyclists travelling along Wilmslow Road. As the turning movements at the roundabouts are simple it is recommended that the Council investigate whether green coloured on-carriageway cycle lanes or other markings would improve safety by highlighting the presence of cyclists.

The Relief Road west of Wilmslow Road

The foot/cycleway runs adjacent to the kerb for the length of the slip road. The Council should investigate whether a verge can be introduced sooner. It may be possible to run the foot/cycleway at the top of the cutting, which would also reduce the works at the Yew Tree footbridge.

Plan 209

Styal Road Junction

This junction is similar in layout to the Macclesfield Road junction but as there is a cycle route along the western footway of Styal Road there is no need to provide for cyclists on the carriageway nor the turns between on carriageway routes and the east-west foot/cycleway (as needed at Macclesfield Road).

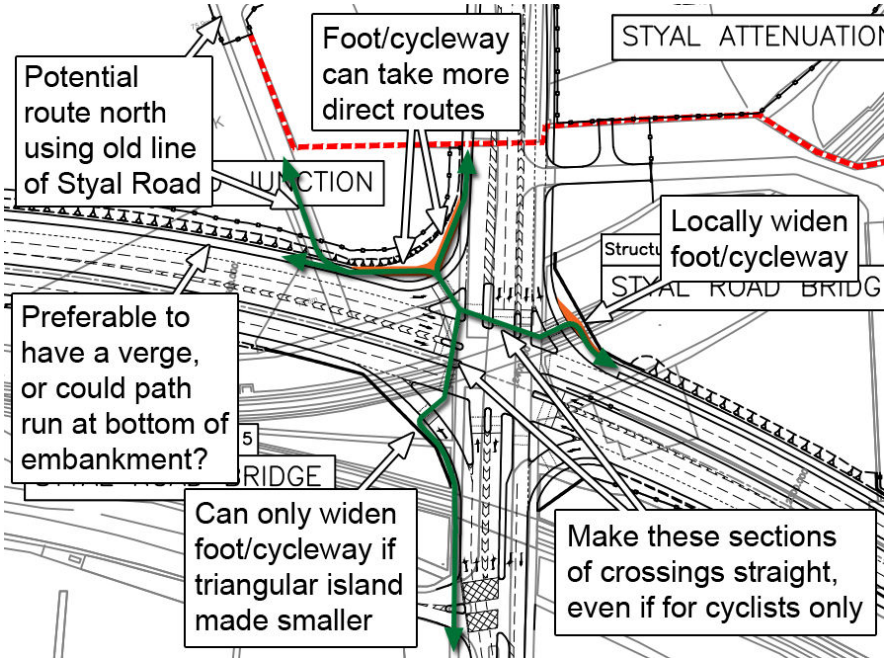


Diagram 16

Styal Road junction

Cycles should be signalled across the junction in fewer stages. Making assumptions about the signal sequencing it should be possible for cyclists to cross the junction in two stages. Cyclists travelling south to east and vice versa will require an additional stage.
The foot/cycleway should be locally widened at the ends of the crossings. On the south west corner of the junction the bridge constrains the available width. The Council should consider whether the triangular island should be made smaller to enable the foot/cycleway to be widened here. On the north west corner of the junction the foot/cycleways could take a more direct route and arrive at the kerb edge in line with the crossing.

It is recommended that the Council considers how to reduce the number of stages involved in the cycle crossings, that the foot/cycleways are locally widened at the ends of crossings and that paths on the north west corner of the junction are straightened and made more direct.

West of Styal Road the Relief Road foot/cycleway is directly adjacent to the carriageway. It is recommended that there be a verge or strip of contrasting material along the kerb edge.

Further north on Styal Road (and outside the direct scope of this scheme) the cycle route crosses the Styal Road / Ringway Road junction by an uncontrolled crossing within the signals. This crossing is not the easiest to use. The Relief Road will result in less traffic using Ringway Road which would make the crossing easier. However, Manchester City Council is recommended to consider moving the cycle route to the old line of Styal Road: firstly, land

requirements for the Relief Road means that the whole length is back in public ownership; and, secondly, it will be safer to cross Ringway Road away from the Styal Road signals.

Relief Road west of Styal Road

The current design shows the foot/cycleway running alongside the Relief Road. According to the Design Team the path is a 3.0m shared space adjacent to the carriageway. There should be a verge or barrier between a cycle / pedestrian path and the carriageway. As the rest of the path is 2.5m wide it would seem reasonable and consistent that this section of path could be the same width giving space for a 0.5m verge. A verge has a larger maintenance liability than a macadam path. If this additional liability is considered a problem the "verge" could be a 0.5m deterrent strip of different contrasting material. It is therefore recommended that a verge or contrasting strip of at least 0.5m is constructed between the cycle path and the carriageway.

The route would be more useful it was better integrated with Ringway Road, Shadow Moss Road and the residential areas in south Wythenshawe. Stockport Council has indicated that the emergency access from Ringway Road to the new road could be used by cyclists and pedestrians. If the link was for cyclists and pedestrians only the design would include measures to prevent cyclists failing to make the turn onto the cycle path and entering the carriageway in error. This could be done either by erecting a barrier near the kerb edge or by designing the junction so that cyclists are guided either left or right before joining the path, for instance by designing the junction in the form of a triangle. As the link is to be used by emergency vehicles then a barrier defeats the object of the link. It may be feasible to design the junction with a route for emergency vehicles running over deterrent paving with a smoother route for cyclists and a barrier at the kerb edge. It is recommended that Manchester City Council investigate measures to improve the links between the Relief Road cycle path and south Wythenshawe.

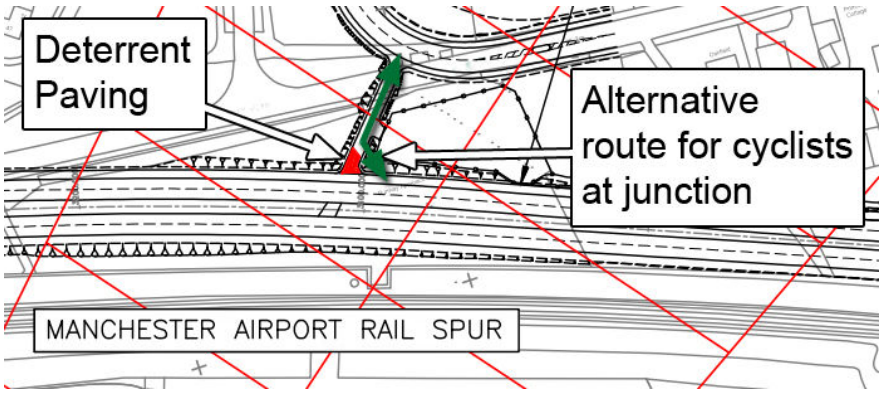


Diagram 17 – issues at the junction of the emergency access and cycle / pedestrian path.

Recommendations

Page	Plan no.	Location	Recommendation
4	209	West of Styal Road	Manchester City Council should consider the option of moving the path further away from the line of the road.
5	General	Access Ramps	Stockport Council should consider altering the alignment of the junctions where access ramps meet the Relief Road cycle pedestrian path.
5	General	Access Ramps	Stockport Council should move the bollard to a straight section of path. The gap between the bollards should be 1.2m minimum and the line of bollards should extend beyond the width of the path as vehicles can drive around them.
6	General	Ends of crossing points	Where possible paths at the end of crossings should be locally widened. Where they are in cuttings or on embankments this may require a short length of retaining wall. Consideration should be given to using cranked rather than straight poles to minimise intrusion into the available path width.
6	General	Transitions between carriageway and foot / cycle path	Stockport Council should pay particular attention to the ability of cyclists to leave and join the carriageway safely at the ends of the scheme.
7	201	Western junction with Buxton Road	The scheme should include a toucan crossing and new length of path to enable cyclists to turn right and rejoin the old alignment here.
7	201	Eastern junction with Buxton Road	Stockport Council should install an advanced stop line at this junction to make the right turn easier.
8	201	Eastern junction with Buxton Road	Stockport Council should convert the footway from the end of the new cul de sac to the Middlewood Way to joint pedestrian and cycle use. Parts of the footway will require widening.

Page	Plan no.	Location	Recommendation
8	201	Buxton Road (old line) / Middlewood Road	Stockport Council should lay a short length of green coloured advisory cycle lane across the mouth of the junction.
8	202	Old Mill Lane	Stockport Council should review the direction of this ramp between Old Mill Lane and the Relief Road.
8	202	Macclesfield Road	Stockport Council should redesign the north side of the Macclesfield Road junction so that the cycletrack along the line of the road crosses the junction in fewer stages.
9	202	Macclesfield Road	The advanced stop lines should be removed from the proposals.
9	202	Macclesfield Road	Stockport Council should abandon the central cycle lane and instead route cyclists via a widened footway on the west side of the road, crossing the left turn movement using a 'jug handle' accessed toucan crossing.
10	202	Macclesfield Road	Stockport Council should consider how turns between the off-carriageway east west route and the on-carriageway north south route can be facilitated.
10	204	Woodford Road Bridge	Stockport Council should ensure that the first 0.5m at the kerb edge of the foot / cycleway is made from a contrasting material.
10	204	Woodford Road Bridge	A flush dropped kerb should be provided at the top of the ramp to the Relief Road path for cyclists wishing to travel to or from the north east.
10	204	Woodford Road Bridge	Stockport Council should realign the foot / cycleway at the south western end of the bridge to make it easier for cyclists and horse riders to align themselves at right angles to Woodford Road.
11	205	Oil Terminal junction	Stockport Council should consider the need for guardrailing to enforce use of the chicanes or review the need for the chicanes themselves.
12	205	Oil Terminal Junction	Stockport Council should consider the safety implications of having an additional stopline set away from the Oil Terminal junction.

Page	Plan no.	Location	Recommendation
12	205	Chester Road	Stockport Council should reconsider the south west to east cycle right turn at the junction.
13	205	Chester Road	Stockport Council should improve the links between the old and new alignments.
14	205	Woodford Road	Stockport Council should investigate the possibility of making the crossing over Woodford Road a two stage crossing rather than a three stage one.
15	205	Woodford Road	Stockport Council should revise and re-align the path towards the Oil Terminal junction to provide a shorter, more direct route.
15	205	Woodford Road	If more carriageway space becomes available Stockport Council should investigate measures to provide for northbound cyclists on the carriageway and to consider either a short central cycle lane or 'jug handle' facilities to enable cyclists to avoid left turning traffic.
15	207	Longsight Lane	Stockport Council should pursue the option of making Longsight Lane a cycle link between Stanley Road and the A555.
16	207	Stanley Road	Stockport Council should investigate whether the offset crossing on the northbound exit can be incorporated into the junction.
16	207	Stanley Road	Stockport Council should ensure that the transitions between the carriageway and foot/cycleway are flush so that a cyclist can leave the carriageway without having to slow appreciably and return to the carriageway in a protected cycle lane.
16	207	Stanley Road	The foot/cycleway should be locally widened at the ends of the toucan crossings by providing a short length of retaining wall.
16	207	Stanley Road	Stockport Council should consider cranked poles to minimise the intrusion of signing poles on path widths.
16	207	A34	The foot/cycleway should be locally widened at the ends of the toucan crossings
17	207	A34	Stockport Council should investigate a subway as well as a bridge to enable cyclists to cross the A34.

Page	Plan no.	Location	Recommendation
17	208	Wilmslow Road	Stockport Council should investigate whether green coloured on-carriageway cycle lanes or other markings would improve safety by highlighting the presence of cyclists travelling in a north – south direction.
18	209	Styal Road	Stockport Council (as designers) should consider how to reduce the number of crossing stages involved in the cycle crossings through this junction
18	209	Styal Road	The foot/cycleways at this junction should be locally widened at the ends of the toucan crossings.
18	209	Styal Road	The paths on the north west corner of the junction should be straightened to make them more direct.
18	209	West of Styal Road	Manchester City Council should consider moving the north south cycle route to the old line of Styal Road.
19	209	West of Styal Road	Manchester City Council should construct a verge or contrasting deterrent strip of at least 0.5m between the cycle path and the carriageway.
19	209	West of Styal Road	Manchester City Council should investigate measures to improve the links between the Relief Road cycle path and south Wythenshawe.

Appendix

GREATER MANCHESTER CONCISE CYCLE & PEDESTRIAN AUDIT

HIGHWAYS SCHEMES

FACILITY	COMMENTS	
New Signal Junction	• Can cyclists and pedestrians make all movements easily?	• Cyclists and pedestrians can make all the necessary movements at most junctions. The scheme does not cater for turns between the Relief Road and Macclesfield Road. The audit has raised the issue of the number of steps required to cross some junctions.
	• Have approach lanes and Advanced Stop Lines (ASLs) been provided?	• Not at all junctions. The audit has recommended that ASLs be added to some approaches at some junctions but in cases where cyclists do not have to contend with conflicting movements they have been recommended for refusal. There is insufficient room in some case for approach lanes.
	• Can bypass lanes be provided for any cycle movements?	• Where cyclists are catered for on the footway or on a separate cycle pedestrian path then there are cases where they have a bypass lane by default, e.g. left turn at signals, but there are no locations where a stand alone bypass lane needs to be provided.
	• Can cyclists turn right easily?	• Not at all locations. The difficulties of turning right have been highlighted at Buxton Road east & west junctions and the Chester Road link junction.
	• If left turn filters are used, can a lane be provided to help cyclists to go straight on?	• The scheme has provided lanes at Macclesfield Road but not at Woodford Road. Those at Macclesfield Road were recommended for removal because of their length and anticipated traffic speeds – it was felt that a jug handle crossing would be considerably safer. At Woodford Road the plans supplied showed insufficient room but the issue of crossing the left turn vehicle movement was raised by the audit.

	• Have cycle detection loops been installed?	• Not shown on plans. Detailed design matter
	• Can signal timings be altered to benefit vulnerable road users? •	• Detailed signal design matter
	• Have audible and / or tactile signals been installed?	• Detailed design matter
T-junction	• Have wide junction mouths been avoided where possible?	There are very few advisory T junctions in the scheme. At Buxton Road (old line) / Mill Lane and Buxton Road (old line) / Middlewood Road the mouth of the junction has been moved out into the carriageway away from the point where pedestrians cross. Although the radii of the corners has been increased pedestrians should benefit.
	• Have pedestrian crossing facilities been provided?	Flows are relatively low at all the T- junctions.
	• Have advisory cycle lanes been extended across junction mouths	Yes, at Buxton Road / Middlewood Road as flows out of Middlewood Road likely to be higher than those along Buxton Road.
Roundabouts	• Can another form of junction control, such as signals, be used?	There are roundabouts at A34/Stanley Road, A34/A555 and Wilmslow Road. The cycle facilities at A34/Stanley Road and A34/A555 are signal controlled. At Wilmslow Road east west movements are catered for by a toucan crossing but north south movements use the roundabouts conventionally. The latter junction could probably be signalled but it is assumed that this was investigated during the initial design stages and rejected.
	• Can vehicle speeds be further reduced? •	The toucan crossing will reduce speeds slightly at Wilmslow Road. The Council have been recommended to consider on carriageway cycle lanes and these would have an effect of reducing speeds by reducing the visibly available carriageway space.
	• Can a single lane circulatory system be used?	There may be capacity issues at Wilmslow Road not discussed with the designer.
	• If not, has a peripheral cycle path been provided at large roundabouts?	On carriageway lanes recommended. No room for a peripheral cycle path at Wilmslow Road.
	• Have pedestrian crossing facilities been provided?	Yes in the east west direction at Wilmslow Road.
	• Do facilities for pedestrians and cyclists minimise delay?	Delay to east west cyclists depend on the signal timings which will be a final design matter.

New Zebra or controlled crossing	• Has puffin crossing been considered rather than a zebra, for pedestrian only routes? • Has a toucan crossing been installed if crossing point is on strategic or local cycle network? • Has tactile paving been installed? • Does crossing conform to latest guidance?	All crossings are signalled and all crossings on cycle routes are toucans. Other questions are detailed design matters
New refuge / island	• Is crossing depth to at least 2m (to allow cyclists to wait on refuge) and crossing width 3m or 4m (to allow cyclists/pedestrians to pass) if on the cycle network?	The audit has recommended refuge islands to assist cyclists cross Chester Road near the link road junction. The recommended width in the audit has been 2.5m
	• If insufficient room for refuge, can a controlled crossing be implemented instead?	Not an issue here
	• Has a high quality cycle bypass been provided if refuge / island creates a pinch point on a high speed road (40mph or above)?	Not an issue here as cyclists provided for off carriageway.
Cycle Lanes	• If multiple traffic lanes exist, can one be removed to create room for cyclists?	Cyclists are mostly provided for off the main carriageway of the scheme. In other places room (where it exists) has been left for a cycle lane.
	• Is lane width 2m (or a minimum of 1.5m) for a long length? Local narrowing below 1.2m is acceptable to ensure continuity of cycle lane.	Detailed design matter
	• Is there sufficient space next to parking/loading areas?	There are no loading or waiting areas in the scheme
	• Are mandatory lanes or no-waiting TRO necessary if parking problems exist?	There should be no areas with parking problems on the scheme
	• Can advisory lanes be extended through pinch points?	There are no pinch points within the scheme. There are narrowings where the scheme meets the existing highway network. Critical points (mostly Woodford Road) have been discussed with the design manager and references made in the audit.
	• Is green coloured surfacing necessary where conflict is likely to occur?	There are several locations where green surface colouring has been recommended.
Inside/	• For carriageways where there is	Cyclists are mostly catered for off

Nearside Lane Width	insufficient space for a cycle lane, can the nearside traffic lane be at least 4.25m width?	carriageway. Some locations (e.g. Macclesfield Road) lanes have been provided. At others (e.g. Woodford Road bridge) the carriageway will be approximately its existing width.
One-Way Street	• Would a contra-flow cycle lane be appropriate, especially if the road is part of the cycle network?	There are no one-way roads in the scheme.
Pedestrian / Shared use cycle paths adjacent to carriageway	• Has on-road provision, with traffic volume and speed reductions, been considered?	Probably a political decision to have off-carriageway facilities. The purpose of the road is to relieve existing roads so traffic reduction is not appropriate,
	• Has the route been given priority over driveways and accesses, and can it be given priority at side roads at side roads?	The are few side roads with priority junctions in the scheme. The route passes these on carriageway. The off carriageway crossings are signalled.
	• Has parking on the path been prevented or discouraged? •	There is unlikely to be pressure for parking on the path.
	• Has at least 1.5m width provided for pedestrians, and 2.0m for cyclists been provided, if segregated? •	The path is unsegregated
	• Is the crossfall between 1 and 2%? •	Detailed design matter
	• Has correct signing, lining been provided? •	Detailed design matter
	• Are tactile markings required? •	Not along the route as it is unsegregated. Markings at junctions and where pedestrian only routes join the path are a matter for detailed design.
	• Is 'cycle calming' necessary to reduce danger at possible points of conflict? •	Inappropriate on a road of this nature.
	• Can cyclists join main carriageway at 90 degrees? •	90 degrees is not appropriate at all transitions to and from the carriageway. Each location has been considered individually.
	• Have cycle, pedestrian and disabled groups been consulted?	Yes. Continuous process of consultation.

Off-highway routes	• Has status of cycle path been determined as adopted highway, bridleway, cycle track or concessionary?	Unknown.
	• Has adequate width been provided if shared use?	Yes. While 2.5m is below the recommended width in LTN1/12 there is a generous verge and the width is more than adequate for the expected flows.
	• Have drainage problems been addressed? •	Detailed design matter
	• Is surfacing all-weather, easy to maintain, comfortable, skid-resistant, appropriate to the path's status and sympathetic to the surroundings? •	Detailed design matter
	• Has correct signing, lining been provided? •	Detailed design matter
	• Are tactile markings required? •	Not along the path. Required at junctions but a matter for detailed design.
	• Is lighting required, especially if a commuter route? •	Overspill from main carriageway should be adequate where cycle route is not adjacent to the carriageway
	• Can cyclists join main carriageway at 90 degrees? •	90 degrees is not appropriate at all transitions to and from the carriageway. Each location has been considered individually.
	• Have cycle, pedestrian and disabled groups been consulted?	Yes. Continuous process of consultation.
Traffic Calming	• Have vertical deflections for cyclists been avoided (whilst maintaining effect on cars), or cycle friendly deflections such as sinusoidal humps used (special authorisation may be required)? • Has a 1m gap (0.75m min) been left in between traffic calming features and the edge of the carriageway? • Have high quality bypasses been provided at pinch points?	No traffic calming in the scheme.
Road Closure	• Can safe pedestrian and cycle access be maintained, both physically and in TROs?	Where roads, footpaths and bridleways have been closed the scheme provides for a bridge or alternative route.

Drop kerb	• Is kerb flush, and has tactile paving been provided for pedestrians if on a pedestrian route?	The design specification provides for a 6mm maximum upstand. Tactile paving is a detailed design matter
Bus Lay-by	• Is upstand flush between carriageway and lay-by?	The design specification provides for a 6mm maximum upstand.
Bus Lane	• Is the lane width 4.25-4.6m to allow buses and cyclists to overtake each other?	No bus lanes on scheme.
Drainage	• Are any conventional gullies located at pinch point or pedestrian crossing point? Alternative gully design or location may be required. • Have gully grates been replaced if bars run parallel to kerb?	Detailed design matters.
Signs, lighting and street furniture	• Are signs mounted at at least 2.4m ? • Is all street furniture necessary? • Is street furniture consistent in style and colour? • Is all signing, lighting columns and street furniture, including bus stops, arranged to minimise clutter, and outside the path? • Are destinations signed for pedestrians and cyclists? • Is lighting adequate for visually impaired people?	Detailed design matters.
Cycle Parking	• Does installation comply with spacing specifications and security issues?	It is unlikely that cyclists will need to park along the route. Detailed design matter.