

ROAD SAFETY AUDIT RESPONSE REPORT FOR RSA STAGE 1 (DMRB GG119)

F1. Project Details

TABLE F.1. PROJECT DETAILS

Report title:	Oxford Modal Filters RSA1 Designer's Response
Date:	18/08/2022
Document reference and revision	Issue 01
Prepared by:	WSP
On behalf of:	Oxfordshire County Council

TABLE F.2. AUTHORISATION SHEET

Project:	Connecting Oxford
Report title:	70092500-RSA1DR
Prepared by:	
Name:	Tim Bird
Position:	Senior Transport Planner
Signed:	
Approved by:	
Name:	Simon Brownlie
Position:	Technical Director
Signed:	
Organisation:	WSP (Design Organisation)
Date:	15/11/2023

F.2. Introduction and Background

- 2.1. WSP have been commissioned by Oxfordshire County Council to provide support for the feasibility design of six modal filters at strategic locations across Oxford.
- 2.2. The project aims to deliver ANPR based modal filters to sever strategic routes to promote public transport, cycling, walking and a reduction in private car movements.



2.3. This report provides a designer’s response to comments raised in the Stage 1 Road Safety Audits (RSA1) for the proposed scheme. The RSA1 were carried out by WSP on behalf of Oxfordshire County Council (Overseeing Organisation). The Road Safety Audit brief to the Audit Team was provided by Tim Bird (Project Manager).

F.3. Key Personnel

TABLE F.3. KEY PERSONNEL

Overseeing organisation:	Oxfordshire County Council
RSA Team:	Rebecca Neves – HCC Audit Team Member Ed Hanks – HCC Audit Team Leader
Design organisation:	WSP

F.4. Road Safety Audit Decision Log

TABLE F.4. ROAD SAFETY AUDIT DECISION LOG

RSA1 Problem	RSA1 Recommendation	Design organisation response	Overseeing Organisation response	Agreed RSA Action
Problems Identified in Stage 1 of Road Safety Audit				
<p>Problem 1:</p> <p>Location: Throughout the scheme</p> <p>Summary: Large quantity of information for drivers to interpret while driving resulting in sudden braking and shunts.</p> <p>Six modal filters are proposed at locations around Oxford on the main routes into the city centre. The speed limits on these roads can be up to 40mph. The filter signage comprises of a prohibition sign, a supplementary plate covering time periods, exceptions for buses, permit holders and lorries that are loading and a sign for the enforcement cameras erected on both sides of the carriageway. Motorcycles are permitted through the modal filter.</p> <p>No other changes to the road environment are proposed to highlight the filter. The large quantity of information on the signs may result in drivers suddenly slowing as they read and interpret the signs and working out whether they can pass or need to divert. This may result in shunts or vehicles carrying out unexpected manoeuvres leading to T-bone collisions.</p> <p>Some vehicles are permitted through the modal filter and will continue at road speed. Drivers of following vehicles may not see the proposed signage until the last minute due to it being blocked by traffic in front and have insufficient time to process the information on the sign. Drivers may be following the vehicle in front without appreciating they are approaching a modal filter. This could result in vehicles suddenly braking leading to shunts.</p> <p>The risk of the above collisions occurring is increased when the speed limit on the approach is 40mph, which will reduce the driver interpretation time of the sign.</p>	<p>R1:</p> <p>It is recommended that the amount of information provided on the signs is reviewed and reduced to provide sufficient interpretation and reaction time, taking into account the speed limit.</p> <p>It is also recommended that additional measures are used to highlight the modal filter, this could include alignment changes, markings or the use of different coloured/textured surfaces.</p>	<p>R1 – Recommendation Partially Accepted:</p> <p>The level of information on the modal filter signage has been carefully considered to provide something that is now deemed legal and clear. DfT however are currently being consulted for authorisation and will determine whether the proposal is acceptable in due course.</p> <p>Agree with the recommendation. Drawings have already been produced additional drawings which include red coloured surfacing at the filters to enhance visibility.</p>	<p>Agree with Design Organisation Response, subsequent to the RSA being completed DfT authorisation has now been received.</p> <p>Drawings have been updated with red coloured surfacing although we are open to considering other potential colours which don't clash with other restrictions across OCC. This will be considered in further detail at the detailed design stage.</p>	<p>Alternative colours to be reviewed at next project stage</p>
<p>Problem 2:</p> <p>Location: Throughout the scheme</p> <p>Summary: Proximity to existing direction, restriction and information signs resulting in a large quantity of information for drivers to see and interpret while driving resulting in sudden braking and shunts.</p> <p>Six modal filters are proposed at locations around Oxford on the main routes into the city centre. At a number of locations, the modal filters are proposed alongside or close to existing direction signage, signs relating to existing banned turns, restricted parking zones and vehicle prohibitions, or close to the proposed Zero Emission Zone signs. The location and quantity of signs provides drivers with a large amount of information to take in and interpret. Signs located in close proximity to each other could also restrict visibility of the signs.</p> <p>There are locations where there are existing direction signs or parking VMS signs located immediately downstream of the modal filter. The close proximity of these signs to the modal filter could encourage drivers to continue through the modal filter.</p>	<p>R1:</p> <p>It is recommended that the modal filters are not positioned at locations where there are existing direction signs, restrictions or ZEZ signs.</p>	<p>R1 - Recommendation Accepted:</p> <p>Where possible, existing signs will be relocated to accommodate filters. There may however be site constraints in some locations that will limit available options. As designs develop, further opportunities will be identified to potentially relocate signage that is required.</p>	<p>Agree with Design Organisation Response, to the recommendation, details surrounding sign visibility will be considered at the more detailed design stage.</p>	<p>No further considerations at this time</p>

<p>The quantity of information, location of the proposed signs in proximity to existing signs or restricted visibility of the signs may result in drivers suddenly slowing as they read and interpret the signs, resulting in shunts or carrying out unexpected manoeuvres resulting in T-bone collisions</p>	<p>Problem 3: Location: Throughout the scheme Summary: Vehicles using less suitable alternative routes, turning in junctions or braking suddenly resulting in sideswipe collisions, collisions with parked vehicles or shunts. Six modal filters are proposed at locations around Oxford which restricts access to the city centre for motor vehicles between 7am and 7pm except for buses, permit holders and lorries that are loading. A single information sign has been provided in advance of some of the proposed modal filter locations, typically this is within 600 yards of the modal filter except for the Marston Ferry Road location where one sign is one mile in ahead. The existing signage on routes into the city direct drivers to follow specific routes in order to avoid the High Street and parts of the city centre. Drivers, particularly those that are visiting or delivering in the area, are likely to have had little or no warning of the proposed modal filters by the time they arrive at the modal filter sign. The proposed advanced signages does not provide sufficient notice for drivers or include information on alternative routes. This could result in them becoming confused or uncertain on how to avoid the filter or to reach their destination. Drivers may attempt to avoid the filter by using less suitable alternative routes. Drivers may also attempt to reverse back to a junction, perform a U-turn or attempt to turn in a junction to avoid the filter and find an alternative route. The use of inappropriate routes or turning in junctions could lead to sideswipe collisions or collisions with parked vehicles. Following vehicles may not anticipate vehicles slowing and turning in side road junctions, causing them to brake suddenly resulting in shunts.</p>	<p>R1: It is recommended that the modal filters are at locations where vehicles can divert on suitable alternative routes before entering the modal filter. It is also recommended that advanced signage is provided at appropriate locations where vehicles can follow a suitable alternative route avoiding the modal filter and provided on all approaches.</p>	<p>R1 - Recommendation Accepted: OCC are in the process of commissioning a wider signage strategy which will provide advanced signage at appropriate locations across the network. Further to this, as part of the modal filter designs, u-turn provision has been provided at some locations. The u-turn area is however considered a 'last resort' option with clear advance signage seen as being critical to safely managing the network on approach to the filters</p>	<p>Designers response accepted. Include in the next design stage a review of road markings and cycling provision on routes where drivers may abruptly make left turns to avoid the traffic filters to mitigate effects on cycle safety. In Particular; <ul style="list-style-type: none"> Hollow Way by Hundred Acres Close St Clements St by Rectory Road St Cross Road by Manor Road Further to this residents will have 100 day passes that will mitigate the need for additional vehicles to take alternative routes.</p>	<p>No further considerations at this time</p>
<p>Problem 4: Location: A420 Thames Street Modal Filter Summary: Restricted visibility of the pedestrian crossing traffic signals resulting in sudden braking and shunts or collisions between vehicles and pedestrians. A modal filter is proposed on the A420 Thames Street between the Blackfriars Road and Speedwell Street junction. The proposed sign on the eastbound side of the filter is before the roadside signal head of the pedestrian crossing. The proposed sign may restrict forward visibility to the signal head. Drivers with restricted visibility of the signal, may not see the signal until the last minute, resulting in sudden braking and shunts or collisions between vehicles and pedestrians</p>	<p>R1: It is recommended that the modal filter is relocated away from the crossing.</p>	<p>R1 - Recommendation Not Accepted It is not possible to relocate this filter whilst also retaining the proposed u-turn facility at the adjacent side road (Blackfriars Road). The visibility to the traffic signal heads however has been considered with the proposed sign setback from the carriageway to ensure required visibility to the signal is maintained. This requires relocating a lamp column and removing a small tree. The detailed design of this will be investigated at the next project stage.</p>	<p>Accepted designers response, ensure at detailed design stage that landscaping and street lighting teams are engaged with from across OCC.</p>	<p>No further considerations at this time</p>	

<p>Problem 5: Location: A420 Thames Street Modal Filter – Option 2 Summary: Restricted visibility of the proposed Zero Emission Zone sign resulting in sudden braking or vehicles turning in the road leading to shunts.</p> <p>A modal filter is proposed on the A420 Thames Street between the Blackfriars Road and Speedwell Street junctions. The proposed Zero Emission Zone (ZEZ) also commences at this location. In Option 2, the proposed sign ZEZ sign is located approximately 12m after the modal filter sign.</p> <p>The modal filter sign may restrict forward visibility of the ZEZ sign. Drivers may not see the ZEZ until the last minute, resulting in vehicles braking suddenly or making unanticipated turns in the road resulting in shunts.</p> <p>Some vehicles may be permitted to travel through the existing restriction and be willing to pay the ZEZ charge. Drivers of following vehicles may not see the proposed signage until the last minute due to it being blocked by traffic in front, or drivers may be following the vehicle in front without appreciating they are unwittingly about to enter the ZEZ or an area where they are prohibited. This could result in vehicles suddenly braking leading to shunts.</p>	<p>R1: It is recommended that adequate visibility is provided to both signs. See also Problem 2.</p>	<p>R1 - Recommendation Accepted The modal filters and ZEZ will not be launched simultaneously, as such, it is considered that there will be time for local businesses and people to understand the restrictions.</p>	<p>Accepted designers response there is a trial within the town centre so local residents and visitors are becoming accustomed with the scheme and the layout of the signs.</p> <p>No further considerations at this time</p>
<p>Problem 6: Location: Manor Road, close to Manor Road / St Cross Road modal filter Summary: Drivers joining St Cross Road not anticipating humps resulting in loss of control collisions or sudden braking and shunts.</p> <p>The existing road humps signage and illuminated sign post on Manor Road are being removed. No changes are proposed to the traffic humps in the area. Vehicles joining St Cross Road from Manor Road will be unaware they are entering an area with traffic humps. This could result in drivers not anticipating humps and continuing at speeds that may result in them losing control at the humps or having to brake suddenly leading to shunts.</p>	<p>R1: It is recommended that the existing hump signage remains.</p>	<p>R1 - Recommendation Not Accepted As the sign in question is for the egress of a cul-de-sac, any individuals exiting will be aware of the humps as would have already driven over them when they arrived. Furthermore the existing thermoplastic triangles on the speed humps provide indication to drivers of their presence in the carriageway.</p> <p>In addition, see problem 2 for signage clutter, we are trying to reduce the number of signs in proximity to the filters.</p>	<p>Accepted designers response</p> <p>No further considerations at this time</p>
<p>Problem 7: Location: Manor Road, close to Manor Road / St Cross Road modal filter Summary: High flows of buses heading south on St Cross Road resulting in sideswipe collisions or pedestrian/vehicle collisions.</p> <p>There is currently a prohibition on buses continuing south on St Cross Road beyond the Manor Road junction. The prohibition applies to all buses except local buses between 10am and 6pm. The drawings provided indicate that this sign is being removed. The proposed modal filter prohibits motor vehicles except buses, permit holders and deliveries between 7am to 7pm.</p> <p>The proposed sign indicates that all buses, irrespective of whether they are local or not are permitted to continue south on St Cross Road and Longwall Street. This route may not be suitable for use by buses due to the narrower carriageway and footways. Higher bus flows could result in buses having difficulty passing other large vehicles, resulting in sideswipe collisions or vehicles having to drive on the footway to pass, leading to pedestrian/vehicle collisions.</p>	<p>R1: It is recommended that the prohibition is reviewed and amended to state Local Buses if required.</p>	<p>R1 - Recommendation Partially Accepted As a result of the modal filter scheme, an increase in buses is not expected. Access for existing local buses and HGVs is also currently provided.</p> <p>The Modal filter on this link will significantly reduce traffic flows which will reduce the likelihood of potential collisions or large vehicle making these unusual manoeuvres.</p> <p>The city-wide restriction for private buses/coaches is currently being reviewed by OCC</p>	<p>Accepted the coach restriction across the city centre is under review by a separate team within OCC.</p> <p>No further considerations at this time</p>

<p>Problem 8: Location: South Parks Road, close to the junction with Mansfield Road Summary: Visibility of proposed modal filter advanced signage obscured by a large tree resulting in sudden braking and shunts.</p> <p>An information sign in advance of the Manor Road / St Cross Road modal filter is proposed on South Parks Road close to the junction with Mansfield Road. During the site visit, large mature trees were observed along the front edge of the footway. These trees may obscure visibility of the proposed sign. Obscured visibility could result in drivers not seeing the advanced sign until the last minute resulting in sudden braking and shunts.</p> <p>Drivers that continue along South Parks Road and St Cross Road may not anticipate the modal filter and brake suddenly resulting in shunts.</p>	<p>R1: It is recommended that the proposed information sign is relocated away from the trees.</p>	<p>R1 - Recommendation Accepted: During the detailed design process, this will be reviewed further and any issues addressed.</p>	<p>Accepted designers response There is a maintenance scheme on south parks road currently planned liaise with them as part of detailed design. The position of this sign will be considered as part of the detailed design stage.</p>	<p>No further considerations at this time</p>
<p>Problem 9: Location: Marston Ferry Road modal filter Summary: Vehicles stopping to unload at the side of the road resulting in sudden braking and shunts, pedestrian trips and falls or pedestrian/vehicle collisions.</p> <p>A modal filter is proposed on the Marston Ferry Road immediately to the north of The Swan School. Parents dropping off pupils at the school will be unable to access the school car park from the north. This could lead to parents stopping at the side of the road or parking on the verge to drop off pupils before the filter. Other vehicles may not anticipate vehicles stopping to park or pulling out and turning in the road to return northwards leading to sudden braking and shunts.</p> <p>Pupils who have been dropped off may attempt to cross Marston Ferry Road away from designated crossing points, this could lead to them tripping and falling on full height kerbs or stepping out into the path of approaching vehicles leading to pedestrian/vehicle collisions.</p>	<p>R1: It is recommended that access to the school from the north is maintained, or an alternative drop-off facility provided.</p>	<p>R1 - Recommendation Not Accepted: Swan School currently has permit-only drop off. This means that few vehicles are expected to approach from the north. OCC will however at implementation need to ensure access for those with permits.</p>	<p>Accepted designers response OCC will monitor this during the e-TRO phase and take further action as required to limit this if needed.</p>	<p>No further considerations at this time</p>
<p>Problem 10: Location: Marston Ferry Road modal filter Summary: Vehicles U-turning via gaps in the central median in advance of the modal filter resulting in T-bone collisions or shunts.</p> <p>A modal filter is proposed on the Marston Ferry Road immediately to the north of The Swan School access road. A central median with a landscaped area is also proposed at this location with gaps in the central median to maintain access to the farm/field to the north and the school access road.</p> <p>The catchment area of the school is unknown. There may be a significant number of pupils attending the school from the north, who will be unable to access the school without passing through the modal filter. This could lead to a high volume of traffic using the gap to turn around.</p> <p>Drivers of prohibited vehicles using these gaps to turn around may result in U-turning vehicles pulling out from the central gap into the path of approaching vehicles or overhanging into the running lane leading to T-bone collisions or sudden braking and shunts</p>	<p>R1: It is recommended that the modal filter is relocated, or formal turning facilities are provided suitable for all vehicles.</p>	<p>R1 - Recommendation Not Accepted: Swan School currently has permit-only drop off. This means that few vehicles are expected to approach from the north. OCC will however at implementation need to ensure access for those with permits.</p> <p>As part of the design process, WSP produced tracking drawings and demonstrated that u-turning is technically possible. There is good visibility at the location with vehicle numbers being significantly lower when the filters are implemented compared to the current situation. This further reduces potential safety concerns. With the provision of advance signage to support the filters, it is not anticipated that many vehicles will undertake this type of manoeuvre.</p>	<p>Agreed As part of detailed design the designer is to liaise with the street lighting team from a maintenance perspective.</p> <p>Consideration also to be given for coloured surfacing rather than an island for the length of the media to mitigate this issue.</p> <p>OCC will monitor this during the e-TRO phase and take further action as required to limit this if needed.</p>	<p>No further considerations at this time</p>

<p>Problem 11: Location: Marston Ferry Road modal filter Summary: Vehicles turning in the school access road in advance of the modal filter resulting in T-bone collisions, shunts, collisions between vehicles and cyclists or cycle loss of control collisions.</p> <p>A modal filter is proposed on the Marston Ferry Road immediately to the north of The Swan School. To the south of the modal filter, there is the school access road.</p> <p>Drivers of prohibited vehicles may use the school access road junction to turn around. Turning vehicles may block or encroach into the cycle lane that crosses the access road. This could result in collisions between vehicles and cyclists or cycles having to brake suddenly and cycle loss of control collisions.</p>	<p>R1: It is recommended that formal turning facilities are provided away from the school access road junction.</p> <p>OR</p> <p>It is recommended that the modal filter is relocated</p>	<p>R1 - Recommendation Not Accepted: Swan School currently has permit only drop off thereby limiting approaching vehicles. Appropriate advance signage will complement the filters. A dedicated u-turn facility was considered during the design stage but it wasn't considered appropriate as the junction bell-mouth would be more visible to the eye and attractive for users. A dedicated facility was therefore felt to likely be missed or ignored. Further to this, vehicle numbers at this location will be significantly reduced in future thereby further reducing any safety concerns.</p>	<p>Agree with the designers response OCC will monitor this during the e-TRO phase and take further action as required to limit this if needed.</p>	<p>No further considerations at this time</p>
<p>Problem 12: Location: St Clements modal filter Summary: Restricted visibility of the modal filter resulting in sudden braking and shunts.</p> <p>A modal filter is proposed on the St Clements Street immediately east of the junction with Boulter Street. On the eastbound side of the filter, there is a bus stop approximately 10m before the proposed sign. Buses stopped at the stop may restrict visibility of the proposed modal filter sign. Drivers passing stopped buses may also be concentrating on passing the stationary bus and oncoming traffic and not notice the sign on the outside.</p> <p>On the westbound approach to the filter signage, there is a sign post with No Entry and No Right Turn signs for Jaune Street approximately 1m before. The existing signage may restrict visibility of the modal filter.</p> <p>Drivers approaching the proposed modal filter may not see the signs until the last minute due to buses or existing signage resulting in sudden braking and shunts.</p>	<p>R1: It is recommended that the adequate visibility is provided to the modal filter signs.</p>	<p>R1 - Recommendation Not Accepted The location of this filter has been technically challenging due to the geometric constraints of the area. The location of the filter signs has been carefully considered ensuring that under typical circumstances the required forward visibility can be met. This is also likely to involve a cantilever sign at the detailed design stage to ensure there is no footway obstruction.</p>	<p>Agree with the designers response</p>	<p>No further considerations at this time</p>
<p>Problem 13: Location: St Clements modal filter Summary: Proposed sign located in line with the tactile paving resulting in pedestrian trips and falls.</p> <p>A modal filter is proposed on St Clements Street immediately east of the junction with Boulter Street. The proposed sign on the northern side of St Clements is located approximately 1.6m after the tactile paving for the Boulter Street crossing. The available width between the sign and the carriageway edge is approximately 1.4m.</p> <p>Visually impaired pedestrians walking east along the footway will use the tactile paving to understand the alignment of the crossing. They are unlikely to anticipate a sign located in line with the crossing and close to the extent of the tactile paving. The sign post may also restrict access to the crossing for those with wheelchairs and pushchairs. This could result in pedestrian trips and falls.</p>	<p>R1: It is recommended that proposed modal filter sign is located at the back of the footway and mounted on an offset bracket if required.</p>	<p>R1 - Recommendation Accepted The design has already been updated to provide a cantilevered sign that is to be placed at the back of the footway. This will be positioned away from the line of the tactile avoiding trips and falls.</p>	<p>Agree with the designers response</p>	<p>No further considerations at this time</p>


F.5. Design Organisation and Overseeing Organisation statements

TABLE F.5. DESIGN ORGANISATION STATEMENT

On behalf of the design organisation, I certify that:	
1) the RSA actions identified in the response to the road safety audit problems in this road safety audit have been discussed and agreed with the Overseeing Organisation.	
Name:	Tim Bird
Signed:	
Position:	Senior Transport Planner
Organisation:	WSP
Date:	15/11/2023
Name:	Simon Brownlie
Signed:	
Position:	Technical Director
Organisation:	WSP
Date:	15/11/2023



TABLE F.6. OVERSEEING ORGANISATION STATEMENT

On behalf of Overseeing Organisation, I certify that:	
1) the RSA actions identified in the response to the road safety audit problems in this road safety audit have been discussed and agreed with the design organisation; and 2) the agreed RSA action will be progressed by the Project Sponsor (Client) and will be reviewed by the Overseeing Organisation at the next RSA stage	
Name:	Anthony Kirkwood
Signed:	
Position:	Principal Engineer, Traffic and Road Safety
Organisation:	Oxfordshire County Council
Date:	09/11/2022



Name:	Moh Shafie
Signed:	 <small>Digitally signed by Moh Shafie DN: C=UK, OU=Engineering and Assurance, O=OCC, CN=Moh Shafie, E=moh.shafie@oxfordshire.gov.uk Reason: I am approving this document Location: Date: 2022.11.10 17:02:53Z00'00' Foxit PDF Reader Version: 12.0.1</small>
Position:	Principal Engineer, Engineering and Assurance
Organisation:	Oxfordshire County Council
Date:	10/11/2022

TABLE F.7. PROJECT MANAGEMENT STATEMENT

On behalf of the Overseeing Organisation, I certify that:	
1) the agreed RSA action will be progressed by the Project Manager (Client) and will be made available for review by the Overseeing Organisation at the next RSA stage	
Name:	Mehdi Zegmou,
Signed:	 <u>Mehdi Zegmou (Nov 15, 2022 10:40 GMT)</u>
Position:	Senior Project Manager
Organisation:	Oxfordshire County Council
Date:	15 / 11 / 2022