

Appendix 2 – Narrative Risk Assessment (September 2021)



Farnborough North Level Crossing Narrative Risk Assessment



September 2021

1 INTRODUCTION

- 1.1 Network Rail has a general duty, including under Part 1 of the Health and Safety at Work etc., Act 1974 and under section 117 of the Railways Act 1993, to secure the health, safety, and welfare of its employees and to conduct its undertaking in a way which ensures, satisfactorily, that persons outside of its employment (i.e. those who interface with the operational railway) are not exposed to risks to their health or safety.
- 1.2 Network Rail also has a legal responsibility under the Management of Health and Safety at Work Regulations 1999. Section 3 focuses on the requirement for suitable and sufficient assessments of risk to health and safety of employees and others, in connection with its undertaking.
- 1.3 Network Rail is committed to reducing risk on the railway and has identified that one of the greatest risks to those who interface with the railway is at the site of level crossings. This is where vehicles and/or pedestrians may come into direct contact with train movements. With the support and oversight of the ORR, Network Rail is working to reduce this risk as much as reasonably practicable.
- 1.4 Network Rail has a responsibility to consider the suitability of options and mitigations, including those that provide for the warning of approaching trains and enable traversing within the required time. This document provides supporting safety information for the making of an informed risk assessment in the decision-making process in respect of the Farnborough North footpath crossing (the Crossing), and to recommend the most appropriate option(s) and mitigation(s) that satisfactorily reduces the risk to as low as reasonably practicable, ALARP, to Crossing users.
- 1.5 The crossing facilitates a public right of way (FP24) located at Farnborough North Railway Station in northeast Hampshire. It is located on a double track railway on the Reading to Gatwick line. The crossing provides platform to platform access and links the residential areas of Frimley Green and Farnborough North.
- 1.6 The crossing was previously a bridleway. In July 2012, Hampshire Country Council made a permanent traffic regulation order to prohibit equestrian access. Network Rail then undertook a series of improvements at the crossing.
- 1.7 Farnborough North is a footpath crossing with Miniature Stop Lights (MSL) and the crossing lies adjacent to Farnborough North User Worked Crossing with Telephones (UWCT). These crossings operate independently of each other and have separate risk assessments.
- 1.8 Since November 2014, an attendant has been in-situ between the hours of 0530-0030 Monday to Friday, Saturday 0545-0030 and Sunday 06:15-0030 in order to operate magnetic locking gates when the MSLs are activated. The MSL provides a visual and audible warning of an approaching train by changing from green to a red light and producing an audible tone.
- 1.9 The lights are positioned in a 'back-to-back' set-up so that those who are on the crossing would be able to see the change of aspect while they were crossing. The attendants use other clues, but also react to the lights and lock the gates when trains are approaching, ensuring that there is no-one within the confines of the gates.

2 DESCRIPTION OF THE SITE

2.1 Current Level Crossing Details

Crossing Details	
Name	Farnborough North
Type	FPGM
Crossing status	Public Footpath
Overall crossing status	Open
Route name	Wessex
Engineers Line Reference	GTW2
Mileage	53 Miles 11 Chains
OS grid reference	SU877566
Number of lines crossed	2
Line speed (mph)	70
Electrification	None
Signal box	Guildford

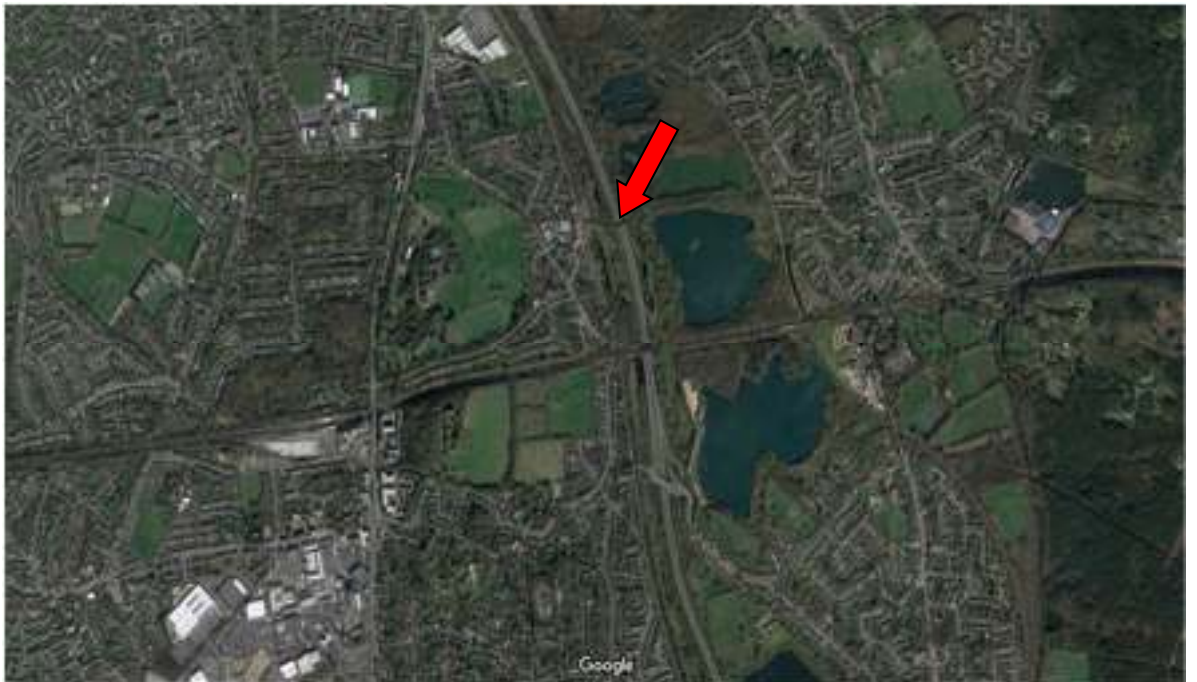
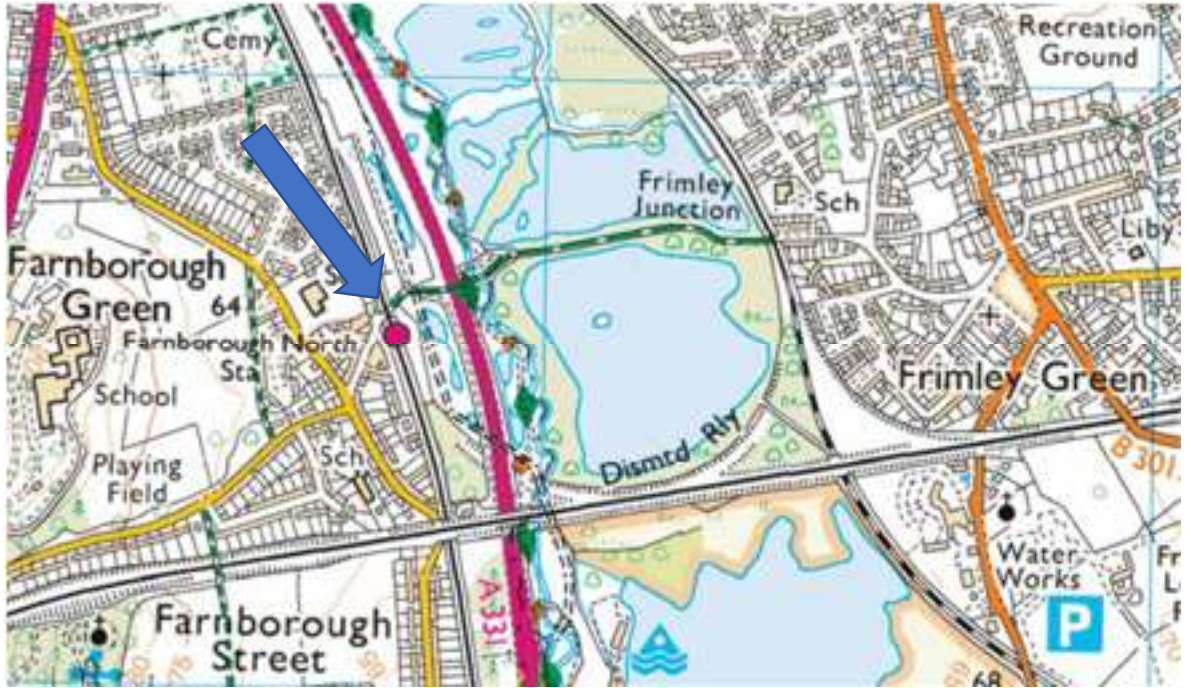
2.2. Surrounding Environment

- 2.2.1 Farnborough North is a footpath crossing with Miniature Stop Lights (MSL) located on public right of way (FP24) at Farnborough North Railway Station in northeast Hampshire. The crossing provides platform to platform access and is also a public right of way linking the residential areas of Frimley Green and Farnborough North.
- 2.2.2 It is situated on the North Downs Line (Reading to Gatwick). The crossing lies adjacent to Farnborough North User Worked Crossing with Telephones (UWCT).
- 2.2.3 The crossing is surrounded by a residential and commercial properties to the west and private fishing lakes and wooded areas to the east. The crossing is well used by daily commuters (both station and non-station users), dog walkers, local walkers/cyclists, school children and students.
- 2.2.4 In peak times the crossing can receive 150+ users that want to use the Crossing at once. This is due to the stopping trains depositing students and commuters that are going to the local college or places of work. The crossing attendant at site will manage the crossing as required.
- 2.2.5 It is reasonable to assume some users may be unfamiliar with the crossing. For the majority of users, their journey will continue along the footpath and over Hatches footpath crossing approximately 400m away on a parallel railway line (AAV). Hatches is a 'passive' level crossing. The decision on whether it is safe to cross is left to the user.

Upside (Eastern) approach	Downside (Western) approach
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2.2.6 The maps below show the location of the Crossing. Ordnance survey view and aerial view map:





2.3 Sectional Appendix

2.3.1 The Sectional Appendix describes the Crossing from the railway perspective. It shows that on the up and down line the speed is 70mph for passenger and freight trains. The controlling signal box is Guildford.

LCR	Seq	Line of Route Description	ELR	Route	Last Updated
SW265	003	Guildford to Wokingham	GTW2	Wessex	03/01/2015
Location	Mileage M	Ch	Running lines & speed restrictions		Signaling & Remarks
					TCB RAB Guildford SB (00)
NORTH CAMP	51	13			
North Camp LC (DCTV)	51	18			
Farnborough North Footpath LE (AW)	53	11			
FARNBOROUGH NORTH	53	18			
Sydney FC	54	00			

2.4 The Crossing

- 2.4.1 Farnborough North is a footpath crossing with Miniature Stop Lights (MSL) located on public right of way (FP24) at Farnborough North Railway Station in northeast Hampshire. The crossing provides platform to platform access and is also a public right of way linking the residential areas of Frimley Green and Farnborough North.
- 2.4.2 It is situated on the North Downs Line (Reading to Gatwick). The crossing lies adjacent to Farnborough North User Worked Crossing with Telephones (UWCT).
- 2.4.3 The MSL provides a visual and audible warning of an approaching train by changing from green to a red light and producing a tone.
- 2.4.4 An attendant has been in-situ since November 2014 between the hours of 0530-0030 Monday to Friday, Saturday 0545-0030 and Sunday 0615-0030 in order manage the crossing and to operate the magnetic locking gates when the MSL are activated.
- 2.4.5 The gates at the crossing are locked with magnetic locks allowing the attendant to lock the gates closed to stop users using the crossing when the MSL is activated.
- 2.4.6 The crossing attendant is to manage the crossing usage with an additional instruction that states if there are more than 20 users waiting then the crossing gates remain locked until the signaller has clarified that another train is not approaching, and so allow multiple users to cross safely. This was implemented after a near miss with 20-30 users in May 2022 when users failed to stop and let the gates be closed and locked.
- 2.4.7 Further duties by the crossing attendants include managing the user-worked crossing next to the footpath crossing. This includes phoning the signaller for permission for users to cross the crossing and also unlocking and locking the crossing gates.
- 2.4.8 Since the crossing attendants have been in-situ, crossing deliberate misuse at both crossings has reduced but deliberate misuse is still is a considerable risk factor at the Crossing.
- 2.4.9 Both gates have metal mesh on them to discourage animals crossing and stop users putting their hand through to operate the emergency magnetic release button on the inside of the gate.
- 2.4.10 There are signs on the fence to encouraging cyclists to dismount, however regular instances have been witnessed and recorded of users struggling through the gates while still mounted and then continuing to cross. This creates an unnecessary distraction further raising the risk of a mounted cyclist not looking at the MSLs and crossing straight onto the deck in front of an approaching train.
- 2.4.11 There are several other signs at the crossing: 'If no light phone crossing operator' and the instruction sign '1. Cross only when green light shows, 2. Cross quickly' are located at the Crossing on both sides by the gates and before the decision point.
- 2.4.12 Signage is also present to encourage dog owners to keep dogs on leads. It should be noted that dogs on leads are also an encumbrance to their handlers which automatically places them at a higher risk.
- 2.4.13 Signage warning the public not to trespass are also present, indicating a penalty of £1000.

- 2.4.14 Within the crossing limits there are signs stating ‘pedestrian exit’ and ‘in emergency press button’ and ‘push gate to exit’ on both gates. There is a green push button next to the gates that will release the magnetic locks if a pedestrian user gets trapped when the gates are locked.
- 2.4.15 Signs have been vandalised in the past and the LCM replaces the signs when required.
- 2.4.16 Telephones are positioned at the crossing approaches in event that the MSL fail, and users are instructed to phone crossing operator. The telephones are also there for the user-worked crossing to contact the crossing operator before crossing.



- 2.4.17 Ground conditions continue to reflect the approaches and are fully tarmacked on both approaches.
- 2.4.18 The Crossing deck is made of a rubberised material offering extra traction over the railway. Either side of the deck are fitted timber anti-trespass guards. The Crossing has self-closing gates on both approaches. With the deck being level to the rails, with excellent approaches and deck, with no tripping or slipping hazard, displaying correct signage, and crossing attendants, there are no other mitigations that can be employed to further mitigate residual risk.
- 2.4.19 In comparison to other crossings, accidental and deliberate misuse is unacceptable and is a regularly reported issue even though the crossing attendants manage the Crossing and also act as a deterrent.
- 2.4.20 The visibility of the signs is reduced at night or at dusk with only lights from surrounding residential housing, station, and lamp posts either side of the crossing gate to illuminate the area. There are no excessive adjacent sources of light or noise that could affect a user’s ability to see or hear approaching trains.
- 2.4.21



2.5 Crossing status

- 2.5.1 The Crossing was originally a bridleway crossing with bridleway rights and in July 2012 Network Rail applied to Hampshire County Council for a Temporary Regulation Order to stop up the bridleway rights over the crossing. The downgrade application was based on non-equestrian usage and a positive attempt to make cyclists dismount, which would then allow Network Rail to upgrade the crossing to meet footpath crossing standards.

2.6 Train movements

- 2.6.1 A total of 78 trains per day are timetabled over 21 hours at the crossing. This is made up of 48 passenger stopping services, 26 passenger non-stopping services and 4 freight trains. Other trains may run on the line that are not part of the timetabled movements, such as rail treatment trains, etc.
- 2.6.2 There is a proposed future increase to rail services, which partially commenced in May 2020 as part of the North Downs line timetable aspirations of First Great Western to increase the train service from 2 to 3 trains per hour in each direction but at the time of completing the risk assessment the future increase has not been fully implemented. Any proposed increase will be risk assessed once known.
- 2.6.3 Passenger trains are timetabled to operate on a similarly hourly basis throughout the day. There is a standard pattern of stopping trains that means that arrival of two trains from differing directions within a few minutes of each other is a regular, recognised pattern of movement.
- 2.6.4 The arrival of two trains at similar times makes the job of the crossing attendant critical, particularly for large groups. A large group coming off the train to Guildford will congregate at the Crossing and wait for their train to pass before the lights return from red to green. However, there may be a small window of time to allow them to traverse before the train approaching on the other line turns the lights to red again.

- 2.6.5 Freight and passenger trains often travel at different speeds and when a crossing is located near a station then stopping and non-stopping services will clearly travel at different speeds, thereby further raising risks.

2.7 Sighting

- 2.7.1 Sighting for approaching trains at the Crossing is non-compliant within Network Rail standards.
- 2.7.2 The recommended Decision Point for a foot crossing stands at a minimum of 2 metres from the nearest running rail. From this position a crossing user should be able to decide if it is safe to cross the line. The length of traverse is then calculated from this point until 2 metres past the furthest running rail.
- 2.7.3 At the Crossing there is a crossing traverse length of 10.0 metres, so providing a traverse time of 12.62 seconds for users. The crossing traverse time includes an increase of 50% traverse time due to the identification of vulnerable users.
- 2.7.4 The upside (Frimley side) decision points, looking in both directions, is obscured at 2m by either the crossing attendants hut or the house. This forces a user to enter the 'danger zone' and move to approximately 1.2m from the running rail in order to achieve clearer sighting.
- 2.7.5 The downside decision points, looking in both directions, is obscured at 2m by MSL equipment and fencing. This forces a user to enter the 'danger zone' and move to approximately 1.5m from the running rail in order to achieve clearer sighting.
- 2.7.6 If all fixed structures were removed from both side at the 2-metre decision point sightings still could be impeded due the volume of users standing on the platforms either side that could obscure sighting of an approaching train in the up direction.
- 2.7.7 The sighting measurements taken from the Decision Point at the time of the assessment (by laser rangefinder) are set out in the table below. Sighting is non-compliant with the minimum required sighting in one direction for vulnerable/incumbent users, as mentioned above, this has been increased by 50%.

Sighting measurement from the Decision Point

	Required Minimum Sighting for 12.62s traverse time	Ideal Sighting Distance	Measured Sighting	Actual Warning time	Measured from crossing to?
Upside looking towards Up direction train approach	395m	489m	489m	15.62 s	Vegetation on upside curvature
Upside looking towards Down direction train approach	395m	489m	366m	11.71s	Vegetation on upside curvature
Downside looking towards Up direction train approach	395m	489m	437m	13.97s	Vegetation on upside curvature

Downside looking towards Down direction train approach	395m	489m	309m	9.87s	Vegetation on upside curvature
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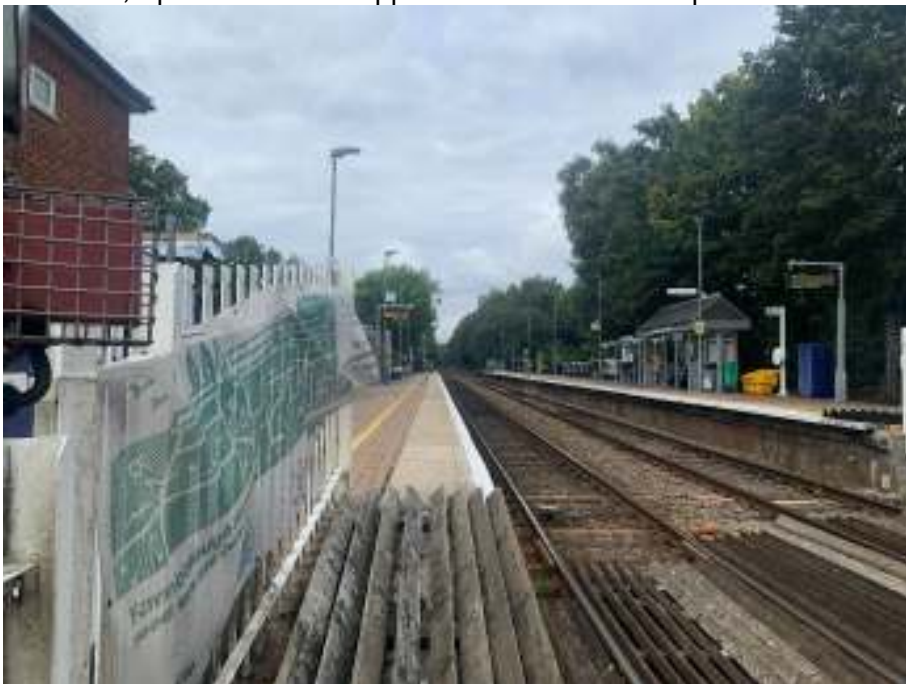
2.7.8 Upside, Up direction train approach at 1.2m Decision Point



2.7.9 Upside, Down direction train approach at 1.2m Decision Point



2.7.10 Downside, Up direction train approach at 1.5m decision point



2.7.11 Downside, Down direction train approach at 1.5m decision point



All of these sighting calculations become irrelevant if Crossing users obey the MSL. It forms the over-riding mitigation by providing a direct indication to the user of an approaching train so that the user no longer is required to look for approaching trains.

- 2.7.12 The MSL strike in point for activation is designed to give 30 seconds warning before the arrival of a train at the Crossing on the up line and 31 seconds on the down line based on 70mph line speed.
- 2.7.13 The MSL activation warning exceeds the minimum warning time required for all types of users of 12.62s. Multiple users (in excess of 20) traversing at the same time would exceed the maximum MSL activation time.
- 2.7.14 Additional mitigations to control multiple users have been put in place. The crossing attendants are mandated to manage the crossing usage with a special instruction. This states that if there are more than 20 users wishing to cross at one time then the crossing gates remain locked until permission is granted by the signaller to make sure there are no other approaching trains. Other approaching trains would limit the ability for multiple users to cross safely.
- 2.7.15 There is a possibility of trains obscuring other trains at the Crossing. This phenomenon, known as 'second train coming' is where a User looks for approaching trains but due to the proximity of train on the first line, cannot see the train approaching on the other line. This scenario is heightened when a train is leaving the platform and user who disembarked the train are waiting at the crossing for the train to leave and the moment the train has passed the crossing the users cross.
- 2.7.16 MSL mitigates the second train coming but only if users obey the MSL warnings.

2.7.17 External influences such as being in a hurry, wearing headphones or simply the noise of the train passing may also impact on the user's decision-making process to identify if another train is coming.

2.8 Crossing Usage

2.8.1 A motion sensor camera was deployed 20th-28th March 2021 by an external company and then a 24-hour average was used over the period and then inputted into ALCRM.

2.8.2 The census was conducted in a period that the country was still recovering from the Coronavirus restrictions and the road map to normal times was still in place.

2.8.3 The data for each of the users have been multiplied by 3 to give a usage to what would be classed as normal. The data taken from ORR station usage figures 2019/20 gives a similar figure as the census data multiplied by 3 (Note: the ORR data does not consider the non-station users).

2.8.4 The average daily figures recorded during the 9 days are shown below.

Pedal / motor cyclists	78
Pedestrians	1,863
Horse riders	0
Animal herders	0

2.8.5 The average daily use was 1863 pedestrians and 78 cyclist and is consistent with the previous census that had 1,843 pedestrians and 100 cyclists.

2.8.6 The types of vulnerable users are elderly, unaccompanied children, those who are mobility impaired, people with prams, family groups with children, mounted cyclists, dogs walkers and fishing persons with fishing kit trolleys. See section on vulnerable use.

2.8.7 There was evidence of usage after the crossing attendants have left site at 00.30 to 05:30 Mon-Fri, Sat 00.30 to 05:45 and Sun 00:30 to 06:15. This consisted of 11 pedestrian users and 7 cyclists throughout the 9-day census period.

- 2.8.8 In peak times the crossing can receive 150+ users that want to use cross the crossing at once. This is due to the stopping trains depositing students and commuters that are going to the local college or places of work. The crossing attendant at site will manage the crossing as required.
- 2.8.9 The picture below shows the set-up prior to the introduction of the attendants. It highlights not only the number of people wishing to cross, but also the behaviours that were common practice to gain access over the crossing of exiting the station over the trespass guards. Although the behaviours are currently controlled, the number of students and commuters remains high. This situation could be exacerbated by the planned train service pattern which means that if there is a second train approaching the station, requiring a longer wait.

2.8.10 The picture below shows the set-up prior to the introduction of the attendants



- 2.8.11 Known deliberate misuse and accidental human error when crossing is at an unacceptable level at this crossing. Regular misuse is witnessed by the LCM and crossing attendant. LCM and crossing attendants regularly inform users of their misuse and offer advice on safe use of level crossings.
- 2.8.12 The LCM or crossing attendant often witness users riding bicycles over the Crossing. These were adults as well as school children, even though there are signs at the Crossing requesting cyclists to dismount when traversing over the Crossing.
- 2.8.13 Many types of users are witnessed crossing over the Crossing wearing headphones and user wearing hoodies with hoods up with and without wearing headphones.
- 2.8.14 The main risk at the crossing is when there are multiple users using the crossing and the crossing attendant is not on duty.
- 2.8.15 In the morning peak there is often 150+ students and commuters waiting to cross. It has been witnessed that multiple users when crossing failed to stop when the MSL were activated and carried on crossing. Also seen are instances when, after the lights have turned to red and the attendant wishes to close the gate, users will hold the gate open for other users. On many occasions where this has happened the attendant has had to leave his operating position and physically close the gates to allow the locking mechanism to activate.
- 2.8.16 Unchecked, the scenario above could lead to a multiple fatality event.

2.8.17 It is thought the majority of users are regular users of the crossing. Although the start of each educational year there will be students that would have not ever crossed a footpath crossing or be familiar with Farnborough North crossing.

2.8.18 The chart below shows the recorded census captured between 20th March–28th March 2021

Date	Day	Direction	Period (24hr)	Pedestrians	Pedal Cycle
20 March 2021	Sat	East	0000-0000	243	17
20 March 2021	Sat	West	0000-0000	221	9
20th March 2021 Total				464	26
21 March 2021	Sun	East	0000-0000	244	27
21 March 2021	Sun	West	0000-0000	237	26
21st March 2021 Total				481	53
22 March 2021	Mon	East	0000-0000	272	10
22 March 2021	Mon	West	0000-0000	378	15
22nd March 2021 Total				650	25
23 March 2021	Tue	East	0000-0000	278	17
23 March 2021	Tue	West	0000-0000	501	7
23rd March 2021 Total				779	24
24 March 2021	Wed	East	0000-0000	298	7
24 March 2021	Wed	West	0000-0000	468	5
24th March 2021 Total				766	12
25 March 2021	Thu	East	0000-0000	240	6
25 March 2021	Thu	West	0000-0000	485	11
25th March 2021 Total				725	17
26 March 2021	Fri	East	0000-0000	218	8
26 March 2021	Fri	West	0000-0000	451	6
26th March 2021 Total				669	14
27 March 2021	Sat	East	0000-0000	244	22
27 March 2021	Sat	West	0000-0000	258	12
27th March 2021 Total				502	34
28 March 2021	Sun	East	0000-0000	245	15
28 March 2021	Sun	West	0000-0000	305	11
28th March 2021 Total				550	26

Grand Total				5586	231
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The figures above were multiplied by 3 to give a true reflection of normal usage based on previous census data.

2.9 Vulnerable use

- 2.9.1 The census data gathered at the Crossing shows a high percentage of vulnerable users. The types of vulnerable users regularly observed are elderly, unaccompanied children, those who are mobility impaired, people with prams, family groups with children, mounted cyclists, dogs walkers and fisherpersons with fishing kit trolleys.
- 2.9.2 There are many people traversing over the crossing walking their dogs, some with more than one dog and some walking dogs on extended leads.
- 2.9.3 Observations when at the crossing conducting inspections show that most dogs walkers do keep their dogs on their leads. ‘Keep dogs on leads’ signs are in situ to remind dog owners to keep their animals under control while using the crossing.
- 2.9.4 Perception with some users with dogs on leads is that they do not easily personally accept an assessed view that they are vulnerable users. However, the user will often remain distracted, watching or controlling their animals, and not appropriately focussing on traversing – in any event, they may be an encumbered user; for example, dog behaviour is unpredictable; the dog may itself become distracted, bark, or pull, when approached by other users approaching in the opposite direction (or by any other event). This in turn causes distraction to the user from properly watching out and listening for approaching trains, etc.
- 2.9.5 Users with multiple dogs further increases the difficulty to maintain adequate and safe control; and dogs off leads represent a much greater hazard to the user. If, for example, a dog strays onto the railway, their owners are more likely to try to follow or react to them, or focus on them, which increases the scope for hazardous distraction and risk, not only from trains, but also from slipping on the sleepers or tripping over the rails.
- 2.9.6 The Crossing has a high number of school/student children on route to and returning from school or college. Many of these school/students children traverse the Crossing with bicycles and have been recorded misusing the Crossing by not dismounting as requested by crossing signage.
- 2.9.7 The crossing is considered to have a higher than usual number of vulnerable users, including school/student children, large groups, and encumbered users (i.e. Fishing persons with fishing kit on trolleys or carrying large bags). Evidence also shows that headphones are often worn by users.

2.10 Incident history [SMIS] (Safety Management Information System) data 1st Jan 2014 – 1st Sept 2022

- 2.10.1 The Crossing has a long history of misuse and near misses. These incidents are cyclists and pedestrians traversing straight over the Crossing without reacting to the MSL warnings.

Event Date	Description
May 19,2022	LC Misuse - a MOP had put their hand over the crossing to operate the green release button when the barriers were closed at Farnborough North Level Crossing.
May 19,2022	LC Near Miss - 1V38 07:02 Gatwick Airport – Reading involving a group of 20 - 30 users crossing Farnborough North Public Footpath Crossing (MSL). EBA applied.

Aug 14,2020	LC Misuse - Nuisance calls made to the signaller from Farnborough North level crossing
Jan 26, 2020	LC Misuse & Trespass - Two youths at Farnborough North level crossing were jumping over the gate before running on the tracks between the two platforms
Jun 9, 2018	LC Misuse - 2V46 (GWR 05:24 Gatwick Airport to Reading) reported a person ran across Farnborough North foot crossing in front of the train and on to the platform in an attempt to board the train
Oct 10, 2017	Misuse LC – Crossing keeper reported a male walked the round locked gates at Farnborough North LC.
Jul 27, 2016	LC Misuse - A young male ran across as a train was approaching at Farnborough North LC, Farnborough - Reported by crossing keeper
Jun 30, 2016	LC Misuse - Cyclist was seen to cross over Farnborough North LC, Farnborough as a train was approaching - Reported by 1052
Apr 13, 2015	LC Misuse - 2V50 0624 Redhill to Reading reported person crossed in front of train at Farnborough North Foot Crossing. Not near miss.
Dec 1, 2014	ATTENDANT NOW IN SITU*
Nov 11, 2014	LC Misuse - 2V65 1529 Redhill - Reading reported a person walk in front of train at Farnborough North LC
Sep 18, 2014	LC Misuse - 2044 1604 Reading - Redhill reported person ran out across Farnborough North LC
Sep 12, 2014	LC Misuse - 2V631434 Redhill - Reading reported two girls crossed in front of the train at Farnborough North Level Crossing - Not near miss.
Jul 19, 2014	LC Misuse - 2V67 1634 Redhill - Reading reported a MOP cross in front of train at Farnborough North LC. Not a near miss.
Jul 10, 2014	LC Misuse - Person walked across Farnborough North LC from the Down to the Upside as 2044 1604 Reading - Redhill was approaching.
Jun 26, 2014	LC Misuse - 2050 1904 Reading - Shalford reported that person ran out across Farnborough North LC in front of train
May 25, 2014	LC Misuse - 1076 1318 Reading - Gatwick reported 2 teenagers run across track at Farnborough North LC
May 9, 2014	LC Misuse - 2029 07 34 Reading - Gatwick Airport reported person crossed against warnings at Farnborough North Level Crossing.
Apr 4, 2014	LC Misuse - 2027 0606 Reading to Shalford reported crossing misuse at Farnborough North Level Crossing.
Mar 31, 2014	LC Misuse - 2038 1204 Reading - Redhill reported a MOP walk from down to up line at Farnborough North LC
Mar 15, 2014	LC Misuse - 2053 2134 Reading - Gatwick Airport reported that MOP ignored road lights at Farnborough North LC & walked across

2.10.2 Note that the misuse significantly reduces when the level crossing attendant are introduced at the level crossing in December 2014.

- 2.10.3 The recorded data shows that there are high numbers of deliberate misuse and accidental human error. In the year of 2014 there were 11 events reported by train drivers of misuse with the potential of near misses. The misuse significantly reduces when the level crossing attendant are introduced at the level crossing in December 2014.
- 2.10.4 The recorded data shows that there are still deliberate misuse and accidental human error events after the introduction of the crossing attendant with 9 events between 2014 and September 2022
- 2.10.5 The misuse appears to tail off between 2019 and 2021 which could be due to the Coronavirus restrictions that were implemented in March 2020. These changed the way the Crossing was being used, i.e. less commuters and school/student children and more people taking exercise locally.
- 2.10.6 Given that the Crossing has no permanent recording methods, in practice, these incidents will only be captured if witnessed by passing train drivers, railway staff or members of the public formally reporting. Experience shows that incidents of formal reporting is significantly less than the level of actual incidents which take place.
- 2.10.7 Evidence from site visits by the LCM also concur that unreported misuse takes place as this has been regularly witnessed during inspections and risk assessments.
- 2.10.8 The majority of potential misuse events are when the crossing is activated, and the users want to cross the railway to get on the train the other side. The LCM or crossing attendant will intervene to advise the user not to cross for their own safety and others. This can lead to verbal abuse from the users directed at the LCM or crossing attendant.

2.11 Unpredictable use at footpath crossings

- 2.11.1 The recent pandemic in 2020 has led to changes in the levels of use at level crossings. These changes include:

- More people exploring local walking routes
- A shift from a standard working hours
- More people working remotely and not travelling into an office
- More dog walker

All of these issues have resulted in an increase in use of public footpaths and therefore more people using level crossings. This has been recognised nationally. It has resulted in many level crossings having an increased risk score.

- 2.11.2 The previous relatively stable, but small increase in use that was recorded over previous years now has become less predictable. The current increase in use is still being felt although not to the levels at the height of the pandemic.
- 2.11.3 The trend identified has been from an increase across the whole network, including remote, previously very low use sites, to now only increases at established sites within the footpath network such as the Crossing.

2.12 Vegetation

2.12.1 Vegetation is an ongoing issue at the crossing. Regular inspections take place to assess the level of growth. Vegetation can limit sighting lines and reduce the available sighting of approaching trains. Vegetation cut-back is often actioned by the LCM or lineside inspectors as far as the boundary fence line, so as much as possible of the Crossing user's sighting remains. This is less relevant at the Crossing as the user should rely on the MSL.

2.13 Future local development

2.13.1 The risk assessment of the Crossing incorporates a check of the local area to highlight any local increases in housing, and therefore use of the Crossing.

2.13.2 If noted prior to the development, negotiations can then take place with the developer to understand the likely impact on the Crossing and modelling can take place to see what the increase in use will do to the risk.

2.13.3 Currently, there is no known housing or commercial development plans in this area which may have an impact on the crossing.

Key factors that can affect the future use are:

- Local developments (e.g., opening schools, retail outlets, factories);
- Increasing pressures for new residential and commercial development;
- Increased number of people living in Britain (i.e. more crossing users);
- The requirement to run additional train services and convey more passengers;

2.13.4 Discovery of new developments is not always easy, and it tends to only be the larger developments that are offered to Network Rail as consultees resulting in increases in use only being highlighted at the next assessment.

2.13.5 The introduction of the Farnborough North community garden started in 2021 on the upside of the crossing which does receive regular visitors and school children but not in high numbers and does not affect the crossing extensively.

2.14 Adverse Weather

2.14.1 During site visits the Level Crossing Manager has witnessed all types of weather conditions whilst carrying out inspections at Farnborough North crossing.

2.14.2 Network Rail have guidance documents for carrying out risk assessments at level / foot crossings: (LCG13) is guidance for sun glare and (LCG21) is a guidance for fog.

2.14.3 As with any foot crossing in the country, adverse weather can affect the crossing User's safety when using the crossing, whether it is low sunlight, fog, or even heavy rain and/or high winds. It would be advisable for the Users to avoid using any crossing during these times.

2.14.4 Weather conditions tend to limit sighting, weather that be by low sunlight obscuring the approach of a train or fog and/or heavy rain reducing visibility.

2.14.5 Below is a graph from the nearest weather station (South Farnborough) to the Crossing highlighting recorded fog conditions at the crossing for the last 5-years.

Level Crossing Weather Station Data Finder

(PC Version)

Date: 21/10/2021
Issue: 1.0

Select Level Crossing: **Farnborough North**

Select or type level crossing name into above drop-down list to plot the monthly fog days from the nearest weather station.

NOTE: If the above drop-down menu does not function on your computer, please use the 'Tablet' version of this form.

Crossing Information

Crossing Type: **Private User worked Crossing with Telephone**

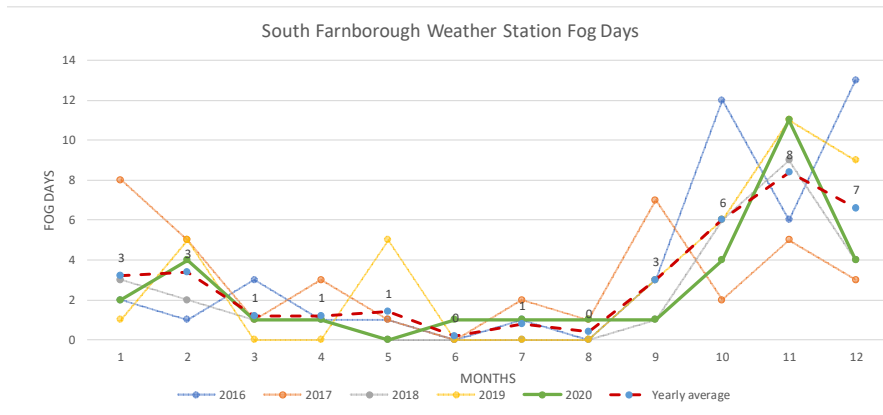
Location: **No Location Information Available for Crossing**

ELR: **GTW2** Miles **053** Miles **0249** Yards

Weather Station

Nearest Weather Station: **South Farnborough**

Distance to nearest weather station: **2.72km** Data Accuracy: Adequate



South Farnborough Weather Station Fog Days

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
2016	2	1	3	1	1	0	1	0	3	12	6	15	45
2017	8	5	1	3	1	0	2	1	7	2	5	3	38
2018	3	2	1	1	0	0	0	0	1	6	9	4	27
2019	1	5	0	0	5	0	0	0	3	6	11	9	40
2020	2	4	1	1	0	1	1	1	1	4	11	4	31
Average	3	3	1	1	1	0	1	0	3	6	8	7	

2.14.6 The data shows that during the colder months of the year Farnborough North is more susceptible to fog days. It has been noted by the LCM that cold days with little to no wind can result in the area suffering from fog that can last for several hours, with particular build ups in the morning hours.

2.14.7 It is noted that the MSL combat the fog which would have to be extremely dense to disguise the MSL output.

2.15 Second train coming

2.15.1 A common feature at locations with two or more lines of rails is that there is a high risk that 'another train approaching' the Crossing on the second set of rails can become fully obscured by a train that has just passed a user on the nearer line, and the user could then step out onto the deck to cross without seeing or hearing the 'second train coming'.

2.15.2 The risk is that a user would observe the first train approaching and wait for it to pass without realising that another train is approaching on the far line. They would then step out behind the first train and directly into the path of the second train which they would not see or hear, with the first train masking the view and sound of the second approaching train.

- 2.15.3 Train stock types that the TOCs normally run on this route includes GWR 165 class which run as 2-3 carriage trains, i.e. 46-69 metres. Empty coaching stock can also run over this line, and this may be up to 12 coaches in length.
- 2.15.4 Freight operating companies have paths over the crossing. These trains can vary in length from an engine car to 200 metres plus train of carriages.
- 2.15.5 The length of these trains will severely restrict the sighting for another train coming on the other line after the train has passed over the Crossing.
- 2.15.6 Although the crossing is double tracked, the MSL warnings warn users of approaching trains, so they mitigate the risk of second train coming as long as the warnings are adhered to.

2.16 Train speeds

- 2.16.1 The line speed is 70mph on both lines for passenger and freight trains. It is understood that not all trains will be travelling so fast. Freight and passenger trains often travel at varying speeds and when a crossing is located near a station then stopping and non-stopping services will clearly travel at different speeds.
- 2.16.2 The variation in speed of trains, as at the location of the Crossing, separately introduces a distinct hazard in so far as waiting times will vary as the timing on the MSL is set to allow enough time for the fastest service to approach safely. Slower, stopping services will extend that waiting time causing frustration and potentially lead to poor behaviours from those not prepared to wait for extended periods.

3 ALCRM (All Level Crossing Risk Model) results

3.1 The ALCRM (All Level Crossing Risk Model) provides a prediction of risk which it classifies in the following ways:

Risk per traverse (identified by a letter A (high) to M (low), which defines the risk for a single traverse over the Crossing.

Collective risk (identified by a number 1 (high) to 13 (low), which relates to the total risk generated by the crossing. This considers the overall risk of death and injury for crossing users, train crew and passengers.

3.2 The current risk assessment rating of the Crossing in ALCRM is **E2** with an FWI scoring of 0.011559092 based on data from the September 2021 assessment.

3.3 This ranks the Crossing as high risk, placing it forth of 151 open footpath crossings on the Wessex route at the time of risk assessment. The risk score is based on 1941 pedestrians and cycle users and 78 trains per day.

3.4 Within the model, 90 % of the risk has been averted by the presence of the crossing attendants. Without them present, the risk score would be 90 % higher.

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

- Second train coming (43 %)
- Does not observe lights/barriers (30 %)
- Slips, trips, falls or snagged on crossing (11 %)

- Distracted / forced by dog (loss of control) (8 %)
- Railway cause: slow moving / short warning (7 %)
- Railway cause: train unexpected (0.07 %)
- Unaware of crossing (0.03 %)

3.6 The top two risk drivers for pedestrian equate to 73 percent, with top 'Second train coming' being 43 percent and 'Does not observe lights/barriers' being 30 percent based on 100 percent. At Farnborough North mitigating the top 2 events for pedestrians the risk driver would significantly reduce the risk at the crossing. This has been mitigated by the provision of attendants who operate the gate at the crossing controlling access to the railway. This has allowed approximately 90 % overall of the risk to be controlled but this crossing still ranks in the top five footpath crossings.

3.7 The risk of be 'distracted / forced by dog (loss of control)' is dependent on users paying attention to signage (Please keep dogs on leads) and using the crossing correctly. So, with human factors being a factor the risk involved are not always able to be mitigated completely.

3.8 'Slips, trips, falls or snagged on crossing' is partially mitigated with a compliant decking with no tripping hazards but it is still reliant on the user paying attention to their foot fall as they cross the crossing.

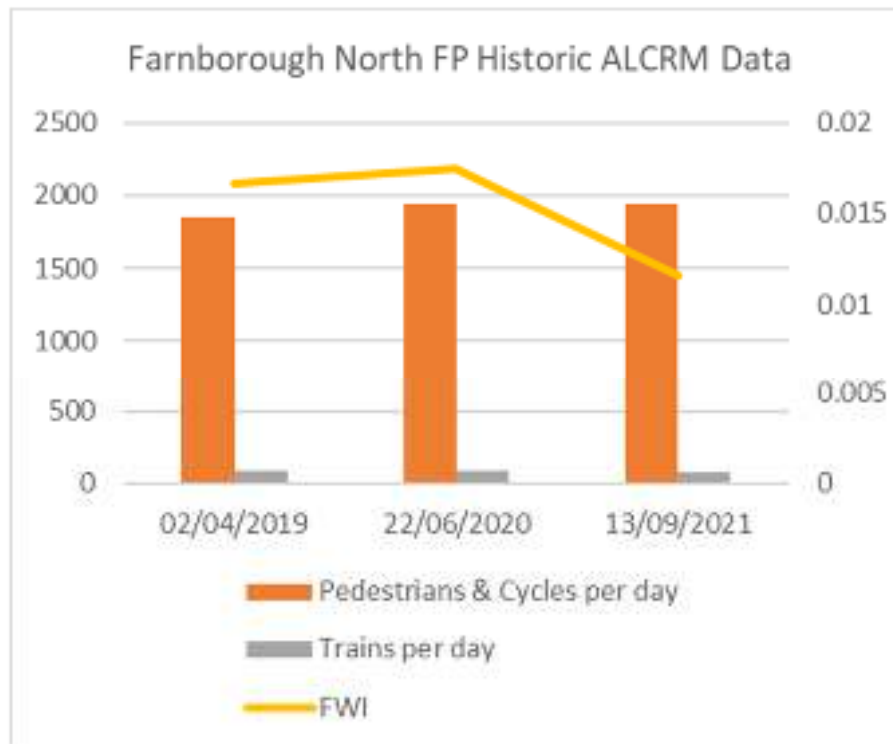
3.9 Railway cause: slow moving / short warning are dependent on users paying attention to the MSL warnings and signage and using the crossing correctly. So, with human factors being a factor the risk involved are not always able to be mitigated completely but again the crossing attendant helps mitigate the risk.

3.10 Details of which risks sum into the risk score are presented in the output table below. The main risk is to the crossing user, with a smaller percentage applied to train staff, namely the train driver.

	Risk per Traverse (Letter)	Collective Risk (Number)
The calculated safety risk for this crossing is:	E	2
	Risk per Traverse (FWI)	Collective Risk (FWI)
Cars / car-based vans / quad bikes	0	0
Large vans / small lorries / large 4x4s		0
Buses / Coaches		0
HGVs		0
Tractors / large farm vehicles		0
Pedal / motor cyclists	0.000000015	0.000436626
Pedestrians		0.010428643

Horse Riders		0
Animal Herders		0
Vehicles user in pedestrian mode		0
Train Passengers	0	0
Train Staff	0.000000024	0.000693823
Derailment Risk		0
Weighted Average (Users)	0.000000015	
Total Risk		0.011559092
	Average Consequence	0.0833
	Collision Frequency	0.138764607

3.11 The historic ALCRM data below shows a slight increase in FWI between 2019 and 2020 which is attributable to increases in pedestrian & cycle users per day. There is a steep decrease between 2020 and 2021 which is attributable to the ALCRM algorithms more accurately reflecting risks at crossings.



- 3.12 Another contributory factor to the decrease in risk is the change in the way the risk model, ALCRM, assigns risk. The changes made have aligned the risk modelling more closely with the Safety Risk Model produced and updated by the Rail Standards and Safety Board (RSSB). The change saw the risk profile change crossing risk scores both up and down, with most footpath crossings increasing their risk score while protected road crossings reduced their risk score. This change took place in April 2021.

4 OPTION ASSESSMENT

- 4.1 Each of the options hypothetically considered represent opportunities to eliminate or reduce risk. Options that achieve closure of the Crossing must always be the primary consideration, as in any hierarchy where the elimination of the risk is the most favoured option.

4.2 Cost Benefit Analysis (CBA)

- 4.2.1 This process allows each of the proposed options to be assessed for their 'value for money'. Any given safety mitigation must show that there is a sufficient safety reduction for the cost of the solution.
- 4.2.2 The Business Cost Ratio (BCR) is the value that is the output of the CBA. The ratio indicates whether there is a sufficient business case to proceed. If the BCR is equal or above 1.0 then there is a positive business case, but if it is less than 1.0 then there is not.
- 4.2.3 Prior to the incorporation of the GDF process (see below) there was a case to argue for those that scored between 0.5 and 1.0. It could be argued that the cost was not grossly disproportionate to the solution and therefore a justifiable option. The GDF process has provided a clearer decision-making tool.

4.3 Gross Disproportionality Factor (GDF)

- 4.3.1 The Office of Road and Rail (ORR) raised concerns that Network Rail's Cost Benefit Analysis (CBA) tool did not adequately account for gross disproportion as required to comply with health and safety law. The Health and Safety at Work Act 1974 places duties on Network rail to conduct its undertaking to ensure, so far as is reasonably practicable, that it does not expose level crossing users to risks to their health and safety. In doing so, Network Rail must consider the cost of implementing risk control measures (in terms of money, time, and effort) against the reduction in risk those measures might achieve.
- 4.3.2 To provide structure and a consistent framework in determining whether an option is grossly disproportionate, Network Rail has developed Gross Disproportion Factors (GDF) that shall be applied to the CBA calculation. To be grossly disproportionate, the cost of implementation must significantly outweigh the risk to the user.
- 4.3.3 When determining the GDF through a series of questions, the highest GDF level achieved is the GDF applied, even if it is not the most recurrent.

- 4.3.4 The below table illustrates the range of suitable Gross Disproportion Factor multipliers that can be applied to the CBA result.

GDF Level	GDF Scale
Medium	1.5
High	2.5
Exceptional	6

- 4.3.5 If the CBA is multiplied by the relevant GDF scale and produces an answer greater than 1.0 then there is an acceptable business case.
- 4.3.6 The results of the GDF evaluation for the Crossing are available in Appendix 1. The CBA results and GDF scales are presented in the options table in the Cost Benefit Analysis section of the report.
- 4.3.7 For reference, the Crossing produced a Exceptional GDF level, resulting in a multiplying factor of 6 to the CBA results.

4.4 Closure via extinguishment

- 4.4.1 Closure of a crossing would always be the preferred option within Network Rail, as it separates the public from trains and is therefore the safest option.
- 4.4.2 Closure of the Crossing would fully eliminate the risk. The Crossing currently ranks as the fourth highest risk of Network Rail Wessex's footpath crossings at the time of writing, due to the high amount of passing trains and public usage, plus the levels of misuse and accidental events linked with the location.
- 4.4.3 This option has been rejected. Extinguishment of the right of way over the crossing without providing an alternative route is not an option due to the lack of suitable alternative routes over the railway within the vicinity of the crossing. It would require changing the route of the path to one that already existed but was as convenient as the one that was extinguished and currently, there is no suitable route.
- 4.4.4 A simple extinguishment would allow no other means for commuters to access the station platforms from one side to the other, as well as break the cross-community link between Frimley and Farnborough.
- 4.4.5 The diversionary route highlighted in red below is 2.4 miles.



4.5 Closure by stepped footbridge

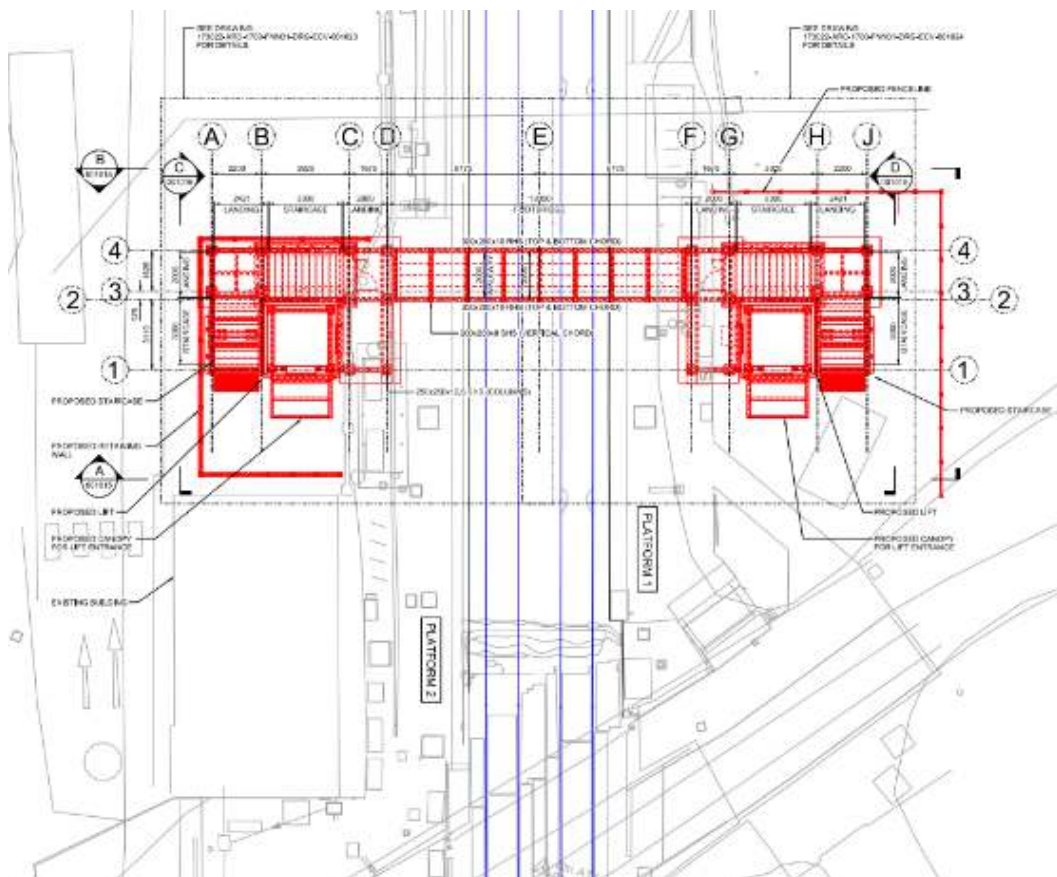
- 4.5.1 This option has also been rejected. It had been proposed that a stepped bridge be built at the current site of the Crossing.
- 4.5.2 However, with a known high number of vulnerable users who could not negotiate a stepped structure, this would not meet NRs Public Sector Equality Duty under the Equality Act 2010, for those with protected characteristics. The diversity and inclusion report highlighted that those with vulnerable characteristics would be disadvantaged by this option.
- 4.5.3 The option to have a stepped bridge for able bodied users and keep the crossing open for non-able-bodied users is not a viable solution. The crossing attendant would have to remain at the crossing.
- 4.5.4 The option above would highly likely mean that users would still use the crossing as it would be less effort to cross the railway than using the bridge.
- 4.5.5 The risks at the crossing would remain and not meet NRs obligation to reduce risks at level crossings.

4.6 Closure by provision of an underpass

- 4.6.1 This option has been rejected.
- 4.6.2 The construction of an underpass at the location of the Crossing would require a vast area to construct a under pass. It would no doubt necessitate compulsory purchase of third-party land. Those dwellings adjacent to the Crossing would require shoring up to stop them being undermined.
- 4.6.3 Network Rail have found that underpasses are spaces that can attract anti-social behaviour.
- 4.6.4 It is also noted in the area that there are large bodies of water and the water table in this area would mean that the underpass would probably require pumping in order to keep it from filling up. Drainage of rainwater and other run-off would also be an issue.

4.7 Closure by diversion and provision of a new EA-compliant bridge with lifts

- 4.7.1 This option has been recommended. An Equalities Act 2010 (EA) compliant bridge and lifts is proposed for an accessible bridge and lifts to be built to the north of the current crossing and as part of the station platform area.
- 4.7.2 The bridge and lifts would provide a suitable alternative route over the railway on a similar route to the previous path. The benefit is that passenger users will have uninterrupted platform to platform access at all times.
- 4.7.3 The risks at the crossing would be completely removed while allowing the large vulnerable population safe passage.
- 4.7.4 This will be a stepped structure built in accordance with British Standard gradients with steps available for the more able-bodied. By providing the lifts Network Rail then comply with the Equalities Act ethos of not reducing access but enhancing where possible. It would satisfy the diversity and inclusion report by preserving access for all.
- 4.7.5 This is reliant on the purchase of third-party land. A path would then be constructed linking back to the original pathway either side of the Crossing.
- 4.7.6 This option offers a way to remove the risk at the Crossing completely.
- 4.7.7 Applying the Gross Disproportionality Factor, there is a business case for this option.
- 4.7.8 The following two diagrams give an indication of the expected stepped and lift structure that would be implemented as part of this proposal.





4.8 Leave with only current mitigations

This is not a viable option as Network Rail is subject to the requirements of the Health and Safety at Work Act etc 1974 to reduce risk 'so far as is reasonably practicable' and a 'do nothing' option does not meet Network Rail's obligation to reduce the risk at the crossing.

5 COST BENEFIT ANALYSIS

Option	Term ¹	ALCRM risk score	ALCRM FWI	Safety Benefit	Cost (£)*	Benefit Cost Ratio	BCR with GDF (6)	Status	Comments
Closure via extinguishment *	Long	M13	00E+00	1.16E-02	100,000	5.05	30.3	REJECTED	No suitable alternative route across the railway.
Closure via extinguishment **	Long	M13	00E+00	1.09E-01	100,000	46.14	276.4	REJECTED	No suitable alternative route across the railway.
Closure by stepped footbridge (composite) *	Long	M13	00E+00	1.16E-02	600,000	0.84	5.04	REJECTED	Does not meet NRs Public Sector Equality Duty under the Equality Act 2010.
Closure by stepped footbridge (composite) **	Long	M13	00E+00	1.09E-01	600,000	7.69	46.14	REJECTED	Does not meet NRs Public Sector Equality Duty under the Equality Act 2010.
Closure by provision of an underpass *	Long	M13	00E+00	1.16E-02	2,500,000	0.11	0.66	REJECTED	Restricted by land restraints
Closure by provision of an underpass **	Long	M13	00E+00	1.09E-01	2,500,000	1.81	10.86	REJECTED	Restricted by land restraints
Closure by diversion via an EA Bridge & lifts *	Long	M13	0.00E+00	1.16E-02	6,740,000	0.07	0.42	RECOMMENDED	Safety and business benefit does not justify the cost of enhancement if the crossing attendants stay in situ
Closure by diversion via an EA Bridge & lifts **	Long	M13	0.00E+00	1.09E-01	6,740,000	0.68	4.08	RECOMMENDED	Safety and business benefit justifies the cost of enhancement based on crossing attendants removed.
Leave as is	Long	C2	1.16E-02	0	0	N/A	N/A	REJECTED	Not a viable long-term option

* Calculation and risk score factoring in attendant in situ – ALCRM risk reduction at 90% - cost per annum 160k

**** Calculation and risk score based on no attendant in situ and increase risk score**

6 CONCLUSION AND RECOMMENDATION


- 6.1 When carrying out a level crossing risk assessment in line with Network Rail and Office of Rail and Road (ORR) policy¹, one must look to eliminate the hazard through the hierarchy of risk controls. Risk controls should, where practicable, be achieved through the elimination of level crossings in favour of bridges, underpasses, or diversions.
- 6.2 The risk assessment process provides evidence of the decision-making process on whether to invest in supplementary safety measures or, to pursue permanent closure of a crossing.
- 6.3 The current risk assessment score in the ALCRM is E2 with an FWI score of 0.011559092. This ranks the crossing as high risk. This score makes the Crossing the ninth-highest risk crossing out of the 299 crossings on the Wessex route. Clearly, this risk is not considered as tolerable or as low as is reasonably practicable. Leaving the Crossing in its current form has been rejected as an option.
- 6.4 Census information and evidence gathered from standard cyclical risk assessments at the Crossing indicates that it is used by a combination of vulnerable user types, including elderly, unaccompanied children, mobility impaired, people with prams, family groups with and without children and fisherpersons with fishing kit trolleys.
- 6.5 Closure via extinguishment is not considered a viable one due to lack of suitable alternative routes over the railway within the vicinity of the crossing.
- 6.6 Closure via footbridge does not meet NRs Public Sector Equality Duty under the Equality Act 2010.
- 6.7 Closure via underpass would require third-party land to construct and may be restricted by land restraints, also recognising that underpasses are spaces that can attract anti-social behaviour.
- 6.8 Crossing attendants required to lock gates is not a sustainable long-term solution. It has a high operational expenditure which will increase each year. Also, as events have shown, there are ways in which this protection can be overcome leading to near miss events and ongoing danger to the public.
- 6.9 The approved option, and one that Network Rail seeks to pursue, is closure by the diversion onto an EA Bridge & lifts. This option shows a positive business case in the cost-benefit analysis, when applying the Gross Disproportionality Factor. Studies show that there is sufficient space to install such a structure at the Crossing with purchase of third-party land.
- 6.10 There is a strong, reasonable, business case to build a footbridge and lifts and close the crossing. Firstly because of the saving made from no longer manning the level crossing but also recognising the inherent risk if they were removed.
- 6.11 It is the conclusion of this risk assessment that closure remains the best option to eliminate the risk at this crossing, by the most applicable means necessary.

¹ Principles for managing level crossing safety, Office of Rail and Road, June 2021

8 APPROVALS

Date of NRA Sign-off	30 st September 2022
Prepared By: Jamie Eyers	Signature: Held on file
	Job Title: Level Crossing Manager
Approved By: Sam Pead (RLCM)	Signature: Held on File
	Job Title: Route Level Crossing Manager

Appendix 1 – GDF result

GDF question set tool to support level crossing cost benefit analysis						 Network Rail
Crossing name		Eaton Road, High				
R.R. No. 01		01025	01025	Crossing type	RR01	
Name of person completing the form		Liam Byrne				
Date of completion		24/04/2022	GDF result		Exceptional	
Culpability – accounting for suicides, deliberate misuse and user errors						Comments
What is the level crossing the level of use and the level of use is expected?	Subdivided into one	0-5 incidents	0-25 incidents	>25 incidents	GDF Score	Medium only, 2/3/4/5/6
	Medium	Medium	High	Exceptional	Medium	
Vulnerability – a greater responsibility sets for those less able to protect themselves						
What is the level of use?	More than 1000 vehicles	Vulnerable user CAT1 or CAT2	2 or more categories of vulnerable users	3 or more categories of vulnerable users	GDF Score	High level of vulnerability
	Medium	Medium	High	High	High	
Social Aversion – addressing the absence of public appetite for credible mass casualty events						
What is the worst case consequence in the event of a collision with a road user, involving a fatality?	Overhead the potential of a single specified injury to 5 specified parties	Overhead the potential of between 5 specified parties or 12 injuries	Overhead the potential of between 2 and 10 fatalities	Overhead the potential of more than 10 fatalities or 12 fatalities	GDF Score	Exceptional, High level of aversion to mass casualty events
	Medium	Medium	High	Exceptional	Exceptional	
Uncertainty – how confident are we that we understand crossing usage correctly?						
Do the rail operating units have a presence at the crossing?		Active	Passive	GDF Score	Crossing active or active	
		Medium	High	Medium		
Do the rail operating units have a presence at the crossing and the other?		No	Yes	GDF Score	How confident are we that we understand crossing usage correctly?	
		Medium	High	Medium		
Uncertainty for private level crossings						
How is the crossing used?	Advisive signs or signals with 100% reliability	Irregular/unreliable signs (no 100% reliability)	GDF Score			
	Medium	High	Medium			
How is the crossing used in the event of a collision with a road user?	Confirmed by signs and other appropriate sources of information	Signs and confirmed by other sources	Confirmed by signs and other appropriate sources of information	GDF Score		
	Medium	High	Exceptional	Medium		
Uncertainty for public road level crossings						
What level of presence is provided at the crossing?	Full barrier	Half barrier (overhead or other appropriate sources of information)	Open crossing (if the road is greater than 10m)	GDF Score	Level of barrier crossing	
	Medium	High	Exceptional	Medium		