I set out my points in my original submission which you have. I will keep my points short and concise.

2. Regarding SA 24 (and Transport) In addition I wish to bring to the Inspector's attention the document to this email which I obtained from Network Rail in August under the FOI rules. It is the latest, full narrative risk assessment of the level crossing in Mortlake, Sheen Lane, situated 200 metres from the Stag Brewery site. The main risks relate not to the trains but to the existing consequent congestion in the surrounding area. On a scale of 1 to 13, where 1 is high and 13 low, the **current** risk rating of the Mortlake Level Crossing is 2.

I wish to submit that the Local Plan in relation to SA 24 and road transport in the surrounding area of the Stag Brewery does not take account of the objectively assessed infrastructure requirements for road traffic movement along the Lower Mortlake Road and surrounding roads.

Mortlake Level Crossing Risk Assessment

Date assessment compiled 26th July 2017

CONTENTS

1. INTRODUCTION

This document provides the necessary supporting safety information to a decision making process for Mortlake Level Crossing, leading to recommendations as to the most suitable level crossing option that reduces the risk to as low as is reasonably practicable.

1.1 Background

Mortlake level crossing is located on the Reading to London Waterloo line. It is an urban Manually Controlled Barrier CCTV crossing with a 4 barrier layout situated near a major arterial road connecting Barnes to Upper/Lower Richmond and has multiple approach roads. The line speed is 60mph in directions, slowing and accelerating for Mortlake Station which is immediately adjacent to the crossing.

Road space is restricted on the main approach road Sheen Lane which has a speed limit of 30 mph. There are footpaths on each side of the road, each of them being narrower over the crossing than on the pedestrian approaches. There is a footbridge at the station which allows for pedestrian access and standard signage is provided on each approach.

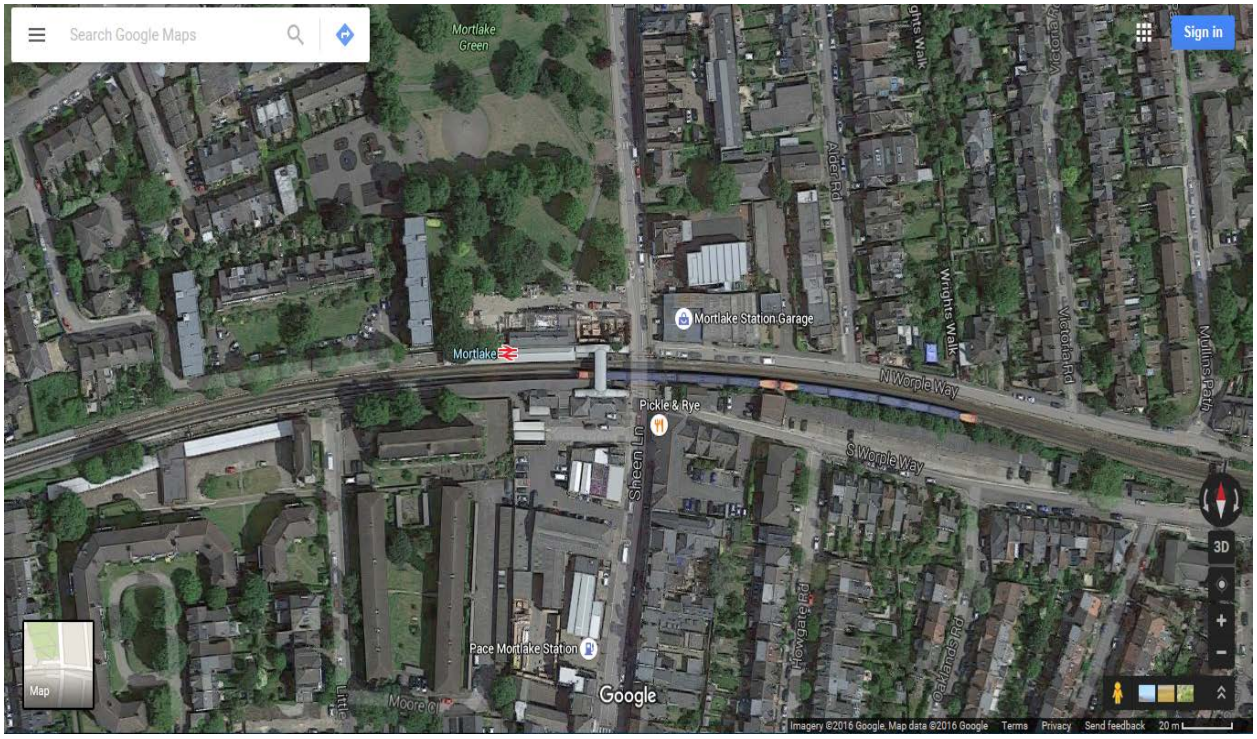
2. DESCRIPTION OF THE SITE

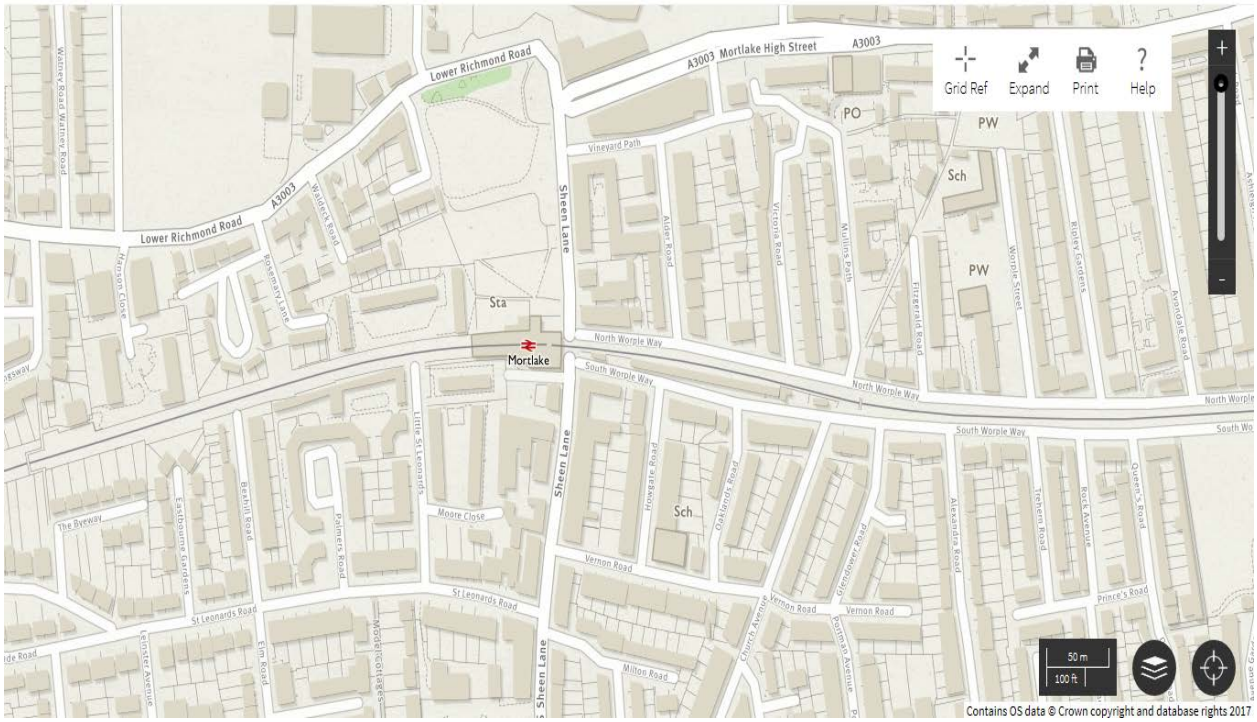
2.1 Current Level Crossing Details

Level Crossing Name	**Mortlake**
Level Crossing Type	CCTV-MCB
Engineers Line Reference (ELR)	RDG1
Mileage	8 miles 21 chains
OS Grid Reference	TQ205758
Local Authority	Richmond Borough Council
Supervising Signalbox	Wimbledon
Number of running lines	2
Maximum Permissible Line Speed	60mph

2.2 Environment

Aerial map and Ordnance survey of the location

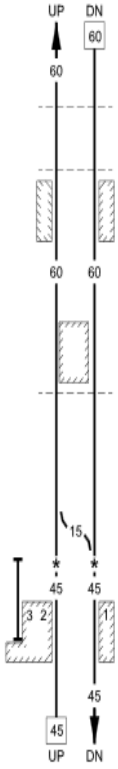




Version 1

Sectional appendix extract of the crossing

LOR	Seq.	Line of Route Description	ELR	Route	Last Updated
SW210	003	Clapham Junction to Reading	RDG1	Wessex	30/11/2015

Location	Mileage M Ch	Running lines & speed restrictions	Signalling & Remarks
			GSM-R TCB Wimbledon SB (W) RA8 DC: Raynes Park
White Hart LC (CCTV)	7 52		
Mortlake LC (CCTV)	8 21		
MORTLAKE	8 21		
NORTH SHEEN	9 03		
North Sheen LC (CCTV)	9 12		
	9 50 *		Feltham SB (F)
RICHMOND	9 57		

Down line approach to the crossing

2.3 Crossing Usage

A quick census was conducted on 5th October 2016 by the Level Crossing Manager at 10:40hrs for a period of 30 minutes. The census applies to 100% of the year. The findings were as follows:

Cars	122
Vans / small lorries	16
Buses	0
HGVs	6
Pedal / motor cyclists	28
Pedestrians	60
Tractors / farm vehicles	0
Horses / riders	0
Animals on the hoof	0

Available information indicates that the crossing does have a high proportion of vulnerable users for a crossing of its type and location. When the census data is aggregated within the ALCRM (All Level Crossing Risk Model) algorithms, it realises a daily usage of 3,888 vehicles users and 2,376 pedestrian and cycle users per day.

2.4 Rail Usage

Rail traffic is heavy at the location with a combination of both passenger and freight services. Most services use Class 458 and class 450 rolling stocks with occasional use of EMU (Electric Multiple Unit). There are 349 trains per day that run over this crossing.

There are currently no known plans to increase train services in the area, although franchise commitments will mean some potential increase in the next few years.

2.5 Future developments

The Stag brewery site near the neighbouring Mortlake level crossing is currently due for development and an application is likely to be submitted in September/October 2017. Similarly there were also historical proposals for the Barnes Hospital / adjoining site for the facilitation of a school or, a residential mixed-use development.

Network Rail is a statutory consultee for all of the main crossings in Richmond and is continually in contact with Richmond Borough Council and associated stakeholders. This would include the potential for the introduction of risk to all of these level crossings by virtue of these developments and on each merits is required to consider possible contributions either under Section 106 or Community Infrastructure Levy intentions to mitigate such risk.

This holistic approach to all the crossings in the Richmond area is imperative and requires the conjoined review by the Wessex Level Crossing Team, the Wessex Capacity/Performance team and Richmond Borough Council/Richmond Highways. At the time of writing, indications are that the Stag Brewery site appears to be a substantive proposal although the impact of that remains notional at this stage. It is probable that this has the potential to increase the risk and usage at Mortlake crossing (further explained

below in section 2.6) and resulting mitigations proposed to negate this could, effectively dissipate the risk to the other crossings in the area therefore, a meeting is being scheduled for a high level review in August 2017.

2.6 Incident history (Source SMIS)

Date	Short Description
18 Feb 17	Lorry struck and ripped off the down side facing barrier at Mortlake LX
27 Jan 17	A flatbed lorry had struck the up facing boom at Mortlake LX
20 Oct 16	Pedestrian ran across LX after the barriers had been lowered
23 Sep 16	A lorry had struck the down side facing barrier at Mortlake LX knocking off the barrier
22 Aug 16	MOP crossed as the barriers were lowering at Mortlake LX
16 Jul 16	Male and female crossed Mortlake LX after leading booms had lowered
16 Jul 16	Cyclist crossed with road lights flashing at Mortlake LX

Mortlake Level Crossing scores high on both individual and collective risk with it being the 4th riskiest CCTV crossing on the Wessex Route. This means that the risks to pedestrians or, road users are high and also that the risks to passengers on trains are high. However, the majority of the risk is controlled by the full barriers separating road users from the trains and the signaller protecting the crossing ensuring that a train cannot approach unless the crossing is clear.

Above is a snap-shot extract of deliberate misuse at the crossing within the past year. Deliberate misuse is prolific and almost occurs on a daily basis which is similar to other crossings in the area or, comparable CCTV crossings situated in congested urban environments. Historic data shows not only that the deliberate misuse is sustained over a number of years, but that this has resulted in other incidents such as regular near-miss events (1-2 per year for the last ten years although less in the last few years) and barriers strikes where vehicles have managed to knock barriers off completely (2-3 per year for the last ten years)

The barrier downtime at the crossing (see section 3) is lengthy and thus is likely to be a contributory factor in deliberate misuse terms. For motorists this includes the potential for blocking back associated with the nearby junctions and cars pulling out straight onto the crossing and on occasion causing damage to the barriers.

In terms of make-up, the road surface and gradient is unlikely to impact on the ability of a vehicle to stop behind either stop line. At the estimated road speed, the visibility of level crossing signage and equipment is considered compliant and provides road users with surplus time to react if the crossing is activated.

For pedestrians, despite the presence of a pedestrian bridge adjoining Mortlake station, this has not deterred deliberate pedestrian misuse i.e. something which was identified on the date of the last assessment as well as during cyclical asset inspections. Pedestrian movements are likely to have increased during the peak period in recent years with children both accompanied and unaccompanied being the predominate users.

In 2015 the associated level crossing manager lodged objections against a development of a Free School development in close proximity to the crossing. This development later went ahead but subject to assurances from the School and further to a proposed safety analysis, revised travel plans necessitating school coordination with Network Rail, and regular education with the parental attendees which has since been continually progressed.

Present at these meeting were developers, BTP (British Transport Police), Metropolitan Police and the school governors. Network Rail has also liaised with the schools in the area providing safety seminars and parental 'Q and A' sessions and has provided internal funding for the provision of additional signs to aid users to encourage use of the station bridge.

With the Stag Brewery development there is a probability (yet to be established) that the primary risk at the crossing will emerge as a 'pedestrian-vehicle' related risk with rail risk being secondary. With associated congestion and by virtue of the developments proximity to the crossing, pedestrians are likely to be forced into the path of vehicles on either side of the crossing when the barriers are lifted. This conflict will also arise from the congestion caused by the extensive barrier downtime at this site and the inability to provide more waiting space and pavement width. This concern arises despite the presence of a suitable bridge at Mortlake, something which is not available at its neighbouring crossing White Hart Lane and, which experiences similar issues. It is unlikely that another bridge structure at the site would solve this problem.

There has also been tasking of the British Transport Police enforcement vehicle throughout the years at Mortlake which has been productive but does not allow or account for enforcement for deliberate pedestrian misuse and is restricted to enforcing vehicle contraventions. The table below show the results from various 'tasking dates' at the crossing.

Crossing name	Date	Total Time (hh:mm)	No. of drivers captured	No. of pedestrians observed offending	Total no. of vehicles
Mortlake	06/12/2011	05:00	19	4	1,760
Mortlake	22/12/2011	06:45	13	0	2,310
Mortlake	16/01/2012	03:15	0	2	1,369
Mortlake	02/02/2012	03:30	7	5	1,396
Mortlake	07/02/2012	03:00	6	8	1,100
Mortlake	29/02/2012	03:00	6	3	1,142
Mortlake	21/03/2012	03:00	3	0	921
Mortlake	28/03/2012	03:45	2	5	924
Mortlake	30/05/2012	03:30	14	9	1,501
Mortlake	02/07/2012	03:30	3	7	1,675
Mortlake	27/09/2012	04:15	9	8	1,720
Mortlake	02/10/2012	02:30	5	0	1,020
Mortlake	09/10/2012	03:00	0	0	1,009
Mortlake	24/10/2012	03:30	8	0	1,593
Mortlake	08/11/2012	03:00	3	0	1,844
Mortlake	15/11/2012	03:00	8	0	1,337
Mortlake	29/11/2012	02:15	2	0	1,259
Mortlake	03/12/2012	03:00	4	0	1,863

Mortlake	12/12/2012	03:00	4	0	1,776
Mortlake	18/12/2012	03:00	2	6	1,682
Mortlake	29/01/2013	03:00	3	9	1,553
Mortlake	05/02/2013	03:00	4	7	1,887
Mortlake	25/02/2013	03:00	7	9	1,426
Mortlake	28/03/2013	01:00	0	0	402
Mortlake	16/05/2013	03:00	3	15	1,205
Mortlake	12/06/2013	03:15	5	6	1,477
Mortlake	25/06/2013	02:15	2	9	473
Mortlake	03/07/2013	03:00	8	5	2,026
Mortlake	24/07/2013	03:30	7	4	1,078
Mortlake	12/09/2013	03:10	5	7	4,055
Mortlake	13/01/2014	03:15	4	6	902
Mortlake	09/12/2014	03:30	8	16	2,549
Mortlake	11/12/2014	03:30	2	13	2,756
Mortlake	18/12/2014	03:30	7	15	2,341
Mortlake	15/01/2015	03:45	3	18	3,233
Mortlake	03/02/2015	04:00	7	17	2,682
Mortlake	26/06/2015	07:45	13	40	7,504
Mortlake	12/10/2016	03:20	0	4	2,187
Mortlake	24/10/2016	03:20	1	4	1,960
Mortlake	13/01/2017	03:20	2	2	1,207
Mortlake	07/02/2017	03:15	0	0	1,928
Mortlake	13/02/2017	03:20	0	6	2,145
Mortlake	01/06/2017	03:30	0	5	1,765
Mortlake	08/06/2017	03:05	3	4	1,307
Mortlake	12/06/2017	03:30	0	1	998

2.6 Vegetation Risk

Vegetation management is occasionally an issue on the upside of the crossing, which arises during cyclical inspections but is generally rectified as and when required. There are no other known issues and at the last inspection all vegetation was complaint.

2.7 ALCRM (All Level Crossing Risk Model) Scores

The current risk assessment score on ALCRM is E2* with a FWI scoring of 3.47E-02. As mentioned previously, this score makes it the 4th riskiest CCTV crossing on the Wessex Route, and places it in the high risk category. The following key risk drivers were identified by the ALCRM toolset and contributed to the risk score as follows:

- Frequent trains
- Crossing near station
- Large number of users

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

- Individual risk of fatality (identified by a letter A (high) to M (low)), which relates to the risk of death for an individual using the crossing on a frequent basis (500 times per year); and
- collective risk (identified by a number 1(high) to 13 (low)), which relates to the total risk generated by the crossing. This takes into account the overall risk of death and injury for crossing users, train crew and passengers.

Note: The ALCRM tool can give a rather limited output about hazards around residual risk or misuse. It is not possible to use ALCRM to properly assess the risk from a wide range of hazards.

3.1 BARRIER DOWN-TIME ANALYSIS

Barrier down-time at Mortlake has been a contentious issue which has had escalation to the ORR, the Wessex Executive and Wessex Operations throughout the years. The high frequency of trains at the crossing, and other contributing factors, means that information from barrier downtimes displayed below gave values where the average barrier down time for non-rail users at Mortlake is 03:59 minutes outside peak hours which averages 40:39 minutes down-time per hour, and 04:40 minutes during peak hours with 46:32 down time minutes per hour.

	Time of day	North Sheen	Mortlake	White Hart Lane	Barnes (Richmond)
Average barrier down time (mm:ss)	Full day	03:41	03:59	03:50	03:52
Average barrier downtime per hour (mm:ss)		39:13	40:39	40:21	40:12
Average barrier down time (mm:ss)	Peak	04:26	04:40	05:15	05:33
Average barrier downtime per hour (mm:ss)		46:32	46:45	47:13	52:43

This snapshot of data is from a report published in the latter part of 2016 and there is likely to be a slight variation in barrier down times from day to day and may alter subject to unforeseen events as well as operational delays.

There has been no change in the services within the area since which would warrant further review of those timings however, as the scale shows, it is imperative that this crossing is not reviewed in isolation and must incorporate the other crossings within the Richmond area. If a closure option was later considered for Mortlake Level Crossing, then it may be feasible that the surrounding traffic could seek alternative routes which perhaps may increase vehicle and pedestrian usage at the other crossings as well as introducing additional risk.

This in turn requisites the necessity for cross collaboration with stakeholders and in particular for collaboration and the insistence for substantive pedestrian and traffic/census modelling relative to the Stag Brewery site. An increase in Rail Traffic at this site would also increase barrier downtime adversely at the site to unacceptable levels.

3.1 OPTION ASSESSMENT

This section reviews the various options available to mitigate risk and reduce it to acceptable levels. These options are then reviewed with a cost benefit analysis to see if they satisfy the spend in return for a proportionate reduction in risk.

In line with ORR guidance, closure is always the first option that has to be investigated.

4.1 Closure via diversion / road Rail Bridge

In November 2013 Network Rail were questioned in Parliament by the Transport Select Committee over the safety of level crossings and were challenged to close crossings wherever feasible. This crossing is situated in an urban area with multiple roads leading to it. There are alternative ways of traversing the railway further away from the crossing however, it is the understanding of this assessment that closure via diversion is currently not possible due to the high usage and lack of suitable diversionary routes within the immediate vicinity of the crossing. This position may change subject to future feasibility studies arising from upcoming meetings with various stakeholders.

Extinguishment and diversion was partially mooted circa 2014/2015 by the Wessex Level Crossing team but later discounted as unfeasible save for a large-scale redevelopment programme, e.g. a Crossrail type project. It was also envisaged locally that a tunnel option may allow for closure to be realised but could cost in excess of £10m although this figure remains notional. A road rail bridge was also considered not to be feasible due to location, absent a similar type of project and well as its proximity to the station with the possibility of land purchase options (again a notional figure of £6m was optioned). This may alter further to the Stag Brewery development and thus these have been optioned as part of this assessment. Together with the notional figures provided both options failed a cost benefit analysis review (CBA).

4.2. Red Light Enforcement Cameras (RLSE)

A bespoke enforcement camera is an option that has been applied to reduce vehicle misuse at another London Crossing in Richmond (White Hart Lane) and has recently passed Home Office approval and could similarly be applied to Mortlake. The camera has automatic number-plate recognition software and would be able to penalise/prosecute vehicles that ran the red-light at the crossing. This would not have an impact on pedestrian misuse which is a significant concern nor would it prevent pedestrian/motorist interaction. Furthermore, it may not have a preventative impact to tackle deliberate vehicle misuse which is a predominate concern there. In risk terms the attributable reduction to the overall risk scorings would be minimal (around 2%) and installation would be cost prohibitive (potentially £200k+).

This option has failed a Cost Benefit Analysis (see below) however may be suitable if external funding with the local authority/Highways/developer was an option but this would not be recommended as a risk reduction option here. This provision would also necessitate additional maintenance costs and ongoing process costs with Staffordshire Police, the current custodian of RLSE contraventions. This option has merely been progressed for documentary purposes.

4.3 Renewal of the crossing

Expanding the width of the crossing and/or the footpath approach access may be an interim option to allow for additional pedestrian room. Notwithstanding that such an upgrade does not stack up under a cost benefit analysis (as per similar studies for other crossings) this would again require external contributions as there is no quantifiable risk reduction benefit for Network Rail and therefore no equivalent balance of finance.

Initial assessments suggest that this is not possible unless there is a full/partial renewal of the crossing and as such justification for such an alteration is unlikely to be passed. In fact for Mortlake it is likely that more land would be required for us to be able to expand the crossing and would impede on existing structures and rights of way. Failing that altering the current 'crossing footpath' may create pinch points thus potentially trapping users within the barriers. Therefore in order for these to have some impact it would necessitate significant works. This would include barrier lengthening, pedestal removal, surface renewal, re-signaling alignment /interfacing, the shortening of adjacent conductor rail as well as ancillary works.

Working in accordance with national standards and combined with feasibility studies and possession requirements, this option is expected to realise at least £400k for a partial renewal or a full renewal of £2.7 besides the other aforementioned factors. It is unlikely that this can be achieved within the current or subsequent control periods (CP5/CP6).

5.1 COST BENEFIT ANALYSIS

Option	Term[1]	ALCRM risk score	ALCRM FWI	Safety Benefit	Cost	Benefit Cost Ratio	Status	Comments
Renewal of crossing partial	Long Term	E2	3.34E-02	0	£400k	0.04	**REJECTED**	Safety and business option case fails CBA.
Renewal of crossing Full	Long Term	E2	3.34E-02	0	£2.7 m	0.01	**REJECTED**	Safety and business option case fails CBA.
Tunnel Structure with Closure	Long Term	M13	3.34E-02	3.34E-2	£10m	0.15	**REJECTED**	Safety and business option case fails CBA.
Road Rail Bridge with Closure	Long Term	M13	3.34E-02	3.02E-04	£6m	0.25	**REJECTED**	Safety and business case fails CBA.
Red Light enforcement	Long Term	E2	2.13E-02	1.02E-04	£200k	0.02	**REJECTED**	Safety and business option case fails CBA.

6 CONCLUSION AND RECOMMENDATION

Rail risk is not a significant concern at Mortlake Level Crossing by virtue of the fact that it is a CCTV controlled crossing. This means that the majority of the risk is controlled by the full barriers separating road users from the trains and the signaller protecting the crossing

ensuring that a train cannot approach unless the crossing is clear. This then leaves the potential risk arising from pedestrians who are struck as a result of a contravention or, error on their part i.e. as opposed to railway failures or errors.

The main risk is a vehicular risk to pedestrians from general road users and more so road users who deliberately misuse the crossing. This is not helped by the current width of the footpaths on both approaches and specifically user congestion during peak hours. This does not mean that the footpaths on the actual crossing are deficient as they are compliant but, with the possibility of increased usage /congestion this may present an issue in the future.

Resolving the wider issue of congestion (both road and pavement) does not rest solely with Network Rail but is also the responsibility of the local council and Highway teams. It is imperative that a Borough-wide strategy of traffic management, enforcement, collaboration on building developments as well as possible regeneration plans are considered by these parties. Network Rail has already taken steps to assist in reducing deliberate misuse by progressing engagement with external parties. The presence of an existing station footbridge, something of which is unavailable at Mortlake's neighbouring crossing White Hart Lane, should alleviate the deliberate misuse at Mortlake although this is still prevalent. This has been countered by education and enforcement, Many of the schools in the vicinity have received guidance to parents and children. Also, the British Transport Police are regularly tasked to the crossing in order to avert misuse.

It is important to emphasise that whilst a footbridge is being considered for White Hart Lane as a partial solution, Mortlake has almost similar usage at the crossing and is likely to see increased usage should the Stag Brewery development proceed in the years to come and thus has the potential to adversely congest the area around the crossing during barrier down-times. A brief census analysis was also conducted to review the current bridge usage at Mortlake station in 2016 and initial findings suggest that the bridge may not be used as much and therefore this would question justifying further spend or, may warrant other logical solutions for consideration.

This in turn prompted the provision of additional signage at the site to encourage usage of the bridge but the problem remains; particularly during the peak hours and has the potential to get worse. It is also a type of risk which not it is easily quantifiable, would require in-depth pedestrian movement analysis as well as high level evaluations with the local authority equally incorporating their considerations as well as establishing available risk prioritisation funding amongst other things.

Expansion of the crossing and approaching pavements is undoubtedly cost prohibitive and may also necessitate land grab as well as station redevelopment as outlined within the options sections above. Whilst the option has a notional costing, the true cost of land grab cannot be determined at this stage and this may not reduce congestion. Moreover expanding the crossing would not provide a risk reduction for Network Rail as the crossing type would remain identical. In fact, it may increase the risk should more users traverse. Alternatively the other RLSE camera option is also only likely to reduce risk minimally and also does not pass a CBA for funding.

On that basis it is the recommendation of this assessment, with an impending development looming that closure with diversion or, via a road Rail Bridge remains the best option. However, whether this is achievable remains to be seen and will requisite complex modelling, feasibility studies, in depth census analysis as well as collaboration with Richmond authorities and possible developers. As the crossing currently has the highest form of signaller protection and a footbridge, funding from Network Rail is unlikely so a solution is likely to be wholly dependent on S106 or CIL contributions arising from developments in the area.

Therefore, even though Network Rail is currently managing the risk as far as is reasonably practical at Mortlake it is the recommendation of this risk assessment for Network Rail to engage with the local council/developers to not only establish possible user impact but to broach mitigation options. At the time of writing a meeting with representatives of the developer is planned for August 2017.

6 APPROVALS

Prepared By: Mark O'Flynn	Signature: Held on file
	Job Title: Level Crossing Manager
Date:26th July 2017	
Approved By: [redacted] (RLCM)	Signature: Held On File
	Job Title: