Designers' Risk Assessment

Chris Kennett Consulting Limited
Traffic Signal Engineering

Site or Scheme Reference:	23-0462
Project:	**Howes Lane north of Middleton Soney Road, Bicester**
Scope of project	New Toucan Crossing
Location	Howes Lane north of Middleton Soney Road, Bicester
Expected Start and duration of works:	TBD
Designers' Risk Assessment Prepared By:	**Chris Kennett**
Principal Designer(s):	SWARCO UK & Ireland
Local Highway Authority:	Oxfordshire County Council

All Designers

Name	Role	Contact
Chris Kennett	Traffic Signals Designer	chris@chriskennett.consulting

Revisions

Author	Version	Date	Changes
Chris Kennett	1	23/04/2023	First Issue

Howes Lane north of Middleton Soney Road, Bicester

Hazard	Initial Risk			Residual Risk		
	L	S	R	L	S	R
Collision between road users (general).	4	4	**16**	2	5	**10**

Site Specific Detail	Significant or Unusual Risk	Design Controls
Road alignment	Heavy tree line on one side and further back on approaches.	Crossing design as clear as possible and suitable. All conflicting movements are identified and separately controlled with appropriate intergreens. Closely associated secondary signals are used wherever they reduce see-through and confusion. Signal times and configuration reduces congestion and delay as much as possible to limit driver frustration.Road surface with suitable polished stone rating for skid resistance, laid in line with Local Highway Authority policy - 68+ PSV / HFS is required due to road speeds.. Geometric design in accordance with requirements of TSM Chapter 6. Adaptive signal control method used to minimise max-changes and delay. Speed of road has been adequately assessed and design is appropriate.
Visibility		
Potential for confusion		
Lane widths and track paths		
Lines and lane markings		
Conflicting movement		
Control of right turns		**Other Options Considered**
Road Speed	High vehicles speeds.	Inductive loops. Dismissed due to cost and risk of installation and maintenance compared to above ground.
Road surface condition and skid resistance	Road surface requires planing out and relay with 68+PSV / HFS	**Remaining Risk**
Proposed method of control	MOVA with above ground detection	Road is very high speed, although actual speeds not as high as posted limit.
Proposed type(s) of detection	Above Ground	

Howes Lane north of Middleton Soney Road, Bicester

Hazard	Initial Risk			Residual Risk		
	L	S	R	L	S	R
Vehicle collision with non-motorised user (NMU)	4	5	**20**	2	5	**10**

Site Specific Detail	Significant or Unusual Risk	Design Controls
Accessibility of NMU facilities		NMU facilities appropriate and close enough to desire lines to encourage proper use. Specific provision made for NMUs with physical disabilities, including tactile paving, flush kerbs, audible and tactile signals, to make crossings accessible. Footway widths and gradients suitable for all users and free of unecessary obstructions. NMU time in carriageway minimised and conflicts controlled. NMUs not encouraged to enter or wait in areas overrun by vehicles. No obstructions to visibility to or from NMUs waiting to cross carriageway. Use of barrier rail is proportional to risk and avoided where possible. Barrier railings, islands and other features do not form pinch points or otherwise trap NMUs in carriageway. Kerbside and on-crossing detection only provided where NMUs are likely to wait or walk within areas of detection.
Proposed NMU facilities		
Separation of NMUs from traffic		
Island and refuge sizes		
Crossing lengths and widths		
Obstructions to visibility of NMUs		
NMU Desire lines		**Other Options Considered**
Crossing times and intergreens		Barrier railing considered but not required - no clear need for it.
On-crossing or kerbside detection		**Remaining Hazard**
Footway widths and gradients		
Barrier railing	Indicated by Preliminary design but it not required.	

Howes Lane north of Middleton Soney Road, Bicester

Hazard

Vehicle collision leaving carriageway

Initial Risk		
L	S	R
4	4	**16**

Residual Risk		
L	S	R
4	3	**12**

Site Specific Detail

Street furniture location

Street furniture construction & materials

Hazardous / immovable objects

Watercourses, ditches or drains

Vehicle restraint systems

Road speed and alignment

Electrical safety (following collision)

Secondary risks (debris etc)

Significant or Unusual Risk

Design Controls

Road alignment, radii and lane wdiths suitable for expected vehicle speeds. Structures and immovable objects located in areas unlikely to be entered by vehicles (including where driver has lost control), otherwise protected or speeds adequately mitigated. Passively safe materials for exposed street furniture considered and appropriate class chosen (70:NE:NR:NR;NRMD:0). All electrical connections are extra-low voltage where possible. Isolation systems not used on ELV circuits as risk from false-trigger exceeds electrical risk. Physical disconnection systems not used in any circumstance as risk from fault / early life failure exceeds electrical risk.

Other Options Considered

Other passive safety classes considered, but low numbers of pedestrians make this class appropriate. Vehicle speed class suitable for typical driving speeds.

Remaining Hazard

Howes Lane north of Middleton Soney Road, Bicester

Hazard	Initial Risk			Residual Risk		
	L	S	R	L	S	R
Injuries sustained during construction activities	3	4	**12**	2	3	**6**

Site Specific Detail	Significant or Unusual Risk	Design Controls
Electrical Chemical Biological Fall from Height Working in live carriageway Manual Handling		Design minimises work required and avoids statutory undertakers plant and overhead cables, as far as possible. All new street furniture is ELV, reducing elecotrocution risk. Pot joints used on loop feeders and signal cables not jointed. Use of chemicals limited to need for base seal to controller cabinet and feeder pillar only.

Other Options Considered

Remaining Hazard

Howes Lane north of Middleton Soney Road, Bicester

Hazard	Initial Risk			Residual Risk		
	L	S	R	L	S	R
Injuries sustained during maintenance activities	3	4	**12**	2	3	**6**

Site Specific Detail	Significant or Unusual Risk	Design Controls
Electrical Chemical Biological Falls from height Working in live carriageway Manual Handling		Terminations in cabinets with locking doors and compression bolts, or otherwise out of reach of public. Site is E.L.V. L.V. Cables insulated and terminated under fixed covers. Signal lanterns are long life LED, reducing requirement for maintenance. Vehicle signals monitored and reported remotely, reducing need for routine on-site inspection. Height of poles limited to minimum necessary. Use of swan neck poles and D-brackets likewise minimised. Solid bases provided around poles in loose soil. Over-height heads accessible from MEWP. Chambers of sufficient size to allow easy access to work. Street furniture is resistant to ingress by animals and water. Street furniture is galvanised and painted to reduce need for protective oils.

Other Options Considered

Remaining Hazard

Howes Lane north of Middleton Soney Road, Bicester

Hazard	Initial Risk			Residual Risk		
	L	S	R	L	S	R
Injuries sustained during decommissioning or refurbishment	4	4	**16**	2	3	**6**

Site Specific Detail	Significant or Unusual Risk	Design Controls
Electrical		Site is ELV, reducing likelihood of exposure to harmfull electric shock. All cabling fully ducted and poles in pole sockets, reducing need for civil engineering works. Chambers of sufficient size to allow easy access to work.
Chemical		
Biological		
Falls from height		
Working in live carriageway		
Manual Handling		

Other Options Considered

Remaining Hazard