



# Rother Valley Railway A21 Robertsbridge

Highways & Traffic Assessment Report -  
Review of A21 (Corridor Wide) Delays  
July 2013

Rother Valley Railway Ltd





# Rother Valley Railway A21 Robertsbridge

Highways & Traffic Assessment Report -  
Review of A21 (Corridor Wide) Delays

July 2013

Rother Valley Railway Ltd

Robertsbridge Junction (RVR) Station, Station Road, Robertsbridge, Sussex  
TN32 5DG



# Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
A	12.07.13	A J Poole	M D Lewis	I Johnston	First Issue

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.



# Content

Chapter	Title	Page
	Executive Summary	i
1.	Introduction	1
1.1	Background	1
2.	Location and Scheme Description	3
2.1	Location	3
2.2	Scheme Description	4
3.	A21 Traffic Assessment	5
3.1	Overview	5
3.2	Analysis of HATRIS data	6
3.3	A21 approaches to John's Cross roundabout (A2100 junction) south of Robertsbridge	6
3.4	A21 section between A262 and A228	9
3.5	Comparison with Proposed RVR Railway Level Crossing Site	10
4.	Conclusions	11

# Executive Summary

Rother Valley Railway (RVR) Limited is seeking to reconstruct a section of railway between Bodiam and Robertsbridge in East Sussex. This section is the final missing link in the Kent and East Sussex Railway (KESR).

The reconstructed railway line will enable the direct interchange of passengers between KESR and the mainline railway network at the new Robertsbridge Junction Station. Once complete this will enable visitors to use the country's public transport system to access the KESR and to use the line as a leisure transport corridor serving popular attractions such as the National Trust's Bodiam Castle and the historic town of Tenterden.

In order to complete the restoration, RVR is proposing to construct a level crossing on the A21 Robertsbridge Bypass.

As part of this assessment work, following consultation between RVR and East Sussex County Council (ESCC), Mott MacDonald has been commissioned to: -

*"Major delays also appear at other points on the A21, e.g. both North of Flimwell where the dual carriageway narrows to single lanes and the B2162 joins it, and to the south of Robertsbridge further down the A21 where the B2089 joins. We need to demonstrate that these delays are far greater than those which would be caused by the RVR level crossing. Produce an annex with the results".*

This report uses data sourced from the Highways Agency Traffic Information System (HATRIS) which contains information on traffic flow and journey times on the motorway and trunk road network.

Traffic flows and journey times have been derived for two locations on the A21 where the highway layout is considered to contribute to vehicle delay. These two locations are south of Robertsbridge at the roundabout junction with the A2100 (near Battle) and at Pembury between the A228 and the A262 where the carriageway cross-section changes from 4-lane, 2-way to 2-lane, 2-way. These two locations have been analysed and delays calculated from differences in off-peak and peak journey times.

At the A21 junction with the A2100 at Robertsbridge southbound vehicles typically experience an additional 52 and 47 seconds of delay (above the baseline) during the respective AM and PM peak periods. Similarly northbound, individual vehicles typically experience an additional 49 and 65 seconds (above the baseline) for the respective AM and PM peak periods.

There is an anomaly here though, in so far as the delays experienced southbound are (marginally) greater in the AM peak, compared with the PM peak, yet the traffic flow southbound in the PM is less than half of that experienced during the PM peak. Likewise, the predominant traffic northbound occurs during the AM peak, yet greater delays to vehicles are incurred in the PM peak period.



At Pembury, between the A228 and the A262, southbound vehicles typically experience an additional 48 and 67 seconds of delay (above the baseline) during the respective AM and PM peak periods. Similarly northbound, individual vehicles typically experience an additional 122 and 61 seconds (above the baseline) for the respective AM and PM peak periods.

There is also an anomaly at this location, in so far as it might reasonably be expected that there would be greater delays where the carriageway cross-section narrows from dual to single (4-lane, 2-way to 2-lane, 2-way). The traffic flow data supports the assertion that the predominant movement is northbound (towards London) during the AM peak and coast bound (southbound) during the PM peak. However, the HATRIS data does indicate greater delays are experienced where the carriageway cross-section increases from single to dual.

Overall, the HATRIS data relied upon is not substantive. It is not considered possible to accurately determine whether the delays at other locations investigated along the A21 are created at the junctions (roundabouts) or along the links themselves.

Notwithstanding, it is clear that the level of delay forecast at the level crossing is minimal in comparison with the other A21 sites investigated.

# 1. Introduction

## 1.1 Background

The Kent and East Sussex Railway (KESR) has progressively reopened the old railway line between Tenterden and Bodiam Castle, which became the current terminus of the line in 2000.

Rother Valley Railway (RVR) is a heritage railway charity aiming to restore the final missing link for the KESR by recreating the link between Robertsbridge and Bodiam, a distance of approximately 3 miles.

Completion of this link will restore the original line to Robertsbridge Junction Station and so provide a direct public leisure transport connection between mainline railway passenger services and the KESR.

RVR began work on restoring the railway in 2010 and are following the original rail alignment. To date: -

- About 1 mile of the new railway has been built from Bodiam as far as Junction Road.
- At the western end the line has recently been rebuilt from Robertsbridge Junction Station to the outskirts of the village.
- RVR has now commissioned the construction of the new Robertsbridge Junction Interchange Station.

To date RVR has committed about £1.5 million to these first phases of the works and has available funding to complete the remaining 'central' section of the line once Powers have been secured.

To complete the link, RVR needs to cross the A21 Robertsbridge Bypass and this represents the last major hurdle to the ultimate restoration of some 13 ½ miles of heritage railway.

The proposed route follows that of the original railway and crosses the A21 to the south of the Northbridge Street roundabout. The proposed design will use a full barrier locally monitored and controlled level crossing to provide a safe at grade intersection between the A21 and the railway.

## 1.2 Aims & Objectives

The principal aims and objectives of this report are as follows: -

- To investigate the delays at two locations on the A21 other than those assessed at the A21 crossroads with Flimwell (undertaken as separate analysis in MM Report Doc. Ref. 313090/ITD/ITQ/009 referred hereinafter as the “Flimwell Report”) and at the proposed RVR level crossing site. The two locations identified are: -
  - The roundabout junction with the A2100 to the south of Robertsbridge; and
  - Where the A21 narrows from a 4-lane, 2-way to 2-lane, 2-way at Pembury (between the A228 in the north and the A262 in the south).

These sites have been selected on the basis of suitable data available from the HA's HATRIS database.

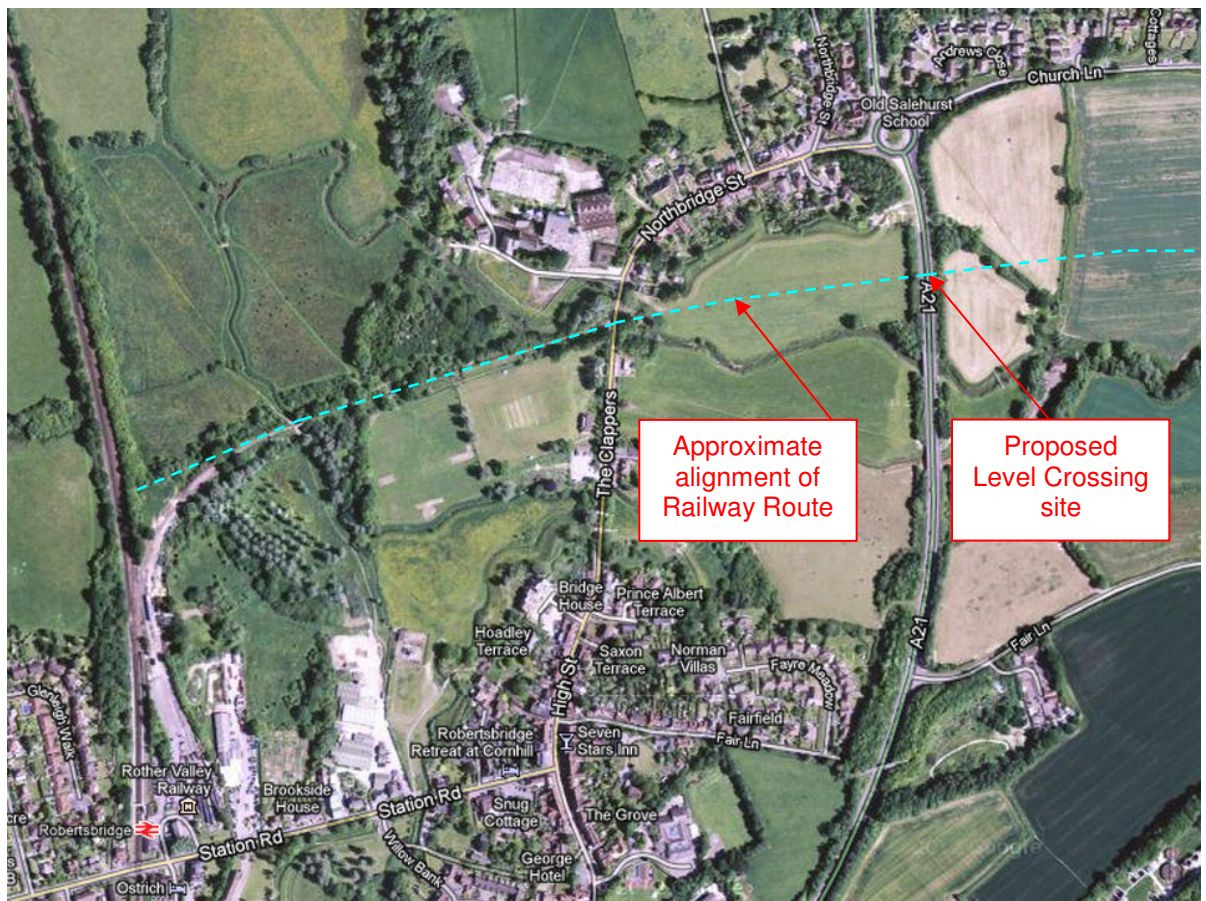
## 2. Location and Scheme Description

### 2.1 Location

The proposed level crossing is located on the A21 Robertsbridge Bypass in East Sussex at a position approximately 135m south of the Northbridge Street Roundabout.

Robertsbridge itself is a small village located approximately 10 miles north of Hastings and 13 miles south east of Royal Tunbridge Wells. The Section ID for the crossing location is 1400A21/841.

Figure 2-1: A21 Robertsbridge bypass, Northbridge Street roundabout and the proposed level crossing location.



Source: Imagery ©2012 DigitalGlobe, GeoEye, Getmapping plc, Infoterra Ltd & Bluesky, Map data ©2012 Google

## 2.2 Scheme Description

The proposed scheme comprises the construction of an at-grade level crossing of the A21. The crossing would comprise full carriageway width locally monitored and controlled barriers in order to prevent vehicle and NMU incursion onto the crossing in accordance with the requirements of the Level Crossing Guidelines As Above. The proposal also comprises the extension of the existing 40mph speed limit south of the A21 roundabout junction with the C18 Northbridge Street, provision of new signs and road markings in accordance with the requirements of the Traffic Signs Regulations and General Directions (TSR&GD) and the Traffic Signs Manual standards and/or the guidance document “Level Crossings: a Guide for Managers, Designers and Operators – Rail Publication 7 (December 2011)”, all as appropriate.



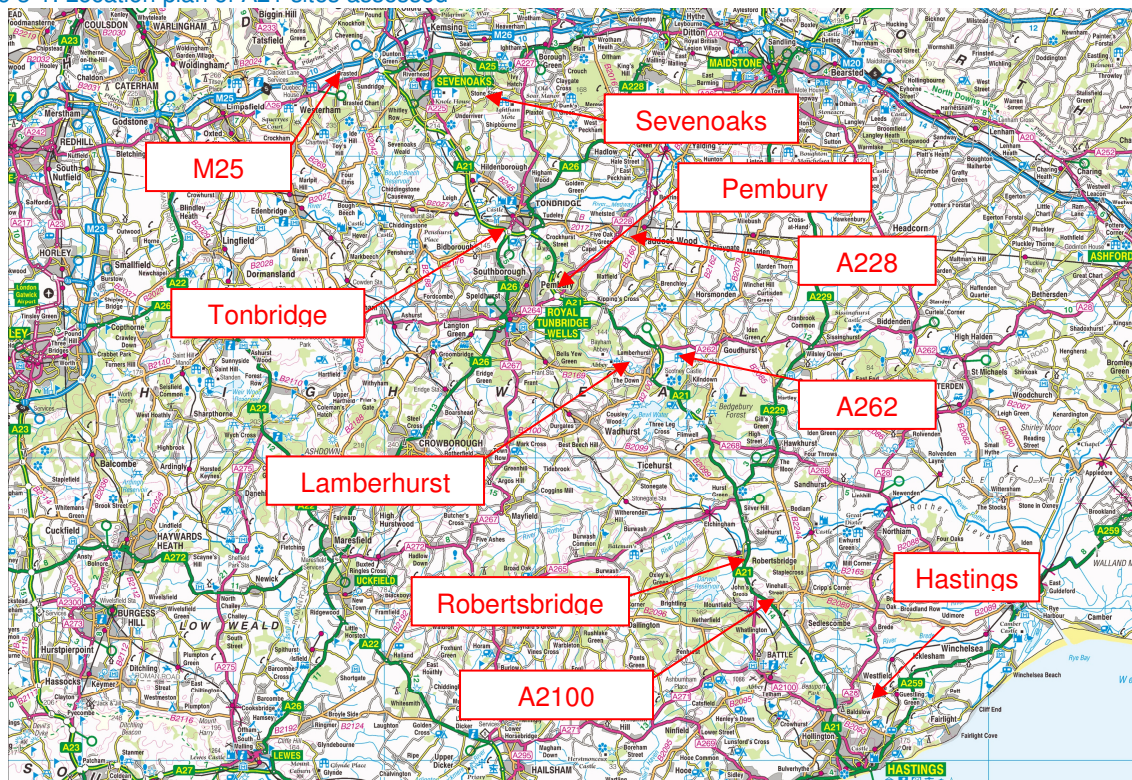
## 3. A21 Traffic Assessment

### 3.1 Overview

The A21 is the principal corridor for road traffic between the M25 London Orbital Motorway and the coastal town of Hastings. The route alignment south of the M25 takes it to the west of Sevenoaks, southwest of Tonbridge, west of Pembury, east of Lamberhurst and on towards Flimwell and Robertsbridge (see **Figure 3.1**). The two locations identified are: -

- The roundabout junction with the A2100 to the south of Robertsbridge; and
- Where the A21 narrows from a 4-lane, 2-way to 2-lane, 2-way at Pembury (between the A228 and the A262).

Figure 3-1: Location plan of A21 sites assessed



Source: Contains Ordnance Survey data © Crown copyright and database right 2013

### 3.2 Analysis of HATRIS data

In order to make an assessment of the delay, the Highways Agency Traffic Information System (HATRIS) was interrogated. HATRIS is the collective term used by the Highways Agency (HA) for two databases; the Traffic Flow Data System (TRADS) and the Journey Time Database (JTDB) system.

TRADS provides traffic flow data at sites on the HA network and the JTDB system holds information on journey times and traffic flows for links of the network. A link is a single direction of carriageway between two junctions of the network (A-road to A-road).

For the purposes of this report traffic flow data and journey time data was downloaded from the JTDB for March, April, May, June, September and October 2012, to correspond with the same months of the year relied upon in the Traffic Impact Study, dated October 2011.

### 3.3 A21 approaches to John's Cross roundabout (A2100 junction) south of Robertsbridge

Hourly traffic flows for an average<sup>1</sup> weekday, obtained from the HATRIS data, were determined for the two A21 links approaching John's Cross roundabout (A2100).

**Figure 3.1** overleaf, shows the average peak hour flows for the following times of day: -

- 07:00 to 08:00 (AM peak); and
- 17:00 to 18:00 (PM peak).

These hours were selected to correspond with those assessed in the "Flimwell Report".

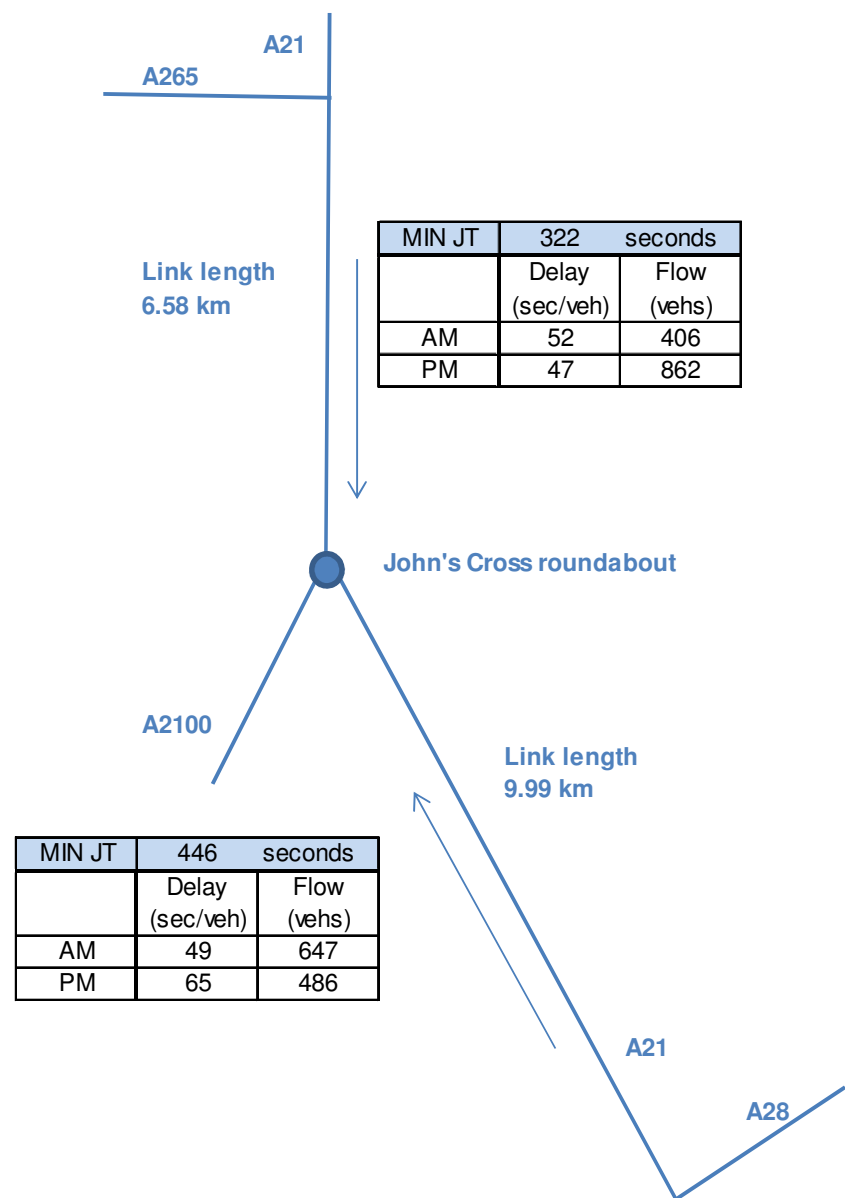
Journey times were also obtained from HATRIS for the peak hours to identify the level of delay on each link. The minimum journey time was taken as a measure of the journey time recorded between 03:00 and 04:00. The calculated delay, in seconds per vehicle, is the additional average delay above the minimum (free flow) journey time incurred during the AM and PM peak hours.

---

<sup>1</sup> Averaged over March, April, May, June, September and October 2012 for Monday-Friday, excluding Bank Holidays and School Holidays.

The A21 link between the A265 (at Hurst Green) and the roundabout junction with the A2100 is approximately 6.6km in length. Similarly, the A21 link between the A28 (north of Hastings) and the A2100 roundabout is approximately 10km in length. There are few junctions of significance which cause substantial delay on this section of the A21.

Figure 3-1: AM and PM additional delay (secs.) and flow (vehs.) at roundabout junction with A2100 to the south of Robertsbridge



Source: Mott MacDonald / HATRIS



From **Figure 3.2** it can be seen that for each independent link, a higher hourly traffic flow does not always result in a corresponding higher delay. As such delays on that given link may not be wholly attributable to the junction. For example, on the A21 southbound link, the AM peak hour flow is half of that experienced in the PM peak, yet the delays on the link are marginally higher in this period than they are for the PM peak period.

Likewise, on the A21 northbound link to the roundabout junction, the AM peak hour flow is higher than the corresponding PM peak hour flow, yet the PM peak hour additional delay is greater than that experienced in the AM peak.

Delays may be attributable to a number of factors. This may be a consequence of turning movements at the junction where the ahead movement (north along the A21) is delayed by traffic from the A21 using the A2100, hence delaying northbound traffic at the roundabout during this time of the day. However, based on the data available this is only surmised and more detailed traffic data (such as a turning movement count at the junction) to substantiate this assertion.

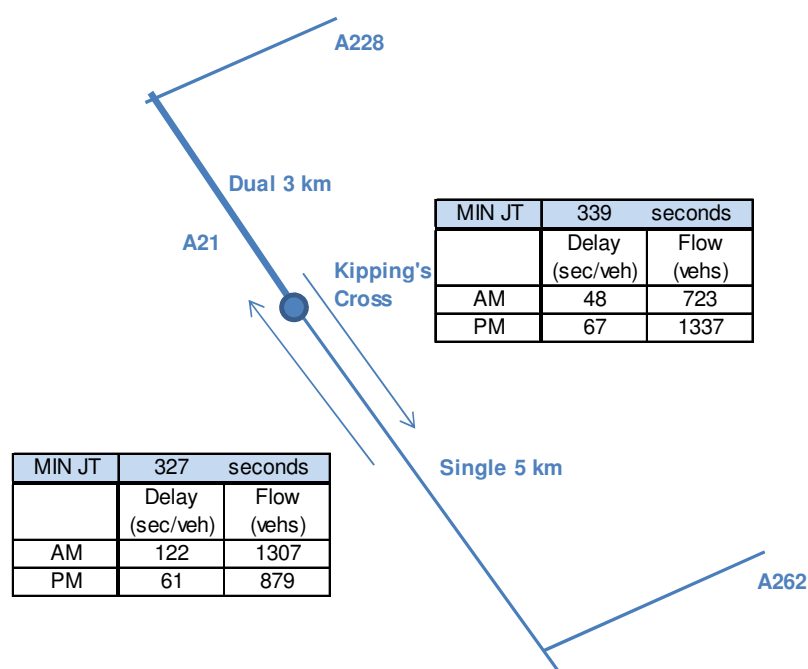
Furthermore, there is little evidence from the data sources available, to suggest that the traffic is queuing in either direction on the approaches to the roundabout. Therefore, it is considered more likely that delays are incurred elsewhere along the link.

### 3.4 A21 section between A262 and A228

Hourly traffic flows for an average weekday, obtained from the HATRIS data, were determined for both directions of travel on the section of the A21 between the A262 and the A228 near Pembury. This HATRIS link is made up of 3 km of 4-lane, 2-way carriageway and 5 km of 2-lane, 2-way carriageway. It was considered that delays in the southbound direction may be greater than in the northbound direction due to the reduction in capacity caused by the change in carriageway cross-section at the A21 roundabout at Kipping's Cross.

The traffic flows and journey time delays from HATRIS covering the same time periods as those identified in Section 3.3 (previously), are shown in **Figure 3.3**. HATRIS segments the HA network into links between 'A' roads and therefore the journey times recorded between the A228 and A262 cover the two differing carriageway standards. As a consequence of this, it is not possible to disaggregate the data into the two sections either side of Kipping's Cross roundabout.

Figure 3-2:: AM and PM additional delay (secs.) and flow (vehs.) at A21 Pembury where the carriageway cross-section changes between single and dual



Source: Mott MacDonald / HATRIS

The traffic flows shown in **Figure 3.3** overleaf are obtained from count sites immediately south of Kipping's Cross. Tidal movement of traffic is clearly evident with high volumes of traffic travelling north in the AM peak and south in the PM peak. However, despite the capacity constraints on this link being in the southbound direction, the greatest level of delay is shown to be in the northbound direction in the AM peak. This implies that the delays are link based and are not specifically as a result of the change in capacity at Kipping's Cross roundabout.

### **3.5 Comparison with Proposed RVR Railway Level Crossing Site**

The delay at the proposed RVR level crossing site reported within the "Flimwell Report" was 0.37 seconds per vehicle. This figure is far less than the delays identified from the data on the A21 approaches to the roundabouts at John's Cross and Kipping's Cross.

The HATRIS data relied upon is not substantive in that it is not possible to accurately determine whether the delays at other locations investigated along the A21 are created at the junctions (roundabouts) or along the links themselves. Notwithstanding, it is clear that the level of delay forecast at the level crossing is minimal in comparison.

## 4. Conclusions

This analysis has been undertaken to ascertain whether quantifiable delays can be identified on sections of the A21 other than those previously reported on, at the A21 Flimwell traffic signal controlled junction.

Two locations were selected:

- The roundabout junction with the A2100 to the south of Robertsbridge; and
- Where the A21 narrows from a 4-lane, 2-way to 2-lane, 2-way at Pembury.

These sections were chosen as they were assumed to incur major delays. However, the data sources and the analysis conducted do not support any firm conclusions in this regard and that delays that do occur are attributable to a number of random factors and not specifically the presence of stand alone junctions.

The data relied upon from the HATRIS sites is not substantive in itself. That is to say that it is not possible to accurately determine whether the delays investigated at the above locations on the A21 are attributable to the junctions or links. Notwithstanding, it is clear that the level of delay forecast at the level crossing is minimal in comparison with these other locations.