

# A43 Abthorpe roundabout improvements

One-year post-opening project evaluation



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# Foreword

National Highways is the government-owned company that operates, maintains, and improves England's motorways and major A roads. Our roads help our customers get to their destination safely – and in the time they expect to. Safety is our top priority, and we are committed to reducing the number of road users killed or seriously injured on the strategic road network by 50% (from the 2005-2009 baseline) by the end of 2025, with a vision of zero harm by 2040.

As Chief Customer and Strategy Officer, I want to know that developments on our network are meeting their objectives and are putting the needs of drivers first. Post-Opening Project Evaluations (POPEs) are a vital part of that assessment. POPEs are undertaken for all our major projects to understand how traffic changes, due to a project being in place, the environmental and safety impacts and how a project supports the economy.

We work to a five-year funding cycle, a radical new approach to road investment first introduced in 2015 which saw the government committing £15.2 billion in the period from 2015 to 2021. The A43 Abthorpe project opened during this period, September 2018.

The A43 Abthorpe junction improvement is situated to the west of Towcester, a town which lies to the south of Northampton on the A43. Before this project, the A43 Abthorpe roundabout experienced congestion, which was impacting the potential for investment in the area. Our improvements included widening the roundabout from two to three lanes and enlarging the Wappenham Road approach. We built an additional lane on the A43 southbound approach and on the Brackley Road approach, as well as two extra lanes on the A43 northbound approach. Finally, we installed traffic signals on the northbound and southbound approaches of the A43 as well as on Brackley Road.

These improvements were designed to help reduce congestion and increase capacity at the junction to accommodate anticipated future traffic growth, in addition to improving journey time reliability and safety for those using our network. We achieved this objective, with customers experiencing improved journey times during the morning and evening peak.

Early indications show personal injury collisions have reduced since the project's opening. The safety analysis will need to be revisited in later years before we are sure that the change is significant and not just a natural fluctuation.

## **Elliot Shaw**

Chief Customer and Strategy Officer  
December 2023

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# 1. Executive summary

The A43 Abthorpe roundabout is situated to the west of Towcester and is located between the A43 Tove roundabout<sup>1</sup> in the north and the A413 in the south. The project was designed to address the expected additional congestion, to provide additional capacity to cater for future traffic growth, and to unlock growth associated with development demand in the area.

We installed traffic signals on the approaches of the A43, and on the Brackley Road approach. We provided an additional lane on the A43 southbound approach and on the Brackley Road approach, and two extra lanes on the A43 northbound approach. We widened the Wappenham Road approach to include a flare<sup>2</sup>, and we widened the roundabout circulatory from two lanes to three lanes.

Our evaluation has shown journey times were improved on the A43 during the busiest periods, southbound journeys in the morning peak and northbound journeys in the evening peak. During other periods, the project had not impacted customers' journeys, and they continued to achieve good average journey times. Enhancements had also improved journey time reliability for most customers in the morning peak. However, there was slight worsening at other times of the day.

Early indications show few personal injury collisions have occurred since the project's opening. The safety analysis will need to be revisited in later years before we are sure that the change is significant and not just a natural fluctuation.

We found the project's environmental impacts at one-year after were mostly neutral as expected by the assessment. However, our site visit found that landscape and biodiversity impacts were likely to be worse than expected at one-year after. The vegetation clearance within the highway boundary had been more extensive than predicted, and new planting designed to minimise the impacts and improve biodiversity was poorly maintained. The condition of the mitigation will be reconsidered when our analysis is revisited, and routine maintenance is expected to have been undertaken.

A proportionate appraisal was completed for this project, in line with the approach to small scale enhancements at the time. This impacted on the scope of the evaluation. We restricted our analysis to data on personal injury collisions on the A43 mainline Abthorpe roundabout and not the wider area. The environmental appraisal was undertaken only at the foundation stage and considered there would not be any environmental impacts applicable to the decision to invest in the project.

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<sup>1</sup> The Tove roundabout was subject to a Pinch Point economy project between September 2014 and March 2015 and was intended to reduce congestion at that roundabout. The National Pinch Point programme comprised small-scale infrastructure and technology projects to be delivered on the Strategic Road Network (SRN) to stimulate growth in the local economy and relieve congestion and/or improve safety. £317m was made available by the Government with delivery planned between the financial years 2012/13 and 2014/15.

<sup>2</sup> A road flare is the gradual corner radius that occurs at junctions, it allows traffic to flow smoothly around corners rather than making sharp 90 degree turns.

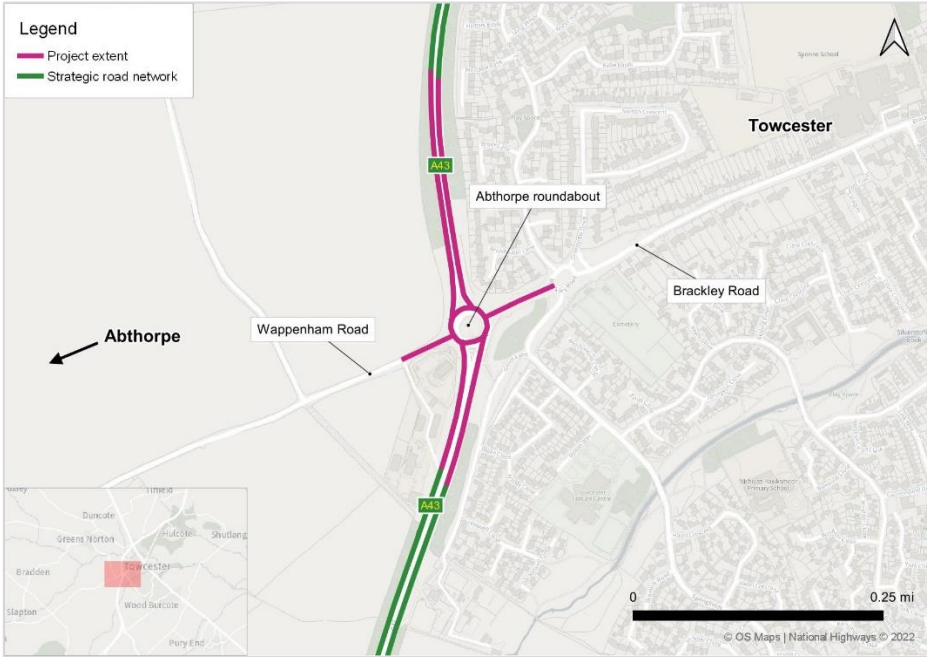
Since the appraisal was undertaken we have learned lessons and new guidance for small scheme appraisal was launched in 2019 and since updated in 2022<sup>3</sup>.

## 2. Introduction

### What is the project and what was it designed to achieve?

The A43 Abthorpe junction improvement is situated to the west of Towcester, a town which lies to the south of Northampton on the A43. To the north of the project, the A5 intersects the A43 at Tove roundabout and to the south of the project the A43 provides access to the A413 for Silverstone. The improvement was opened in March 2017. The geographical context of the project is shown in Figure 1.

Figure 1 A43 project location



Source: National Highways and OpenStreetMap contributors

Before the project, the A43 Abthorpe roundabout experienced congestion problems, and it was considered the congestion was restricting the viability of development proposals in the area. The project was designed to provide additional capacity to cater for predicted future traffic growth<sup>4</sup>, and manage the flow of traffic being released towards Tove roundabout, providing an overall improvement to the operation of the highway network.

The project aimed to reduce congestion, improve journey times, improve safety, and unlock growth in Towcester (immediately east of the roundabout), some of which was not expected to be deliverable without improvements to Abthorpe roundabout.

<sup>3</sup> <https://www.gov.uk/government/publications/levelling-up-fund-round-2-small-scheme-appraisal-toolkit-user-guide/small-scheme-appraisal-toolkit-user-guide>

<sup>4</sup> as set out in the Northamptonshire Strategic Transport Model.

The project comprised of the following elements:

- Installation of traffic signals on the approaches to Abthorpe roundabout from the A43 and Brackley Road.
- Provision of an additional lane on the A43 southbound approach increasing the capacity from two lanes to three lanes.
- Provision of two additional lanes on the A43 northbound approach, providing a four-lane approach, with the fourth lane dedicated for vehicles turning right.
- Widening of the circulatory carriageway from two to three lanes.
- Widening of Brackley Road approach to the roundabout from two to three lanes.
- Widening of Wappenham Road approach to the roundabout from one lane with no flare to one lane with flare.
- New sections of pedestrian / cycleway on Wappenham Road and a new footpath/ cycleway / equestrian route between the A43 and Green Lane to the southeast of the roundabout.
- Replacement of the existing pegasus crossing on the A43 south approach arm with a new crossing and new signage.
- New signalised pedestrian crossing on Brackley Road between the A43 Abthorpe roundabout and the Brackley Road/Springfields/Belle Baulk/Greenview Drive roundabout; and
- Installation of a noise barrier to the east of the roundabout parallel to the southbound approach to the roundabout.

## How has the project been evaluated?

Post-opening project evaluations are carried out for major projects to validate the accuracy of expected project impacts which were agreed as part of the business case for investment. They seek to determine whether the expected project benefits are likely to be realised, provide opportunities to learn and improve future project appraisals and business cases. They are also important for providing transparency and accountability for public expenditure, by assessing whether projects are on track to deliver value for money.

A post-opening project evaluation compares changes in key impact areas<sup>5</sup>, by observing trends on a route before a project is constructed (baseline) and tracking these after it has opened to traffic. The outturn impacts are evaluated against the expected impacts (presented in the forecasts made during the appraisal) to review the project's performance. For more details of the evaluation methods used in this study please refer to the post-opening project evaluation methodology note<sup>6</sup>

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<sup>5</sup> Key impact areas including, safety, journey reliability and environmental impacts.

<sup>6</sup> <https://nationalhighways.co.uk/media/exypgk11/pope-methodology-note-jan-2022.pdf>

### 3. Delivering against objectives

#### How has the project performed against objectives?

Our Major Projects have specific objectives which were defined early in the business case when project options were being identified. These benefits are appraised to be realised over 60 years; a one-year evaluation provides early indication if the project is on track to deliver the benefits.

Table 1 summarises the project’s performance against each of the objectives, using evidence gathered for this study.

**Table 1 Project Objectives and Evaluation Summary**

Objective	One-year evaluation
Reduce congestion and improve journey times	<p>The project provided increased capacity which enabled improvements in customers journey times on the A43 during the busiest periods (southbound journeys in the morning peak and northbound journeys in the evening peak). Signalisation had also brought journey time improvements.</p> <p>The project had not impacted customers’ journeys at other times of the day, and they continued to achieve good average journey times and reliable journeys.</p> <p>Customers experienced improvements or no worsening in the reliability of their journeys.</p>
Improve safety	<p>Early evidence suggested the safety objectives were on track to be achieved. More data will be required to ensure we have a better picture.</p>
Allow local development and growth to take place (through future-proofing)	<p>Signalisation at the roundabout has improved traffic flow on both Brackley Road and Wappenham Road. The improvements will facilitate housing and employment growth in the area.</p>



## 4. Customer journeys

### Summary

During the first year of project opening, traffic using the roundabout has increased by 11%. On the surrounding strategic road network, traffic flows increased by between 11 to 22%. This increase is slightly above the regional traffic growth (10%)

The project provided increased capacity which enabled improvements in customers journey times on the A43 during the busiest periods (southbound journeys in the morning peak and northbound journeys in the evening peak). Signalisation had also brought journey time improvements on the roundabout's minor arms. Customers experienced improvements or no worsening in the reliability of their journeys.

We found that the forecasting undertaken as part of the business case for the project was reasonably accurate for traffic growth, and for journey times observed at one year after.

Evidence suggested the project's enhancements have facilitated better travel between the A43 south to north, and to and from Towcester town centre.

### How have traffic levels changed?

The following sections will examine if the traffic levels changed over the evaluation period and to what extent the forecast traffic levels were realised.

#### National and regional traffic

To assess the impact of the project on traffic levels, it is useful to understand the changes within the context of national and regional traffic. We use this information as a baseline from which to measure a project's impact on traffic growth. We attribute to the project, any growth observed on roads in the study area which is above the baseline trends.

Figure 2 below, shows in Northamptonshire, where the A43 is located, traffic increased by 10% between 2015 (the start of the evaluation period) and 2019 (the one-year after evaluation point)<sup>7</sup>. More widely, traffic grew by 8% and 13% in England and on Highways England 'A' Roads during the same period.

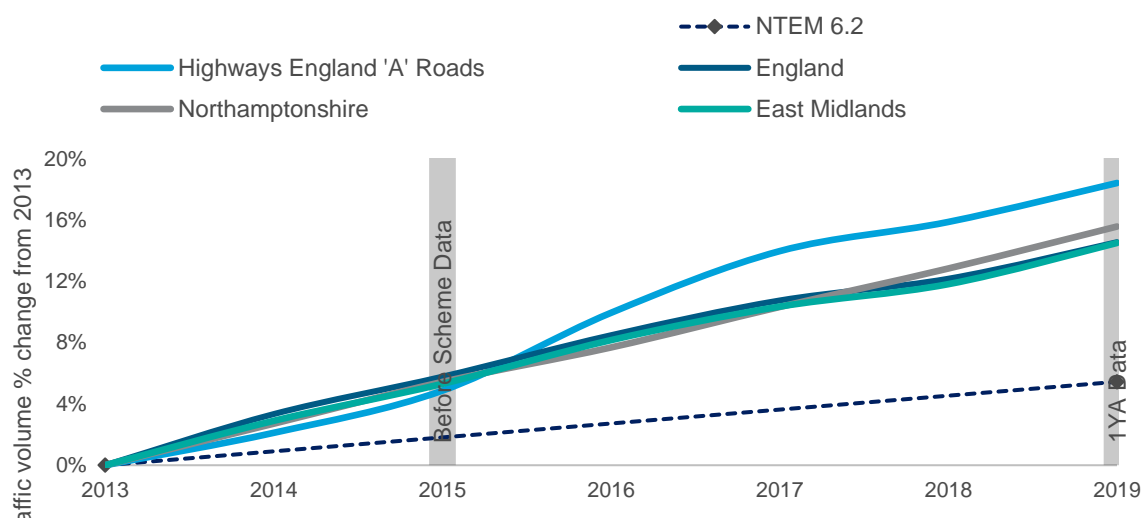
The appraisal of this project assumed that there would be some background growth and used NTEM<sup>8</sup> to estimate this. The NTEM growth rate is included in Figure 2 for comparison. The model underestimated the growth seen in the area.

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<sup>7</sup> We collated the background changes in the levels of traffic nationally, regionally, and local to the project between 2013 and 2019 using the annual statistics for all observed traffic by local authority and road type produced by the Department for Transport (DfT). This data includes the total number of million vehicle kilometres (mvkm) travelled and allows us to contextualise the project within the wider picture. DfT Data Table TRA4112, TR0202, TRA8904 (Motor vehicle traffic (vehicle kilometres) by local authority in Great Britain, annual from 1993), <https://www.gov.uk/government/statistical-data-sets/road-traffic-statistics-tra>.

<sup>8</sup> NTEM 6.2 – National Trip End Model, owned by the Department for Transport and used to inform the traffic modelling that supports our project appraisal.

**Figure 2 National, Regional and Local Traffic Trends**



Source: Department for Transport road traffic statistics  
<https://www.gov.uk/government/statistical-data-sets/road-traffic-statistics-tra>

### Project locality

We found that traffic volumes had increased on roads around the project at one year after<sup>9</sup> The increases were mostly above background trends for Northamptonshire for the same period and ranged between 11% and 22 as shown in Figure 3.

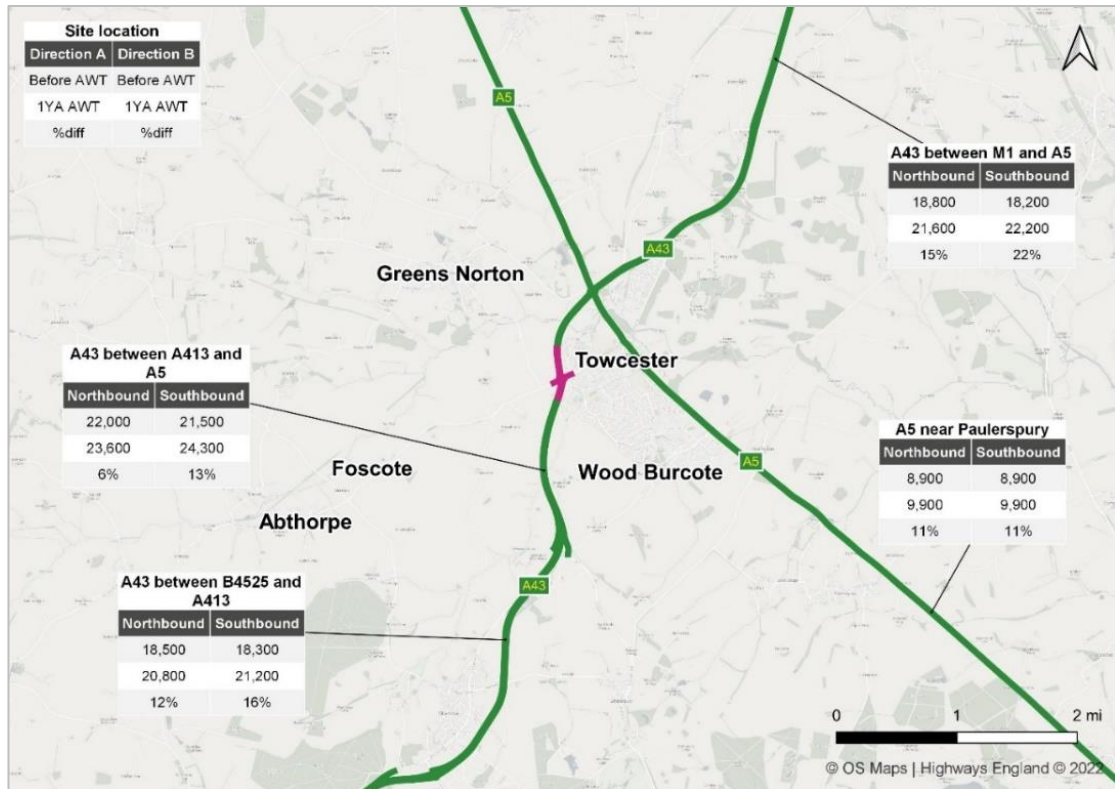
A comparison of 12-hour turning counts<sup>10</sup> confirmed the roundabout was handling greater amounts of traffic at one year after (Figure 4) reflecting the wider trends seen above. Overall, traffic arriving and exiting the roundabout had increased by 11% (from 38,800 before, to 43,000 at one year after).

Some of the increases suggested the project's enhancements had facilitated better travel to and from Towcester town centre. Traffic coming into Towcester from the A43 southbound had increased by 15% (220 vehicles), while traffic coming from Abthorpe to Towcester via Wappenham Road had increased by 31% (330 vehicles). In contrast traffic turning on to the A43 from Abthorpe fell by 11% (180 vehicles).

<sup>9</sup> We compared changes in average weekly traffic (AWT) between September 2015 and September 2019. There was limited WebTRIS data available for the A43 in 2018, (the one-year after period). We therefore extracted data for September 2019 to represent the one-year after evaluation period. We extracted the AWT data from WebTRIS for relevant roads near the project extent. These figures were not factored to account for the extra year.

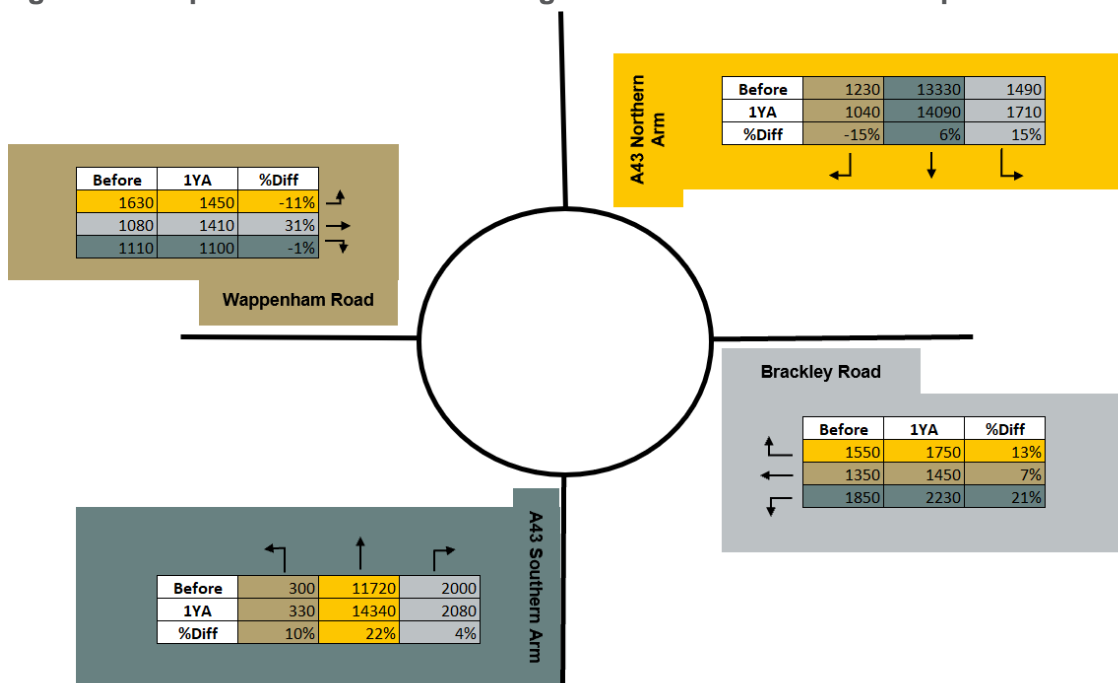
<sup>10</sup> We analysed turning count data for the periods before (May 2013) and after the project opened (September 2019) to gain insight into what impact the project had on traffic movements and volumes occurred at Abthorpe roundabout.

Figure 3 Comparison of before and one-year after average weekly traffic.



Note: All figures are to the nearest one hundred. Source: WebTRIS.  
Months assessed: September 2015 (before) and September 2019 (one-year after)

Figure 4 Comparison of 12-hour turning movements for A43 Abthorpe roundabout.

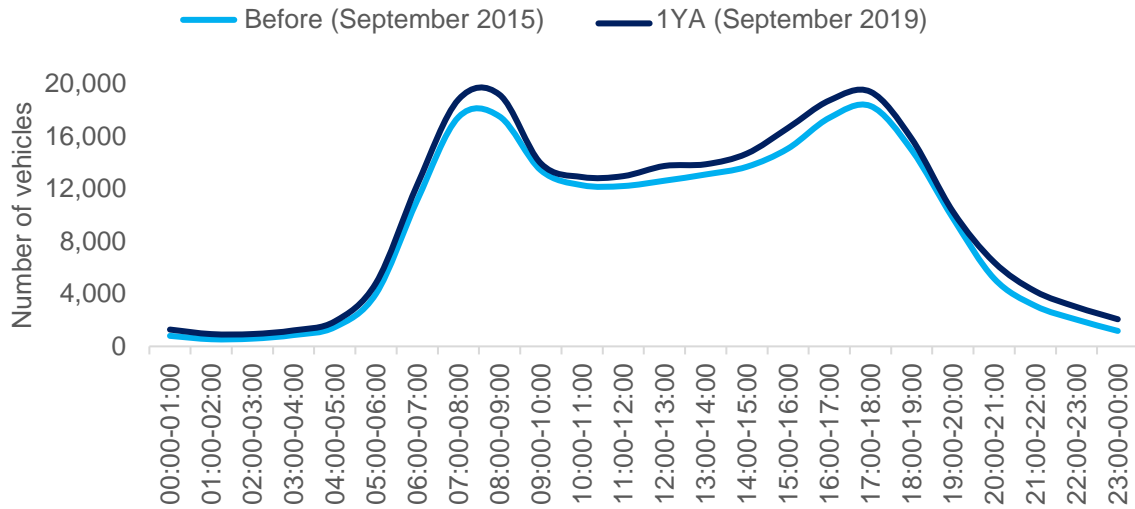


Note: All figures are to the nearest ten.  
Source: Turning Count Traffic Survey – May 2013 (before) and March 2019 (after).

## How are traffic flows distributed across the day?

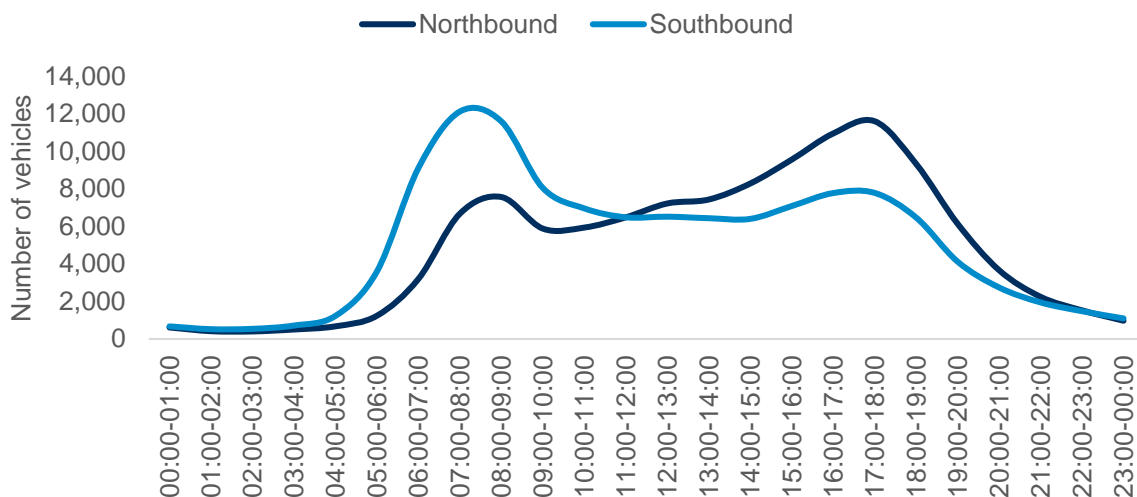
We found no real change in the daily patterns of traffic on the A43. Traffic growth was consistent, and the peaks occurred at the same time as before (Figure 5). The tidal nature of peak-time traffic on the A43 was evident (Figure 6), with more traffic headed south in the morning and north in the evening.

**Figure 5 Comparison of average weekday A43 two-way flows before and one year after opening.**



Source: WebTRIS traffic counts - September 2019 (after)

**Figure 6 Comparison of average weekday on the A43 Northbound and A43 Southbound one year after opening.**



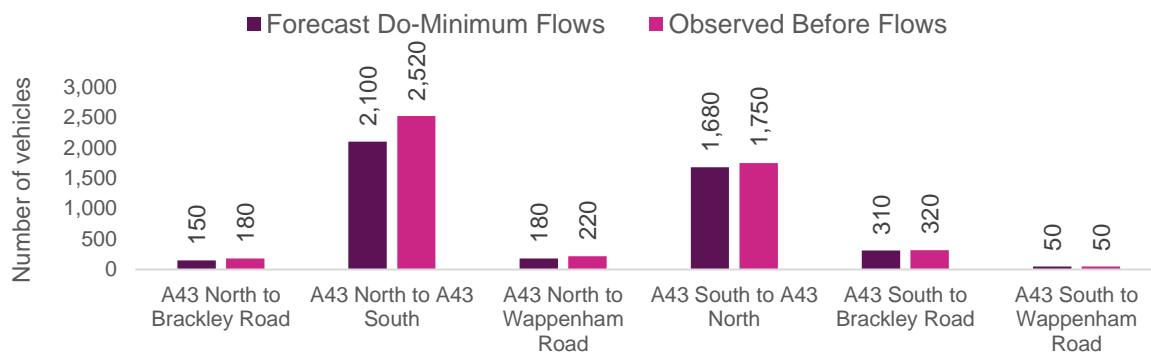
Source: WebTRIS traffic counts - September 2019 (after)

## Were the traffic changes expected?

We found that the forecast traffic flows were generally accurate. In most cases the forecasts for flows ‘without the project’ scenario were a little lower than the factored observed before flows (Figure 7 and Figure 8) while the forecasts flows for the ‘with project’ scenario were closer to the factored post-opening flows<sup>11</sup> (Figure 9 and Figure 10). Overall, the forecasts have been reasonably accurate.

The one exception was the evening peak A43 southern arm to A43 northern arm movement, where the forecasting was slightly less accurate. The tidal pattern of traffic on the A43 was expected to continue. Traffic flows were greater from the A43 northern arm in the morning peak, and greater from the A43 southern arm in the evening peak.

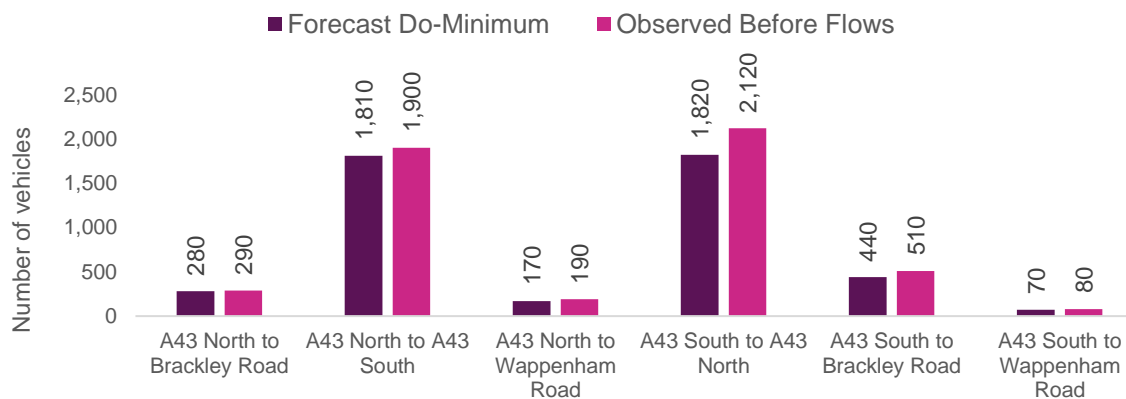
**Figure 7 Without project forecast (Do-Minimum) model flows vs. before project observed flows (morning peak)**



Note: All figures are to the nearest ten.

Source: Traffic Forecasting Report and 12-Hour Turning Count (May 2013 factored to 2016).

**Figure 8 Without project forecast (Do-Minimum) flows vs. before project observed flows (evening peak)**

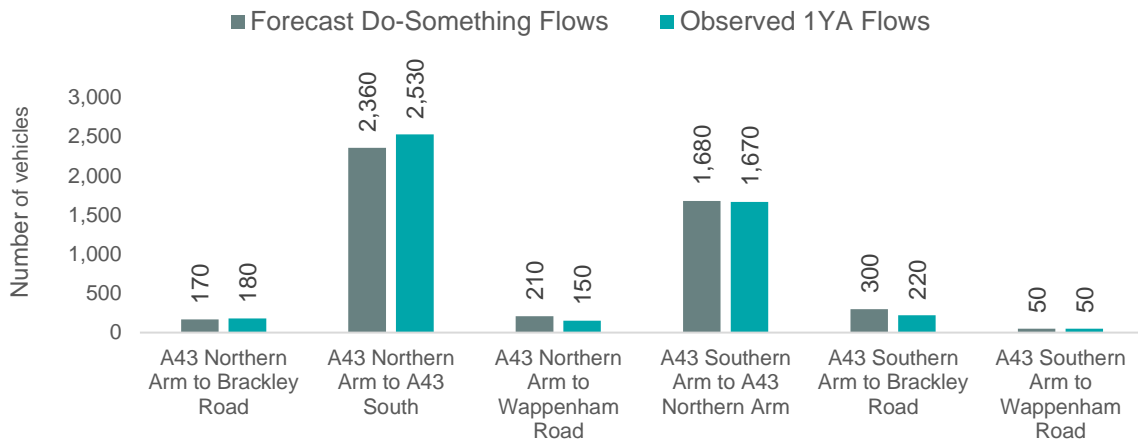


Note: All figures are to the nearest ten.

Source: Traffic Forecasting Report and 12-Hour Turning Count (May 2013 factored to 2016).

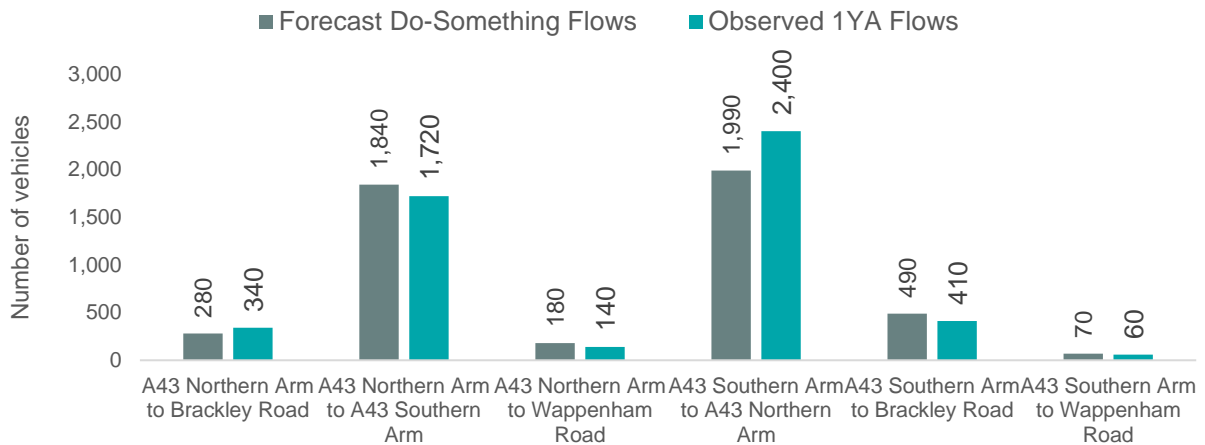
<sup>11</sup> The project’s traffic model produced traffic forecasts for specific time periods<sup>11</sup> The model has a base year of 2013 and two forecast years: 2016 and 2026. To enable like-for-like comparisons, we factored the relevant observed traffic data to match with the assumed opening year used in the different scenarios of the model forecasts.<sup>11</sup> We compared ‘with project’ and ‘without project’ peak period traffic volume forecasts with the equivalent observed data.

**Figure 9 With project forecast (Do Something) model flows vs. one-year after observed flows (morning peak)**



Note: All figures are to the nearest ten.  
Source: Traffic Forecasting Report and 12-Hour Turning Count (May 2013 factored to 2016).

**Figure 10 With project forecast (Do Something) flows vs. one-year after observed flows (evening peak)**



Note: All figures are to the nearest ten.  
Source: Traffic Forecasting Report and 12-Hour Turning Count (May 2013 factored to 2016).

## Relieving congestion and making journeys more reliable

An objective of this project was to provide relief from traffic congestion.

We have analysed journey times as a way of identifying the impact of the project on congestion. We have also considered the extent to which journey times vary from the expected average journey time which indicates how reliable a journey is.

### Did the project deliver journey time savings?

To understand whether the project has provided journey time savings for customers, we used GPS data on selected routes around the A43 Abthorpe roundabout. We captured both local movements along Brackley Road and Wappenham Road and strategic movements along the A43 through the roundabout. (Figure 11).

**Figure 11 Journey Time Routes**



Source: National Highways and OpenStreetMap contributors

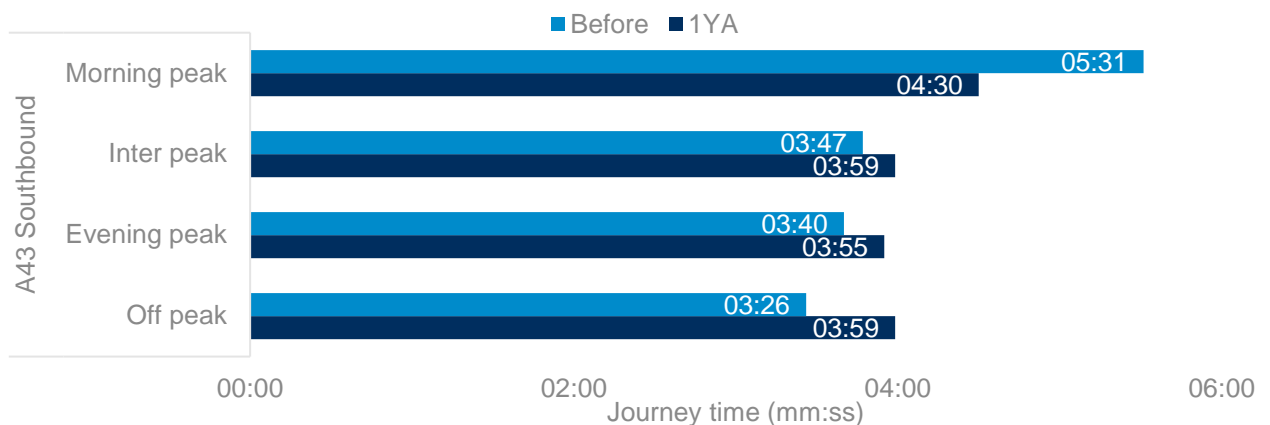
September 2015 represented the before scenario, and September 2019 represented the one-year after. We used the same time periods that were used in the project appraisal. Notably, we assumed the journey times in the off-peak period (23:00-00:00) represented ‘free-flow’ conditions.

Customers’ southbound journey times on the A43 in the morning were improved by around a minute, and in the evening their northbound journey times were improved by around half a minute. This evidence indicated the project’s widening of the A43 approaches to Abthorpe roundabout had contributed to improvements at peak times. (Figure 12 and Figure 13).

During other periods, customers journeys saw similar or up to half a minute increase.

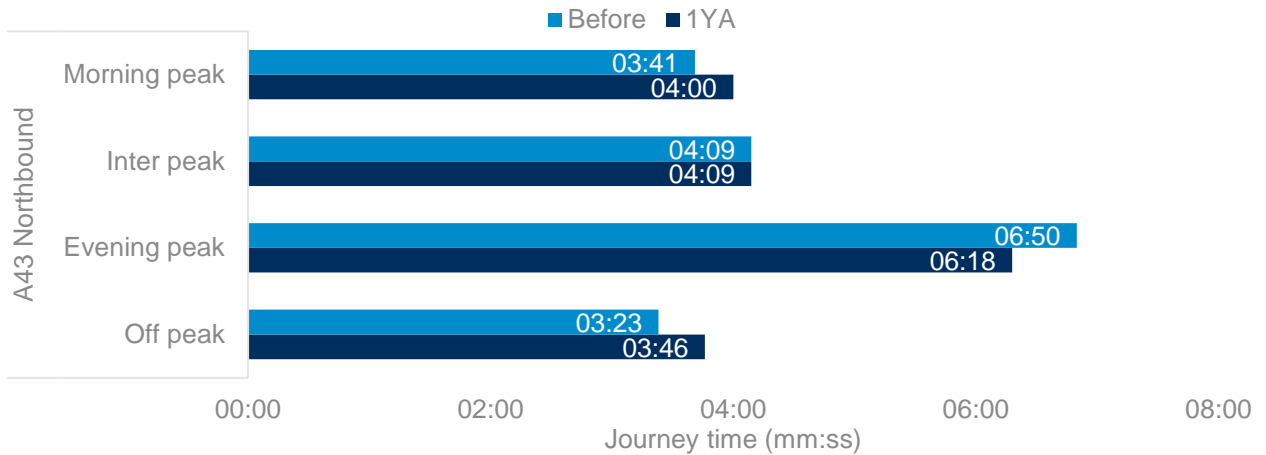
The introduction of traffic signals at Abthorpe roundabout on the A43 southern and northern arms, and the Brackley Road arm had potentially increased off-peak journey times up to half a minute on each route assessed.

**Figure 12 A43 Southbound average observed journey times before and one year after project opening (mm:ss)**



Source: TomTom (September 2015, September 2019)

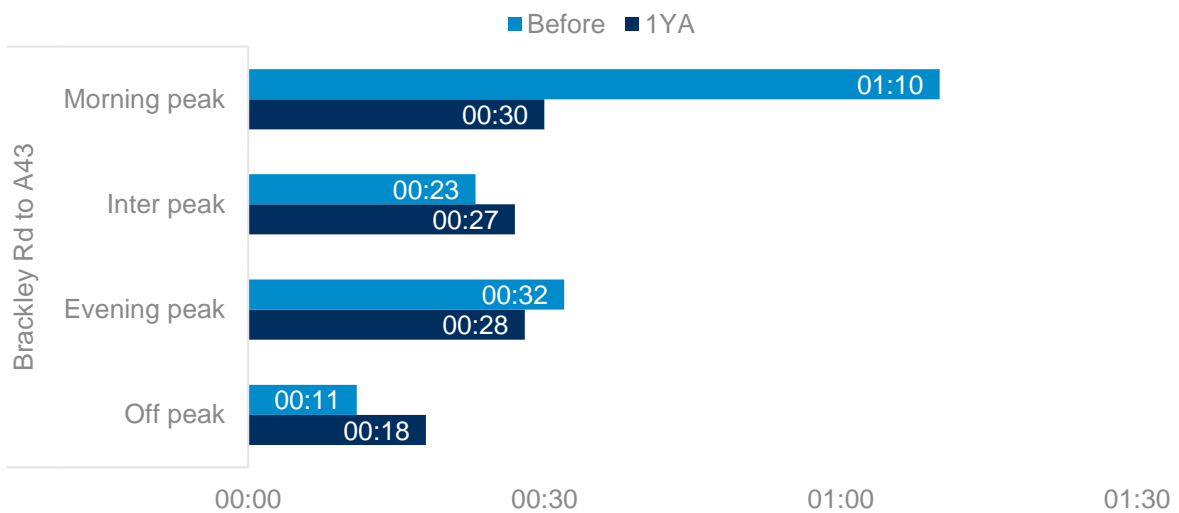
**Figure 13 A43 Northbound average observed journey times before and one year after project opening (mm:ss)**



Source: TomTom (September 2015, September 2019)

On Brackley Road we found that the project’s widening of approach from two to three lanes had contributed to improvements in customers’ journey times at one year, in the morning and evening peak periods (Figure 14). They were most improved in the morning peak, by an average of 40 seconds, suggesting congestion had reduced on the approach. Customers’ journeys were now closer to ‘free flow’ conditions across the day. The signalisation of the approach arm may also have been a factor. Traffic from Brackley Road now has designated green time to access the circulatory, whereas traffic previously would have had to wait until there was a ‘gap’ in traffic.

**Figure 14 Brackley Road to Abthorpe roundabout average observed journey times before and one year after project opening (mm:ss)**

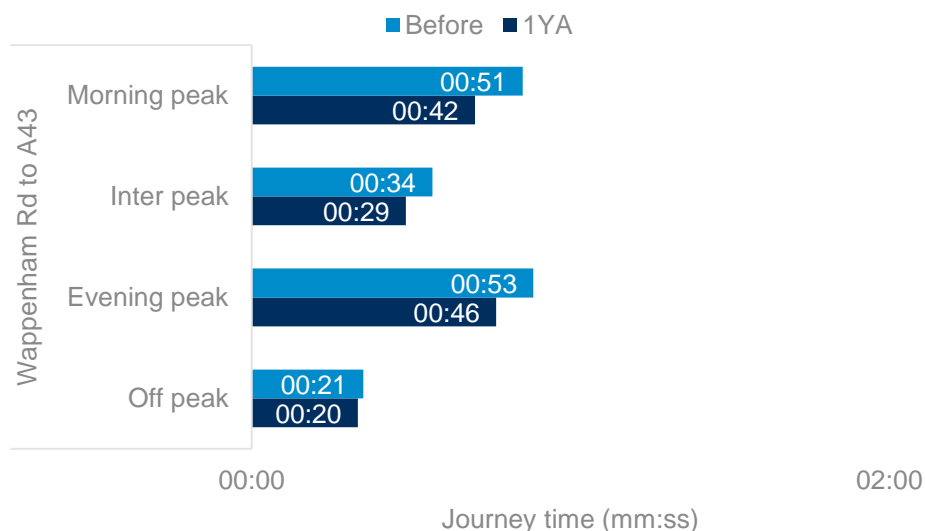


Source: TomTom (September 2015, September 2019)



On Wappenham Road, the project’s enhancements of the approach to the roundabout had brought improvements to road user’s journey times at one year after. (Figure 15). The improvements were most likely attributable to the signal phasing which allows vehicles to access the roundabout when there is a break in traffic flows between signal stages. Also, the lane flare enables two cars to wait at the approach to the roundabout.

**Figure 15 Wappenham Road to Abthorpe roundabout average observed journey times before and one year after project opening (mm:ss)**



Source: TomTom (September 2015, September 2019)

### Were journey time savings in line with forecast?

Forecast journey times<sup>12</sup> were provided for all modelled years and time periods in the ‘with project’ and ‘without project’ scenarios. To enable comparison with the forecasts, we obtained GPS data for observed journey times using the same route as that used in the Options Testing Report<sup>13</sup>.

The evidence indicated that the model was generally accurate<sup>14</sup> but with a trend towards overestimation of journey time savings. (Table 2).

The observed journey times in the before morning peak were a quarter (or 5 minutes less) of those that were expected in the ‘Do-Minimum’ forecast. Journey times in the off-peak and interpeak were forecast to increase slightly, by up to five seconds. Observed journey times in these periods increased slightly more than forecast, by up to 30 seconds.

<sup>12</sup> Forecast journey times were provided in the A43 Abthorpe roundabout Options Testing Report (October 2013), prepared for the project’s appraisal.

<sup>13</sup> The A43 journey time route which was included in the project appraisal did not extent the full length of the A43 route. To determine whether journey time savings were in line with forecasts we have matched our observed data to the appraised A43 route in this section. As such the observed journey times reported in this section are different to those shown previously.

<sup>14</sup> The threshold for model accuracy was that travel times should be within 15% or one minute of the corresponding observed value.

**Table 2 Observed and forecast journey times and savings A43 southbound (mm:ss)**

Time Period	Observed Journey Time (mm:ss)			Forecast Journey Time (mm:ss)		
	Before	1YA	Saving	DM 2016	DS 2016	Saving
Morning peak	04:43	03:38	01:04	09:45	05:11	04:34
Inter-peak	02:58	03:08	-00:10	03:18	03:18	00:00
Evening peak	02:54	03:06	-00:12	04:25	03:39	00:46
Off-peak	02:37	03:07	-00:30	02:56	02:59	-00:03

Note: Forecast scenarios: DS: Do-Something or 'with project,' DM: Do-Minimum or 'without project.' Time periods: Morning peak (07:30-09:00); Interpeak (11:00-12:00); Evening peak (16:45-18:15); Off-peak (23:00-00:00). Source: Traffic Forecasting Report & TomTom (September 2015 and September 2019)

**Table 3 Observed and forecast journey times and savings A43 northbound (mm:ss)**

Time Period	Observed Journey Time (mm:ss)			Forecast Journey Time (mm:ss)		
	Before	1YA	Saving	DM 2016	DS 2016	Saving
Morning peak	02:59	03:15	-00:16	04:07	03:48	00:19
Inter-peak	03:19	03:25	-00:07	03:18	03:23	-00:05
Evening peak	05:14	04:59	00:14	07:51	04:04	03:47
Off-peak	02:39	02:59	-00:20	03:03	03:05	-00:02

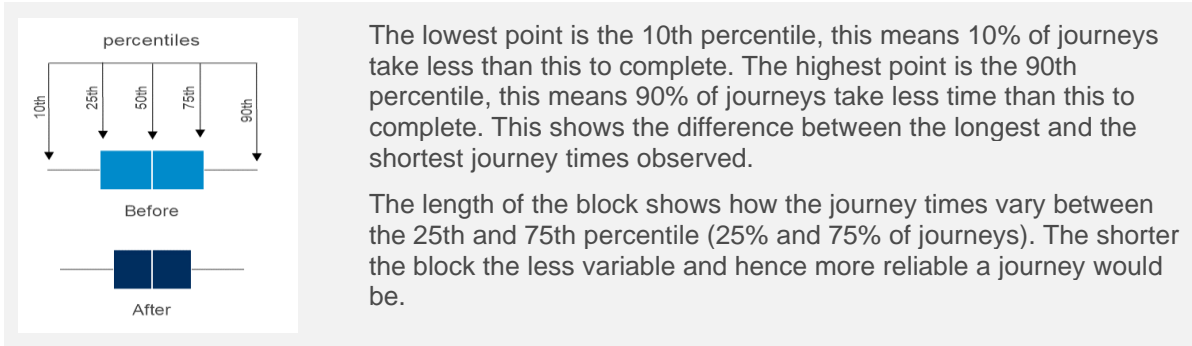
Note: Time periods: Morning peak (07:30-09:00); Interpeak (11:00-12:00); Evening peak (16:45-18:15); Off-peak (23:00-00:00). Source: Traffic Forecasting Report & TomTom (September 2015 and September 2019)

### Did the project make journeys more reliable?

Congestion can make journey times unreliable. If the time taken to travel the same journey each day varies, journey times are unreliable, and customers are less confident in planning how long their journey will take them. If journey times do not vary, our customers can be more confident in the time their journey will take and allow a smaller window of time to make that journey.

We calculate this using the same GPS data that was used in the journey time analysis. We have looked at the percentiles of journey times to establish whether they have become more reliable since before the project was implemented. In this section, we present the journey time reliability on the A43 extent used in the journey time analysis section.

**Figure 16 What does a box plot show?**

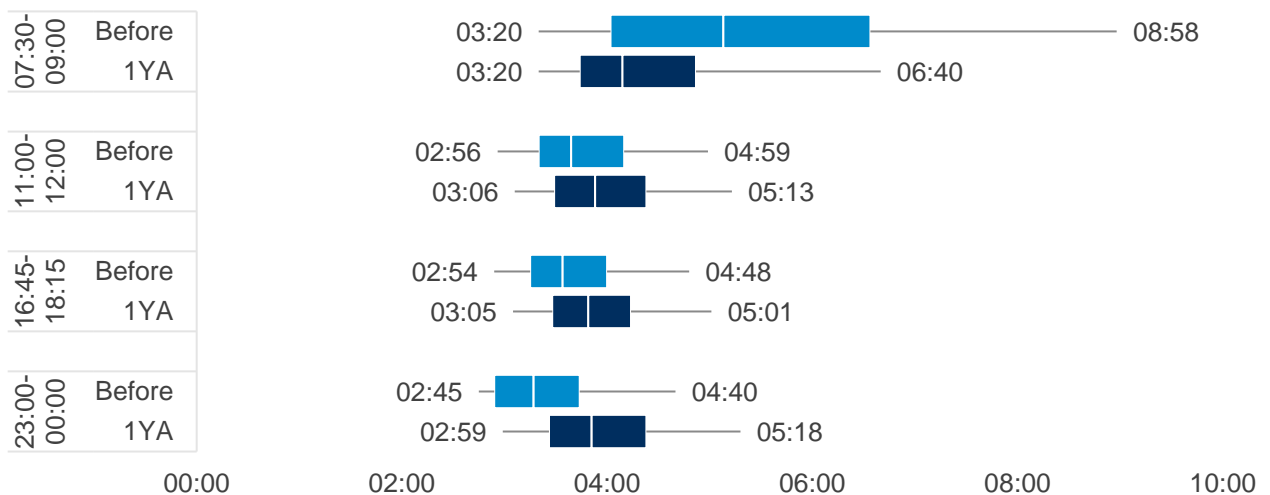


We found the project’s enhancements had improved journey time reliability on the A43 southbound route for most customers at the busiest time of the day, the morning peak (Figure 17). The morning peak’s interquartile range<sup>15</sup> had reduced by one minute and 24 seconds. As noted previously, traffic on the A43 has a tidal nature.

At other times of the day the evidence indicated that most customers’ journeys were reliable before the project and the project had had minimal effects at one year after. The slight increases in average journey times seen earlier were reflected in the shifts of the interquartile ranges, however the distribution around the averages was little changed. Comparison indicated the ranges in the interpeak were within four seconds of each other, in evening peak they were within one second of each other, and in the off peak within seven seconds.

We also found the project had improved the worst journey times in the morning peak, as represented by the 90<sup>th</sup> percentile.<sup>16</sup> The worst journey times in the morning peak had improved by over two minutes at one year after, from eight minutes 58 seconds to six minutes 40 seconds.

**Figure 17 A43 Southbound journey time reliability**



Source: TomTom (September 2015, September 2019)

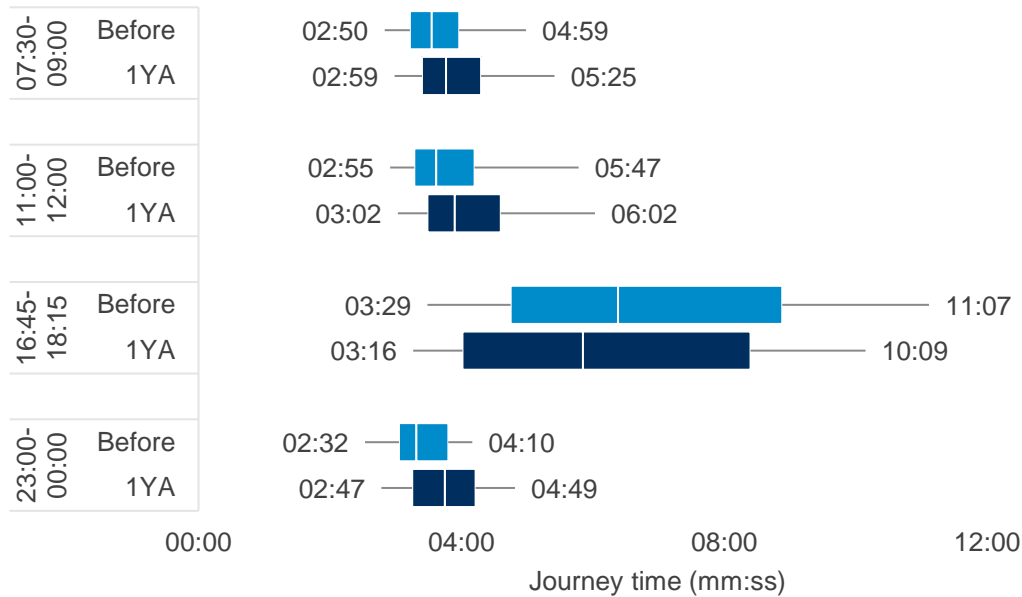
<sup>15</sup> The interquartile range represents the 50% of journey times in the middle of the range between the 25<sup>th</sup> and the 75<sup>th</sup> percentiles.

<sup>16</sup> The 90<sup>th</sup> percentile represents the ten percent of longest journey times.

At one year after on the northbound route, the project had improved average journey times in the evening peak, the busiest time of the day. It had also improved the worst journey times too. However, there was evidence indicating journey time reliability had declined for other periods (Figure 18). The worst journey times were a minute shorter, while the interquartile range had grown by around by 15 seconds.

At other times of the day, the evidence suggested the project had not impacted journey time reliability for most time periods. The longest journey times were however longer at one year after.

**Figure 18 A43 Northbound journey time reliability**



Source: TomTom (September 2015, September 2019)

# 5. Safety evaluation

## Summary

The project aimed to improve safety, early indications suggest that this is on track, with fewer personal injury collisions in the first 12 months after opening compared to five years before the project.

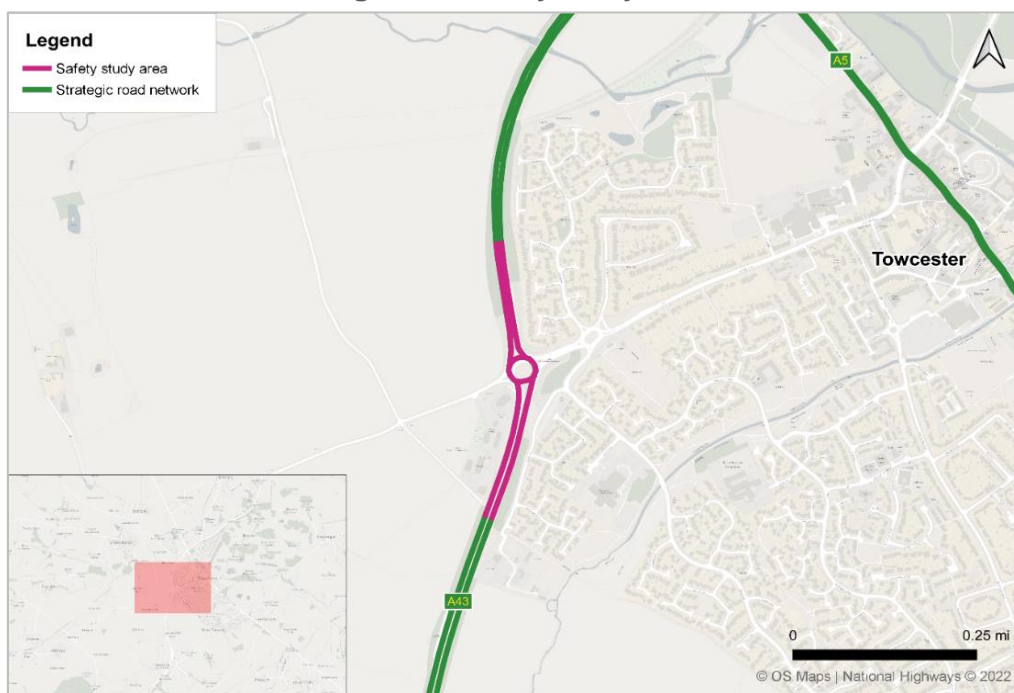
The analysis will be revisited in the following evaluation covering five years of data before we are sure that the change is significant. It will require a longer period to determine if these initial positive findings are a real trend or natural fluctuation.

## Safety study area

We restricted our analysis to data on personal injury collisions on the A43 mainline and A43 Abthorpe roundabout. This was due to a proportionate appraisal completed in line with the approach to small scale enhancements at the time and to the small number of accidents, making the sample size too small for robust evaluation of most safety metrics.

The safety study area is shown in Figure 19.

Figure 19 Safety study area



Source: National Highways and OpenStreetMap contributors

## What were the emerging safety trends?

Safety data for this evaluation was obtained from Department for Transport Road Safety Data. This records incidents on public roads that were reported to the police. This evaluation considered only collisions that resulted in personal injury.

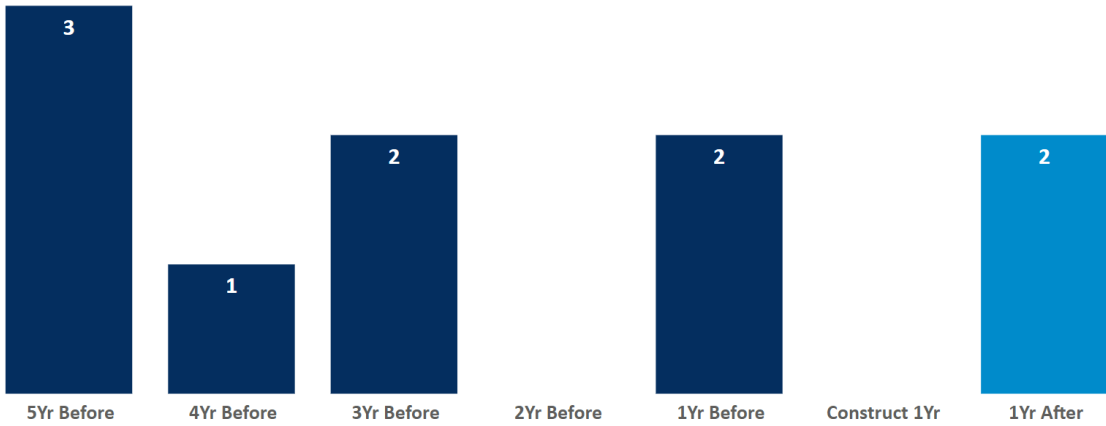
The safety analysis was undertaken to assess changes over time looking at the trends in the five years before the project was constructed to provide an annual average. We then assessed the trends from to those observed in the 12 months

since it opened to customers. The analysis drew on the following data collection periods:

- Pre-construction: 15 February 2011 – 14 February 2016.
- Construction: 15 February 2016 – 11 April 2017.
- Post-opening: 12 April 2017 – 11 April 2018.

The early indications were that the number of personal injury collisions for the first 12 months of the project were lower than the period before construction began. In total twelve personal injury collisions occurred in the entire observation period: nine before project, two during construction, and two after project completion.

**Figure 20 Annual Personal Injury Collisions**



Source: STATS19 1<sup>5</sup> February 2011 – 11 April 2018

Safety trends can vary each year and we will monitor this trend over a longer period before drawing conclusions about the safety impact of the project.

The sample size is too small for robust evaluation of most safety metrics; therefore, these have been descoped from this one-year evaluation and we will look to assess in the follow up evaluation which evaluates the five-year opening period.

## 6. Environmental evaluation

The evaluation of environmental impacts used information on the predicted impacts gathered from the environmental assessment report (2015). Information from the Economy Study (2014) and the project team was also used for this project. This information was then compared with findings observed one-year after the project opened for traffic. Observed impacts were determined during a site visit in July 2018, supported by desktop research. The results of the evaluation are recorded against each of the Transport Analysis Guidance (TAG)<sup>17</sup> environmental sub-objectives and the three society sub-objectives of physical activity, severance, and journey quality. These are presented in Table 4.

The appraisal considered that there would not be any environmental impacts applicable to the decision to invest in the project and reported them and the three society sub objectives as not applicable. An environmental assessment was however undertaken, and the impacts assessed have been considered in this evaluation.

Our one-year after evaluation found that most of the impacts on the sub-objectives were confined to within the highway boundary and were neutral as expected by the assessment. However, the site visit found that landscape and biodiversity impacts were likely to be worse than expected at one-year after. This was because vegetation clearance within the highway boundary was more extensive than predicted and new planting designed to minimise the impacts and improve biodiversity was being poorly maintained. It was also noted that asset data on National Highways environmental asset system EnvIS had not been updated. Poor asset data may contribute to poor asset management in the future.

Observed after opening traffic data was limited to a one day<sup>18</sup> turning count at the roundabout. There was no observed Annual Average Daily Traffic or Annual Average Weekday Traffic flow data available for the A43 or other approach roads to the roundabout. Therefore, it was not possible to make any robust comparison between traffic forecasts used for the environmental assessments and post-opening observed traffic flows.

### Noise

The environmental assessment predicted that in the short term most nearby residential properties would experience a negligible increase in noise. This would be caused by changes in traffic and by traffic being brought closer to properties. Approximately four properties were predicted to experience minor but perceptible increases. In the longer term, the impacts would remain broadly the same. The assessment considered proposals for mitigation and concluded that as the road surface was already a low noise surface a noise barrier could be installed. The barrier would increase the number of properties experiencing a decrease in noise in both the short and long term. Overall, the assessment concluded that the project would not cause a significant impact and that the provision of a noise barrier would

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<sup>17</sup> TAG UNIT A3 Environmental Impact Appraisal ([publishing.service.gov.uk](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/99917/tag-unit-A3.pdf))  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/99917/tag-unit-A3.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/99917/tag-unit-A3.pdf)

<sup>18</sup> 12 hour turning count between 7 a.m. and 7 p.m.

support the delivery of the aims of the Government's Noise Policy Statement for England<sup>19</sup>.

Our evaluation site visit confirmed that the noise barrier was in place and asset data confirmed that the A43 had a low noise surface.

As only limited post opening traffic flow data was available for the project, it was not possible to fully evaluate the effects any changes in traffic flows may have had on the local noise climate.

## Air quality

The air quality assessment reported that the project would bring traffic closer to residential properties on Ouse Lane and Broadwater Lane. Traffic flows would increase along the A43 adjacent to these properties and daily average speeds would reduce. These changes in traffic would lead to increases in nitrogen dioxide (NO<sub>2</sub>) at these properties but these would not cause any new exceedances of UK annual mean NO<sub>2</sub> air quality standards<sup>20</sup>. The assessment concluded that the impacts would not be significant.

As only limited post-opening traffic flow data was available for the project it was not possible to evaluate the effects any changes in traffic flows may have had on local air quality.

## Greenhouse gases

The only appraisal undertaken for the project was at the Foundation stage. At this stage, greenhouse gas impacts are not appraised as the design is not usually detailed enough to allow it to be done. No evidence has been provided to indicate that further appraisal was done and no standard appraisal reports, where greenhouse gas would have been appraised, were provided. No further information is available on the appraisal of greenhouse gases.

As limited appraisal was undertaken, greenhouse gases were descoped from this evaluation.

## Landscape and townscape

The environmental assessment reported that the project lies on the urban fringe providing a boundary between the residential areas of Towcester and rural areas beyond. There were no designated landscapes within the assessment study area and no direct impacts to local townscape were expected. The assessment predicted that mature vegetation around the junction would need to be cleared to accommodate the project. This would open new views of the project from nearby residential properties and change distant views of the project from Grafton Way National Trail. New planting would be provided which was predicted to mitigate for the loss of mature vegetation over time. By the design year it was predicted that the changes would be barely noticeable with impacts expected to be neutral.

Our evaluation confirmed that the impacts of the project were confined to within the highway boundary and no impacts to townscape had occurred. However, the site visit identified that significantly more vegetation had been cleared adjacent to

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<sup>19</sup> <https://www.gov.uk/government/publications/noise-policy-statement-for-england>

<sup>20</sup> <https://uk-air.defra.gov.uk/air-pollution/uk-eu-limits>



Green Lane than predicted in the assessment due to design changes during construction. There was also limited evidence of any recent aftercare maintenance which may affect the establishment of the new planting provided to minimise project impacts. As more vegetation was cleared than predicted, we considered that the outcome for landscape at one-year after was worse than expected.

## Heritage of historic resources

The environmental assessment identified that there were no sites important for cultural heritage within the study area. The assessment suggested that there was the potential for buried archaeology associated with Towcester's Romano-British heritage to be present, but the risk was considered low as much of the project area had previously been disturbed. The assessment reported that the results of any geotechnical surveys would be shared with the archaeology planning advisory service of Northamptonshire County Council to ensure any buried archaeology was identified and appropriate mitigation implemented. Overall, no significant effects were predicted.

Our evaluation confirmed that no known cultural heritage resources were affected by the project and no evidence was provided to suggest any buried archaeology was encountered. Our site visit identified that the Towcester war memorial, which was not considered within the project assessment, is within 100m of the project extent. However intervening vegetation means there was no inter-visibility and so no impacts were identified. Overall, the impacts were determined to be as expected.

## Biodiversity

The environmental assessment reported that vegetation clearance would be required to accommodate the project within the existing highways boundary. This would involve the loss of mixed woodland, scrub, and semi-improved grasslands. No protected species were predicted to be affected. Replacement planting would be provided, and it was suggested by the project's project team that the new planting would provide a slight net gain in biodiversity.

Our evaluation confirmed that the impacts were confined to the highway boundary and involved the loss of mixed woodland, scrub, and semi-improved grasslands. However, our site visit identified that more clearance had occurred adjacent to Green Lane than predicted and we saw little evidence of recent aftercare maintenance. Many plots were overgrown and weeds including ragwort and dock weeds were common. Dead planting behind the properties on Broadwater Lane was seen, along with dead hedging along Wappenham Road. No evidence was found to suggest the new planting was providing a net gain in biodiversity. Overall, it was considered that the outcome at one-year after was worse than expected.

**Figure 21 Overgrown planting plot adjacent to Wappenham Road.  
Injurious weeds common.**



Source: Evaluation site visit July 2018

## Water environment

The environmental assessment identified that the increase in impermeable area due to the extra lanes would cause an increase in the volume of routine surface water runoff. This could affect flood risk. Changes in traffic volumes could also impact the quality of the runoff and the risk of accidental spillage. The assessment considered these impacts and determined that including oversized pipes and hydrobrakes<sup>21</sup> in the project drainage design would mitigate these impacts. Overall, the assessment predicted that the impacts would be neutral.

We evaluated the impacts of the project by reviewing the drainage asset data and by observing drainage features visible from the surface during a site visit. The asset data confirmed that the pipework had been replaced and that the hydrobrake flow control devices had been installed. A formal drainage inspection was not undertaken but based on the evidence available the network appeared to have been installed as expected. We considered that the outcome at one-year after was as expected.

## Society appraisal - physical activity, journey quality and severance

The environmental appraisal considered that there would not be any impacts to physical activity, journey quality or severance and reported that they were not applicable to the investment decision. The environmental assessment scoped out impacts to non-motorised users. However, the project's economic assessment report published in 2014 reported that the project would renew the existing pegasus<sup>22</sup> crossing on the A43 and improve and extend the existing network of footpaths around the junction. A new signalised pedestrian crossing would also be provided on Brackley Road. Based on the information available it is assumed that

<sup>21</sup> A device that manages the flow of water.

<sup>22</sup> A type of signalised pedestrian crossing that includes special consideration for horse riders.

the impacts of the project on physical activity, journey quality and severance were predicted to be neutral.

We considered the impacts of the project as part of our evaluation site visit. The existing footpaths and crossing points around the junction had been improved and the existing pegasus crossing replaced. The combined footpath cycleway to Green Lane had been widened and resurfaced and the footpath/cycleway on Wappenham Road extended to the entrance to the service station. New signage had also been provided. No user surveys were undertaken but pedestrians and cyclist were seen using the new facilities. Improvements had been made but we do not consider that the scale of the improvements were likely to have had any significant effect on existing travelled patterns. Impacts on physical activity and severance were likely to be neutral as expected. The additional lane at the approach to Abthorpe roundabout may have improved journey quality in terms of driver stress and frustration. However, in view of the small scale of the project any improvements were unlikely to be significant. Overall, we considered that the outcome on physical activity, severance and journey quality was neutral as expected.

## Overview

The results of the evaluation are summarised against each of the Transport Appraisal Guidance (TAG) environmental sub-objectives and presented in Table 4. In the table we report the evaluation as expected if we believe that the observed impacts at one-year after were as predicted in the appraisal. We report them as better or worse than expected if we feel the observed impacts were better or worse than expected. Finally, we report impacts as too soon to say if we feel that at one-year after there was insufficient evidence to draw firm conclusions.

The appraisal considered that there would not be any environmental impacts applicable to the decision to invest in the project and reported them and the three society sub objectives as not applicable. For the purposes of the evaluation, we assumed that the impacts were predicted to be neutral. An exception was made for biodiversity where the project team advised that the new mitigation planting would deliver slight beneficial impacts.

**Table 4 Environmental impacts**

Sub-objective	Appraisal Summary Table Score	One-year evaluation	Summary
Noise	Not applicable assumed to be not significant	Descoped	
Air Quality	Not applicable assumed to be not significant	Descoped	
Greenhouse Gases	Not applicable. Assumed neutral	Descoped	
Landscape	Not applicable. Assumed neutral	Worse than expected	The site visit found that whilst impacts were confined to within the highway boundary, they were larger than predicted. This was because more vegetation clearance had been undertaken than expected. Poor maintenance may also affect the establishment of mitigation planting.
Townscape	Not applicable. Assumed neutral	As expected	Impacts were confined to within the highway boundary. No impacts on the wider townscape were observed.
Heritage of Historic Resource	Not applicable. Assumed neutral	As expected	Impacts were confined to within the highway boundary. No buried archaeology encountered.
Biodiversity	Not applicable. Assumed slight beneficial	Worse than expected	Impacts were confined to within the highway boundary. However, they were larger than predicted because more vegetation clearance had been undertaken than expected. Many plots were found to be overgrown with injurious weeds. Failed planting had not been replaced. Poor maintenance means that the beneficial impacts predicted were not observed.
Water Environment	Not applicable. Assumed neutral	As expected	A new drainage network was provided including flow control devices. It was expected that these measures would ensure addition flows were managed effectively.
Physical activity, Severance, and Journey quality	Not applicable. Assumed neutral	As expected	Existing footpath, cycleways and the Pegasus crossing around the junction had been improved and a new traffic lane provided. However, the scale of the improvements was unlikely to cause any significant changes to existing travel patterns.

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