



**Project Centre**

**Sturry MCB Level Crossing**

## **Level Crossing Risk Assessment Report**

**Prepared by  
Amy Marshall**

**January 2024**

**BS408/001/D420.1**

**Revision E**

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## **ISSUE AND REVISION HISTORY**

Issue Reference	Details	Date	Prepared By	Checked By
Draft - BS026/046/D420.1	Issued for Internal Review	26/03/2018	E Neale	D Bird
Revision A - BS026/046/D420.1	Minor Amendments and Issued to Client	29/03/2018	E Neale	D Bird
Revision B - BS026/046/D420.1	Updated to Client Comments and Reissued	05/07/2018	E Neale	D Bird
Revision C - BS408/001/D420.1	Updated to Include Additional Workshop and Reissued	29/09/2023	I Watkins	T Clark
Revision D - BS408/001/D420.1	Updated to Client Comments and Reissued	04/01/2024	S Coyne	T Clark
Revision E - BS408/001/D420.1	Updated to Client Comments and Reissued	09/01/2024	A Marshall	T Clark

**Project Centre**

**Sturry MCB Level Crossing**

**Level Crossing Risk Assessment Report**

**BS408/001/D420.1**

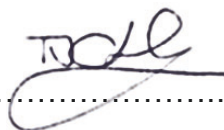
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## **TABLE OF ABBREVIATIONS**

ALCRM	The All Level Crossing Risk Model
CCTV	Closed Circuit Television
FWI	Fatalities and Weighted Injuries
HGV	Heavy Goods Vehicle
LC / LX	Level Crossing
MCB	Manually Controlled Barriers
MCB-CCTV	Manually Controlled Barriers with Closed Circuit Television
MCB-OD	Manually Controlled Barriers with Obstacle Detection
MSL	Miniature Stop Light
RSSB	Rail Safety and Standards Board
RTL	Road Traffic Lights
SFAIRP	So Far As Is Reasonably Practicable
SMIS	Safety Management Intelligence System
YN/YO	Up Near Side / Up Off Side
ZN/ZO	Down Near Side / Down Off Side

## **EXECUTIVE SUMMARY**

RSK Business Solutions Ltd was commissioned by Amey to carry out a suitable and sufficient risk assessment for Sturry Level Crossing. Railway Group Guidance GI/RT7611 Issue N° 1, Section C1.2 specifically requires that a suitable and sufficient level crossing risk assessment shall be undertaken wherever there is a change likely to affect the risk to users of a level crossing. The future development in the area of Sturry Level Crossing therefore required a suitable and sufficient level crossing risk assessment to be carried out to ensure that the planned development would not impinge on level crossing safety.

This report summarises the level crossing risk assessment process for Sturry Level Crossing, located in the town of Sturry, near Canterbury in Kent.

The proposed development in the area of Sturry involves the construction of ~3000 new homes, and additional school, and other associated buildings. This project will also involve the construction of a new road running parallel to the railway and an additional bridge over the railway. Additionally multiple redesign options for the adjacent junction have been proposed. Traffic modelling has therefore been carried out to estimate the impact of the development on the use of the crossing, the conclusions of which can be seen document 661439 “Transport Impact Study, Sturry and Broad Oak Level Crossings” provided by RSK. The proposed master plan for the redevelopment of the area is shown in Figure 1.1 (level crossing circled in blue), and the draft local plan is shown in Figure 1.2 (both figures supplied by Kent County Council)

Currently Sturry Level Crossing is of MCB type controlled from an adjacent signal box. It is adjacent to Sturry Station, which has 2 Platforms, one either side of the crossing. Sturry Hill Road crosses the railway.

RSK Business Solution's risk assessment process for the suitable and sufficient level crossing risk assessment for Sturry Level crossing followed the following procedure:

1. Site Visit and Hazard Identification
2. Evaluation of nine day census information and traffic modelling of future use
3. Analysis of information pertinent to the level crossing, including SMIS event Data
4. Specification and review of assessments of crossing type options using ALCRM, based on best available information, both current and in the future
5. Options and Risk Control Workshop
6. Further Blocking Back Study required due to concerns raised during the Workshop
7. Further Meeting to discuss post workshop updates
8. Conclusions and Recommendations

The Level Crossing Workshop was held at Cottons Centre, Tooley Street, London SE1 2QG on 20<sup>th</sup> September 2017 and the Further Post - Workshop update meeting was also held at the Cottons Centre on 22<sup>nd</sup> March 2018. Following the Level Crossing Workshop and the Post-Workshop Meeting, a further Options and Risk Control Workshop was held via Microsoft Teams on 11<sup>th</sup> September 2023.

The recommendations from the Options and Risk Control Workshop are listed below. They have been superseded by the recommendations from the second workshop, and have been retained for information only:

#### **Sturry Level Crossing (MCB):**

The Workshop recommended that a further blocking back study of Sturry Level Crossing is carried out, due to the concerns of the presence of several factors which may increase blocking back at the level crossing

The Workshop recommended that an additional blocking back study be carried out at a location where the proposed mitigation is in operation, i.e. it was recommended that the level crossing RTL sequence also initiates the traffic light sequence in order to mitigate potential mixed messages for an approaching road user.

### **Sturry Footpath Crossing (Milner Court Footpath Crossing)**

It was noted that this foot crossing was outside the remit of the project, however, the Workshop recommended that the plans for Milner Court Footpath Crossing were reviewed with a view to closing the crossing point.

#### Post-Workshop Addendum 1

Further to the Options and Risk Control Workshop, a further blocking back and barrier activity study at Sturry Level Crossing was commissioned. Full details of the blocking back and barrier activity survey can be found in the Blocking Back and Barrier Activity Nine Day Census Report, Document number BS026/046/D220.

Subsequent to the blocking back and barrier activity study, a further risk assessment meeting with Network Rail representatives was convened to review the risks raised, and to review the new proposed road layout to the north of the workshop.

The recommendations of the further risk assessment meeting are summarised below:

#### **Sturry Level Crossing (MCB):**

The Meeting reviewed the recommendations from the first workshop, and made the following specific comments.

#### Previous Recommendations and Meeting Comments

The Workshop recommended that a further blocking back study of Sturry Level Crossing is carried out, due to the concerns of the presence of several factors which may increase blocking back at the level crossing.

Post Workshop Meeting Comments: The Meeting were advised that the blocking back survey had been carried out, and were advised of the findings.

- The Workshop recommended that an additional blocking back study be carried out at a location where the proposed mitigation is in operation, i.e. it was recommended that the level crossing RTL sequence also initiates the traffic light sequence in order to mitigate potential mixed messages for an approaching road user.

Post Workshop Meeting Comments: The Meeting were advised that of the 3 locations suggested as having a similar system, none had a directly comparable system. Additionally a level crossing with a similar system was not able to be located for analysis.

The Meeting recommended that the potential impact to the pedestrian usage of the level crossing due to the movement of the bus stop was reviewed.

The Meeting recommended that the type of pedestrian crossing was confirmed by the designer. The Meeting recommended that the integration of the traffic light sequence with the initiation of the level crossing light sequence when a train is approaching was confirmed and the detail of the initiation agreed with Network Rail.

#### Non-Project Recommendations

The Meeting identified the increased barrier down time for longer stopping trains caused ambulances on emergency calls to stop for prolonged periods. This was considered to be a significant factor which should be communicated back to the Network Rail Level Crossing Risk team. The Meeting noted that the issue would be mitigated by the proposed bridge, and therefore this issue was raised as a current issue to be passed back to Network Rail in the interim.

#### Post-Workshop Addendum 2

Subsequent to the initial Options and Risk Control Workshop and a further Risk Assessment Workshop held by RSK Business Solutions for Amey, an additional change at Sturry MCB Level Crossing required a review of the crossing's risk assessment. Specifically, the Sturry Link Road viaduct is proposed to be completed by 2025 in the areas adjacent to the crossing.

The project convened an additional Workshop, held on 11<sup>th</sup> September 2023 to discuss this change. A full list of Workshop attendees can be found in Appendix C. The notes and discussions taken on the day of the additional Workshop can be found in Appendix E. The Workshop agreed that option 1, retaining the current MCB arrangement at the crossing, was the preferred option and that option 2, closing the crossing, was the second preferred option. The Workshop agreed that these options are preferred provided the following recommendations are implemented:

- The Workshop were advised by Kent County Council that as a part of the development at the crossing, bus stops near the approaches to the crossing would be relocated to improve

- traffic flow on approach to the crossing. The Workshop were also advised by Kent County Council that traffic lights protecting pedestrians from northbound traffic will be located south of the crossing to mitigate blocking back over the crossing in the event that a pedestrian wishes to cross the roadway.
- The Workshop discussed the provision of ticket machines on the station platforms either side of the crossing. The Workshop noted that there is only one ticket machine at Sturry Station, on the Down Line platform, and considering the station booking office has restricted opening hours, passengers departing from the Up Line platform may have to traverse the crossing to obtain a ticket. The Workshop recommended that the proposed installation of a ticket machine on the Up Line platform, as part of the scheme to close booking offices, should be undertaken as soon as possible.
- The Workshop noted site traffic will access the construction site for the new viaduct bridge in the area nearby the level crossing. The Workshop recommended that once a construction site contractor has been appointed, collaboration with Network Rail is required to manage access to the site and manage the potential increased risk of blocking back. The Workshop further recommended that a traffic management plan is required for access to the construction site and across Sturry Level Crossing.

## **NOTICE**

This report was prepared by RSK Business Solutions Ltd for Project Centre. The conclusions are the result of the exercise of our reasonable professional judgement, based in part upon materials and information provided to us by Amey, Kent County Council and Project Centre. Use of this report by any third party for whatever purposes should not, and does not absolve such third party from using due diligence in verifying the report's contents.

Any use which a third party makes of this report, or any reliance on it, or decisions to be made based upon it, are the sole responsibility of such a third party. RSK Business Solutions Ltd accepts no duty of care or liability of any kind whatsoever to any such third party, and no responsibility for damages, if any, suffered by any third party as a result of decisions made, or not made, or actions taken or not taken, based upon this report.

It should be noted that this report captures the recommendations based upon the design, and anticipated mode of operation, identified at the time of the risk assessment and the stage of the project development. It is not intended that this report be updated as the design is progressed, but moreover that the design is progressed as a result of this report. Any subsequent changes to or development of the design should be assessed as necessary and reported as required with reference back to this report.

## **1.0 INTRODUCTION TO THE LEVEL CROSSING RISK ASSESSMENT PROCESS**

### **1.1 Background**

RSK Business Solutions Ltd was commissioned by Project Centre to carry out a suitable and sufficient risk assessment for Sturry Level Crossing. Railway Group Guidance GI/RT7611 Issue N° 1, Section C1.2 specifically requires that a suitable and sufficient level crossing risk assessment shall be undertaken wherever there is a change likely to affect the risk to users of a level crossing. The future development in the area of Sturry Level Crossing therefore required a suitable and sufficient level crossing risk assessment to be carried out to ensure that the planned development would not impinge on level crossing safety.

### **1.2 Planned Changes Likely to Affect Risk at Sturry Level Crossing**

The proposed development in the area of Sturry involves the construction of 3000 new homes, and additional school, and other associated buildings. This project will also involve the construction of a new road running parallel to the railway and an additional bridge over the railway. Additionally multiple redesign options for the adjacent junction have been proposed. Traffic modelling has therefore been carried out to estimate the impact of the development on the use of the crossing, the conclusions of which can be seen document 661439 “Transport Impact Study, Sturry and Broad Oak Level Crossings” provided by RSK. The proposed master plan for the redevelopment of the area is shown in Figure 1.1 (level crossing circled in blue), and the draft local plan is shown in Figure 1.2 (both figures supplied by Kent County Council)

Currently Sturry Level Crossing is of MCB type controlled from an adjacent signal box. It is adjacent to Sturry Station, which has 2 Platforms, one either side of the crossing. Sturry Hill Road crosses the railway.



### **1.3 Suitable and Sufficient Level Crossing Risk Assessment**

RSK Business Solution's risk assessment process for the suitable and sufficient level crossing risk assessment for Sturry Level crossing followed the following procedure:

1. Site Visit and Hazard Identification
2. Evaluation of nine day census information and traffic modelling of future use
3. Analysis of information pertinent to the level crossing, including SMIS event Data
4. Specification and review of assessments of crossing type options using ALCRM, based on best available information, both current and in the future
5. Options and Risk Control Workshop
6. Further Blocking Back Study required due to concerns raised during the Workshop
7. Further Meeting to discuss post workshop updates
8. Conclusions and Recommendations



Figure 1-1- Master Plan for Development at Sturry



Figure 1-2 - Sturry Development Plan

## **2.0 DESCRIPTION OF SITE**

### Post-Workshop Addendum 2

Subsequent to the previous level crossing site visit being completed, RSK Business Solutions was commissioned by Project Centre to carry out a nine-day traffic and pedestrian census survey and a site visit and hazard identified at Sturry Manually Controlled Barrier (MCB) Level Crossing. The site visit and hazard identification were carried out on Friday 12<sup>th</sup> May 2023. The latest site images are presented in Appendix F.

### **2.1 Current Level Crossing Details and Environment**

Currently Sturry Level Crossing is of MCB type controlled from the adjacent Sturry Signal Box. The crossing is in the centre of Sturry Village, near to the city of Canterbury. It is adjacent to Sturry Station, which has 2 Platforms. Sturry Hill Road crosses the Ashford to Ramsgate Line, near to the junction of Sturry Hill and Island Road.

The crossing has four half width road barriers and four RTL's which are not fitted with extended hoods to reduce the sun impact, however, they are LED type.

There are no red light enforcement cameras at the crossing.

There are marked footways on both sides of the crossing, and street lighting on both sides. Additionally there is a cycle path on the pavement on the south approach to the crossing, and this path ends just before the crossing on the south side.

The line through the crossing is a 3<sup>rd</sup> rail electrified line.

The Barrier machines are guarded.

Sturry Level Crossing is located in a predominantly urban area, the village of Sturry and is located near to the city of Canterbury. There is a mixture of commercial and residential properties on the approach to the crossing. Sturry station is adjacent to the crossing and the entrance to the platforms are located immediately adjacent to the crossing. Additionally there is a local shop with car park just to the north of the crossing.



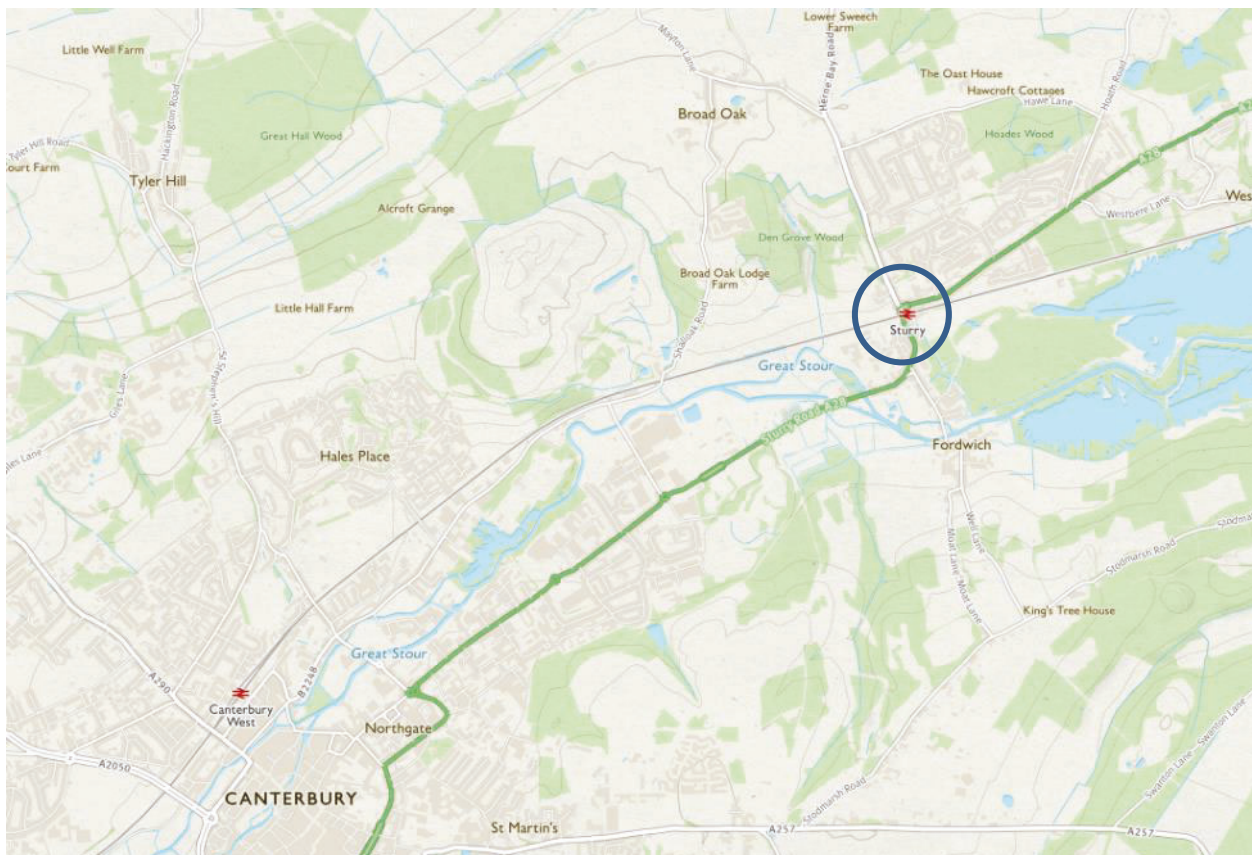
Figures 2.1 and 2.2 shown the configuration of the crossing, from the south and north approach respectively and Table 2.1 summarises the level crossing details. Figure 2.3 is a map to show the location of Sturry Level Crossing and Figure 2.4 is an extract from the sectional appendix for the area of the level crossing. Figure 2.5 shows the environmentally significant sites in the local area (Crossing circled in blue).



**Figure 2-1 - Current Crossing Arrangement at Sturry (South Approach)**



**Figure 2-2- Current Crossing Arrangement at Sturry (North Approach)**



**Figure 2-3 - General Area of Sturry Level Crossing**

**Project Centre**  
**Sturry MCB Level Crossing**  
**Level Crossing Risk Assessment**

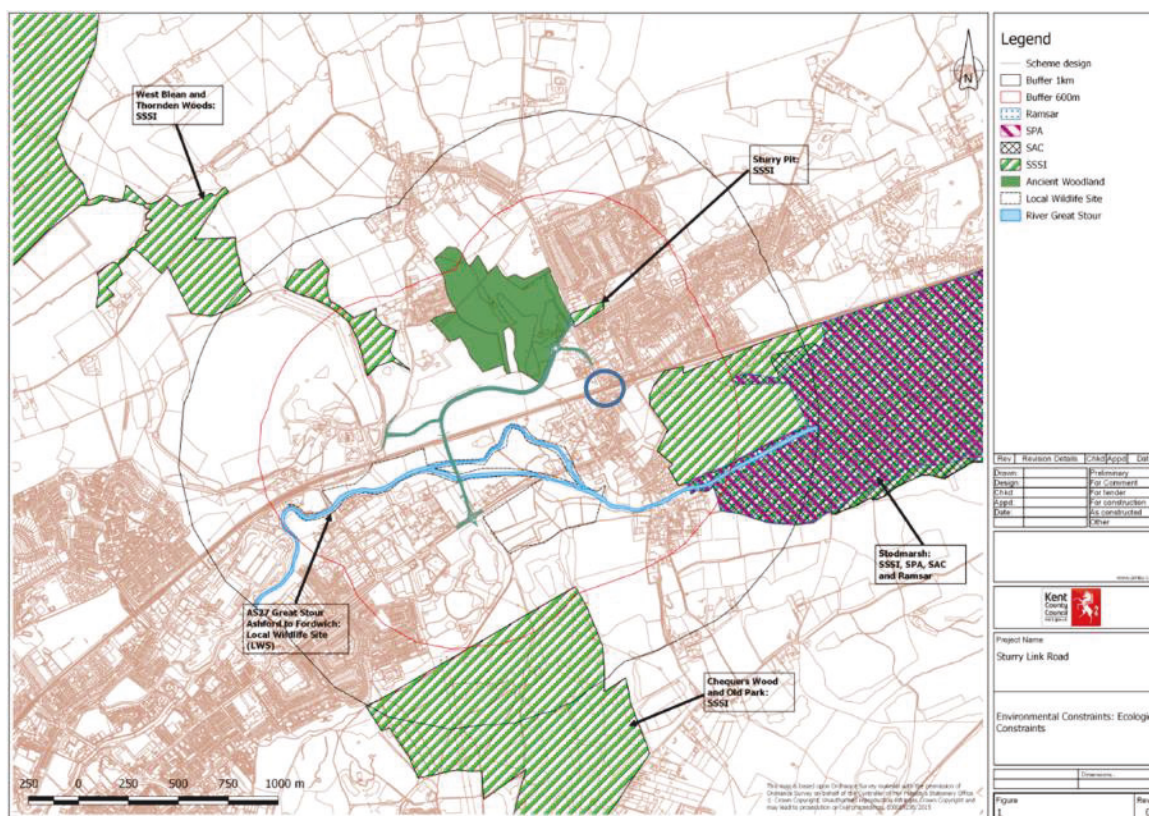
LOR	Seq.	Line of Route Description	ELR	Route	Last Updated
SO220	003	Ashford to Ramsgate (via Canterbury West)	ACR	Kent / Sussex	07/11/2022
Location		Mileage M Ch	Running lines & speed restrictions		Signalling & Remarks
Folly Farm UWC		71 28			

**Figure 2-4 - Sectional Appendix Covering Sturry Level Crossing**

Level Crossing Name	Sturry
Level Crossing Type	MCB
ELR and Mileage	ACR, 72m 58ch
Status	Public Road
Number of Running lines	2
Permissible Speed Over Crossing	70mph (Up and Down)
OS Grid Reference	TR177603
Post Code	CT2 0BH
Local Authority	Kent County Council
Supervising Signal Box	Sturry SB (ST)
Electrification and Type	Lines are 3 <sup>rd</sup> Rail Electrified

**Table 2-1 - Current Level Crossing Details**





**Figure 2-5 - Environmentally Significant Sites**

## 2.2 Footpath Approaches

There is a marked footway on both sides of the crossing, and pavement along the road for the footway to meet on both sides of the crossing on both footways. Both Footways are the full length of the crossing and has tactile paving at all corners meeting points. Figure 2.6 shows the East side foot crossing and Figure 2.7 shows the Crossing on the West side. The meeting point of the footway to the road is uneven in the ZO corner (Figure 2.7), and there is some degradation of the footpath in the ZN corner (Figure 2.9).

Access to the Platform 1 at Sturry Station is via a pedestrian gate immediately adjacent to the crossing. No access to crossing signs and wooden wedges are in place to prevent trespass from the crossing to the platform on both sides of the crossing.

A summary of the issues identified are presented in Table 2.2





**Figure 2-6 - Footway Over Crossing (East Side)**





**Figure 2-7 - Footway Over Crossing (West Side). Note Uneven Approach to Crossing**



**Figure 2-8 Degradation to Road Surface at ZN corner**

<b>Issue</b>	<b>Detail</b>
Skew	No Significant Skew
Deck	Rubber Panels
Footway Markings	Footways Marked
Textured Pavement	Fitted on all 4 corners
Footway Slip Hazards	Uneven Approach to crossing at ZO corner, degradation of pavement Surface at ZN corner

**Table 2-2 Summary of Issues Identified for Footpath Approaches**

## **2.3 Road Approaches**

The approach speed is 30mph in both directions. The following key features of the approach are shown in Figure 2.9 and detailed below, and the far, medium and close approaches are from the South shown in Figures 2.10 - 2.12.

1. The road curves on approach near the level crossing warning sign which is obscured by vegetation (Figures 2.13 and 2.14). Sighting of the RTLs are limited by buildings closer to the crossing (See point 2)
2. YO corner RTL obscured by building. YN visible, however can be easily obscured by traffic due to the further curve on approach (Figure 2.15) YO RTL also obscured for Vehicles turning right out of Field Way (Figure 2.16)
3. High Street after the crossing is one way, and there is therefore no right turn for vehicles after they have crossed the crossing. YO corner RTL visible only from end of the road (Figure 2.17)
4. Public Footpath joins road pavement adjacent to the crossing. All RTL's visible from end of footpath (Figure 2.18)
5. Sturry Station Pick up and Drop off area entrance/exit adjacent to the crossing. Both RTL's visible from the pick-up and drop-off areas. (Figure 2.19)
6. Junction of Sturry Hill Road and Island Road. The main flow of traffic proceeds onto Island flow around the bend. There is a bus stop shortly after the junction on Sturry Hill Which is an additional potential source of blocking back for vehicles turning right. Medium and far approaches from Sturry hill are shown in Figures 2.20 and 2.21, and the first sighting point of the RTL's on Island road and the Close approach from the North are shown in Figures 2.22 and 2.23
7. CO-OP shortly after the crossing. Left turn for vehicles after the crossing. No right turn for vehicles exiting the car park towards the crossing (Figure 2.24)





Figure 2-9 - Key Features on Approach to Crossing



Figure 2-10 - View Approaching Crossing from South (Far)



Figure 2-11 - View Approaching Crossing from South (Intermediate)





Figure 2-12 - View Approaching Crossing from South (Close)



Figure 2-13 - Warning Sign on Approach (South Side)



**Figure 2-14 - Obscuration of Warning Sign on Approach (South Side)**



**Figure 2-15 - Obscuration of YO Corner RTL by Residential Buildings**





Figure 2-16 - Obscuration of YO RTL for Vehicles Turning Right out of Field Way



Figure 2-17 - View of RTL's from High Street





Figure 2-18 - View of RTL's from End of Footpath



Figure 2-19 - View of Level Crossing from Exit to Sturry Station Pick Up and Drop Off Area



Figure 2-20- View Approaching Crossing from North on Sturry Hill (Far)



Figure 2-21 - View Approaching Crossing from Junction of Sturry Hill and Island Road





Figure 2-22 - View Approaching Crossing from Island Road (First Sighting of RTL's)



Figure 2-23 - View Approaching Crossing from North (Close)



**Figure 2-24 - No Right Turn from Local Shops**

The road approach from the south is flat, and from the north the gradient declines slightly on approach to the crossing.

From the south the backdrop of the signals is the buildings behind the crossing and trees. From the north the backdrop is also trees and buildings. The crossings are currently provided with LED RTL's but are not provided with extended hoods to mitigate the impact of the low sun. Figure 2.25 shows the calculation from the SunCalc application which has been used to identify the line of the sun and sunset on the shortest and longest days of the year. The thin orange curve is the sun trajectory on the day selected and the yellow area is the variation of the sun trajectories over the year. The closer a point is to the centre the higher the sun above the horizon. The yellow line shows the direction of the sunrise, the dark orange line shows the direction of sunset



Road Markings - The Hash markings on the crossing itself are faded on the rubber panels (Figure 2.26). Additionally the road markings are faded on approach to the crossing from the south side (Figure 2.27 and 2.28), and slightly faded on the approach to the crossing from the north side (Figure 2.29 and 2.30)



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**Figure 2-27 - Faded Road Markings on South Side of Crossing**



**Figure 2-28 - Faded Road Markings on Distant Approach to South Side of Crossing**





Figure 2-29 - Faded Road Markings on Distant Approach to North Side of Crossing



Figure 2-30 - Road Markings on North Side of Crossing

There is a cycle path that terminates just before the crossing on the south side.

No other significant features were noted regarding the road approaches to the crossing, and a summary of the issues identified is provided in Table 2.3

<b>Issue</b>	<b>Detail</b>
Skew	No significant Skew
Deck	Rubber Panels
Visibility and Condition of Warning signs	South Approach Warning sign obscured by vegetation
Sighting of RTL's	Some obscuration of South side RTL's by buildings and vegetation. North side RTLS obscured by buildings on approach from Island Road
Road Markings	South side approach road markings faded
Impact of Low Sun	No issue identified
Nearby industry of Farms	Local Shop only. Potential issue for HGV's delivering
Gradient and condition of road on approach	Slightly declining Gradient to Crossing from North
Red Light Safety Equipment	Not Fitted
Any further observations	Cycle Path Ends Just before crossing

**Table 2-3 - Summary of Issues Identified for Road Approaches**



## 2.4 Current Crossing Usage

A nine day census was carried out by Tracsis between 11<sup>th</sup> March 2017 and 19<sup>th</sup> March 2017, between the hours of 00:00 and 24:00. Table 2.4 summarises the results from the survey

Road Vehicle Frequency	Busiest Day	21,816
	Busiest 15 minute period	500
	Average Weekday	21,380
Pedestrian Frequency	Busiest Day	815
	Busiest 15 minute period	52
	Average Weekday	735
Overall Crossing Use (Vehicles and Pedestrians)	Busiest Day	22,608
	Busiest 15 minute period	527
	Average Weekday	22,115
Train Frequency	Busiest Day	96
	Average Weekday	95
	Saturday	81
	Sunday	71

**Table 2-4 Summary of Results from Nine Day Census**

A breakdown of the vehicle, pedestrian and train usage is provided in Tables 2.5-2.7. It can be seen that 48 unaccompanied children use the level crossing, a weekday average of ~6 per Weekday, with a maximum of 14 on any one day. Additionally 73 Elderly pedestrians a weekday average of ~10 per Weekday and a maximum of 18. There were 81 impaired users of the crossing, a weekday average of ~10 per weekday and a Maximum of 18. There was no Wheelchair usage of the crossing.

<b>Vehicles</b>	Car	Light Goods Vehicle	Motorcycle	Heavy Goods Vehicle	Tractor & Trailer	Bus	Horse Rider	Pedal Cycle	Herded Animals & Horses	Large / Slow Vehicle	Total
Saturday 11-03-17	17612	1255	312	247	0	368	0	102	0	13	19909
Sunday 12-03-17	14379	982	177	102	0	177	0	90	0	3	15910
Monday 13-03-17	17260	2060	224	725	2	403	0	124	0	82	20880
Tuesday 14-03-17	17333	2236	248	796	9	407	0	125	0	80	21234
Wednesday 15-03-17	17596	2240	285	802	7	419	0	144	0	96	21589
Thursday 16-03-17	17586	2173	243	754	4	413	0	113	0	95	21381
Friday 17-03-17	18004	2237	280	690	9	417	0	96	0	83	21816
Saturday 18-03-17	17287	1230	175	260	1	366	0	82	0	9	19410
Sunday 19-03-17	14444	965	180	93	0	172	0	93	0	5	15952
Totals	151501	15378	2124	4469	32	3142	0	969	0	466	178081

**Table 2-5 - Vehicle Usage of Level Crossing**

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**Sturry MCB Level Crossing**  
**Level Crossing Risk Assessment**

<b>Pedestrians</b>	Adult	Accompanied Child	Unaccompanied Child	Elderly	Impaired	Wheel-chair	Pushchair / Pram*	Mobility Scooter	Railway Personnel	Total
Saturday 11-03-17	738	46	0	9	7	0	14	1	0	815
Sunday 12-03-17	476	35	2	2	8	0	7	3	0	533
Monday 13-03-17	642	39	4	7	18	0	16	2	0	728
Tuesday 14-03-17	569	41	6	13	12	0	32	2	6	681
Wednesday 15-03-17	661	38	0	6	5	0	20	2	4	736
Thursday 16-03-17	670	32	14	4	2	0	18	0	0	740
Friday 17-03-17	694	36	8	18	11	0	21	2	2	792
Saturday 18-03-17	704	36	0	7	17	0	8	0	0	772
Sunday 19-03-17	441	27	14	7	1	0	14	0	0	504
<b>Totals</b>	<b>5595</b>	<b>330</b>	<b>48</b>	<b>73</b>	<b>81</b>	<b>0</b>	<b>150</b>	<b>12</b>	<b>12</b>	<b>6301</b>

\*Please note – Pushchairs/Prams may or may not contain a child. As it is often difficult to see into prams, in order to ensure consistency, the children will not be counted separately.

**Table 2-6 - Pedestrian Usage of Crossing**

<b>Trains</b>	<b>Eastbound</b>	<b>Westbound</b>	<b>Train Totals</b>
Saturday 11-03-17	41	41	82
Sunday 12-03-17	37	32	69
Monday 13-03-17	49	47	96
Tuesday 14-03-17	46	46	92
Wednesday 15-03-17	49	47	96
Thursday 16-03-17	49	46	95
Friday 17-03-17	49	45	94
Saturday 18-03-17	39	41	80
Sunday 19-03-17	38	35	73
<b>Totals</b>	<b>397</b>	<b>380</b>	<b>777</b>

**Table 2-7 - Trains Across Crossing**

During the site visit it was observed that longer trains stopping in the station overhang the crossing and therefore cause a longer barrier down time (Figure 2.31). This occurs in both directions.



**Figure 2-31 - Train Stopped at Sturry Station Overhanging Station and Level Crossing**

#### Post-Workshop Addendum 1

#### **Blocking Back Study**

Further to the Options and Risk Control Workshop, a further blocking back and barrier activity study at Sturry Level Crossing was commissioned. Full details of the blocking back and barrier activity survey can be found in the Blocking Back and Barrier Activity Nine Day Census Report, Document number BS026/046/D220. The key findings of this survey are summarised below:

Firstly, over the nine days of footage, 14 instances of ambulances being held up for a prolonged period due to the barrier being down. Overall this totalled almost 18 minutes over the course of the nine days, and on average each incident meant an ambulance was held up for roughly 1 minute 15 seconds. The most extreme case was recorded on Sunday 29<sup>th</sup> October when an ambulance was held up by the barrier being down for approximately 4 minutes.

There was also a barrier down incident recorded on Friday 13<sup>th</sup> October that lasted for over 40 minutes. This was presumably a fault with the level crossing and therefore has been excluded from the data review of barrier activity.

The nine-day survey was planned to be completed between 7<sup>th</sup> October 2017 and 15<sup>th</sup> October 2017. However, upon initial review of the data, it was found that the main camera was tampered with on the Saturday of the second weekend (14<sup>th</sup> October 2017). Subsequently, data was used for the first seven days (7<sup>th</sup> October 2017 to 13<sup>th</sup> October 2017) and the cameras were set up again to record a new second weekend, between 28<sup>th</sup> October 2017 and 29<sup>th</sup> October 2017.

Many blocking back incidents were recorded during the nine day survey of the level crossing, including 5 minutes 38 seconds involving a peak Category Red 2, and 1 minute 19 seconds involving a peak Category Red 3. Reviewing blocking back data through the nine days showed recurring causes of incidents. Due to the large number of these incidents, a general overview of each cause is summarised on a day-by-day basis. Overall, the total blocking back time throughout the nine days for all recurring incidents is summarised below (Table 2-8).

Cause	Amber 1	Amber 2	Red 1	Red 2	Red 3	Total
General Traffic Congestion (North)	00:07:12	00:21:46	00:06:09	00:00:59	00:00:23	00:36:29
General Traffic Congestion (South)	00:00:19	00:14:09	00:06:04	00:02:57	00:00:00	00:23:29
A291 Traffic Flow	00:01:08	00:14:05	00:07:06	00:00:52	00:00:56	00:24:07
Bus Stop Use	00:00:00	00:05:11	00:01:11	00:00:12	00:00:00	00:06:34
Pedestrians	00:00:00	00:00:38	00:00:30	00:00:28	00:00:00	00:01:36
Ambulances	00:00:25	00:00:56	00:00:47	00:00:00	00:00:00	00:02:08
Carpark Use	00:00:15	00:02:19	00:00:47	00:00:00	00:00:00	00:03:21
U-Turning Vehicles	00:00:00	00:00:24	00:00:14	00:00:10	00:00:00	00:00:48
Total	00:09:19	00:59:28	00:22:48	00:05:38	00:01:19	01:38:32

**Table 2-8 Summary of the Total Time of Blocking Back Incidents throughout the Nine Day Census Period**

#### Post-Workshop Addendum 2

Subsequent to the previous level crossing usage data being completed, RSK Business Solutions were commissioned by Project Centre to carry out a nine-day traffic and pedestrian census survey of Sturry Manually Controlled Barrier (MCB) Level Crossing. This census was required to determine up-to-date information on the usage of the level crossing. A nine day census was carried out between 13<sup>th</sup> May 2023 and 21<sup>st</sup> May 2023.

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The nine-day average pedestrian use, minus railway personnel, recorded was 629 users per day, with a weekday average of 683 traverses per day and a weekend average of 561 traverses per day. The only user types not recorded over the census period were wheelchair users and dog walkers with their dogs off lead. The total pedestrian usage of the crossing over the census period can be seen in Table 2-9.

**Table 2-9: Total usage by pedestrians over the nine-day survey period.**

		Adult	Accompanied Child	Unaccompanied Child	Dog Walker (Dog on a lead)	Dog Walker (Dog off lead)	Elderly	Mobility Impaired	Encumbered User	Cyclist Pushing Bike	Wheelchair	Pushchair/ Pram	Mobility Scooter	Railway Personnel	Total	Total Minus Railway Personnel
Saturday	13/05/2023	410	13	2	30	0	0	13	2	2	0	9	2	0	483	483
Sunday	14/05/2023	449	26	19	31	0	5	4	0	7	0	9	2	0	552	552
Monday	15/05/2023	583	34	12	21	0	0	5	1	7	0	10	0	2	675	673
Tuesday	16/05/2023	635	13	26	20	0	0	8	0	0	0	10	4	0	716	716
Wednesday	17/05/2023	603	28	16	13	0	0	3	0	3	0	14	0	0	680	680
Thursday	18/05/2023	602	22	6	7	0	0	0	0	5	0	14	1	2	659	657
Friday	19/05/2023	591	32	25	17	0	0	1	0	5	0	10	6	0	687	687
Saturday	20/05/2023	631	64	6	30	0	3	2	1	7	0	7	2	0	753	753
Sunday	21/05/2023	392	17	0	22	0	0	8	0	6	0	6	2	0	453	453
Total over 9 days		4896	249	112	191	0	8	44	4	42	0	89	19	4	5658	5654
9 day Average		544	27.67	12.44	21.22	0	0.89	4.89	0.44	4.67	0	9.89	2.11	0.44	628.67	628.22
Weekday Average		602.8	25.8	17	15.6	0	0	3.4	0.2	4	0	11.6	2.2	0.8	683.4	682.6
Weekend Average		470.5	30	6.75	28.25	0	2	6.75	0.75	5.5	0	7.75	2	0	560.25	560.25

The nine-day average vehicle use recorded was 19268 vehicles per day, with a weekday average of 20563 vehicles per day and a weekend average of 17649 vehicles per day. The total vehicular usage of the crossing over the census period can be seen in Table 2-10.

**Table 2-10: Total usage by vehicles over the nine-day survey period**

		Car	Light Goods Vehicle	Motor Cycles	Pedal Cycles	Heavy Goods Vehicles	Tractor & Trailers	Bus	Horse Riders	Herded Animals & Horses	Large / Slow Vehicles	Total
Saturday	13/05/2023	18180	2144	352	92	200	5	327	0	0	0	21300
Sunday	14/05/2023	14244	1312	441	116	24	2	172	0	0	0	16311
Monday	15/05/2023	16220	3015	225	107	453	5	346	0	0	10	20381
Tuesday	16/05/2023	15942	3111	326	118	478	5	350	0	0	3	20333
Wednesday	17/05/2023	16276	2975	315	117	512	6	343	0	0	2	20546
Thursday	18/05/2023	16179	3029	368	106	543	4	344	0	0	3	20576
Friday	19/05/2023	16809	2873	367	94	490	6	336	0	0	1	20976
Saturday	20/05/2023	15743	1713	322	100	130	14	342	0	0	0	18364
Sunday	21/05/2023	12757	1085	364	114	32	1	267	0	0	1	14621
Total over 9 days		142350	21257	3080	964	2862	48	2827	0	0	20	173408
9 day Average		15816.67	2361.89	342.22	107.11	318	5.33	314.11	0	0	2.22	19267.56
Weekday Average		16285.2	3000.6	320.2	108.4	495.2	5.2	343.8	0	0	3.8	20562.4
Weekend Average		15231	1563.5	369.75	105.5	96.5	5.5	277	0	0	0.25	17649

The usage data at the crossing can be further reviewed in the Sturry MCB Level Crossing Traffic & Pedestrian Nine Day Census Report (Document Reference: BS408/001/D320.1).

## 2.5 Rail Approaches and Usage

The level crossing is located on the Ashford to Ramsgate Line, and is used by 96 trains per day, from the traffic census. The crossing is monitored by the Sturry signal box. The line speed is 70mph in both directions over the level crossing. It was noted that a future capacity improvements scheme will increase the speed to 85mph.



The view of the rail approach to the East and West are shown in Figures 2.32 and 2.33. The line is straight in both directions. It should be noted that Sturry Station is located on either side of the crossing and this may represent a significant consequence in the case of a collision.



**Figure 2-32 - View of Rail approach to the East**



**Figure 2-33 - View of Rail approach to the West**

#### Post-Workshop Addendum 2

Subsequent to the previous level crossing usage data being completed, RSK Business Solutions were commissioned by Project Centre to carry out a nine-day traffic and pedestrian census survey of Sturry Manually Controlled Barrier (MCB) Level Crossing. Train movements were also recorded and documented.

The nine-day census recorded an average use of 69 trains per day, with a weekday average of 89 trains per day and a weekend average of 44 trains per day with the trains operating under usual conditions. The train usage data at the crossing can be further reviewed in the Sturry MCB Level Crossing Traffic & Pedestrian Nine Day Census Report (Document Reference: BS408/001/D320.1).

## **2.6 Incident and Near Miss History**

Incident Data relating to level crossings was provided by RSSB for Sturry Level Crossing. It is recognised that not all incidents are reported into RSSB's SMIS database. Incident reporting is not entirely consistent and also SMIS primarily holds incident data rather than fault data.

There is a relatively high level of incidents for an MCB type crossing. There are several cases of barriers being struck, and vehicles crossing whilst lights are flashing or on. There was also one injury where a contractor suffered a broken leg whilst roadside at Sturry Level Crossing.

Classification	Incidents in Data Set	Average for LC Type	Ratio to average for LC Type
Train - striking road vehicle or gate at LC	0	0.01	0.00
Train - striking or being struck	0	0.07	0.00
Non-rail vehicles (Including vehicle on the line	6	2.14	2.80
person - personal accident	0	0.28	0.00
level crossing/LC equipment - misuse/near misses	37	17.95	2.06
Near miss - train with person (not at LC)	0	0.01	0.00
Train - striking animal	0	0.01	0.00
Animals - On the line	0	0.04	0.00
Person - trespass	2	0.13	15.38
Person - vandalism	1	0.11	9.09
Train - Signal passed at danger	0	0.12	0.00
Train - running over LC (When Unauthorised)	0	0.02	0.00
Irregular Working	0	0.13	0.00
Level Crossing Equipment Failure	4	5.89	0.68
Signalling System - failure	1	0.09	11.11
Permanent way or works - failure	5	0.03	166.67
All incidents	56	27.43	2.04

**Table 2-11 - Breakdown of Incident History**



## Post-Workshop Addendum 2

Subsequent to the initial Options and Risk Control Workshop and a further Risk Assessment Workshop held by RSK Business Solutions for Amey, an additional change at Sturry MCB Level Crossing required a review of the crossing's risk assessment. The project convened an additional Workshop, held on 11<sup>th</sup> September 2023 to discuss this change. Incident data relating to Sturry MCB Level Crossing was requested and summary of the incidents over the last 10 years, displayed in Table, was presented during the Option Selection Workshop on 11<sup>th</sup> September 2023.

It is recognised that not all incidents are reported into RSSB's SMIS database. Incident reporting is not entirely consistent and SMIS primarily holds incident data rather than fault data. Further comments on these events are available on the SMIS database.

Category	No. of incidents in the last 10 years
Level Crossing / level crossing equipment - misuse/near misses <sup>1</sup>	38
Person - personal accident	1
Non-rail vehicle colliding with an animal, object or another road vehicle	2
Rail strike fatality <sup>2</sup>	1
Trespass <sup>3</sup>	2
Railway infrastructure fault	1
<b>Total</b>	<b>45</b>

**Table 2-12 - Incident category summary at Sturry Level Crossing**

<sup>1</sup>This category includes relevant SMIS incident data classified as 'Level Crossing/LC equipment - misuse/near misses', 'Personal accident form', 'Public behaviour form', 'Incorrect usage of level crossing' and 'Infrastructure failure and irregular signal aspect form'.

<sup>2</sup>This category includes relevant SMIS incident data classified as 'Person interacting with animal, object, vehicle or another person'.

<sup>3</sup>This category includes relevant SMIS incident data classified as 'Person in prohibited area' and 'Personal accident form'.

## **2.7 Predicted Future Usage**

The proposed development in the area of Sturry involves the construction of ~3000 new homes, and additional school, and other associated buildings. This project will also involve the construction of a new road running parallel to the railway and an additional bridge over the railway, details of which can be seen in Figures 1.1 and 1.2. Additionally multiple redesign options for the adjacent junction have been proposed.

Traffic modelling of the predicted usage of Sturry Level Crossing for all options has been modelled in document 661439 “Transport Impact Study, Sturry and Broad Oak Level Crossings” provided by RSK. The traffic modelling found that traffic flows at Sturry are predicted to reduce as expected, and the proposed options for the redesign of the adjoining junction will offer a number of benefits, including increased visibility to signal heads, new pedestrian crossing facilities and will force some traffic away from the level crossing. The modelling of this level crossing indicates that some queuing may increase from the baseline case. Option 2B (Figure 2.36), specified by Kent County Council, would result in the smallest increase and would therefore suit an overall balance between capacity, queuing and pedestrian facilities.

## **2.8 Potential Future Road Layouts**

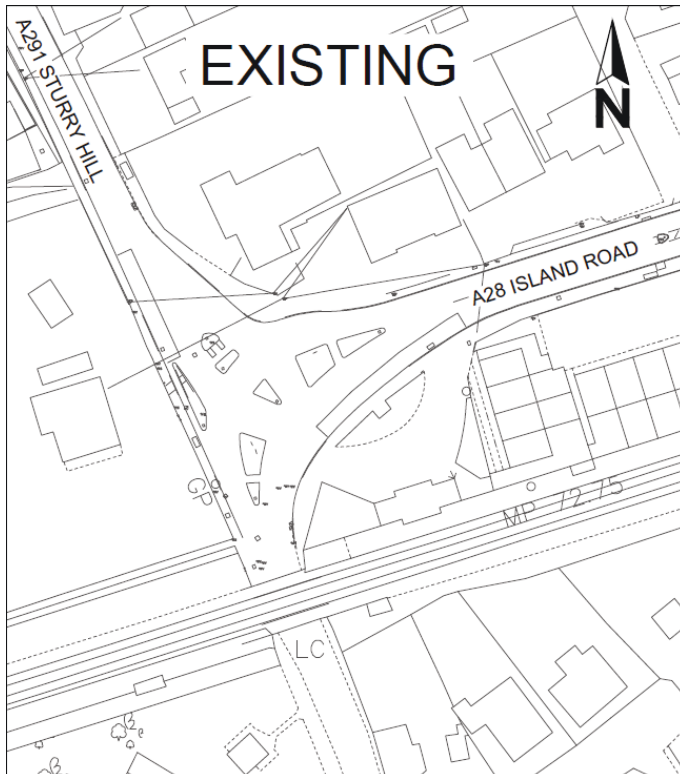
At the time of the workshop, several options to develop the road junction to the north of Sturry crossing were considered by Kent County Council, and then considered by the workshop. Figure 2.34 shows the plan of the existing road layout, and Figures 2.35 to 2.38 show the proposed options for the road layout.

### Post-Workshop Addendum 1

Further to the initial Options and Risk Control Workshop, the options were developed from workshop feedback and also stakeholder consultation. The chosen option for development was discussed at a further meeting held on 23<sup>rd</sup> March 2018. This option is shown in Figure 2.39

Post-Workshop Addendum 2

Subsequent to the initial Options and Risk Control Workshop and a further Risk Assessment Workshop held by RSK Business Solutions, Project Centre advised that planning consent was granted in September 2021, with the layout shown in Figure 2-39 taken forward and included in the planning permission for Sturry Link Road.



**Figure 2-34 - Existing Road Layout at Sturry Level Crossing**

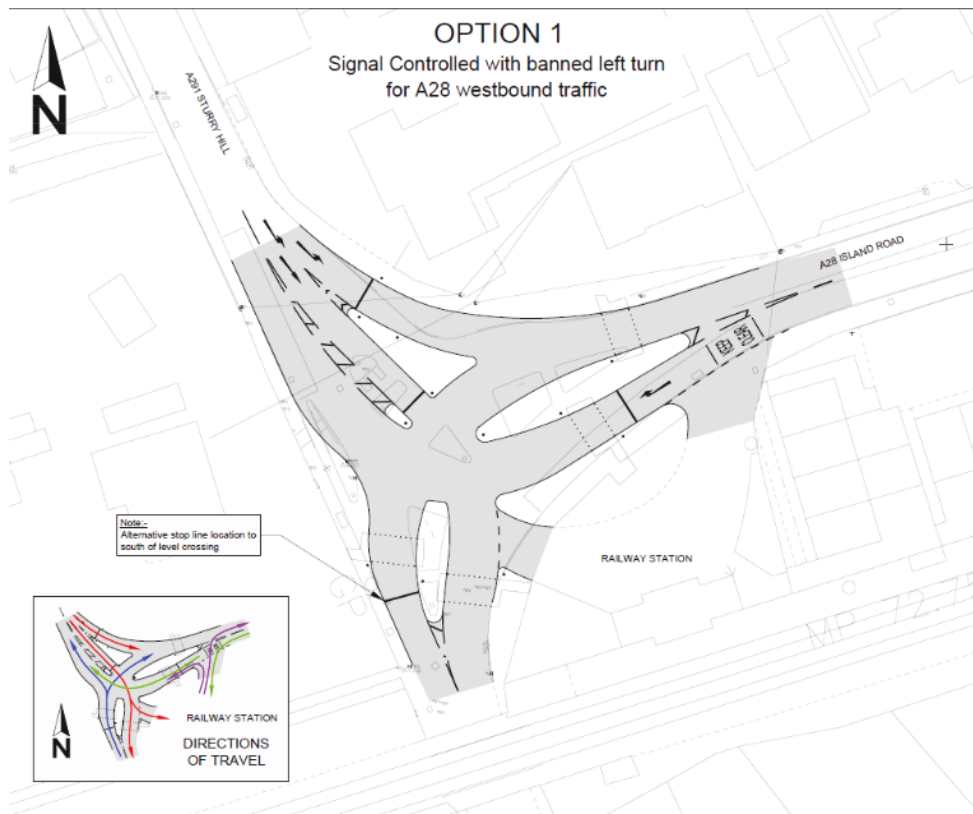


Figure 2-35 - Option 1 for the Proposed Road Layout North of Sturry Level Crossing

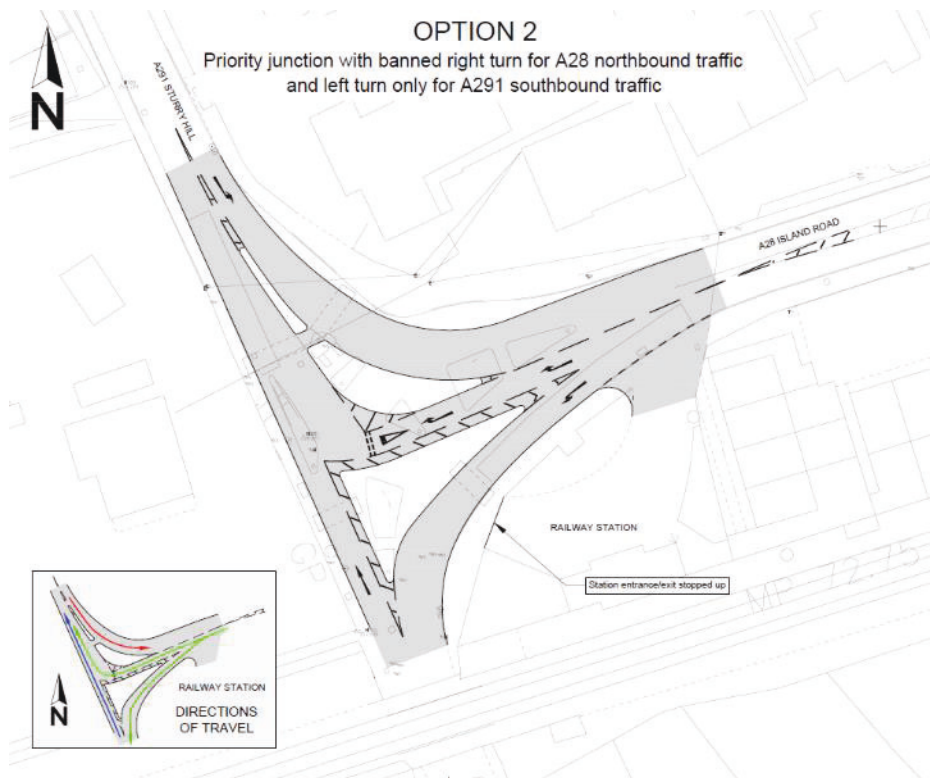


Figure 2-36 - Option 2 for the Proposed Road Layout North of Sturry Level Crossing

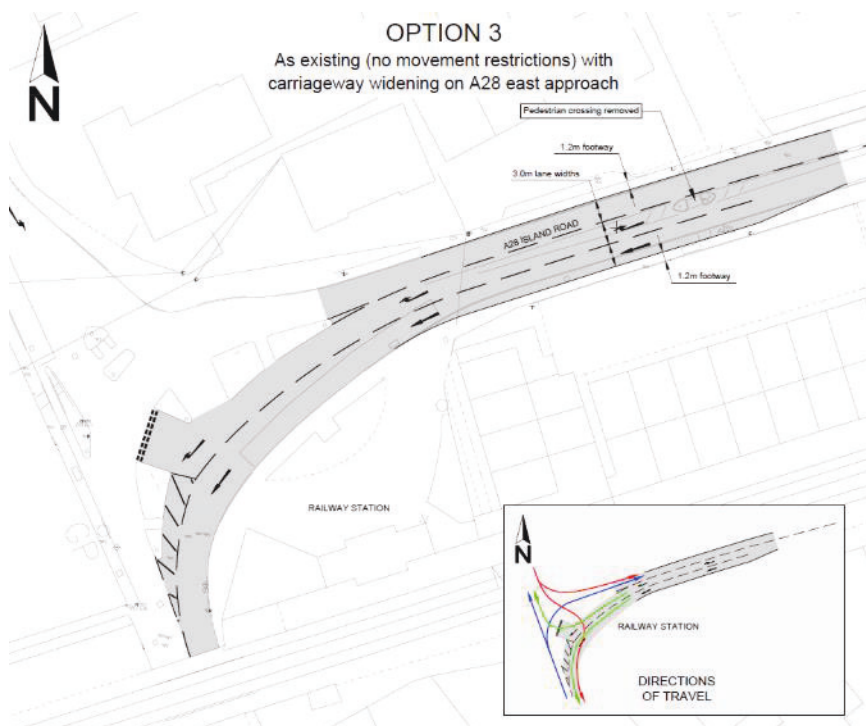


Figure 2-37 - Option 3 for the Proposed Road Layout North of Sturry Level Crossing

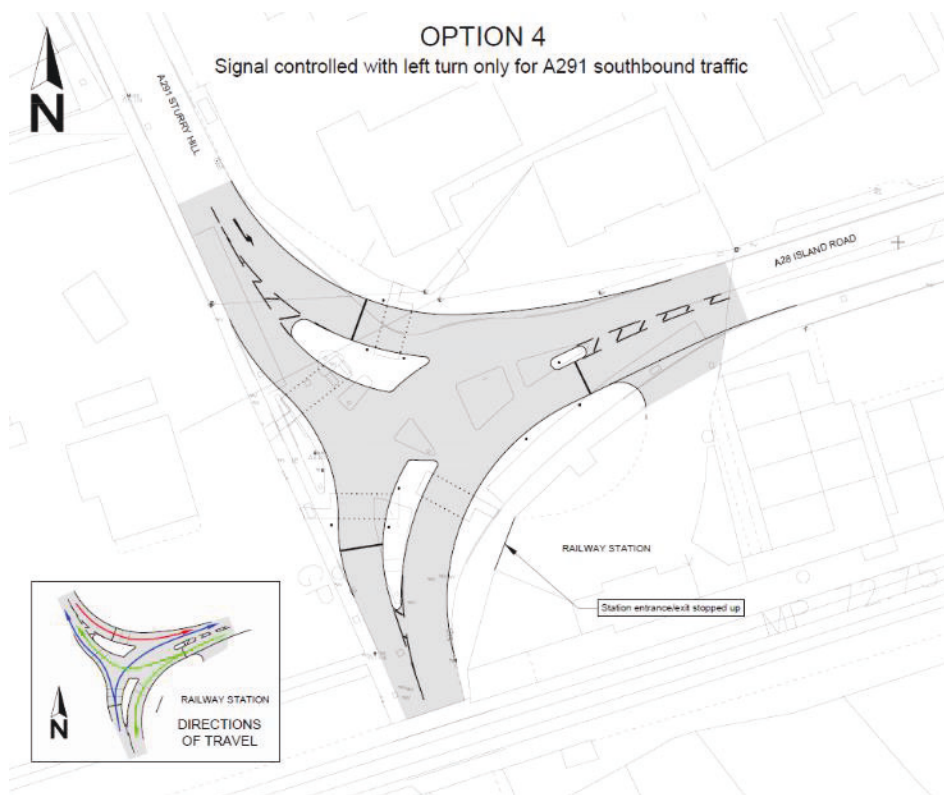
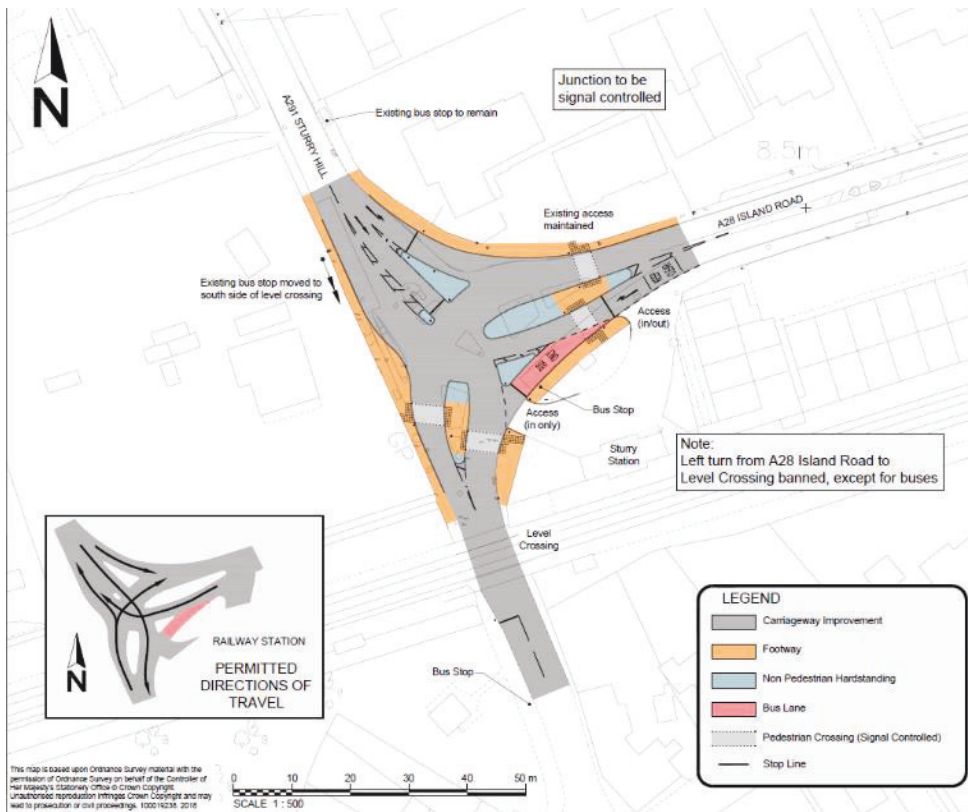


Figure 2-38 - Option 4 for the Proposed Road Layout North of Sturry Level Crossing

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**Figure 2-39 - Proposed Road Layout for the Junction North of Sturry Level Crossing**



## **3.0 RISK ASSESSMENT AND RECOMMENDATIONS**

### **3.1 Options and Risk Control Workshop**

The Level Crossing Workshop was held at Cottons Centre, Tooley Street, London SE1 2QG on 20<sup>th</sup> September 2017, and a further follow up meeting was held with Network Rail representatives on 23<sup>rd</sup> March 2018. A further workshop will be held at a later date to confirm the final recommendations for the project.

The Workshop were advised that the traffic impact study, document 661439 “Transport Impact Study, Sturry and Broad Oak Level Crossings” provided by RSK, showed that the proposed road layout would decrease the use of the crossing by between 50 and 75% depending on the junction layout chosen and represents a decrease in level crossing risk. Therefore no upgrade options for the crossing were discussed.

The Workshop noted there are three viable options for the new junction on the North side of the crossing. The option that was preferred in terms of control of risk at the level crossing was option 2B which would reduce the usage of the level crossing by 50% in peak time analysis with a free flowing movement of traffic unlikely to introduce any blocking back risk. However, the consultation process yielded option 1A as the preferred option as it has the least restrictions in terms of movements and was preferred for the movement of local traffic. It was noted that although option 1A decreased the use of the crossing within the impact study by the largest amount (~70% in peak time analysis) it introduced a potential blocking back issue with a set of traffic lights on the north side of the crossing.

The crossing was assessed using the All Level Crossing Risk Model (ALCRM). Using the data from the current census the crossing scored 0.0175 FWI/year, equivalent to ranking G2. With a 50% reduction in vehicle use the ALCRM score fell to 0.0108 FWI/year. This was still equivalent to ranking G2, however represented a 62% reduction in the risk at Sturry Level Crossing.

The Workshop discussed a potential mitigation to the blocking back issue of the level crossing barrier RTL being integrated with the traffic lights beyond. The start of the RTL sequence will initiate the traffic light sequence beyond the crossing and would clear the road of traffic before the barrier is lowered (known as a hurry up button). It was understood that this type of mitigation has been implemented in other areas such as Crawley High Street LX, Lancing LX and West Worthing. The decision on which junction option would be preferred by the workshop was postponed until more is known about the blocking back at Sturry LX and the effectiveness of the suggested mitigation. The Workshop therefore recommended that a further blocking back study of Sturry Level Crossing and additional blocking back study at a location where the proposed mitigation is in operation.

#### Summary of Recommendations:

The recommendations from the first workshop are listed below. They have been superseded by the recommendations from the second meeting, and have been retained for information only.

- The Workshop recommended that a further blocking back study of Sturry Level Crossing is carried out, due to the concerns of the presence of several factors which may increase blocking back at the level crossing
- The Workshop recommended that an additional blocking back study be carried out at a location where the proposed mitigation is in operation, i.e. it was recommended that the level crossing RTL sequence also initiates the traffic light sequence in order to mitigate potential mixed messages for an approaching road user.

#### **Sturry footpath crossing:**

The Workshop noted Milner Court Public Footpath Crossing is located on the West side of Sturry Road Crossing and is currently identified as high risk. The main usage of the level crossing is for primary school children to cross to get to their playing fields. The current plan is to close the crossing and provide a footbridge. The option of closing the crossing point altogether was discussed by the Workshop and agreed to be the ideal solution. Although outside the remit of the project, the Workshop therefore recommended that the plans for Milner Court Footpath were reviewed with a view to closing the crossing point.

#### Summary of Recommendations

- The Workshop recommended that the plans for Milner Court Footpath were reviewed with a view to closing the crossing point

## **3.2 Post Workshop Updates**

### Post-Workshop Addendum 1

Further to the Options and Risk Control Workshop, a further blocking back and barrier activity study at Sturry Level Crossing was commissioned. Subsequent to the blocking back and barrier activity study, a further risk assessment meeting with Network Rail representatives was convened on 23<sup>rd</sup> March 2018 to review the risks raised, and to review the final proposed road design to the north of the workshop.

The recommendations of the further risk assessment meeting are summarised below.

### **Sturry Level Crossing (MCB):**

The Meeting reviewed the recommendations from the first workshop, and made the following specific comments.

#### Previous Recommendations and Meeting Comments

- The Workshop recommended that a further blocking back study of Sturry Level Crossing is carried out, due to the concerns of the presence of several factors which may increase blocking back at the level crossing

Post Workshop Meeting Comments: The Meeting were advised that the blocking back survey had been carried out, and were advised of the findings

- The Workshop recommended that an additional blocking back study be carried out at a location where the proposed mitigation is in operation, i.e. it was recommended that the level crossing RTL sequence also initiates the traffic light sequence in order to mitigate potential mixed messages for an approaching road user.

Post Workshop Meeting Comments: The Meeting were advised that of the 3 locations suggested as having a similar system, none had a directly comparable system. Additionally a level crossing with a similar system was not able to be located.

The Meeting agreed that the new junction arrangement north of the level crossing would ease the blocking back issues by reducing the road congestion. The new junction arrangement is shown in Figure 2.39.

The movement of the traffic lights to a position south of the crossing within the final design was agreed to be a preferred arrangement and would mitigate the blocking back issue due to queuing traffic.

The movement of the bus stop to a position south of the crossing was also agreed to be an improvement to the potential blocking back issue. However for the bus stop location it was suggested that there may be potential for this to cause an increase in pedestrian usage across the level crossing. The Meeting therefore recommended that the potential impact to the pedestrian usage of the level crossing due to the movement of the bus stop was reviewed.

The Meeting noted that the location of the pedestrian road crossing on the north side of the level crossing was an issue that may increase blocking back, depending on the type of pedestrian crossing fitted and its initiation compared to the RTL sequence. Therefore the meeting recommended that the type of pedestrian crossing was confirmed by the designer.

The interlocking of the traffic lights with the level crossing RTLs was discussed. It was agreed that it is crucial that the road users are not given mixed signals when approaching from the south side in particular. The Meeting therefore recommended that the details of integration of the traffic light sequence with the initiation of the RTL sequence when a train is approaching was confirmed.

The increased barrier down time for longer stopping trains causing ambulances on emergency calls to stop for prolonged periods was raised to the meeting attendees. Although outside of the remit for the project, it was identified as a significant factor which should be communicated back to the Network Rail Level Crossing Risk team.

### Summary of Recommendations

- The Meeting recommended that the potential impact to the pedestrian usage of the level crossing due to the movement of the bus stop was reviewed.
- The Meeting recommended that the type of pedestrian crossing was confirmed by the designer.
- The Meeting recommended that the integration of the traffic light sequence with the initiation of the level crossing light sequence when a train is approaching was confirmed and the detail of the initiation agreed with Network Rail.

### Non-Project Recommendations

The Meeting identified the increased barrier down time for longer stopping trains caused ambulances on emergency calls to stop for prolonged periods. This was considered to be a significant factor which should be communicated back to the Network Rail Level Crossing Risk team. The Meeting noted that the issue would be mitigated by the proposed bridge, and therefore this issue was raised as a current issue to be passed back to Network Rail in the interim.

### Post-Workshop Addendum 2

Subsequent to the initial Options and Risk Control Workshop and a further Risk Assessment Workshop held by RSK Business Solutions for Amey, an additional change at Sturry MCB Level Crossing required a review of the crossing's risk assessment. Specifically, the Sturry Link Road viaduct is proposed to be completed by 2025 in the areas adjacent to the crossing.

The project convened an additional Workshop, held on 11<sup>th</sup> September 2023 to discuss this change. A full list of Workshop attendees can be found in Appendix C. The notes and discussions taken on the day of the additional Workshop can be found in Appendix E, however the Workshop agreed that option 1, retaining the current MCB arrangement at the crossing, was the preferred option and that option 2, closing the crossing, was the second preferred option. The further Option Selection and Risk Assessment Workshop agreed that these options are preferred provided the following recommendations are implemented:

- The Workshop were advised by Kent County Council that as a part of the development at the crossing, bus stops nearby the approaches to the crossing would be relocated to improve traffic flow on approach to the crossing. The Workshop were also advised by Kent County Council that traffic lights protecting pedestrians from northbound traffic will be located south of the crossing to mitigate blocking back over the crossing in the event that a pedestrian wishes to cross the roadway.
- The Workshop discussed the provision of ticket machines on the station platforms either side of the crossing. The Workshop noted that there is only one ticket machine at Sturry Station, on the Down Line platform, and considering the station booking office has restricted opening hours, passengers departing from the Up Line platform may have to traverse the crossing to obtain a ticket. The Workshop recommended that the proposed installation of a ticket machine



on the Up Line platform, as part of the scheme to close booking offices, should be undertaken as soon as possible.

- The Workshop noted site traffic will access the construction site for the new viaduct bridge in the area nearby the level crossing. The Workshop recommended that once a construction site contractor has been appointed, collaboration with Network Rail is required to manage access to the site and manage the potential increased risk of blocking back. The Workshop further recommended that a traffic management plan is required for access to the construction site and across Sturry Level Crossing.

## **Project Centre**

## **Sturry MCB Level Crossing**

## **Level Crossing Risk Assessment Report**

## **APPENDICES**

## **A. SOURCES OF INFORMATION**

### **A1. Sources of Information**

- The All Level Crossing Risk Model (ALCRM) has been used to estimate the risk of the level crossing for the various options
- Data and photos from site was collected on 15<sup>th</sup> May 2017 and 12<sup>th</sup> May 2023
- Original Traffic data contained within supplied Traffic census report document “3556-LON SITE 01 - Sturry Level Crossing”
- All site plans were and diagrams provided by Kent County Council via Amey
- Sturry MCB Level Crossing Traffic & Pedestrian Nine Day Census Report, BS408/001/D320.1 Revision A, June 2023, RSK Business Solutions

## **B. Summary of ALCRM Scores**

Case	Crossing Type	ALCRM Ranking	FWI/Year	Percentage Change from Today
Current Traffic Flows	MCB	G2	0.017541	N/A
50% Reduction in Vehicle Traffic	MCB	G2	0.010769	-61.7%

### Post-Workshop Addendum 2

Subsequent to the initial Options and Risk Control Workshop and a further Risk Assessment Workshop held by RSK Business Solutions for Amey, an additional change at Sturry MCB Level Crossing required a review of the crossing's risk assessment. A summary of the ALCRM scores and Cost Benefit analysis that were presented during the Option Selection Workshop on 11<sup>th</sup> September 2023 are shown below.

No	Option	Costs (Taken from the Southern Region CBA Guide 2020)	ALCRM Score	FWIs	Benefit Cost Ratio (25 years)
1	Current Arrangement (MCB crossing)	-	J4	0.001554143	N/A
2	Closure with diversion	£50,000 (To cover legal costs)	M13	0	7.048
3	Closure with a road bridge	£10,000,000 (For bridge construction on a major road)	M13	0	0.009
4	Upgrade to MCB-CCTV	£2,800,000	K4	0.001069315	0.013
5	Upgrade to MCB-OD	£4,000,000	K4	0.001344402	0.012



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Case	Crossing Type	ALCRM Ranking	FWI/Year	Percentage Change from Today
Current Traffic Flows	MCB	J4	0.001271036	N/A
50% Reduction in Vehicle Traffic	MCB	J5	0.000891274	-29.88%

The revised ALCRM scores are based on a more recent census and have been used to indicate the effect of a 50% reduction in vehicular traffic over the crossing.

## **C. Workshop Dates and Participants**

### **VENUE**

<sup>a</sup>Cottons Centre, Tooley Street, London SE1 2QG

### **DATES**

20/09/2017 & 22/03/2018

<sup>b</sup>Microsoft Teams

11/09/2023

<b>Name</b>	<b>Company</b>	<b>Present on 31<sup>st</sup> January 2018<sup>a</sup></b>	<b>Present on 23<sup>rd</sup> March 2018<sup>a</sup></b>	<b>Present on 11<sup>th</sup> September 2023<sup>b</sup></b>
M. Mortley	Amey	Y	N	N
P. Coleman	Network Rail	Y	N	N
D. Kane-Gil	Network Rail	Y	N	N
R. Angus	Network Rail	Y	N	N
T. Iddenden	Network Rail	Y	Y	N
R. Shelton	Kent County Council	Y	N	Y
L. Ward	Network Rail	N	Y	N
B. Osebor	Network Rail	N	Y	N
D. Bird	RSK Business Solutions	Y	Y	N
E. Neale	RSK Business Solutions	Y	Y	N
P. Sewart	RSK Business Solutions	N	N	Y
T. Clark	RSK Business Solutions	N	N	Y
J. Tumilty	Network Rail	N	N	Y
M. Slade	Network Rail	N	N	Y
C. Collins	Network Rail	N	N	Y
N. Wellington	Network Rail	N	N	Y
R. Fletcher	Network Rail	N	N	Y
P. Calvert	TOC Southeastern	N	N	Y
J. East	Project Centre	N	N	Y
S. Ramm	Kent County Council	N	N	Y

## D. Workshop Participants Signatures



### Sturry and Broad Oak Level Crossing Risk Assessment

Workshop 1

20/09/2017

<u>Name / Email</u>	<u>Company</u>	<u>Position</u>	<u>Signature</u>
M. MORTLEY Michael.Mortley@Amey.co.uk	Amey	Principal Engineer (Design)	
PAUL COLEMAN Paul.Coleman2@networkrail.co.uk	NR	ROUTE LX MANAGER	
DAVID KANG-GIL	NR	SENIOR ASSET PROTECTION ENGINEER	
RICHARD ANGLICK	NR	SENIOR ASSET - SIGNALLING	
TREVOR IDDENDEN	NR	ASSET PROTECTION ENGINEER	T. Iddenden 
Richard Shelton	RCC	Project Manager	
Danny Bird	RSK	Facilitator	DPL Bird 
Elliot Noake	RSK	Recorder	

## **E. Additional Workshop Notes and Considerations**

### **11<sup>th</sup> September 2023 Workshop notes**

The Workshop discussed the integration of the RTL sequence with the traffic light sequence to mitigate potential miscommunication to road users. A plan to integrate these light systems has been developed but the Workshop noted no further progress has been made and light system integration is estimated to take place in Summer 2027. The Workshop noted that Kent County Council are to liaise with Jim Tumilty and or Richard Angus concerning the RTL and Traffic Light integration at the crossing.

The Workshop were advised by Kent County Council that as a part of the development at the crossing, bus stops nearby the approaches to the crossing would be relocated to improve traffic flow on approach to the crossing. The Workshop were also advised by Kent County Council that traffic lights protecting pedestrians from northbound traffic will be located south of the crossing to mitigate blocking back over the crossing in the event that a pedestrian wishes to cross the roadway.

The Workshop discussed the provision of ticket machines on the station platforms either side of the crossing. The Workshop noted that there is only one ticket machine at Sturry Station, on the Down Line platform, and the station booking office has restricted opening hours, which may result in passengers, departing from the Up Line platform, traversing the crossing to obtain a ticket. The Workshop recommended that the proposed installation of a ticket machine on the Up Line platform, as part of the scheme to close booking offices, should be undertaken as soon as possible.

The Workshop discussed the latest census report provided by RSK Business Solutions (Document Reference: BS408/001/D320.1). This discussion concerned barrier down times delaying ambulances, issues concerning an increase of trains stationary over the crossing and incidents of pedestrians walking off the platform ends onto the crossing. The Workshop also noted that the Co-op Food shop immediately north of the crossing has increased footfall over the crossing.



The Workshop discussed the Option Selection for Sturry MCB Level Crossing and the contained ALCRM scores and option benefits. The Workshop noted that there are currently no MCB-OD crossings in Kent and that the re-control of the crossing is currently under investigation, with an aspiration to upgrade the crossing to an MCB-CCTV type crossing. The Workshop also noted the impracticalities of closing a crossing immediately adjacent to a station and the Workshop agreed that continued pedestrian and vehicle access to the station is required.

The Workshop also discussed the nearby Milner Court Level Crossing. The Workshop noted that although the Junior Kings School has an agreement for the use of this crossing to access fields owned by the school, the land has now been sold and therefore access is no longer required.

The Workshop noted site traffic will access the construction site for the new viaduct bridge in the area near the level crossing. The Workshop recommended that once a construction site contractor has been appointed, collaboration with Network Rail is required to manage access to the site and manage the potential increased risk of blocking back. The Workshop further recommended that a traffic management plan is required for access to the construction site and across Sturry Level Crossing.

**F. Level Crossing Photographs Captured on 12<sup>th</sup> May 2023**



**Figure F-1 – Current arrangement at Sturry Level Crossing on the South approach (Up side)**



**Figure F-2 – Current arrangement at Sturry Level Crossing on the North approach (Down side)**





Figure F-3 – Far approach from the Up side on the A28 (Mill Road) to Sturry Level Crossing



Figure F-4 - Junction between the A28, High Street and Field Way on the South approach to the crossing





**Figure F-5 – Far approach from the Down side on the A291 (Sturry Hill) to Sturry Level Crossing**



**Figure F-6 – Far approach from the Down side on the A28 (Island Road) to Sturry Level Crossing**





**Figure F-7 – Junction between the A28 and the A291 near the Down side approach to Sturry Level Crossing**



**Figure F-8 – Railway in the Down direction from the Down side**



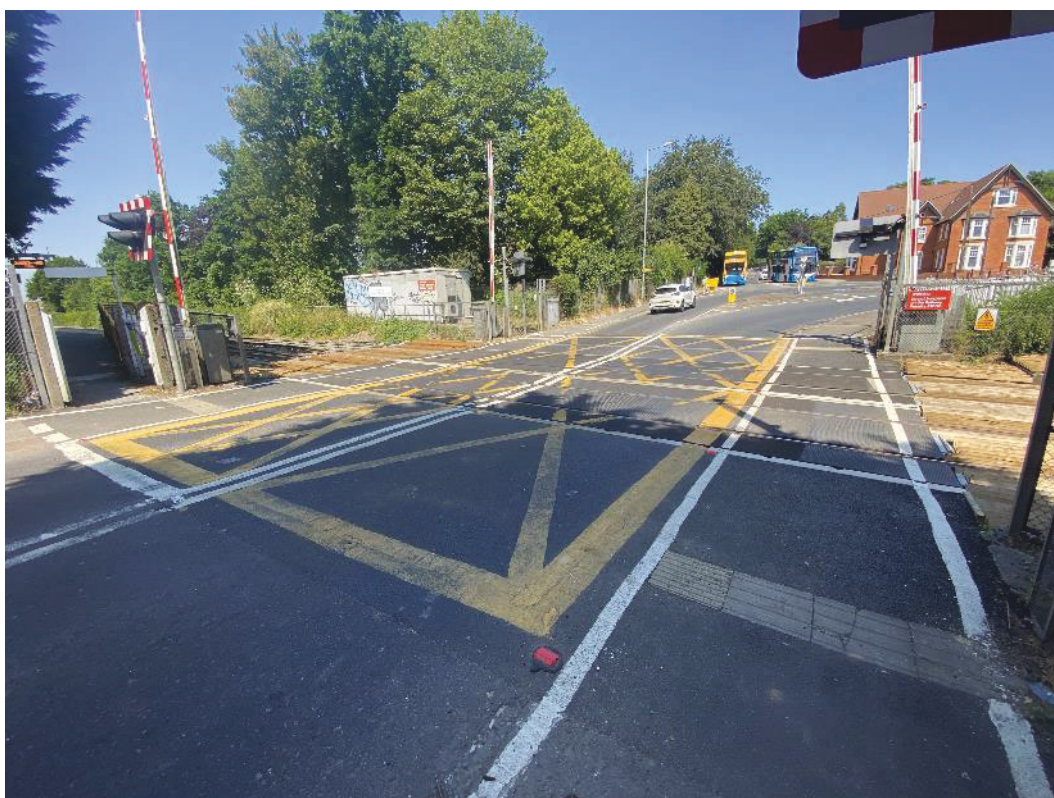


Figure F-9 – Railway in the Up direction from the Down side



Figure F-10 – Railway in the Down direction from the Up side





**Figure F-11 – Railway in the Up direction from the Up side**



**Figure F-12 – Level crossing decking**