



# **A329 Corridor Improvements**

## **12 Month Evaluation Report**



# 1 Introduction

## 1.1 BACKGROUND

- 1.1.1 In 2016, Bracknell Forest Council submitted a business case to the Thames Valley Berkshire Local Enterprise Partnership (TVBLEP) to secure funding for improvements to the A329 corridor.
- 1.1.2 This corridor runs from Coppid Beech Roundabout, which is just across the border in Wokingham Borough, through central Bracknell and out towards the Heatherwood Roundabout in Ascot which is in the Royal Borough of Windsor and Maidenhead (RBWM). It forms part of the original inner ring road developed in the post-war years, and the main capacity constraints today are the junctions where radial and orbital routes intersect.
- 1.1.3 The project focussed on the Martins Heron roundabout (the intersection of A329 London Road / New Forest Road / Long Hill Road) to the east of Bracknell and included associated junction improvements and minor alterations to the A329 London Road corridor.
- 1.1.4 This particular stretch of the route between the Martins Heron roundabout and Fernbank Road intersections with A329 London Road had been identified for improvement, as it had become characterised by poor journey times and peak hour traffic queuing in both directions.
- 1.1.5 Solutions were therefore developed to address these issues, thus improving journey times and traffic flows, improving safety and reducing carbon emissions. They were also developed to help improve accessibility for non-car modes. The improvements were designed to create a managed corridor and gate the traffic levels through the junctions, particularly in the eastbound direction.
- 1.1.6 This report has been prepared to evaluate the 12-month performance of the improvements to the eastern section of the A329 corridor in line with the requirements of TVBLEP. It would have been produced in March 2020, however the Covid-19 pandemic delayed this to September 2021 when traffic had settled into a newly established pattern following the removal of Government restrictions.

## 1.2 SCHEME DETAILS

- 1.2.1 The works undertaken included;

- Replacement of Martins Heron Roundabout with a fully signalised junction;
- Improvements to the existing signal junction at A329 London Road / Swinley Road / Priory Road including upgrading the signal equipment and controller. This improvement also included the introduction of MOVA to control the signals at the junction.
- Improvements to the existing signal junction at A329 London Road / Fernbank Road, including widening of the westbound approach and eastbound exit on A329 London Road and the introduction of MOVA.
- Each junction included pedestrian and cycle crossing facilities to link to the National Cycle Route 422, which runs along the northern side of A329 London Road.

1.2.2 The scheme also included modifications to the entrance and exit of Licensed Victuallers School to the east of the Swinley Road / Priory Road signals comprising of the following;

- Introduction of a dedicated entry lane to remove queuing eastbound traffic from A329 London Road;
- Introduction of an island to enforce the banned right turn movement out of the site on to A329 London Road;
- Extension of the nearside eastbound lane from the school exit to the A329 London Road / Fernbank Road junction to minimise disruption to through traffic on the A329.

1.2.3 These improvements were part of a wider programme to improve access between the M3 and M4 via the A322, A329 and A329M.

## 2 Scheme Build

### 2.1 PROJECT PROGRAMME

2.1.1 The key delivery stages were detailed on the project programme, outlining an overall 22-month construction period to complete the improvements to the corridor.

### 2.2 SCHEME BUILD PHASE 1

2.2.1 Between April 2017 and September 2017, BFC delivered three separate elements of the overall A329 improvement scheme. The works formed phase 1 of the overall planned improvements for this corridor. Phase 1 consisted of the following elements which are detailed below:

- Improved exit lane from Licensed Victuallers School
- Improved entry lane into Licensed Victuallers School
- Widening of the A329 London Road

2.2.2 *Improved exit lane from Licensed Victuallers School.* The exit from the school had a dedicated left turn only lane introduced which enabled vehicles to exit the school without the need to find a gap in traffic. This had two benefits. 1), It stopped the practice of vehicles on the A329 having to slow down or stop to allow vehicles to exit, thus maintaining vehicle flow on the main road, and 2) it also allowed vehicles to exit the school more efficiently, which in turn prevented a queue building up through the school drop-off and pick up area. Previously this would sometimes queue back through the school's entrance, causing congestion on the A329 London Road to the west.

2.2.3 *Improved entry lane into Licensed Victuallers School.* The introduction of a dedicated left turn entry lane into the school allowed vehicles to slow down and turn left separately from the main A329 London Road traffic. This prevented the unnecessary delay to through traffic that had characterised the approach previously. In addition, if a queue forms into the school, as had been previously observed, this would now remain in the left turn lane, again preventing it from blocking the A329 through route. The right turn lane into the Priory Road signals was also lengthened as part of these works to improve the queueing capacity into this busy junction.

2.2.4 *Widening of the A329 London Road.* Widening the A329 London Road to the east of the Fernbank Road junction provided wider and longer approach lanes into the signalised junction heading towards Bracknell. This improvement enabled two lanes of

vehicles to approach the traffic signals comfortably, without the need for larger vehicles to encroach into the second lane. These efficiencies improved the overall capacity of the junction.

- 2.2.5 The improvements to the Licensed Victuallers School entrance and exit were undertaken between June and August 2017, with the exit being completed prior to the entrance works. The traffic management required the removal of the central hatched lane and a permanent contraflow to maintain through flow of traffic. There was no reduction in the number of lanes for through traffic during this phase.
- 2.2.6 The widening of London Road to the east of the Fernbank Road junction was undertaken between April and August 2017. Traffic management involved off-peak lane closures, with capacity maintained through the corridor during peak periods. The widening was undertaken by working on the north side first to widen the exit merge lane. This afforded more road space to enable the southern side to be widened thereafter.
- 2.2.7 In all three areas, footpaths were maintained, however there was restricted access/narrow footways during the construction period.

## **2.3 SCHEME BUILD PHASE 2**

- 2.3.1 Phase 2 was programmed to start on 2<sup>nd</sup> January 2018, allowing a gap between phase 1 and 2 of approximately four months. This gap was timed to coincide with the opening of the new town centre and its first Christmas when traffic volumes were expected to be greater than usual.
- 2.3.2 Three further elements of the overall A329 London Road scheme were implemented during this phase, thus completing the highway improvements on this part of the corridor. The second phase consisted of:
- London Road/ Martins Heron junction traffic signalisation
  - Improvements to the London Road / Priory Road traffic signals
  - Improvements to the London Road / Fernbank Road traffic signals
  - Pedestrian / Cycle Crossing facilities
- 2.3.3 *The Martin Heron Roundabout improvements* were programmed to start on 2<sup>nd</sup> January 2018, with a construction period stretching over approximately 13 months. This began with the removal of the physical roundabout island and the islands on the approach

arms. Each of the arms were then constructed for the installation of signals, with the junction being commissioned February 2019.

- 2.3.4 *The London Road / Priory Road traffic signals upgrade* also started in January 2018 and for practical reasons coincided with essential gas main repair works at the junction. To facilitate these combined works, both Priory Road and Swinley Road were temporarily closed for approximately four weeks at the A329 London Road junction. The traffic signals were refurbished to incorporate MOVA to enable the signals to operate more efficiently when adjusting to local traffic conditions. The ability of the junction to respond automatically to changing demands was thus improved.
- 2.3.5 *The London Road / Fernbank Road signals upgrade* took place during the school summer holidays between July and August 2018. These works required the traffic signals to be temporarily turned off for a period of approximately four weeks. The signals were also refurbished to incorporate MOVA, thus enabling them to operate more efficiently.
- 2.3.6 *Pedestrian / Cycle crossing facilities* – In order to improve links to National Cycle Route 422 which runs along the northern side of the A329 London Road, each junction improvement included either new formalised crossing points or replacement equipment as part of the junction refurbishment. The Martins Heron improvements included replacement of the informal dropped kerb crossing points on the roundabout arms with formal toucan crossings on the A329 London Road West and Long Hill Road arms of the new signalised junction. The existing crossing points at the junctions of A329 London Road / Priory Road and A329 London Road / Fernbank Road were replaced with new equipment as part of the overall refurbishment. These improvements allowed for far safer movements for people accessing the walking / cycling routes.

## 3 Scheme Costs

### 3.1 BUDGET ESTIMATE

3.1.1 The project commenced in 2016 with an estimated cost of £3,800,000, comprising £2.9M funding from the TVBLEP and a £900K local contribution.

3.1.2 The projected cost breakdown over the life of the project was as follows

**Table 3.1 – Projected annual budget requirements**

Financial Year	Cost	TVBLEP	BFC
2016/2017	£200,000	£200,000	
2017/2018	£2,000,000	£2,000,000	
2018/2019	£1,600,000	£700,000	£900,000
Total	£3,800,000	£2,900,000	£900,000

### 3.2 PROJECT SPEND

3.2.1 Upon completion, the project came in just under £3.95M, with the minor overspend covered by BFC.



# 4 Delivered Scheme

## 4.1 MARTINS HERON ROUNDABOUT / SIGNALISED JUNCTION

Photo 1 – Martins Heron Roundabout looking east before improvements (image from Google Maps)



Photo 2 – Martins Heron Signalised Junction looking east after improvements (image from Google Maps)



Photo 3 – Martins Heron Roundabout looking west before improvements (image from Google Maps)



Photo 4 – Martins Heron Roundabout looking west after improvements (image from Google Maps)





## 4.2 PRIORY ROAD / SWINLEY ROAD JUNCTION IMPROVEMENTS

Photo 5 – The view west towards A329 London Road / Priory Road / Swinley Road before improvements (image from Google Maps)



Photo 6 – The view west towards A329 London Road / Priory Road / Swinley Road after improvements (image from Google Maps)



### 4.3 LICENSED VICTUALLERS SCHOOL ENTRANCE

Photo 7 – Licensed Victuallers School entrance looking east before improvements  
(image from Google Maps)



Photo 8 – Licensed Victuallers School entrance looking east after improvements  
(image from Google Maps)





#### 4.4 LICENSED VICTUALLERS SCHOOL EXIT

Photo 9 – Licensed Victuallers School exit looking west before improvements (image from Google Maps)



Photo 10 – Licensed Victuallers School exit looking west after improvements (image from Google Maps)



#### 4.5 A329 LONDON ROAD / FERNBANK ROAD JUNCTION IMPROVEMENTS

Photo 11 – A329 London Road approaching Fernbank Road junction looking west before improvements (image from Google Maps)



Photo 12 – A329 London Road approaching Fernbank Road junction looking west after improvements (image from Google Maps)





# 5 Travel Demand

## 5.1 OBSERVED TURNING COUNTS

5.1.1 Junction turning counts were undertaken in March and October 2013 and were due to be repeated in March 2020 to illustrate the pre and post implementation effect of the corridor improvements. However, the beginning of the national lockdown due to the Covid-19 pandemic that month meant these were postponed until September 2021, so the positive effects of the improvements were also seen against a backdrop of travel demand that had been permanently changed by the events of the preceding 18 months.

5.1.2 Surveys were undertaken at the following junctions.

- Martins Heron roundabout junction (2013);
- Martins Heron signalised junction (2021);
- A329 London Road / Priory Road / Swinley Road; and
- A329 London Road / Fernbank Road.

5.1.3 All of the junctions were surveyed in the AM (07:00-10:00) and PM (16:00-19:00) peak periods with queue lengths observed at five minute intervals across all arms.

## 5.2 MARTINS HERON JUNCTION

5.2.1 Tables 5.1 and 5.2 below show the total number of vehicles passing through the junction during the busiest hours of the AM and PM peak periods for both 2013 and 2021.

**Table 5.1: Total vehicles entering Martins Heron junction: AM Peak (08:15 – 09:15)**

AM Peak	Total Vehicles
March 2013	2,524
Sept 2021	2,235
<b>change from 2013</b>	<b>-11.5%</b>

**Table 5.2: Total vehicles entering Martins Heron junction: PM Peak (17:15 – 18:15 in 2013 and 17:00 – 18:00 in 2021)**

<b>PM Peak</b>	<b>Total Vehicles</b>
March 2013	3,056
Sept 2021	2,556
<b>change from 2013</b>	<b>-16.4%</b>

5.2.2 This reduction in traffic over the eight year period is reflected across the borough and clearly demonstrates the impact that the pandemic has had on travel behaviour. A comparison of Annual Average Daily Traffic (AADT) recorded on an automatic traffic counter near this location also shows a 13% reduction overall between 2013 and 2021, so the numbers above clearly reflect this trend.

### **5.3 A329 LONDON ROAD / PRIORY ROAD / SWINLEY ROAD**

5.3.1 Tables 5.3 and 5.4 below show the total number of vehicles passing through the junction during the busiest hours of the AM and PM peak periods for both 2013 and 2021.

**Table 5.3: Total vehicles entering London Road / Priory Road / Swinley Road junction: AM Peak (07:30 – 08:30)**

<b>AM Peak</b>	<b>Total Vehicles</b>
Oct 2013	2,488
Sept 2021	2,262
<b>change from 2013</b>	<b>-9.1%</b>

**Table 5.4: Total vehicles entering London Road / Priory Road / Swinley Road junction: PM Peak (17:15 – 18:15 in 2013 and 17:00 – 18:00 in 2021)**

<b>PM Peak</b>	<b>Total Vehicles</b>
March 2013	2,468
Sept 2021	2,350
<b>change from 2013</b>	<b>-4.8%</b>

5.3.2 The reduction in recorded demand since 2013 is lower here than at Martins Heron, however this indicates that the schemes introduced have improved capacity sufficiently to reduce the long queues that used to form from the London Road West approach, especially during the morning period.



## **5.4 LICENSED VICTUALLERS SCHOOL**

- 5.4.1 Between the Swinley Road / Priory Road and Fernbank Road, the Licenced Victuallers School (LVS) is situated to the north of the A329 London Road. Prior to these works, access was by means of a left turn straight into the site from the single eastbound lane, and a westbound right turning lane of approximately 15m. In 2017 the eastbound approach was widened to include a 55m dedicated left turn only lane into the school, thus allowing through traffic to remain segregated from those queuing to enter the site.
- 5.4.2 The introduction of a new eastbound lane for traffic exiting the site towards the Fernbank Road signals also contributed significantly to the improved flow of through movements here, as London Road traffic no longer had to slow down to allow those exiting the school to merge. In addition, the banned right turn out of the site further to the east was enforced by the introduction of an island in the centre of the A329 carriageway.
- 5.4.3 Prior to the improvement being implemented, the eastbound approach to LVS was characterised by slow-moving traffic during the morning peak hour as vehicles queued into the site. During a morning peak hour survey here in January 2015, 190 out of 761 eastbound vehicle journeys turned left into the site (20%). In a survey a year earlier there had been 247 left turns. With little room for this traffic to move through the LVS site, this often caused traffic to back up towards the Swinley Road / Priory Road signals and beyond towards Bracknell.
- 5.4.4 So, against this backdrop of high demand for left turns into the school, it became clear to BFC that this one particular location was contributing to the overall delays being seen along the whole corridor. The improvement that was added significantly reduced these delays, although it wasn't until the introduction of the other measures that their combined benefits could be delivered.

## **5.5 A329 LONDON ROAD / FERNBANK ROAD**

Tables 5.5 and 5.6 below show the total number of vehicles passing through the junction during the busiest hours of the AM and PM peak periods for both 2013 and 2021.

**Table 5.5: Total vehicles entering London Road / Fernbank Road junction: AM Peak (07:30 – 08:30 in 2013 and 07:45 – 08:45 in 2021)**

<b>AM Peak</b>	<b>Total Vehicles</b>
Oct 2013	2,233
Sept 2021	2,132
<b>change from 2013</b>	<b>-4.5%</b>

**Table 5.6: Total vehicles entering London Road / Fernbank Road junction: PM Peak (17:00 – 18:00)**

<b>PM Peak</b>	<b>Total Vehicles</b>
March 2013	2,180
Sept 2021	2,077
<b>change from 2013</b>	<b>-4.7%</b>

- 5.5.1 As with the Swinley Road / Priory Road junction to the west, the fall in traffic entering this junction between 2013 and 2021 is below the average reduction for the corridor. Again however, this reflects the improvement in capacity that has allowed more demand to pass through, where previously it had queued or moved at very slow speeds.

# 6 Journey Times

## 6.1 INTRODUCTION

6.1.1 This section details the journey times now experienced on the eastern section of the A329 corridor following the introduction of these improvements and makes comparison between a recent survey (September 2021) and those first recorded before any of these schemes were introduced.

6.1.2 The journey time routes were as follows;

- The A329 from Eastern roundabout to Heatherwood roundabout, Ascot in the west to east direction
- The A329 from Heatherwood roundabout, Ascot to Eastern Roundabout in the east to west direction

6.1.3 Prior to any of the improvement schemes being added, this section of the A329 London Road corridor was characterised by lengthy queues of stationary or slow-moving traffic leading to delays, in particular eastbound during the morning peak period. Queues would regularly form from the signals at Swinley Road / Priory Road, leading to very slow-moving traffic stretching back through the Martins Heron roundabout towards the Eastern roundabout. Such queues occasionally allowed north-south movements to cross this junction with reduced delay as the entries were kept clear, however there was a clear compromise to safety when this occurred.

6.1.4 Journey times were originally recorded in 2013 as part of that year's refresh of the Bracknell Multi-Modal Transport Model. They were recorded between the hours of 07:00 – 10:00 for the AM peak period and 16:00 – 19:00 for the PM peak period, with the busiest 90 minute period being assessed in this exercise. These were used as a baseline, and although it had been intended to repeat them in early 2020 (a year after the completion of the schemes), the onset of the national lockdown because of the Covid-19 pandemic meant these were pushed back to September 2021. It was considered that this would provide a better comparison, as any post-Covid journey time patterns would have become established.

## 6.2 AM PEAK JOURNEY TIMES

6.2.1 Table 6.1 summarises the average journey times recorded over a 90 minute period (0745 – 0915) for the AM peaks. They also illustrate the percentage improvements between 2013 and 2021.

**Table 6.1 – AM peak (0745 – 0915) Journey Time Comparison 2013 - 2021**

<b>AM Peak</b>	<b>Eastbound</b>	<b>Westbound</b>
Sept 2013	12 min 54s	6 min 01s
Sept 2021	8 min 45s	5 min 57s
<b>change from 2013</b>	<b>-32.2%</b>	<b>-1.1%</b>

6.2.2 Table 6.1 shows the improvements to the corridor have significantly reduced the eastbound journey time when compared with those that were previously recorded. There was less of an issue with westbound delay, but even here we see a modest reduction.

### **6.3 PM PEAK JOURNEY TIMES**

6.3.1 Table 6.2 summarises the average journey times recorded over a 90 minute period (1645 – 1815) for the PM peaks. It also illustrates the percentage changes in journey times between 2013 and 2021.

**Table 6.2 – PM peak (1645 – 1815) Journey Time Comparison 2013 - 2021**

<b>PM Peak</b>	<b>Eastbound</b>	<b>Westbound</b>
Sept 2013	8 min 26s	9 min 05s
Sept 2021	6 min 58s	7 min 17s
<b>change from 2013</b>	<b>-17.4%</b>	<b>-19.8%</b>

6.3.2 Table 6.2 shows the improvements have significantly reduced journey times in both directions during the busiest part of the PM peak period

6.3.3 The introduction of the new signalised junction at Martins Heron has had a positive impact on the overall performance of the corridor, in particular during the morning peak period as it has enabled eastbound traffic to be gated through each signal cycle. This has had the benefit of significantly reducing the eastbound queues / slow-moving traffic that used to stretch back from the Swinley Road / Priory Road signals beyond the Martins Heron junction.

6.3.4 North-south movements through the junction were never significantly affected by queuing beyond that associated with normal peak hour demand, and whilst the signals have introduced a small delay, this has resulted in a far safer operation as each movement now has its own dedicated stage.

# 7 Conclusions

## 7.1 SUMMARY

- 7.1.1 The programme of improvements for this stretch of the A329 corridor has delivered benefits that extend beyond any individual improvements in journey times.
- 7.1.2 For years this section of A329 London Road was characterised by long queues of stationary or slow-moving traffic, in particular on the eastbound carriageway towards Swinley Road / Priory Road and beyond approaching the Licenced Victuallers School.
- 7.1.3 It is only upon completion of the entire programme of improvements that the potential benefits first identified in the business case have been able to come to fruition.
- 7.1.4 This has been achieved using a combined approach of capacity improvements and adaptive signal technology that allows phasing to be changed and thus manage the movement of traffic along the corridor.
- 7.1.5 Below is an extract from the business case that sets out the challenges presented and the identified benefits that were being sought:

**Table 7.1: Transport Challenges in LTP3 and Benefits of A329 Corridor Improvements**

TRANSPORT CHALLENGES IDENTIFIED	DO THE IMPROVEMENTS HELP RESOLVE THIS?	DESCRIPTION
To reduce delays associated with traffic congestion and improve reliability of journey times	✓	The A329 Corridor Improvements will reduce congestion and delay
To maintain and improve, where feasible, the local transport network	✓	The A329 Corridor Improvements will contribute to an overall improvement in the local transport network
To reduce greenhouse gas emissions from transport	✓	The A329 Corridor Improvements will reduce congestion and the level of greenhouse gas emissions
To encourage and promote accessibility by sustainable modes of transport	✓	Improvements to walking and cycling infrastructure will improve accessibility and encourage more people to travel sustainably
To protect and enhance the quality of natural resources including water, air quality and the natural environment	✓	The A329 Corridor Improvements will reduce congestion and the level of greenhouse gas emissions, resulting in improved air quality

TRANSPORT CHALLENGES IDENTIFIED	DO THE IMPROVEMENTS HELP RESOLVE THIS?	DESCRIPTION
To reduce casualties and improve safety on the local transport network	✓	A number of new pedestrian crossings and cycle lanes will be installed, providing improved facilities for vulnerable road users and helping to reduce road casualties
To secure necessary transport infrastructure and services to support development	✓	The improvements are required to provide vital vehicular access and pedestrian / cycle access into and out of the Borough

7.1.6 Taking these challenges in turn, the comparison in impacts between 2013 and 2021 demonstrates that this has been a success:

- *Reduce delays associated with traffic congestion* – in 2013 it took on average almost 13 minutes to travel eastbound along this stretch during the morning peak. Now the average is under nine minutes.
- *To maintain and improve, where feasible, the local transport network* – introducing MOVA-controlled signals along any route will allow peaks in traffic delay to be smoothed out quickly as the timings adjust to accommodate the increased demand.
- *To reduce greenhouse gas emissions from transport* – whilst the full transition towards electric vehicles still has some way to go, any initiative that reduces queuing and thus idling engines will be helping to achieve this aim. The changes in queue lengths, in particular on A329 London Road eastbound support this.
- *To encourage and promote accessibility by sustainable modes of transport* – each of the improved junctions at Martins Heron, Swinley Road / Priory Road and Fernbank Road now incorporate dedicated pedestrian and cycle crossing phases. This is particularly effective in breaking down the barrier that A329 London Road presents to north-south movements by non-motorised modes and linking the residential areas of Bracknell to other areas via the National Cycle Network Route 422.
- *To protect and enhance the quality of natural resources including water, air quality and the natural environment* – as stated above, the removal of long queues of traffic helps to reduce the levels of harmful exhaust fumes.

- *To reduce casualties and improve safety on the local transport network* – the introduction of new or upgraded formal pedestrian and cycle crossing points at the signal junctions has provided a safer environment for these modes to cross and has improved access to the wider pedestrian / cycle network. In addition, the removal of the roundabout at Martins Heron has significantly reduced the potential for road traffic accidents as all conflicting movements are now controlled by separate signal stages.
- *To secure necessary transport infrastructure and services to support development* – the A329 is a major arterial route in the borough that will continue to serve existing developments as well as those committed through the planning process. These improvements help to maintain that status and thus deter traffic demand from switching to inappropriate routes.

7.1.7 The other key change to emerge from the comparison of 2013 and 2021 is the overall fall in traffic volumes along the corridor. This is mirroring the patterns being seen across the borough in which travel behaviour is beginning to settle into a less car-dependent post-covid norm. What this has done is complement the improvements made to the corridor, resulting in reduced but better managed traffic flows and quicker journey times on what is a key strategic route in the borough.