

NARRATIVE RISK ASSESSMENT – PROTECTED TEMPLATE FINAL v2.0

PROTECTED LEVEL CROSSING RISK ASSESSMENT

1. LEVEL CROSSING OVERVIEW AND ENVIRONMENT

1.1 LEVEL CROSSING OVERVIEW

This is a risk assessment for Six Mile Bottom level crossing.

Crossing details	
Name	Six Mile Bottom
Type	AHB
Crossing status	Public Highway
Overall crossing status	Open
Route name	Anglia
Engineers Line Reference	CCH, 7m, 65ch
OS grid reference	tl576576
Number of lines crossed	1
Line speed (mph)	60
Electrification	No
Signal box	Cambridge

Risk assessment details	
Name of assessor	Brendan Lister
Post	Level Crossing Manager
Date completed	15/12/2020
Next due date	16/03/2023
Email address	brendan.lister@networkrail.co.uk
Phone number	07973524610

ALCRM risk score	
Individual risk	H
Collective risk	4
FWI	0.012247386

1.2 INFORMATION SOURCES

The table below shows the stakeholder consultation that was undertaken as part of the risk assessment.

Consulted	Attended site
None	None

The reference sources used during the risk assessment included:

- SMIS, GI Portal, Census, Other (TRUST for train information, Sectional Appendix, DST)

Engineers Renewal Date 31/03/2018
SICA Renewal Date 08/09/2029

For Safety performance (Fatality weighted injuries (FWI)), this crossing is ranked 31st in Anglia route and 83rd nationally compared to all other AHB

1.3 ENVIRONMENT



Upside crossing approach



Downside crossing approach

The level crossing is located on A1304 which is a Public Highway. The road approach speed is estimated to be 31-40mph. There are no stations visible at the level crossing

At Six Mile Bottom the orientation of the road/path from the north is 210°; the orientation of the railway from the north to the up line in the up direction is 250°. Low horizon can result in sun glare; sun glare is a known issue.

Northbound approach.

There is one potential issue with low sun when approaching the crossing northbound:

1. In the winter, the setting sun would shine towards the RTLs, potentially washing them out. The vehicle approach speed is quite high however there are trees and buildings south of the crossing to reduce the impact of this and there is no gradient. The crossing has LED type RTLs, to mitigate the impact of this problem.

Southbound approach.

There is one potential issue with low sun when approaching the crossing southbound:

1. In the winter, the setting sun would be straight behind the crossing, potentially causing glare. The vehicle approach speed is quite high however there are trees and buildings south of the crossing to reduce the impact of this and there is no gradient. The crossing has an anti-slip/anti-glare road surface; this has, however, partially worn off.

Impact of low sun on the crossing

Below is the output from the SunCalc application, which shows the lines of sunrise and sunset angles at two times of year (longest day June 21st & shortest day December 21st) when low sun would align with the rail approaches and might impact on the sighting.

The thin orange curve is the current sun trajectory, and the yellow area around is the variation of sun trajectories during the year. The closer a point is to the centre, the higher is the sun above the horizon.

The yellow line shows the direction of sunrise; the dark orange line the direction of sunset and the mid orange line the direction at a selected time of day (shown by the orange circle above the satellite image).



Longest Day

Shortest Day

LGC 13 assessing sun glare at public road level crossings has been completed and has recorded the risk as Non-urgent requires work at certain times of the year. This crossing requires work to be completed such as VAS and/or modified advance warning signage.

There are no planned or apparent developments near the crossing which may lead to a change or increase in use or risk.

2. LEVEL CROSSING USAGE

2.1 RAIL

The train service over Six Mile Bottom level crossing consists of passenger trains. There are 34 trains per day. The highest permissible line speed of trains is 60mph. Trains are timetabled to run for 17 hours per day.

Assessor's train service notes:

The train service is relatively low, but the Train Operating Company is looking to increase the service. Trains are timetabled to run for 17 hours per day, but lines are open 24 hours a day and may receive additional freight, passenger or engineering trains.

2.2 USER CENSUS DATA

A 24-hour census was carried out on 15/01/2020 by a barrier downtime Project. The census applies to 100% of the year.

The census taken on the day is as follows:

Cars	8891
Vans / small lorries	1042
Buses	28
HGVs	402
Pedal / motor cyclists	28
Pedestrians	9
Tractors / farm vehicles	5
Horses / riders	0
Animals on the hoof	0

Available information indicates that the crossing does not have a high proportion of vulnerable users.

Vulnerable user observations:

None recorded

Available information indicates that the crossing has a high number of irregular users.

Irregular user observations:

Nonlocals could attend the local Newmarket Racecourse on race days
Diversion route if A11 or A14 is shut

Assessor's general census notes:

The census is based on a full 9-day census, but the figures used are a weekday average between 11/01/20 to 19/01/20.
A barrier downtime census showed that the barriers are down an average of 1minute and 22 seconds per hour, with the longest hour downtime was 2minutes

2.3 USER CENSUS RESULTS

ALCRM calculates usage of the crossing to be 10368 road vehicles and 37 pedestrians and cyclists per day.

3. RISK OF USE

3.1 CROSSING APPROACHES

The road approach speed is estimated to be 31-40mph. One or more of the approach roads to Six Mile Bottom level crossing are assessed as being long and straight. There are prominent features on the approach to or on the far side of the level crossing that could distract drivers.

Site visit observations:

Houses close to the crossing, also a shop about 180m from the crossing. Road junctions within 250m and traffic calming. Potential blocking back at houses on both approaches but the barrier downtime census showed that there was no blocking back over the crossing. Speed limit over the crossing is 40mph and the census recorded the average speed 85th percentile as 39mph

The road surface, including gradient if present, is unlikely to impact on the ability of a vehicle to stop behind the stop line.

There are no known issues with ice, mud, loose material or flood water. In addition, there are known issues with foliage or fog. These known issues might impair visibility of the crossing or crossing equipment, including signage. They might also affect the ability of a vehicle to stop behind the stop line.

Assessor's notes:

Fog could be an issue at certain times in the year. Foliage can obscure wig wags (maintain)

At the estimated road speed, the visibility of level crossing signage and equipment is considered to provide road users with surplus time to react if the crossing is activated.

3.2 AT THE CROSSING – GROUNDING RISK

The visual evaluation of the vertical profile of the road indicates that it does not create a risk of vehicles grounding on the crossing. Risk of grounding signs have not been provided at the crossing.

Assessor's notes:

The crossing has a relatively flat profile

3.3 AT THE CROSSING – BLOCKING BACK

Assessor's notes:

Road junctions, houses and a shop, traffic calming nearby.
If an accident occurs on the A11 or A14 the crossing could be used as a diversionary route

3.4 AT THE CROSSING – ANOTHER TRAIN COMING RISK

The likelihood of a second train approaching does not exist at this crossing as it is a single-track line

3.5 INCIDENT HISTORY

A level crossing safety event has been known to occur at Six Mile Bottom crossing in the last twelve months.

Assessor's incident history notes:

03/02/2020 LC Misuse - Driver of 2W19 13:47 Cambridge - Ipswich reported a car travelling over Six Mile bottom LC as he approached. No near miss or EBA.

Older than 12 months

23 Nov 2019 LC Misuse - 2W23 15:47 Cambridge - Ipswich reported a Land Rover doing a u turn on Six Mile Bottom AHBC LC. No near miss or EBA.

25 Oct 2019 LC Near Miss - 2W16 with a 4x4 within the lowered barriers at Six Mile Bottom AHB level crossing.

Nov 19, 2018 RIF / LC Misuse - Car jumped the red lights at Six Mile Bottom (AHBC) LC struck and removed the Up side barrier.

Older than 12 months

Dec 14, 2017 LC Misuse - at Six Mile Bottom Crossing a vehicle zigzagged around the barriers as they were lowering

08-Apr-16 LC Near Miss - 2W10 10:20 Ipswich – Cambridge near miss with a car at Six Mile Bottom AHB level crossing.

Red light violations / barrier weaving

The chance of a vehicle user deliberately misusing the crossing is estimated as average Measures have been taken to mitigate deliberate misuse.

Assessor's notes:

LED Wigwags, yellow box on the crossing, Anti-trespass guards

03/02/2020 LC Misuse - Driver of 2W19 13:47 Cambridge - Ipswich reported a car travelling over Six Mile bottom LC as he approached. No near miss or EBA.

Older than 12 months

23 Nov 2019 LC Misuse - 2W23 15:47 Cambridge - Ipswich reported a Land Rover doing a u turn on Six Mile Bottom AHBC LC. No near miss or EBA.

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3.6 THE CROSSING – STRIKE IN TIMES

Strike in times

	Designed strike in time (Obtainable from RAM)	Does the observed strike in time conform to the designed strike in time?	Is the observed barrier down time excessive?
Up line	38 Seconds	Yes	No
Down line	33 Seconds	Yes	No

Assessor's notes and observations on strike in times:

The timings taken are comparable to the designed strike in times

4. ALCRM CALCULATED RISK

Six Mile Bottom *level crossing* ALCRM results

Key risk drivers: ALCRM calculates that the following key risk drivers influence the risk at this crossing:

- Sun glare
- Large number users
- High skew crossing, therefore long traverse distance and time

Safety risk				
Compared to other crossings the safety risk for this crossing is	Individual risk		Collective risk	
	H		4	
	Individual risk (fraction)	Individual risk (numeric)		
Car	1 in 968054	0.000001033	0.007823416	
Van / small lorries	1 in 90785	0.000011015	0.000916882	
HGV	1 in 106326	0.000009405	0.000116523	
Bus	1 in 74057	0.000013503	0.000008116	
Tractor / farm vehicle	1 in 1322	0.000756142	0.000001449	
Cyclist / Motor cyclist	1 in 53174	0.000018806	0.000384397	
Pedestrian	1 in 53174	0.000018806	0.000123556	
				Derailment contribution
Passengers			0.000748159	96.82260432
Staff			0.002124889	3.800936605
Total			0.012247386	6.574075985
Collision frequencies	Train / user	User equipment	Other	
Vehicle	0.018253432	0.283176111	0	
Pedestrian	0.000618686	0	0.000724817	
Collision risk	Train / user	User equipment	Other	
Vehicle	0.008866386	0	0	
Pedestrian	0.000492326	0	0.000015627	

5. OPTION ASSESSMENT AND CONCLUSIONS

5.1 OPTIONS EVALUATED

The options evaluated to mitigate the risks at Six Mile Bottom crossing include:

Option	Term ¹	ALCRM risk score	ALCRM FWI	Safety Benefit	Cost	Benefit Cost Ratio	Status	Comments
Closure via overbridge	Long Term	M13	0.000000000	0.012247386	10,000,000	0.04	Rejected – Cost Disproportionate to Safety Benefit	This would be a long-term option and given the amount of usage it would benefit network rail massively but is unlikely to happen at this location.
Upgrade to MCB-OD	Long Term	K6	0.000324637	0.011922749	3,500,000	0.14	Accepted – Completed by end of CP6	This option was considered under the Cambridge relocking project and is being taken forward to be upgraded in this project. There would be increased barrier down time and possibly this would lead to an increase into incidents at the crossing, such as barrier strikes, increased incidences of vehicles running the red lights.
Red light safety enforcement camera	Long Term	H4	0.010997653	0.001249733	136,000	0.31	Rejected – due to MCB-OD being progressed	As the road that the crossing is situated on leads directly from the A11, some of the traffic are travelling greater than the speed limit and may run the red lights.

Yellow backing boards	Short Term	H4	0.012122413	0.000124973	1,000	N/A	Accepted	Yellow backing boards would help a lot here along with the traffic calming it may reduce the misuse of the crossing.
VAS	Long Term	H4	0.011872466	0.000374920	7,000	0.75	Accepted but only on the upside approach	VAS positioned on the A11 approach would alert the drivers when they are travelling from the A11 towards the crossing as they are generally travelling faster than the speed limit and VAS would warn the drivers to the approaching crossing.
Replace Holdfast decking with Strail decking	Long Term	H4	0.011997440	0.000249946	50,000	0.43	Accepted	We have had plenty of issues with the decking here and what lies beneath the deck. I have capex proposed for this to have a new deck as the current holdfast is in a terrible state and is very close if not past life expectancy. I would strongly recommend that we install a new deck here.
Safety Campaign	Short Term	H4	0.012122413	0.000124973	500	N/A	Ongoing	The LCM with the help of the BTP if required to undertake safety campaigns whilst at the crossing and also their presence would deter any incidents at the crossing.

NOTES

Network Rail always evaluates the need for short¹ and long-term risk control solutions. An example of level crossing risk management might be; a short term risk control of a temporary speed restriction with the long term solution being closure of the level crossing and its replacement with a bridge.

¹ Includes interim

CBA gives an indication of overall business benefit. It is used to support, not override, structured expert judgement when deciding which option(s) to progress. CBA might not be needed in all cases, e.g. standard maintenance tasks or low-cost solutions (less than £5k).

The following CBA criteria are used as a support to decision making:

- a. benefit to cost ratio is ≥ 1 : positive safety and business benefit established;
- b. benefit to cost ratio is between 0.99 and 0.5: reasonable safety and business benefit established where costs are not grossly disproportionate against the safety benefit; and
- c. benefit to cost ratio is between 0.49 and 0.0: weak safety and business benefit established.

5.2 CONCLUSIONS

The crossing is located in Six Mile Bottom on the A1304 London Road. The road is urban, giving access to the A11 for the village of Six Mile Bottom and Newmarket further afield.

The line speed over the crossing is 60 mph. The train service is moderate at approximately one train per hour per direction on a weekday, giving a total of 34 trains per day. The line is not electrified.

There are footways marked across the crossing, but they do not continue along the normal roadway as there are no pavements to meet up with. The footways are long due to the skew of the crossing such that the crossing time is likely to be greater than the warning time provided by the normal crossing sequence. At the time of the site visit, the surface on the Upside footway was found to be poor and this has been reported to the Network Rail project team.

The road is fairly straight approaching the crossing. The road has a speed limit of 40mph, although observed vehicles were travelling faster. The road approach is orientated south west to north east, indicating that low sun could be problem at sometimes.

There are several turnings into driveways which could occasionally cause blocking back of traffic over the crossing.

The approach to the crossing from the north east can be seen that the road is a straight on the approach. The road has a speed limit of 40mph.

The crossing is visible in the intermediate and close road approaches, there is a right turn into Ardross Court at 65m, a turning into a convenience store at 110m, and a junction with Brinkley road at 165m north east of the crossing. These, together with several turnings into driveways could occasionally cause blocking back of traffic over the crossing. The profile of the crossing is level with a slight gradient from the downside.

Options Considered

Upgrade to MCB-OD

This option was considered under the Cambridge relocking project and is being taken forward to be upgraded in this project. There would be increased barrier down time and possibly this would lead to an increase into incidents at the crossing, such as barrier strikes, increased incidences of vehicles running the red lights. This option does not have a positive CBA. Optioneering meeting held on 14/03/18, this option was not discounted but the S+T RAM to explore.

Optioneering meeting held on 20/11/19, Accepted – this option will be progressed by the S+T RAM

Closure via overbridge

This would be a long term option and given the amount of usage it would benefit network rail massively but is unlikely to happen at this location. Optioneering meeting held on 14/03/18.

Rejected – Cost disproportionate to safety benefit

Optioneering meeting held on 20/11/19, Rejected – Cost disproportionate to safety benefit

Red light safety enforcement camera

As the road that the crossing is situated on leads directly from the A11, some of the traffic are travelling greater than the speed limit and may run the red lights. This option's CBA is on the borders of being a positive value. Optioneering meeting held on 14/03/18, Accepted

Optioneering meeting held on 20/11/19, Accepted – the S+T RAM to place in their work bank for CP6

Replace Holdfast decking with Strail decking

We have had plenty of issues with the decking here and what lies beneath the deck. I have capex proposed for this to have a new deck as the current holdfast is in a terrible state and is very close if not past life expectancy. I would strongly recommend that we install a new deck here. Optioneering meeting held on 14/03/18, Accepted - due to crossing surface not to standard for a high skew crossing, to be completed in CP6 with agreement from Track RAM. Optioneering meeting held on 20/11/19, Accepted - due to crossing surface not to standard for a high skew crossing, to be completed in CP6 with agreement from Track RAM.

Yellow backing boards

Yellow backing boards would help a lot here along with the traffic calming it may reduce the misuse of the crossing. This option has a positive CBA. Optioneering meeting held on 14/03/18, Rejected – due to existing signs clearly visible as you approach the crossing. Optioneering meeting held on 20/11/19, Rejected – due to existing signs clearly visible as you approach the crossing and installing VAS

VAS

VAS positioned on the A11 approach would alert the drivers when they are travelling from the A11 towards the crossing as they are generally travelling faster than the speed limit and VAS would warn the drivers to the approaching crossing. The CBA is not positive. Optioneering meeting held on 14/03/18, Rejected – approved RLSE equipment. Optioneering meeting held on 20/11/19, Accepted due to the high approach speed, S+T RAM to place in their work bank.

Safety Campaign

The LCM with the help of the BTP if required to undertake safety campaigns whilst at the crossing and also their presence would deter any incidents at the crossing. Optioneering meeting held on 20/11/19, Accepted, the LCM will continue to do this when on site.

Options Completed

9-day census

The RLCM to package together other crossings that require an up to date census to reduce the cost of the census. The present census is from 2013. Optioneering meeting held on 20/11/19, Accepted the Route and the RLCM to organise.

Led wig wags

There is an issue with low sun at this location and the wig-wags have already got extended sun hoods, so I would recommend this as this crossing has high usage day and night and I feel this would be a great benefit for the safety of the users and network rail. This option has a positive CBA. Optioneering meeting held on 14/03/18, Accepted – planned for CP6. Optioneering meeting held on 20/11/19, Accepted – planned for CP6 by S+T RAM

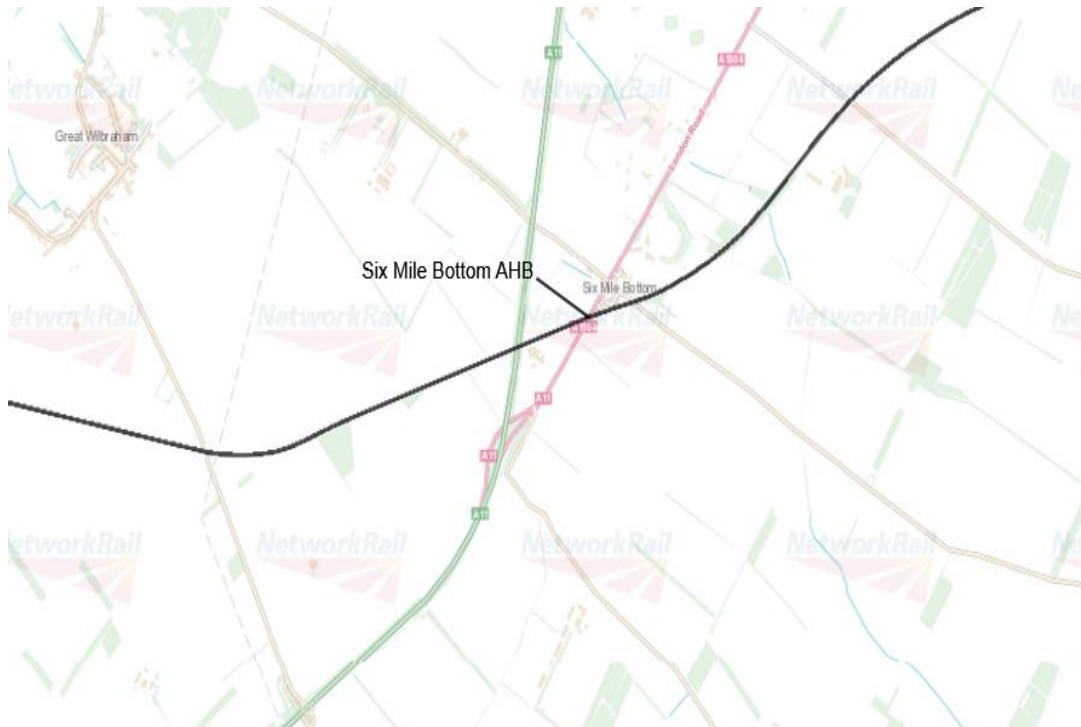
ANNEX A – ADDITIONAL PHOTOGRAPHS



Location of the crossing



Surrounding area of the crossing



Wider Surrounding Area



Ariel view



Upside sighting for up direction trains approaching



Upside sighting for down direction trains approaching



Downside sighting for up direction trains approaching



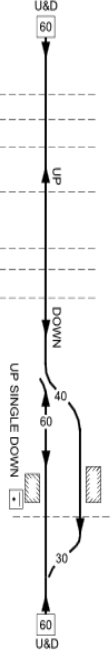

Downside sighting for down direction trains approaching



Across the crossing



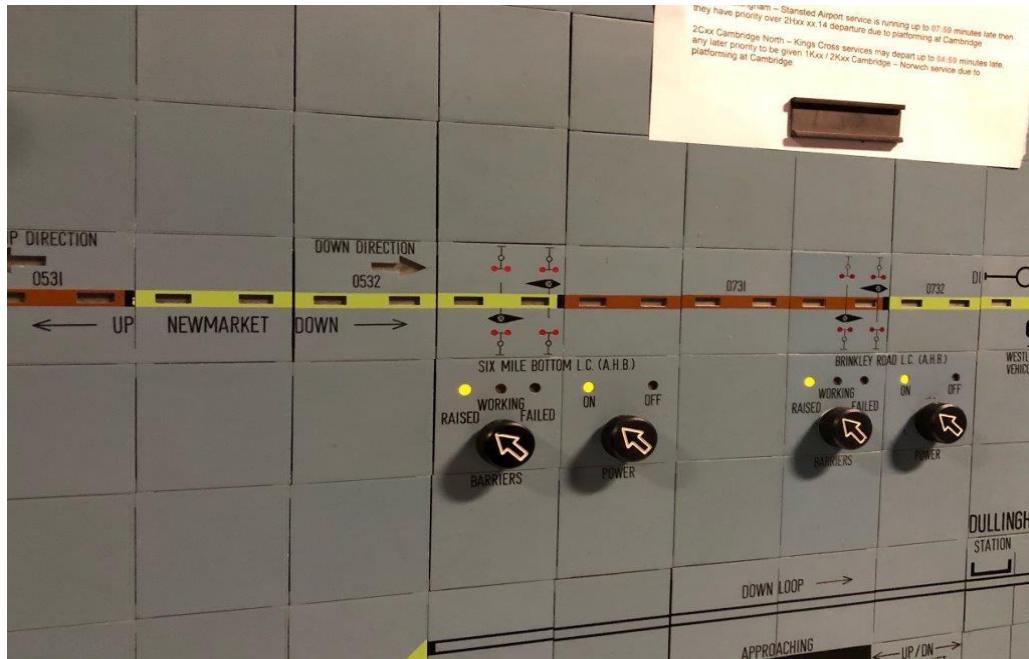
Across the crossing

LOR	Seq.	Line of Route Description	ELR	Route	Last Updated
EA1530	002	Coldham Lane Jn to Haughley Jn	CCH	Anglia	19/11/2016
Location		Mileage M Ch	Running lines & speed restrictions		Signalling & Remarks
					GSM-R TCB RA8 Cambridge SB (CA)  Up platform - 94m (102 yds) Down platform - 103m (111 yds) TB Dullingham SB (DH)
Fulbourn LC (AHBC)		4 36			
Home Farm LC FPS)		5 31			
Hicks LC (UWC)		5 38			
Six Mile Bottom LC (AHBC)		7 65			
Brinkley Road LC (AHBC)		7 78			
Cassells LC (FPG)		8 05			
Westley Road LC (R/G) (UWC)		8 74	T		
Single line		10 07			
DULLINGHAM					
Dullingham (DH) SB		10 54			
Dullingham LC (MCG)		10 56			
Single line		11 09			

Sectional Appendix



Cambridge Signal Box Panel B



Crossing location on the signalling panel



Examples of signage at the crossing and the new LED Wigwags

ANNEX B – HAZARD IDENTIFICATION AND RISK CONTROLS

The table below is intended for use by risk assessors when identifying hazards and risk control solutions. It is not an exhaustive list or presented in a hierarchical order.

	Hazard	Control
Road vehicle and train collision risk	<p>Examples at the crossing include:</p> <ul style="list-style-type: none"> fast and / or long and straight roads; inability to stop proximity of junctions; distraction, blocking back sweeping road approaches, parked cars hinder identification of level crossing ahead level crossing equipment and road traffic light signals are not conspicuous or optimally positioned; orientation / sun glare, insufficient light output, misalignment of the carriageway over the crossing there is a risk of grounding and / or the severity of the gradient might adversely affect a vehicle's ability to negotiate the crossing insufficient or excessive strike in times increase the likelihood of driver error / violations high chance of a second train coming crossing type is unsuitable for location, train service, line speed and / or user groups <p>Additional examples include:</p> <ul style="list-style-type: none"> Signaller unsighted to road vehicle; bleaching of CCTV image, blind spots barriers or gates not fully interlocked with signalling system and / or no approach locking (opportunity for human error - raise barriers / open gates with train approaching) 	<p>Controls can include:</p> <ul style="list-style-type: none"> vehicle activated signs, advance warning signs; countdown markers, risk of grounding signs, provision of emergency telephones liaising with highways authority regarding traffic restrictions; speed limits, restricting direction of traffic engaging with signalling engineers to optimise strike in times enhanced 'another train coming' signs road traffic light signal and boom lighting LED upgrade, extended hoods, repaint backboards, reflectorised markings upgrading of asset to a higher form of protection improving camera equipment / Signaller's view of crossing, e.g. install colour monitor signalling interlocking upgrade and / or barrier inhibition
Pedestrian and train collision risk	<p>Examples include:</p> <ul style="list-style-type: none"> high chance of a second train coming increased likelihood of user error, e.g. crossing is at station free wicket gates are known to result in user error or encourage misadventure crossing type is unsuitable for location, train service, line speed and user groups 	<p>Controls can include:</p> <ul style="list-style-type: none"> spoken 'another train coming' audible warning providing red standing man sign maximise sighting lines of approaching trains enhanced 'another train coming' signage providing tactile paving and / or pedestrian stop lines interlocking (or locking where Crossing Attendant provided) of wicket

	Hazard	Control
	<ul style="list-style-type: none"> schools, local amenities or other attractions are known to contribute towards user error <p>Additional examples include:</p> <ul style="list-style-type: none"> Signaller unsighted to user; bleaching of CCTV image, blind spots barriers or gates not fully interlocked with signalling system and / or no approach locking (opportunity for human error - raise barriers / open gates with train approaching) 	<p>gates</p> <ul style="list-style-type: none"> upgrading of asset to a higher form of protection improving camera equipment / Signaller's view of crossing, e.g. reposition on-site camera equipment signalling interlocking upgrade and / or barrier inhibition
Pedestrian and road vehicle collision risk	<p>Examples include:</p> <ul style="list-style-type: none"> road / footpath inadequately separated; footpath not clearly defined, narrow carriageway restricts width of footpath, footpath width unsuitable for all user groups, e.g. heavily used, high volume of encumbered users condition of footpath surface increases the likelihood of users diverting from the designated footpath or slipping / tripping into the carriageway 	<p>Controls can include:</p> <ul style="list-style-type: none"> clearly define the footpath; renew markings, install tactile paving and / or widen where possible improving footpath crossing surface so it is devoid of potholes, excessive flangeway gaps and is evenly laid removing redundant footpath markings that do not align with public footpaths road speed controls, vehicle activated signs, advance warning signs
Personal injury	<p>Examples include:</p> <ul style="list-style-type: none"> barrier mechanism unguarded / inadequately protected foreseeable likelihood of pedestrians standing beneath barrier during lowering sequence skewed crossing with large flangeway gaps results in cyclist, mobility scooter, pushchair or wheelchair user being unseated 	<p>Controls can include:</p> <ul style="list-style-type: none"> fully guarding barrier mechanisms improving fence lines marking pedestrian stop lines, introducing tactile paving reducing flangeway gaps and straightening where possible

ANNEX C – ALCRM RISK SCORE EXPLANATION

ALCRM provides an estimate of both the individual and collective risks at a level crossing.

The individual and collective risk is expressed in Fatalities and Weighted Injuries (FWI). The following values help to explain this:

- **1** = 1 fatality per year or 10 major injuries or 200 minor RIDDOR events or 1000 minor non-RIDDOR events
- **0.1** = 20 minor RIDDOR events or 100 minor non-RIDDOR events
- **0.005** = 5 minor non-RIDDOR events

INDIVIDUAL RISK

This is the annualised probability of fatality to a 'regular user'. *NOTE: A regular user is taken as a person making a daily return trip over the crossing; assumed 500 traverses per year.*

Individual risk:

- Applies only to crossing users. It is not used for train staff and passengers
- Does not increase with the number of users.
- Is presented as a simplified ranking:
 - Allocates individual risk into rankings A to M (A is highest, L is lowest, and M is 'zero risk' e.g. temporary closed, dormant or crossings on mothballed lines)
 - Allows comparison of individual risk to average users across any crossings on the network

Individual Risk Ranking	Upper Value (Probability)	Lower Value (Probability)	Upper Value (FWI)	Lower Value (FW)
A	1 in 1	Greater than 1 in 1,000	1	0.001000000
B	1 in 1,000	1 in 5,000	0.001000000	0.000200000
C	1 in 5,000	1 in 25,000	0.000200000	0.000040000
D	1 in 25,000	1 in 125,000	0.000040000	0.000008000
E	1 in 125,000	1 in 250,000	0.000008000	0.000004000
F	1 in 250,000	1 in 500,000	0.000004000	0.000002000
G	1 in 500,000	1 in 1,000,000	0.000002000	0.000001000
H	1 in 1,000,000	1 in 2,000,000	0.000001000	0.000000500
I	1 in 2,000,000	1 in 4,000,000	0.000000500	0.000000250
J	1 in 4,000,000	1 in 10,000,000	0.000000250	0.000000100
K	1 in 10,000,000	1 in 20,000,000	0.000000100	0.000000050
L	Less than 1 in 20,000,000	Greater than 0	0.000000050	Greater than 0
M	0	0	0	0

COLLECTIVE RISK

This is the total risk for the crossing and includes the risk to users (pedestrian and vehicle), train staff and passengers.

Collective risk:

- Is presented as a simplified ranking:
 - Allocates collective risk into rankings 1 to 13 (1 is highest, 12 is lowest, and 13 is 'zero risk' e.g. temporary closed, dormant or crossings on mothballed lines)
 - Can easily compare collective risk between any two crossings on the network

Collective Risk Ranking	Upper Value (FWI)	Lower Value (FW)
1	Theoretically infinite	Greater than 5.00E-02
2	0.050000000	0.010000000
3	0.010000000	0.005000000
4	0.005000000	0.001000000
5	0.001000000	0.000500000
6	0.000500000	0.000100000
7	0.000100000	0.000050000
8	0.000050000	0.000010000
9	0.000010000	0.000005000
10	0.000005000	0.000001000
11	0.000001000	0.000000500
12	0.0000005	0
13	0.00E+00	0.00E+00