TECHNICAL NOTE

WEST OXFORDSHIRE LOCAL PLAN 2043 MODELLING

SUBJECT
Strategic Transport Modelling Sensitivity Test 1

PROJECT NO.
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AUTHOR
AtkinsRéalis

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Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
0.1	Sensitivity Test 1 TN Draft	CS/JB	CB	HDC	MA	17/07/2026
1.0	Sensitivity Test 1 TN Final	CS	CB	MA	MA	31/07/2026
2.0	Address OCC Comments	CS	CB	CLFL	CB	25/08/2026

This document and its contents have been prepared and are intended solely as information for Oxfordshire County Council and West Oxfordshire District Council and use in relation to report the strategic transport modelling work completed for the West Oxfordshire Local Plan 2043. This technical note has been prepared to document a sensitivity test of the strategic transport model and should be considered an addendum to the main “West Oxfordshire Local Plan 2043 Strategic Transport Modelling Report”, which remains the primary source of information on the strategic transport modelling work undertaken for the West Oxfordshire Local Plan 2043.

Client signoff

Client	Oxfordshire County Council and West Oxfordshire District Council		
Project	WEST OXFORDSHIRE LOCAL PLAN 2043 MODELLING	**Project No.**	100124996
Client signature / date			

1. Introduction

1.1.1 The modelling results presented in the West Oxfordshire Local Plan 2043 Strategic Transport Modelling Report[1] (hereafter the Strategic Transport Modelling Report) are based on the assumptions and information available at the time of model development. As with all forecasts of future travel demand and network performance, there is an inherent degree of uncertainty associated with future growth patterns, travel behaviour and the timing and extent of infrastructure delivery.

1.1.2 To provide greater understanding of the findings, a series of sensitivity tests have been undertaken to assess the impact of alternative assumptions relating to highway infrastructure provision, trip demand growth, and travel demand. The results of these tests are presented in separate technical notes, which should be read as addendums to the Strategic Transport Modelling Report. Together, they help understand the robustness of the report's conclusions under a range of plausible future scenarios.

1.1.3 The following sensitivity test scenarios have been undertaken:

- **Sensitivity Test 1 (ST1)** – WOLP2043 scenario 2 (DS2) without access restrictions on Witney Road to prioritise cycle and bus (Access to Carterton Scheme).
- **Sensitivity Test 2 (ST2)** – WOLP2043 scenario 2 (DS2) without access restrictions on Witney Road to prioritise cycle and bus (Access to Carterton Scheme), and without A40 Bus Lanes: Witney to Eynsham.
- **Sensitivity Test 3 (ST3)** – WOLP2043 scenario 2 (DS2) without access restrictions on Witney Road to prioritise cycle and bus (Access to Carterton Scheme), without A40 Bus Lanes: Witney to Eynsham, with high growth local plan demand.
- **Sensitivity Test 4 (ST4)** – WOLP2043 scenario 2 (DS2) without access restrictions on Witney Road to prioritise cycle and bus (Access to Carterton Scheme), and without A40 Bus Lanes: Witney to Eynsham, with Witney West End Link (Phase 2) and Bridge Street Improvements (Gyratory Operation) (highway only).
- **Sensitivity Test 5 (ST5)** – WOLP2043 scenario 2 (DS2) without access restrictions on Witney Road to prioritise cycle and bus (Access to Carterton Scheme), and without A40 Bus Lanes: Witney to Eynsham, with reduced travel demand and improved public transport cost.

2. Sensitivity Test 1: Scenario

Sensitivity Test 1 (ST1): Do Something 2 Scenario without access restrictions on Witney Road to prioritise cycle and bus (Access to Carterton Scheme).

2.1.1 This sensitivity test assesses the impact of uncertainty surrounding the proposed access restrictions as part of the Access to Carterton Scheme. The test builds on the 2043 West Oxfordshire Local Plan Do

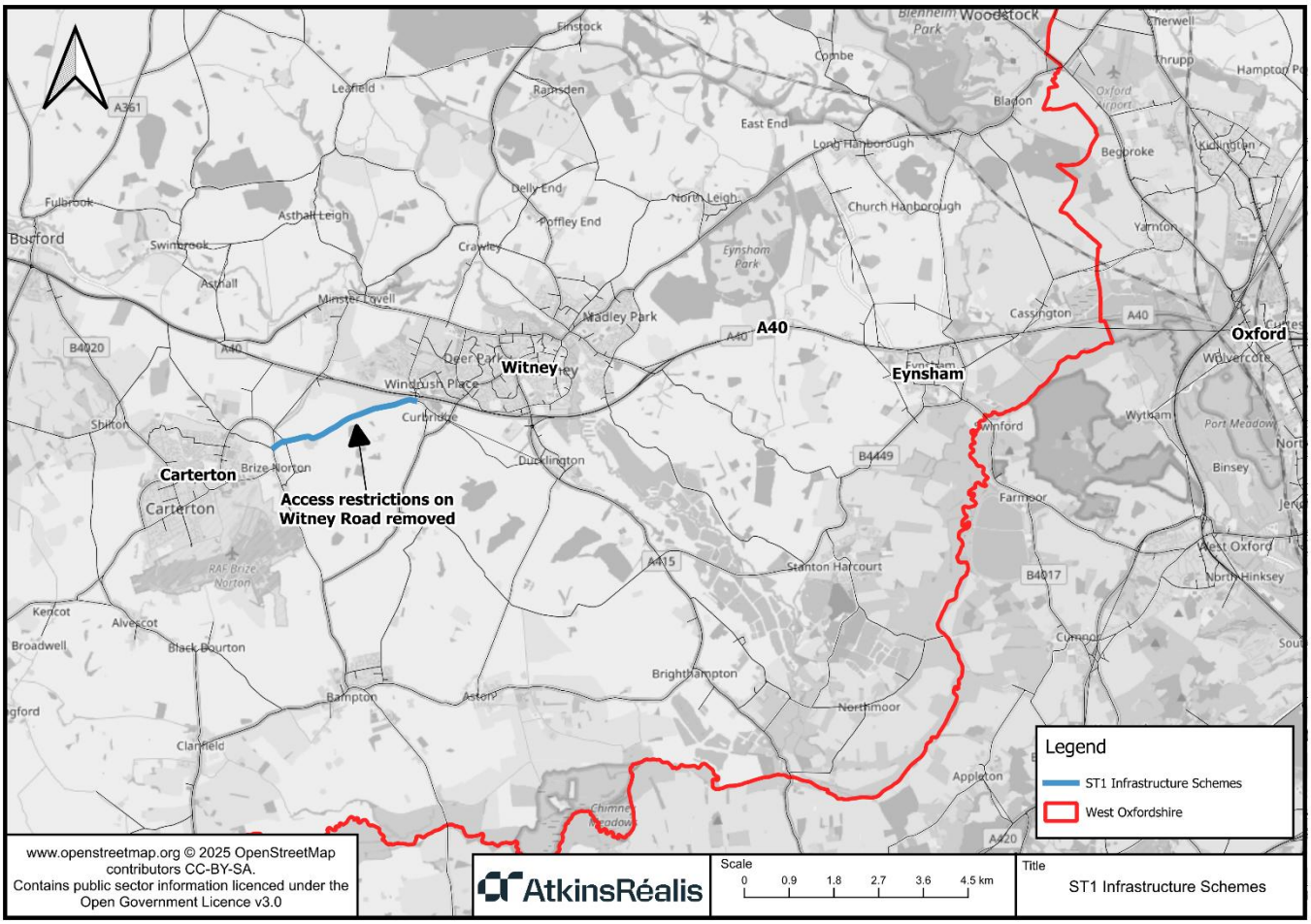
[1] West Oxfordshire Local Plan 2043 Strategic Transport Modelling Report v4.0

Something 2 (DS2) scenario, which includes enhanced active travel and bus mitigation measures, including restrictions on general traffic along Witney Road to prioritise cycle and bus movements.

2.1.2 The test considers whether the overall conclusions of the Strategic Transport Modelling Report remain unchanged if the Witney Road access restrictions are not delivered as currently modelled.

2.1.3 The sensitivity test was implemented by removing the access restrictions on Witney Road between Downs Road and Minster Road in both direction (shown on Figure 2-1), allowing all traffic to use the route. No other changes have been made to the highway network, and all other DS2 assumptions, including 2043 forecast demand, were retained. Results are compared directly with the DS2 scenario to assess the influence of the access restrictions on network performance and the overall findings.

Figure 2-1 – Sensitivity Test 1: Location of intervention for Sensitivity Test 1



3. Sensitivity Test 1: Results

Demand by mode

3.1.1 There are no changes in demand assumptions between the two tests. ST1 adopts the same land use assumptions as DS2, any changes in mode share are attributable to the sensitivity test rather than differences in development quantum or distribution.

Table 3-1 – Modelled flows (person trips), 12-hour period: 07:00-19:00

Modelled flows (person trips)	ST1	% Change from DS2
Trips by car beginning in West Oxfordshire	211,252	<1%
Trips by car ending in West Oxfordshire	208,726	<1%
Trips by car both beginning and ending within West Oxfordshire	117,693	<1%
Bus trips beginning in West Oxfordshire	8,466	-1%
Bus trips ending in West Oxfordshire	9,884	2%
Bus trips both beginning and ending in West Oxfordshire	4,092	3%
Rail trips beginning in West Oxfordshire	4,008	-1%
Rail trips ending in West Oxfordshire	4,204	-1%
Rail trips both beginning and ending in West Oxfordshire	725	-7%

3.1.2 Table 3-1 shows that compared against the 2043 Local Plan: DS2 Mitigation scenario, removing restrictions on general traffic along Witney Road results in a negligible increase in car trips and a slight increase in bus trips, offset by a small reduction in rail trips. Given the minimal magnitude of these changes, they are considered insignificant and likely reflect normal model variation rather than a material impact on travel demand.

3.1.3 Table 3-2 provides the modelled mode shares for the trips over the 12 hours starting in West Oxfordshire compared to those in the full model. Mode share is presented as a percentage with changes relative to DS2 presented in percentage points.

3.1.4 ST1 mode share is comparable to the DS2, with an increase to car from DS2 of 0.02%, indicating that the sensitivity test has a negligible effect on travel mode choice, with mode shares largely unchanged across the study area, including all developments zones. The marginal increase in car use is expected given the increase in available highway capacity, while the shift from bus and rail mode share are minor.

Table 3-2 – Mode share for trips starting in West Oxfordshire and Full Model, 12 hour - 07:00-19:00

Mode	West Oxfordshire		Full Model	
	ST1 (%)	Change from DS2 (pp)	ST1 (%)	Change from DS2 (pp)
Car	93.4%	0.02%	89.0%	0.00%
Bus P&R	1.1%	0.00%	1.0%	0.00%
Bus	3.7%	-0.01%	7.0%	0.00%
Rail	1.8%	-0.01%	3.0%	0.00%
Total	100.0%	-	100.0%	-

3.1.5 The Park & Ride site numbers and the change from the DS2 mitigation scenario are shown in Table 3-3. There is negligible impact to car arrivals by P&R site in the AM period as a result of the removal of restrictions on general traffic along Witney Road to prioritise cycle and bus.

Table 3-3 – Car arrivals by P&R site in ST1, AM period: 07:00-10:00

P&R Site	ST1	Change from DS2
Redbridge	2,279	-4
Seacourt	778	-2
Peartree	417	0
Water Eaton	399	0
Thornhill	703	1
Eynsham	1,537	7
Airport	325	0

Travel patterns

3.1.6 The interaction between West Oxfordshire, the other districts in Oxfordshire and the rest of the country is shown in Table 3-4. Destination share is presented as a percentage with changes relative to DS2 presented in percentage points. There is very little overall change compared against DS2 of less than 0.1% demonstrating that the sensitivity test removing restrictions on general traffic along Witney Road to prioritise cycle and bus has minimal impact on the performance of the local plan decisions.

Table 3-4 – Destination share for trips starting in West Oxfordshire and Full Model, 12 hour - 07:00-19:00

District / area	Destination share	
	ST1 (%)	Change from DS2 (pp)
Oxford City	9.4%	0.00%
Cherwell	11.6%	0.01%
Vale of White Horse	9.4%	-0.02%
South Oxfordshire	2.9%	-0.01%
West Oxfordshire	54.1%	0.04%
Rest of Great Britain	12.5%	-0.02%
Total	100.0%	-

Network impacts

3.1.7 As with the main Do Something scenario runs, the highway results below include an active travel adjustment. The adjustment reflects a generic assumption that walking and cycling infrastructure is improved across the main settlements of West Oxfordshire and is not intended to represent the direct impact of the scheme being tested. Under this assumption, a small number of shorter car journeys are assumed to transfer to cycling. As with DS2, no adjustments are made to public transport trips.

3.1.8 The forecast reduction in car demand associated with the shift to cycling is broadly consistent with that reported for DS2. For ST1, car demand on the modelled highway network is projected to reduce by approximately 620 trips in the AM peak hour, 310 trips per interpeak hour, and 670 trips in the PM peak hour, compared with 610, 340 and 660 trips respectively for DS2. This indicates that the overall impact on highway demand is not materially different between the two scenarios. Consequently, while removal

of the scheme could lead to a marginal increase in car demand, the modelling suggests that any such change would not materially influence the overall highway performance.

Network performance

3.1.9 Table 3-5 presents the forecast year network statistics from for the sensitivity test for all modelled roads in Oxfordshire, as shown in Figure 3-1, and the change compared with the DS2 Mitigation scenario. Table 3-6 presents the corresponding statistics for only the roads modelled in West Oxfordshire, while Table 3-7 presents the same for the A40 Corridor from Burford to the Wolvercote roundabout. These are presented for all car trips in West Oxfordshire across the 12-hour period from 07:00 to 19:00, with the total on the roads also including LGV and HGV trips. Figure 3-1 shows the full extent of the roads considered, with those inside the West Oxfordshire border being used to provide the West Oxfordshire statistics.

Figure 3-1 – Model links included in network statistics

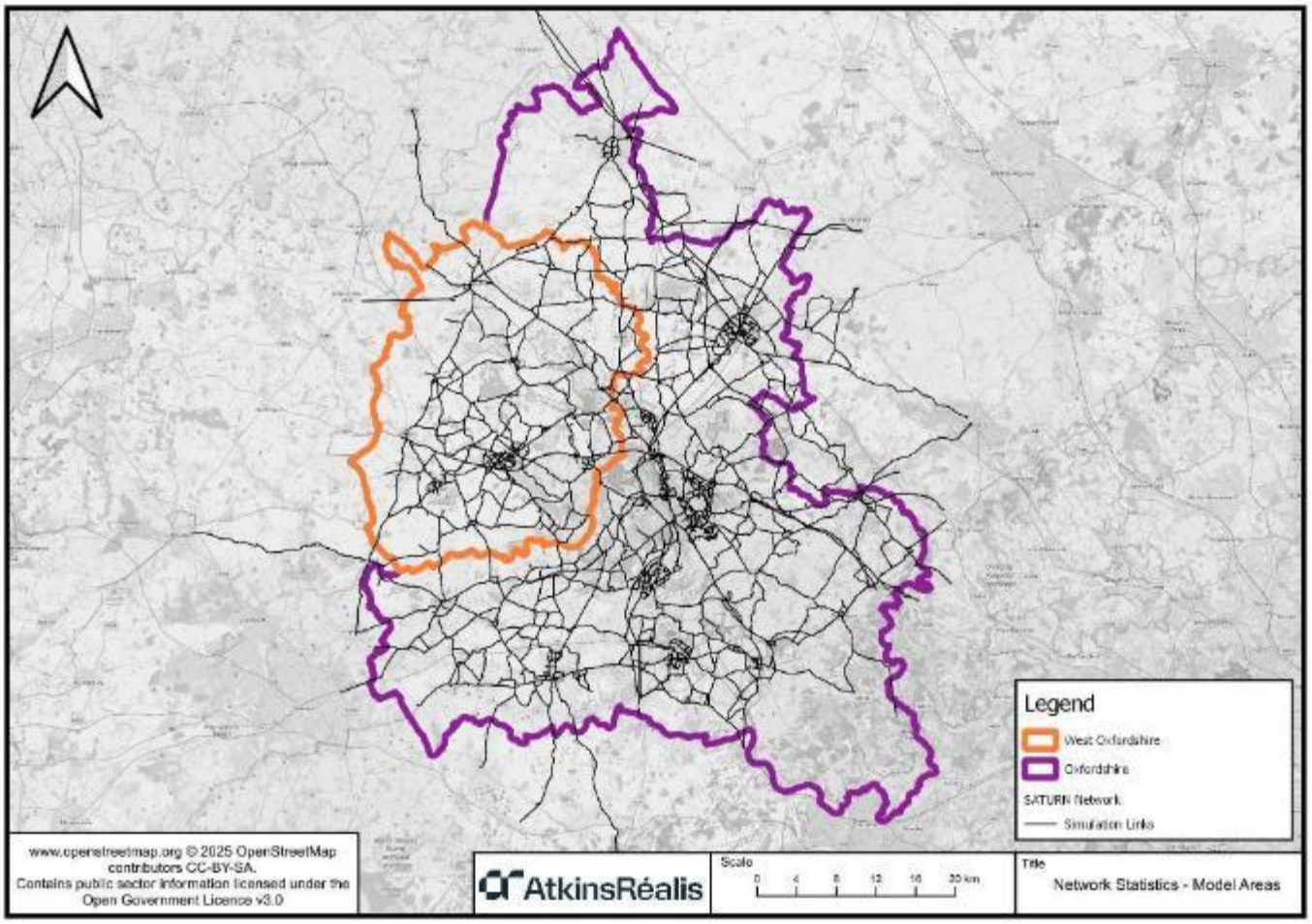


Table 3-5 – Key highway network statistics – Full Model

Metric	ST1		% Change from DS2	
	Car	All vehicles	Car	All vehicles
Total Travel Time (hr)	365,600	445,300	0.0%	0.0%
Cruise Time (hr)	307,900	376,500	0.0%	0.0%
Delay (hr)	57,800	68,800	-0.1%	0.0%
Delay (sec per km)	10.2	9.8	0.0%	0.0%
Total Distance (km)	20,325,600	25,151,300	0.0%	0.0%
Average Speed (km/h)	55.6	56.5	0.0%	0.0%

Table 3-6 – Key highway network statistics – West Oxfordshire

Metric	ST1		% Change from DS2	
	Car	All vehicles	Car	All vehicles
Total Travel Time (hr)	62,300	77,200	-0.2%	-0.1%
Cruise Time (hr)	54,600	67,300	-0.1%	-0.1%
Delay (hr)	7,700	9,900	-0.3%	-0.1%
Delay (sec per km)	9.2	9.6	-0.2%	0.0%
Total Distance (km)	3,015,500	3,713,800	-0.1%	-0.1%
Average Speed (km/h)	48.4	48.1	0.0%	0.0%

Table 3-7 – Key highway network statistics – A40 Corridor

Metric	ST1		% Change from DS2	
	Car	All vehicles	Car	All vehicles
Total Travel Time (hr)	13,100	16,600	-1.2%	-0.9%
Cruise Time (hr)	11,200	14,300	-0.9%	-0.7%
Delay (hr)	1,900	2,300	-2.7%	-2.2%
Delay (sec per km)	10.5	10.5	-1.7%	-1.5%
Total Distance (km)	632,700	803,700	-1.0%	-0.8%
Average Speed (km/h)	48.4	48.3	0.1%	0.1%

3.1.10 The statistics indicate negligible change in overall highway demand across the full model area. In West Oxfordshire, the model shows minimal reductions in travel time, cruise time and total distance. Where removing the access restrictions on Witney Road offers a more direct route for some journeys, reducing travel distances, journey times and delays compared to travelling along the existing routes via Brize Norton Road and the A40 to the north and Station Road and A4095 to the south. The changes are however small (up to -0.3%), indicating that the overall impact at district level is negligible.

3.1.11 The A40 corridor near Carterton and Brize Norton sees the greatest impact as a result of the reopening of Witney Road to general traffic. The reductions in delay and distance travelled indicate improved network operation as vehicles are choosing to travel along Witney Road, reflecting existing on-road conditions. This redistribution of traffic results in small improvements in network operation along the A40 in the immediate area, reflected in less seconds of delay per kilometre. Overall, the results suggest that the sensitivity provides a modest improvement on network performance on the A40 corridor. However, the benefits are largely localised and result in negligible changes to the wider network.

A40 travel times by section

3.1.12 Table 3-8 sets out the average journey time along the A40 in the eastbound direction. Table 3-9 sets out the corresponding data for the westbound direction, with the sections listed in reverse. Journey time data shows a decrease of journey time between Burford and Witney. This aligns with a reduction in flow along this section of the A40, where removing the access restrictions on Witney Road provides an alternate route, reflecting existing on-road conditions. A slight increase in travel times of 3% is forecast between Eynsham P&R and Cassington. There is a small negligible impact to journey times forecast in the interpeak or PM peak periods.

3.1.13 For the same section, there is little change in journey time in any time periods in the westbound direction. Between Eynsham P&R and Witney there is a slight increase in journey time in the PM peak (circa 1%) and a slight decrease (circa 1%) between Witney and Burford in the PM peak, which is minor, as with the negligible impact to journey times forecast in the interpeak or PM peak periods.

Table 3-8 – A40 Eastbound journey time change from 2043 DS2 to 2043 ST1 (minutes)

Journey time route section	ST1			% Change from DS2		
	AM	IP	PM	AM	IP	PM
Section 1 - Burford to Witney (Ducklington Lane)	11.2	8.8	9.1	-8%	0%	0%
Section 2 - Witney to Eynsham P&R	10.3	8.0	8.4	1%	0%	0%
Section 3 - Eynsham P&R to Cassington	5.7	4.8	5.5	3%	0%	0%
Section 4 - Cassington to Wolvercote Rdbt	8.1	6.9	7.2	1%	0%	0%
Full Route	**35.2**	**28.5**	**30.1**	**-1%**	**0%**	**0%**

Table 3-9 – A40 Westbound journey time change from 2043 DS2 to 2043 ST1 (minutes)

Journey time route section	ST1			% Change from DS2		
	AM	IP	PM	AM	IP	PM
Section 4 – Wolvercote Rdbt to Cassington	6.5	6.0	6.5	0%	0%	0%
Section 3 - Cassington to Eynsham P&R	5.4	4.7	5.8	0%	0%	0%
Section 2 - Eynsham P&R to Witney	8.8	8.0	9.4	0%	0%	1%
Section 1 - Witney (Ducklington Lane) to Burford	8.8	8.7	9.3	0%	0%	-1%
Full Route	**29.5**	**27.4**	**30.9**	**0%**	**0%**	**0%**

Highway flow and delay

3.1.14 All figures in this section show the West Oxfordshire district boundary as a red line for context.

Flow

3.1.15 Figure 3-2 to Figure 3-4 show the change in traffic flow from the DS2 scenario to the ST1 scenario. The sensitivity test leads to an increase in car trips on Witney Road (+504 eastbound, +194 westbound in the AM in PCU/h (passenger car units per hour) between Brize Norton and Curbridge with some localised decreases on adjacent roads; Brize Norton Road (-165, 17% eastbound PCU/r) and A4095 (-245, 30% eastbound, PCU/h).

Delay

3.1.16 Figure 3-5 to Figure 3-7 show the change in link delay from the DS2 scenario to the ST1 scenario. There is limited change across West Oxfordshire, with the largest increase in delay along Witney Road, as expected as this is now open to all general traffic rather than being bus only. In the AM peak the delay is more prominent in the eastbound direction (+50 seconds) towards Oxford with a small increase westbound (+6 seconds), the PM peak sees a higher delay in the westbound direction as expected. Delay in the interpeak is minimal. There are corresponding reductions in delay along parallel routes, where traffic is re-routing from along the A40 and Brize Norton Road. In the AM, the A40 eastbound between Brize Norton Road and Downs Road roundabout sees a decrease in delay of -57 seconds.

Junction metrics

3.1.17 Junction performance has been assessed for key locations across West Oxfordshire. Performance is reported in terms of average delay and volume-to-capacity (V/C) ratio. Delay represents the flow-weighted average delay across all turning movements, while the V/C ratio indicates the proportion of total demand relative to the combined capacity of the junction entry arms.

3.1.18 As seen in Table A-1 the most notable reduction in delay can be seen at the A40 / Downs Road junction where average delay decreases by 25 seconds in the AM peak. This reduction is attributable to reassigned trip patterns, with a proportion of traffic now accessing the A40 via Witney Road and Downs Road. As a result, eastbound traffic flows on the A40 are reduced, leading to a more balanced distribution of demand across the roundabout and improved operational performance. The effect is particularly pronounced in the AM peak, reflecting the predominance of eastbound commuter movements towards Oxford through the Downs Road roundabout.

3.1.19 Table A-2 shows minor changes along the A40 to V/C ratio, with the biggest reduction forecast is -5, on average across the day at the A40 / Brize Norton Road junction, resulting in an average V/C of 42 at the junction. The assessment indicates slight increases during the AM and PM peaks at junctions in Witney, Carterton and Brize Norton. Despite these increases, the impact on roundabout operation is negligible, with no meaningful change in performance.

Plots

Figure 3-2 – AM peak – change in flow from 2043 DS2 to 2043 ST1

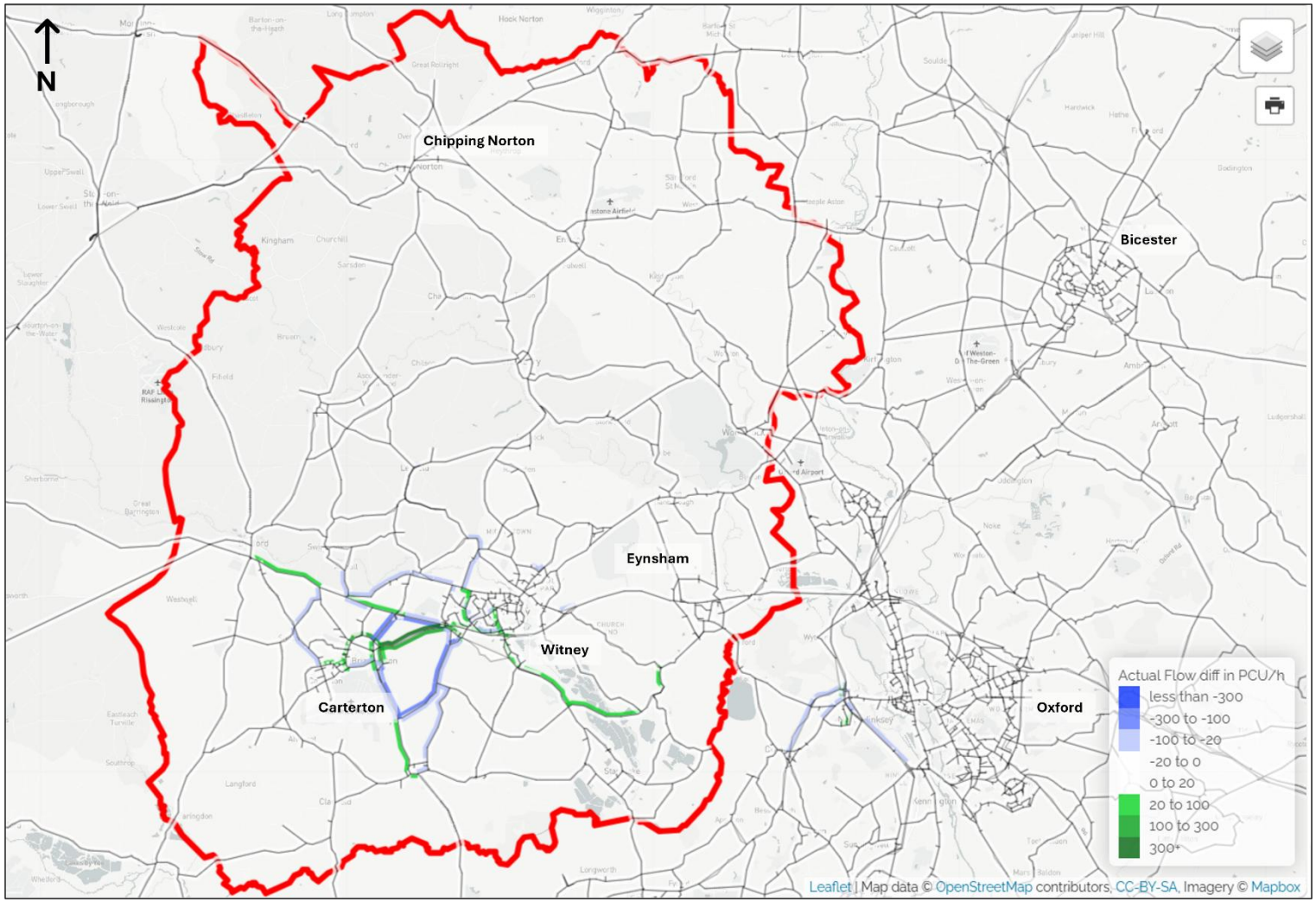


Figure 3-3 – Interpeak – change in flow from 2043 DS2 to 2043 ST1

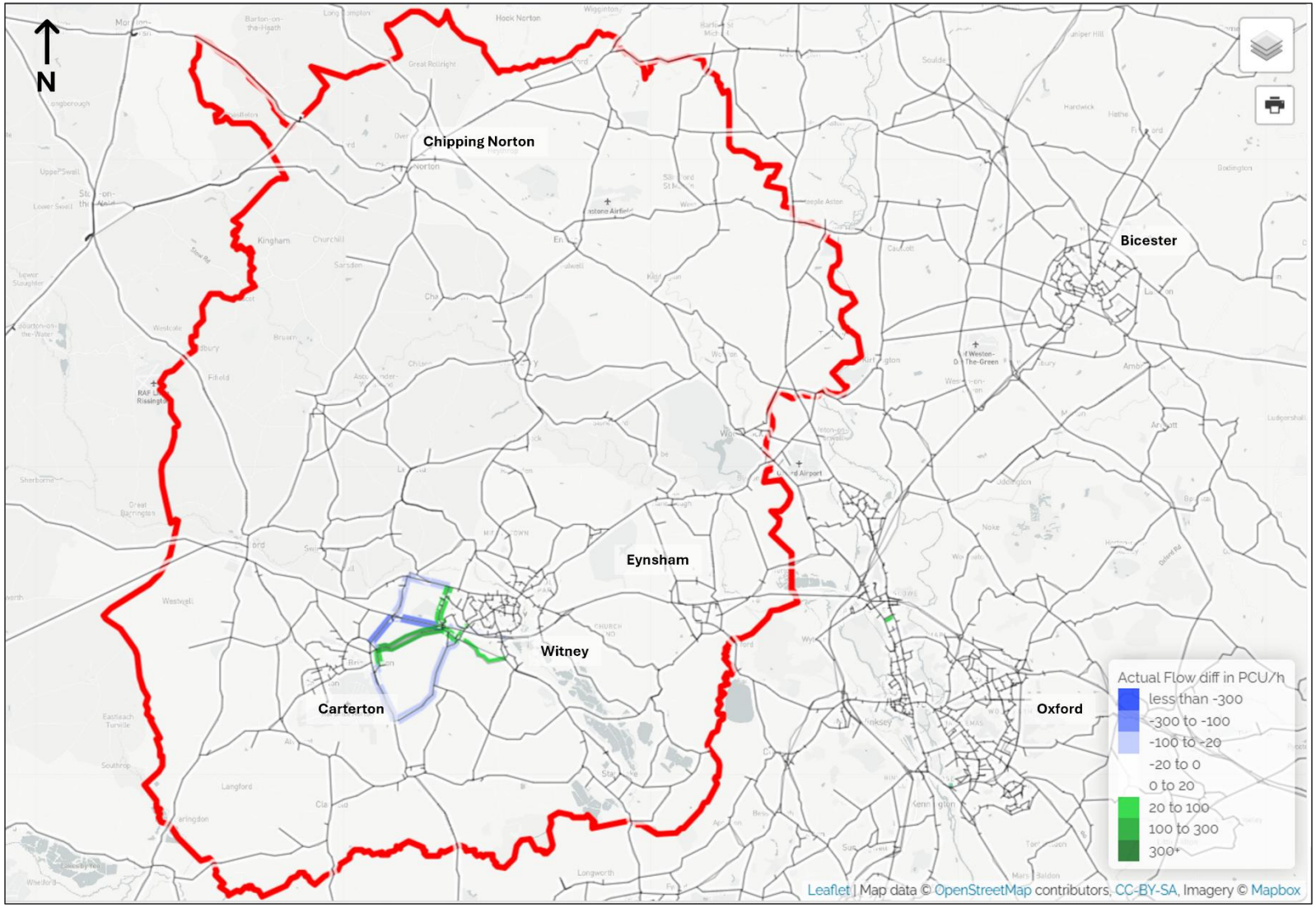


Figure 3-4 – PM peak – change in flow from 2043 DS2 to 2043 ST1

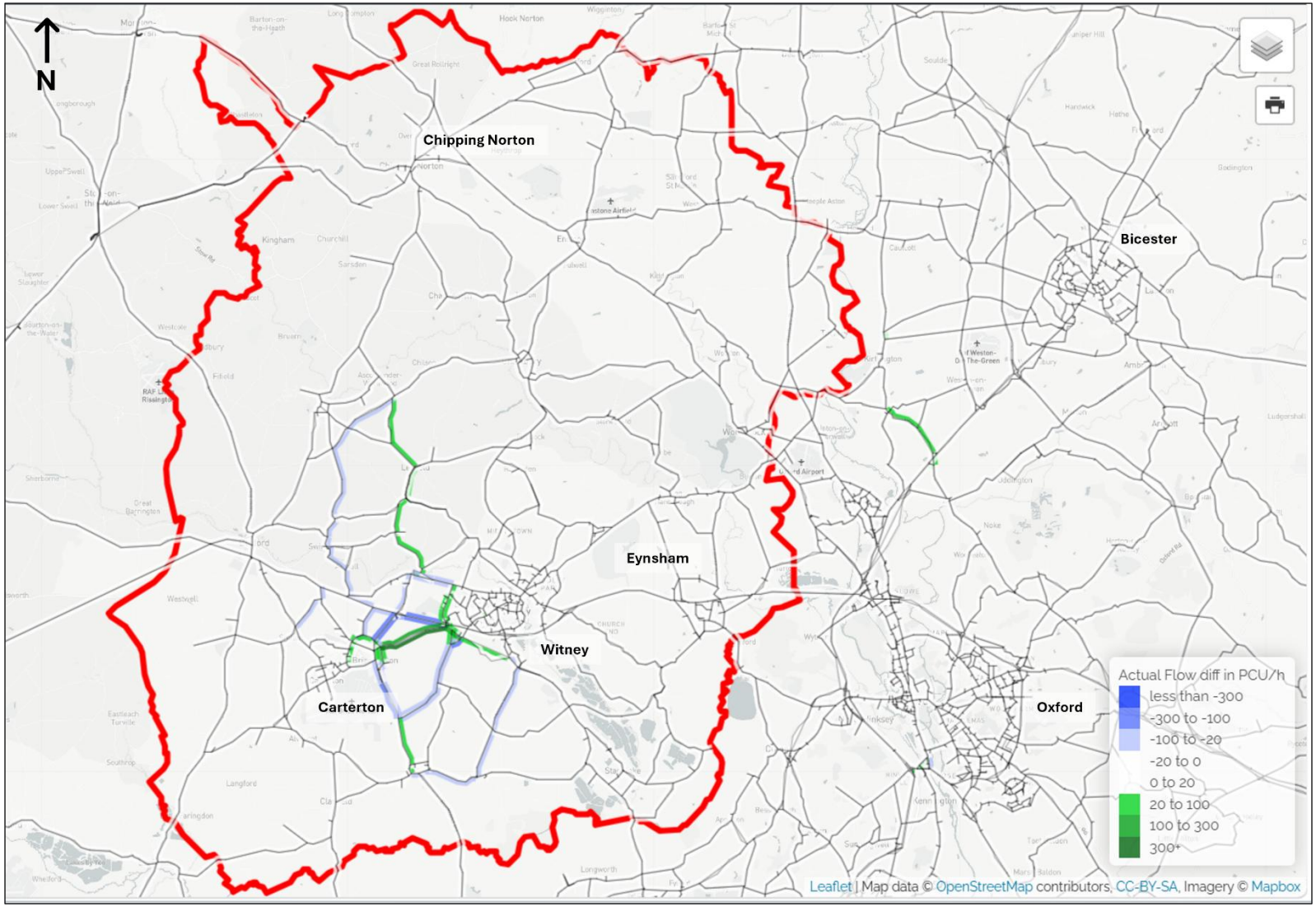


Figure 3-5 – AM peak – link delay change from 2043 DS2 to 2043 ST1

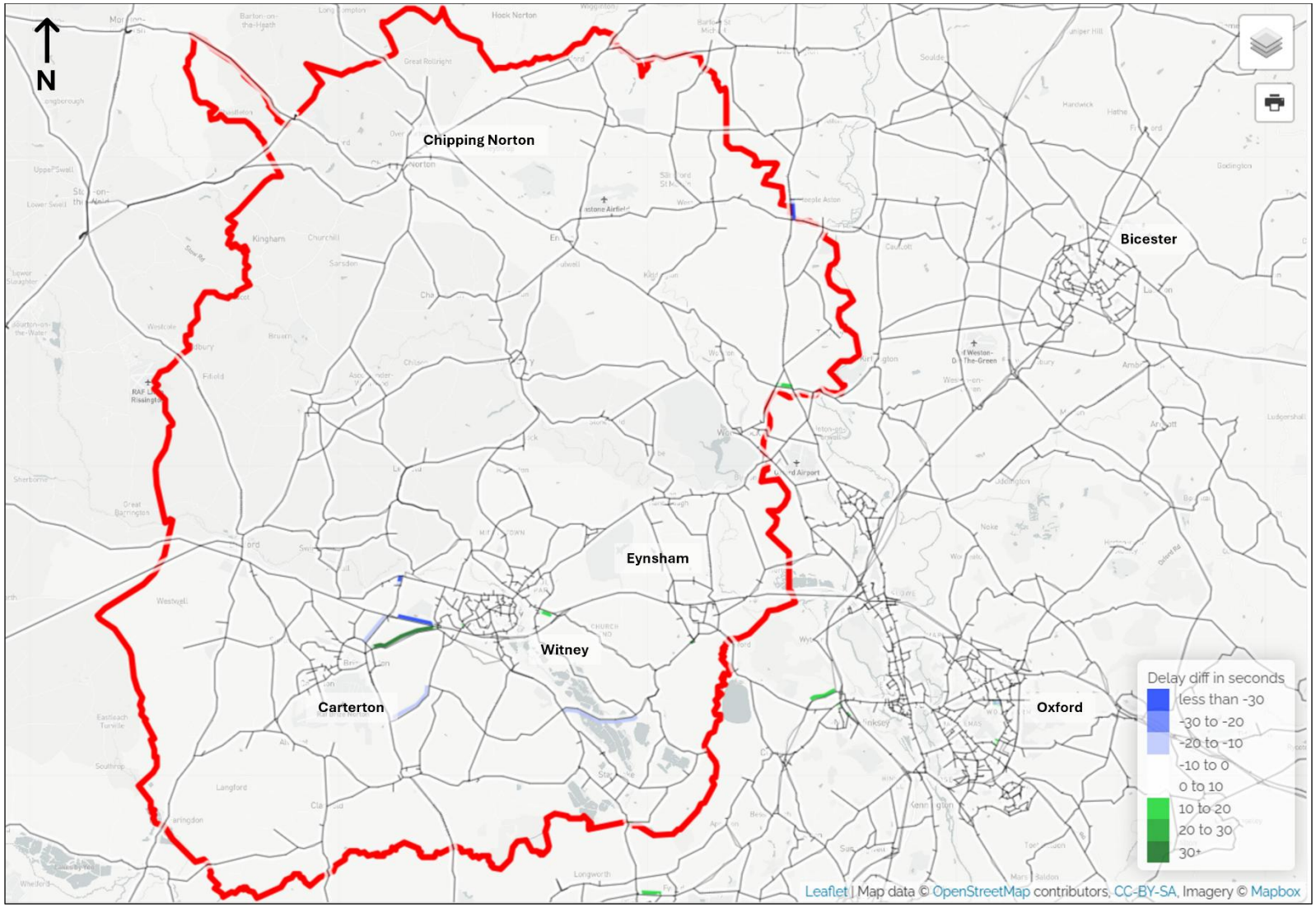


Figure 3-6 – Interpeak – link delay change from 2043 DS2 to 2043 ST1

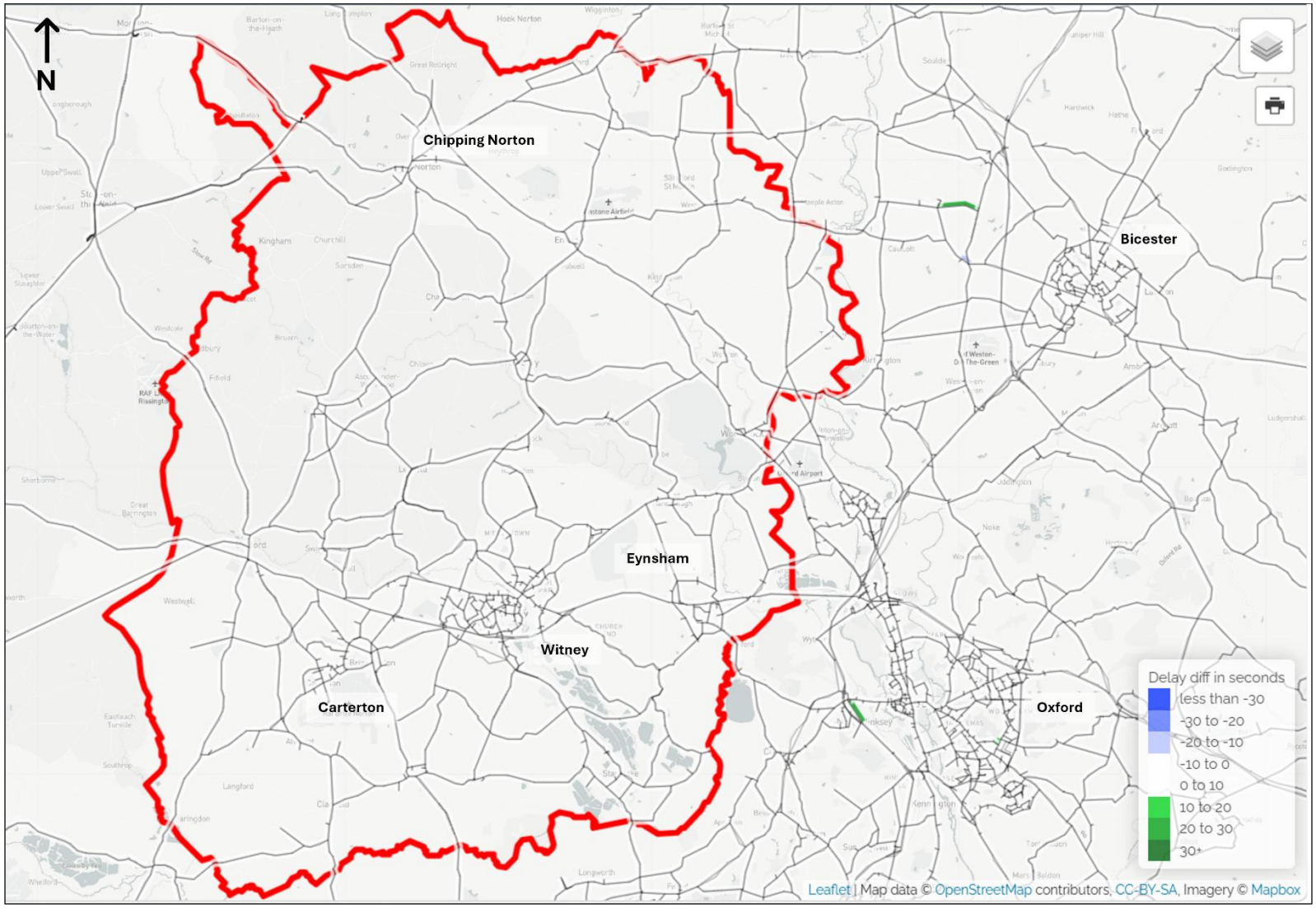
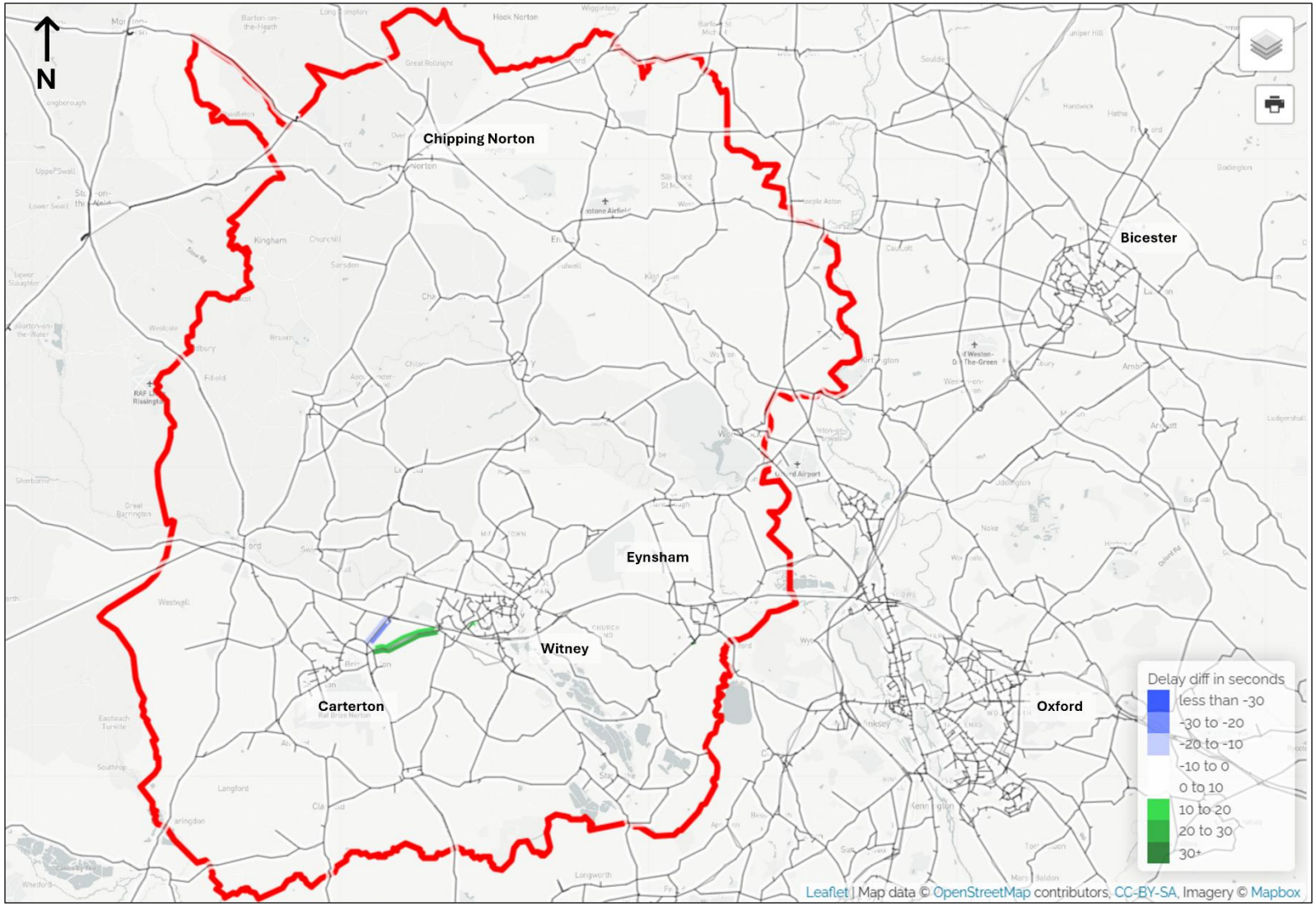


Figure 3-7 – PM peak – link delay change from 2043 DS2 to 2043 ST1



Bus flows and journey times

Patronage

3.1.20 Figure 3-8 to Figure 3-10 show the changes in levels of bus patronage across West Oxfordshire. Bus patronage decreases along Witney Road (<30, -140% eastbound in the AM peak) as a result of the increased delay now the access restrictions to general traffic have been removed. There are minor increases along Brize Norton Road towards Minster Lovell and along Burford Road into Witney (3, 23% AM Peak), the competing bus travel times into Witney are impacted by the small increase in travel time along Witney Road now the buses share the road space. The changes in patronage in the AM peak are weighted towards the eastbound direction, with a reversal of the directionality of the pattern in the PM peak. The plots show switching between routes into Oxford from the North, this is negligible and can be considered model noise (less than 5 passengers), with a similar story along the A40 between Eynsham P&R and Oxford.

Plots

Figure 3-8 – AM Peak – bus patronage change from 2043 DS2 to 2043 ST1

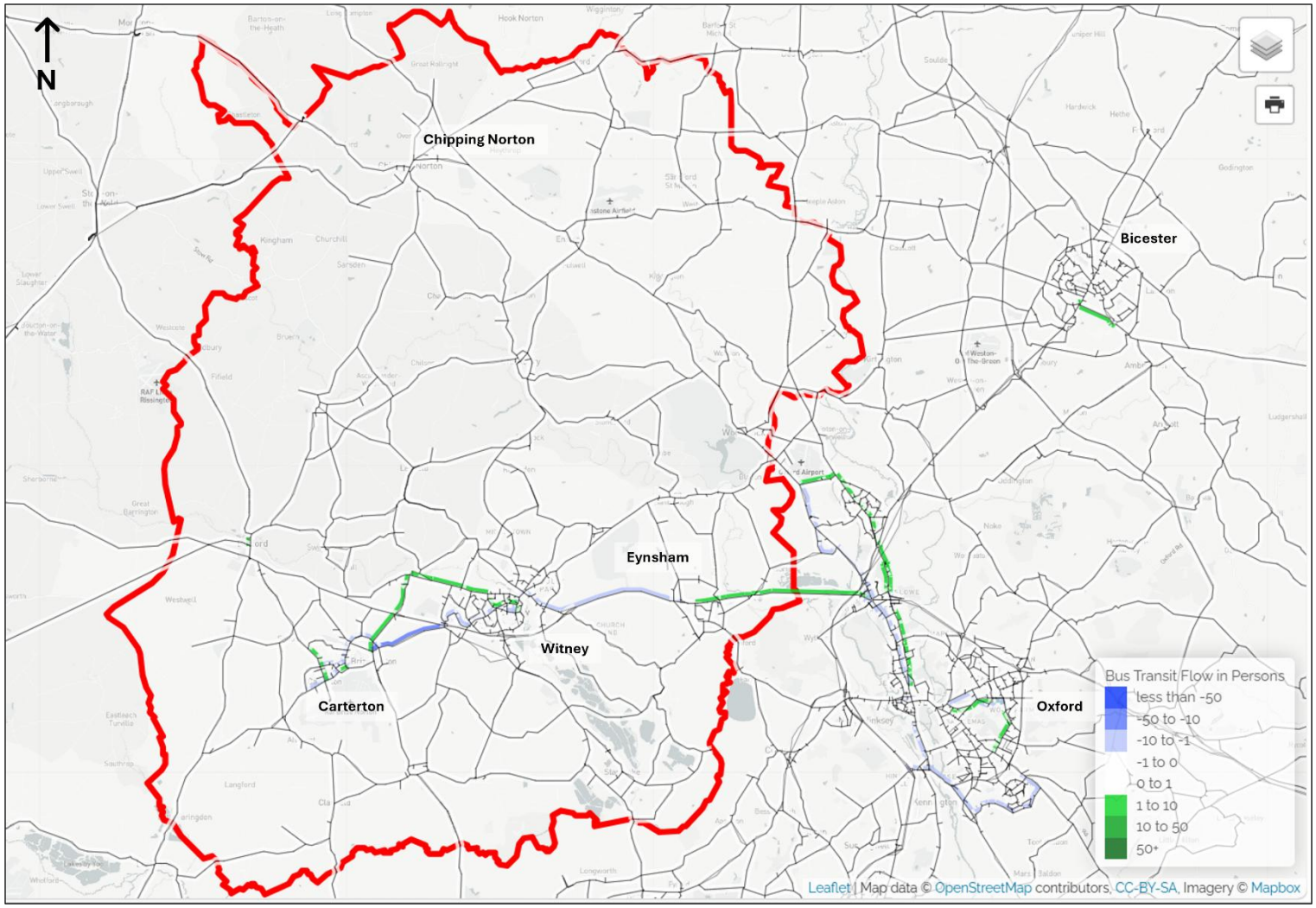


Figure 3-9 – Interpeak – bus patronage change from 2043 DS2 to 2043 ST1

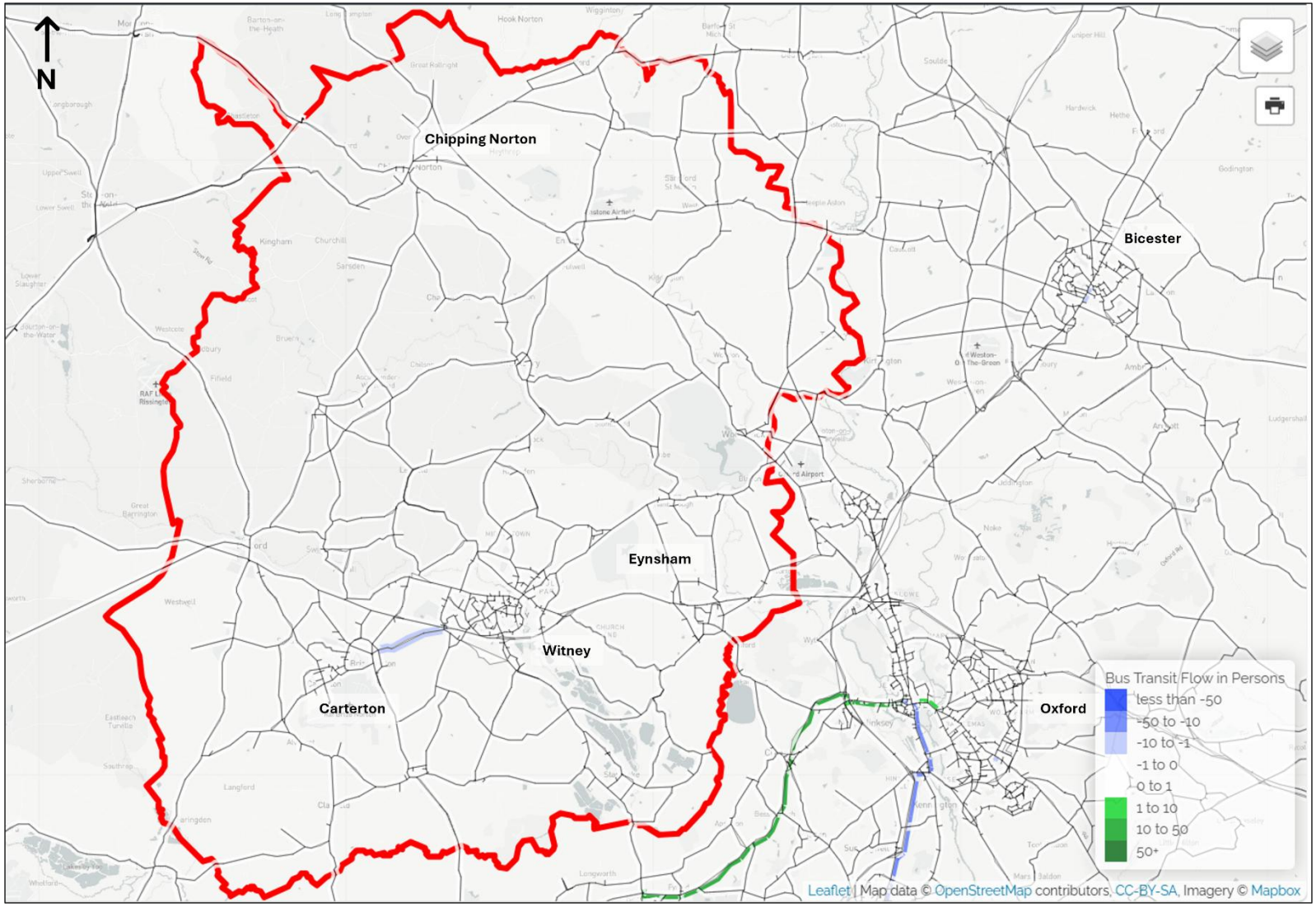
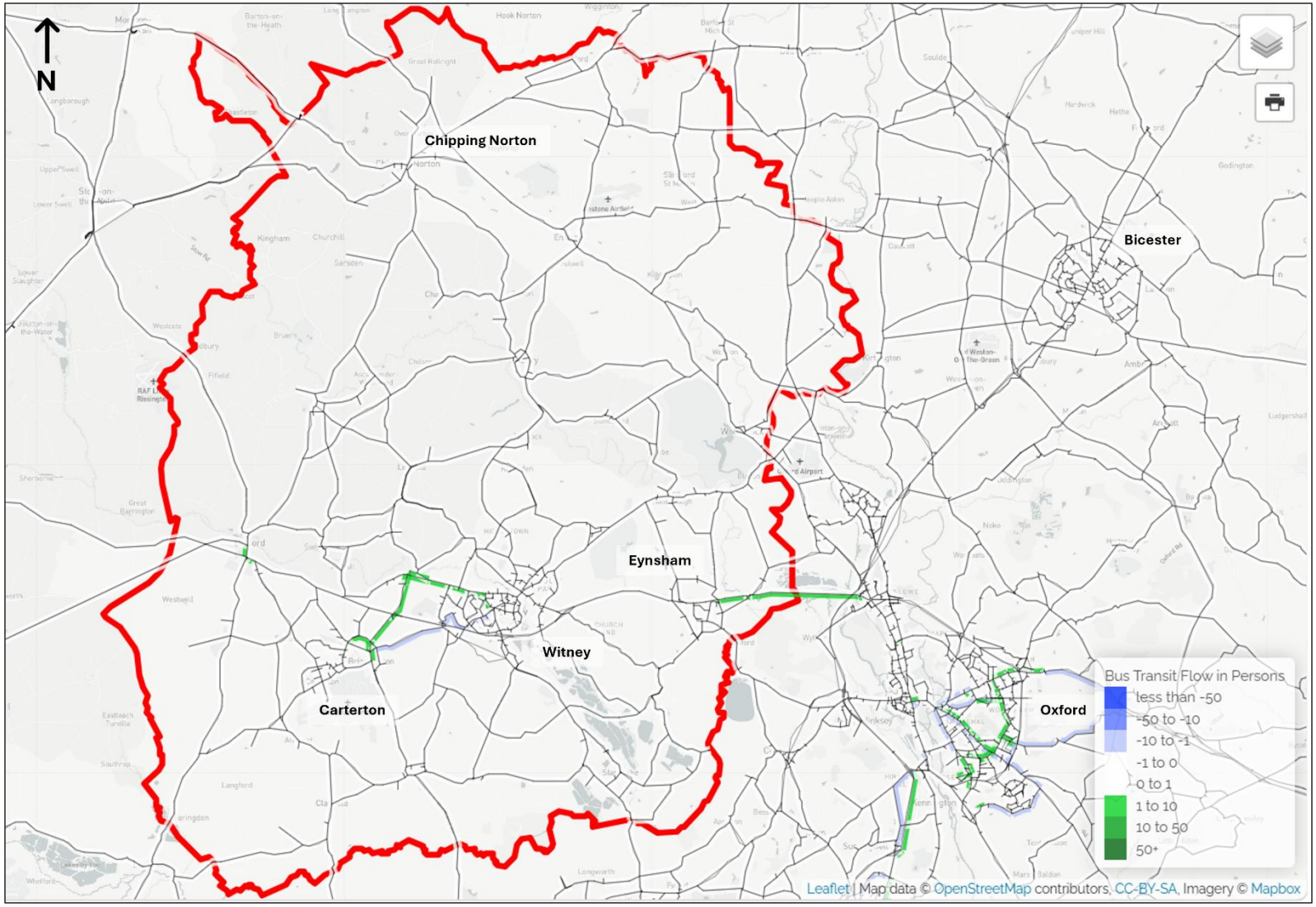


Figure 3-10 – PM Peak – bus patronage change from 2043 DS2 to 2043 ST1



Journey times

3.1.21 Bus lanes along the A40 are included in both the DS2 and ST1 networks. As a result, the associated improvements to bus service reliability are represented consistently across both scenarios and do not contribute to any differences in modelled performance between them.

3.1.22 The eastbound direction shows little to no impact, as seen in Figure 3-11. The westbound direction is also confirmed to show no impact, as shown in Figure 3-12. This is expected due to no network or service frequency changes between model runs.

Figure 3-11 – A40 Eastbound AM bus journey time change from 2043 DS2 to 2043 ST1 (minutes)

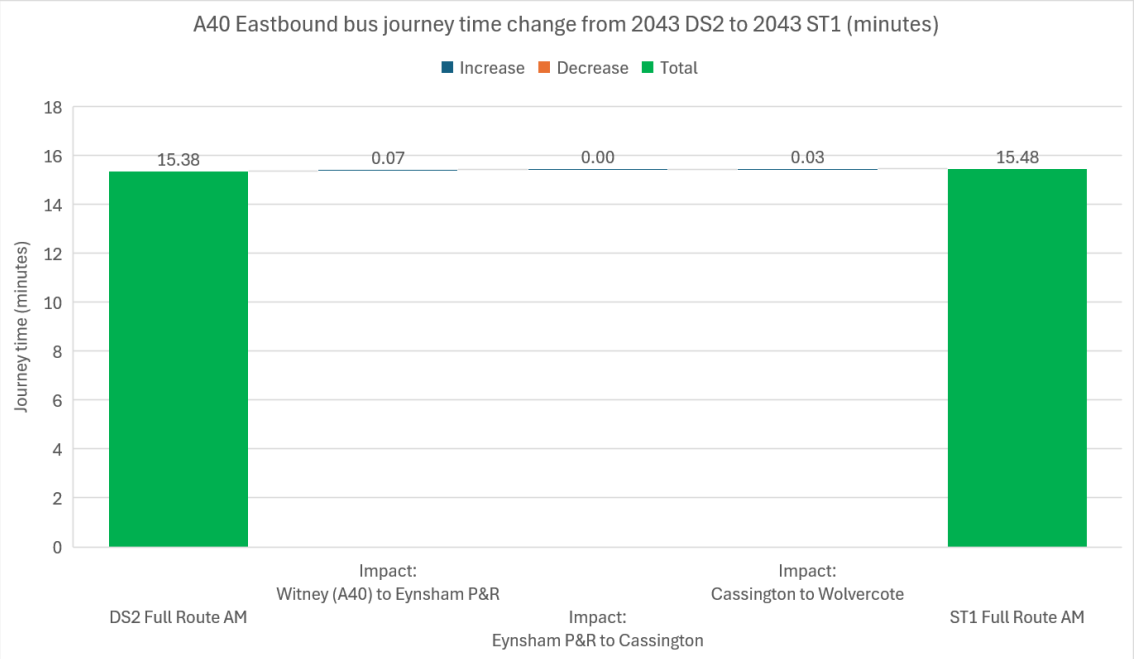
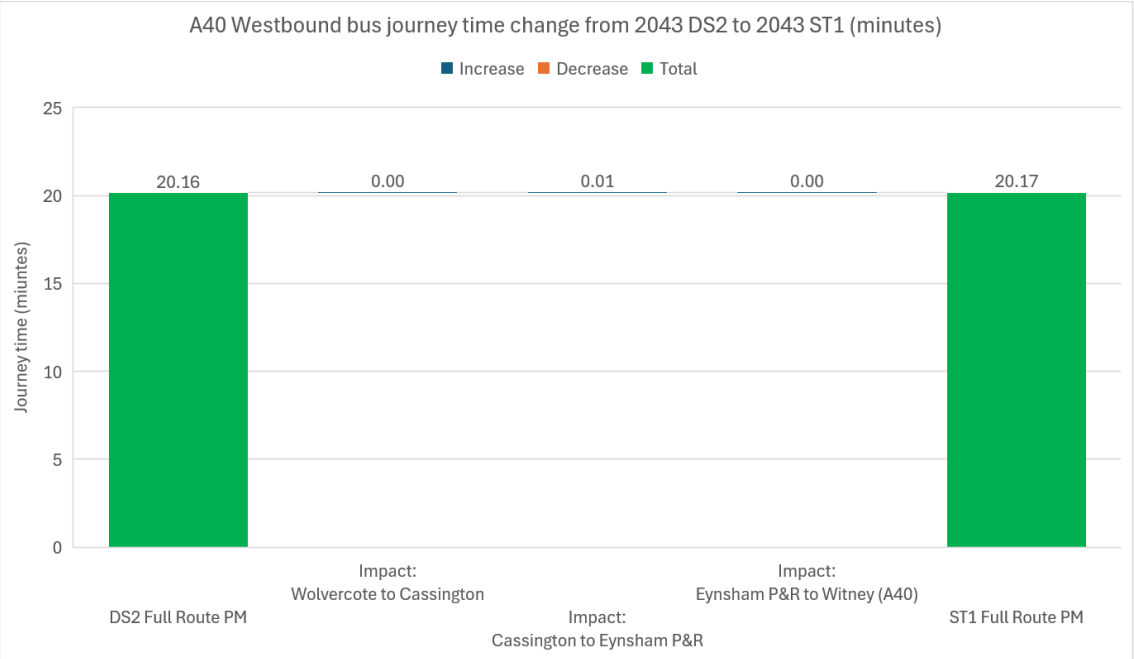


Figure 3-12 – A40 Westbound PM bus journey time change from 2043 DS2 to 2043 ST1 (minutes)



A40 Segment Detail

3.1.23 This analysis compares highway and bus journey times along the A40 corridor, using data extracted from the variable demand model, pre-active mode adjustment, to ensure a consistent journey time baseline across both model runs. It is expected that highway journeys will generally be faster than bus journeys in sections without dedicated bus infrastructure, due to the impacts of intermediate stops, passenger dwell times, and vehicle deceleration/acceleration affecting bus performance.

3.1.24 Table 3-10 shows that, compared with the DS2 scenario, the sensitivity test results in longer AM peak journey times along the A40. Journey times between Carterton and the A40 (Downs Road) increase by approximately 2 minutes for both highway and bus trips. This reflects the reassignment of highway traffic following removal of the access restrictions, prior to the forecast mode shift to active travel modes, resulting in increased traffic demand via Witney Road and the Downs Road roundabout. There is negligible impact during the interpeak period and the PM peak period.

3.1.25 Table 3-11 indicates that, in the westbound direction, the sensitivity test results in only marginal changes in journey times compared with the DS2 scenario. In the AM peak and interpeak periods, bus and highway journey times increase by less than 0.5 minutes. In the PM peak, journey times between the A40 (Downs Road) roundabout and Carterton increase by less than 1 minute.

3.1.26 Consistent with the reference case, buses are modelled to operate faster than general traffic in the AM peak westbound for A40 (Shores Green) - Witney Centre due to retained base model factors; this does not affect the validity of comparisons between scenarios.

Note: Journey times throughout this report in relation to A40 segment journey times are rounded to one decimal place; therefore, totals may not equal the sum of the individual A40 segment journey times.

Table 3-10 – A40 Eastbound journey time 2043 DS2 to 2043 ST1 (minutes)

Towards Oxford (eastbound)	ST1						Change from DS2					
	AM		IP		PM		AM		IP		PM	
	HY	Bus	HY	Bus	HY	Bus	HY	Bus	HY	Bus	HY	Bus
Carterton - A40 (Downs Road)	12.6	20.7	10.9	18.7	11.2	19.0	1.5	1.9	0.2	0.2	0.3	0.4
A40 (Downs Road) - Witney Centre	8.6	12.1	7.4	10.0	7.5	10.1	0.3	0.4	0.0	0.0	0.0	0.0
Witney Centre - A40 (Shores Green)	8.7	9.4	6.0	8.0	9.7	7.8	0.1	0.0	0.0	0.0	0.0	0.0
A40 (Shores Green) - Eynsham P&R*	7.1	7.5	5.3	6.1	5.7	6.3	0.0	0.1	0.0	0.0	0.0	0.0
Eynsham P&R - Cassington*	5.2	2.2	4.4	1.8	4.8	1.8	0.1	0.0	0.0	0.0	0.0	0.0
Cassington - Wolvercote*	8.8	5.8	7.6	5.9	7.8	6.7	0.1	0.0	0.0	0.0	0.0	0.0
Total Carterton - Wolvercote	**50.9**	**57.7**	**41.6**	**50.4**	**46.6**	**51.7**	**2.0**	**2.3**	**0.1**	**0.2**	**0.2**	**0.3**

**Highlight reflects near full bus lane (not through stop line)*

Table 3-11 – A40 Westbound journey time 2043 DS2 to 2043 ST1 (minutes)

From Oxford (westbound)	ST1						Change from DS2					
	AM		IP		PM		AM		IP		PM	
	HY	Bus	HY	Bus	HY	Bus	HY	Bus	HY	Bus	HY	Bus
Wolvercote - Cassington*	6.9	7.5	6.4	8.5	7.1	8.7	0.0	0.0	0.0	0.0	0.0	0.0
Cassington - Eynsham P&R*	5.0	4.3	4.4	4.6	5.2	5.4	0.0	0.0	0.0	0.0	0.0	0.0
Eynsham P&R - A40 (Shores Green)*	5.4	6.1	4.8	6.5	5.7	6.1	0.0	0.0	0.0	0.0	0.0	0.0
A40 (Shores Green) - Witney Centre	10.9	8.9	7.3	8.8	8.7	9.9	0.3	0.1	0.0	0.0	0.1	0.1
Witney Centre - A40 (Downs Road)	7.4	10.4	7.4	10.1	8.8	12.1	0.0	0.0	0.0	0.0	0.1	0.0
A40 (Downs Road) – Carterton	11.5	15.0	11.4	15.1	12.1	16.5	0.1	0.2	0.2	0.2	0.6	0.7
Total Wolvercote - Carterton	**47.1**	**52.1**	**41.6**	**53.5**	**47.5**	**58.6**	**0.4**	**0.2**	**0.2**	**0.2**	**0.7**	**0.8**

**Highlight reflects near full bus lane (not through stop line)*

4. Key Findings and Conclusions

4.1.1 This sensitivity test has been undertaken to assess the impact of removing the proposed access restrictions on Witney Road between Downs Road and Minster Road, while retaining all other assumptions associated with the 2043 DS2 mitigation scenario. The test examines whether the conclusions of the Strategic Transport Modelling Report remain robust if the proposed bus and cycle priority restrictions are not delivered as assumed.

Highway

4.1.2 The results indicate that removing the Witney Road access restrictions is forecast to result in localised changes, and thus a negligible impact on overall travel demand and mode share. Differences in car, bus and rail demand are small and are considered insufficient to materially alter the strategic travel patterns identified in the DS2 scenario.

4.1.3 At a network level, changes in highway performance are also limited. Across both West Oxfordshire and the wider model area, changes in travel time, delay, distance travelled and average speed are generally less than 1%, indicating that the inclusion or omission of the proposed access restrictions to Witney Road to prioritise bus and cycle, does not materially alter overall network operation.

4.1.4 The most noticeable impacts are concentrated locally around Carterton, Brize Norton and the A40 Downs Road corridor, where traffic reassigns to Witney Road once the restrictions are removed. The assessment shows:

- Increased traffic flows on Witney Road, particularly in the AM peak.
- Corresponding reductions in flows on sections of Brize Norton Road, the A4095 and parts of the A40.
- Increased delay on Witney Road itself as general traffic makes use of the additional route capacity.
- Localised reductions in delay on sections of the A40 corridor as a small amount of traffic diverts away from existing routes.

4.1.5 Junction-level results indicate broadly negligible changes in performance across West Oxfordshire. The most notable benefit is observed at the A40 / Downs Road roundabout, where average delay reduces during the AM peak and volume-to-capacity ratios show a modest improvement. This reflects the redistribution of demand between Witney Road and the surrounding highway network, resulting in a more balanced operation of the junction. However, the improvements are localised and do not represent a material change in overall highway conditions.

Bus performance

4.1.6 The sensitivity test demonstrates that removal of the Witney Road restrictions has little impact on bus performance along the A40 corridor. The bus lane infrastructure, service frequencies and active travel assumptions remain unchanged from DS2 and therefore continue to provide the principal benefits to bus services.

4.1.7 Bus journey time changes on the A40 corridor are negligible, generally less than 0.1 minutes on the dedicated bus lane sections in both directions. Changes in bus patronage are similarly small and are largely

confined to local route choice effects around Carterton and Brize Norton. Overall, the enhanced bus offer assessed in DS2 continues to perform in a similar manner under the sensitivity test assumptions.

4.1.8 The A40 segment analysis identifies some localised increases in journey times between Carterton and the A40 (Downs Road) roundabout, particularly in the eastbound direction. These changes reflect traffic reassignment via Witney Road and are most evident in the pre-active travel adjustment highway assignment. Bus journey times on Witney Road are adversely affected by the removal of the access restrictions, as buses must now compete with general traffic using the route. However, the impacts are concentrated on specific route sections and do not materially alter overall corridor performance or bus competitiveness relative to car travel.

Overall conclusions

4.1.9 Overall, the sensitivity test indicates that removing the proposed access restrictions on Witney Road results in only minor changes to travel demand, public transport operation and overall network performance, although modest localised highway benefits are evident in the vicinity of the A40 / Downs Road roundabout in the AM peak. While traffic reassigns onto Witney Road and minor localised changes in delay occur around Carterton, Brize Norton and the A40 Downs Road corridor, the impacts are small and remain highly localised.

4.1.10 The assessment therefore demonstrates that the principal conclusions of the Strategic Transport Modelling Report remain robust under this sensitivity test. In particular:

- Highway performance remains primarily constrained by junction capacity along the A40 corridor.
- Removal of the Witney Road restrictions delivers modest localised highway benefits, particularly around the A40 / Downs Road roundabout, but does not materially improve overall network performance.
- The benefits of the DS2 package continue to be driven principally by improved bus provision, active travel assumptions and targeted corridor interventions rather than changes in general traffic capacity.
- Bus journey time and patronage benefits are largely retained.
- The removal of the Witney Road access restrictions reduces the effectiveness of bus priority on Witney Road, with buses experiencing increased delay as they are required to compete with general traffic. However, these impacts remain localised and do not materially affect overall corridor bus performance.
- The strategic transport conclusions of the West Oxfordshire Local Plan 2043 modelling are not materially affected by uncertainty regarding the delivery of the proposed Witney Road access restrictions.

Appendix A. Junction Metrics

Junction performance has been assessed for key locations across West Oxfordshire, presented in Table A-1 and Table A-2.

Table A-1 – Junction performance: Delay (seconds)

Area	Junction	ST1			Change from DS2		
		AM	IP	PM	AM	IP	PM
A40	A40 / Wolvercote Roundabout (West)	16	17	16	0	0	0
A40	A40 / Canalside Quarter Junction	63	46	48	3	-1	0
A40	A40 / Eynsham Road	14	9	22	0	0	0
A40	A40 / Cassington Road	7	4	11	0	0	0
A40	A40 / Approach to Cassington Road	22	0	0	5	0	0
A40	A40 / Eynsham Roundabout	24	16	26	0	0	0
A40	A40 / Witney Road	19	8	24	0	0	0
A40	A40 / Eynsham P&R	10	10	20	0	0	0
A40	A40 / West Eynsham / Salt Cross (New junction)	47	19	23	2	0	0
A40	A40 / Shores Green (EB on-slip)	4	1	1	3	0	0
A40	A40 / Shores Green (WB off-slip)	0	0	0	0	0	0
A40	A40 / Shores Green (WB on-slip)	4	1	12	1	0	4
A40	A40 / Shores Green (EB off-slip)	0	0	0	0	0	0
A40	Shores Green (EB off-slip) / B4022	18	16	19	0	0	0
A40	Shores Green (WB on-slip) / B4022	23	9	35	1	0	5
A40	A40 / Ducklington Lane (WB on-slip)	1	1	1	0	0	0
A40	A40 / Downs Road	39	4	5	-25	0	-1
A40	A40 / Brize Norton Road	11	11	11	0	0	0
A40	New A40 Roundabout (Carterton Site F)	10	11	11	0	0	0
A40	A40 / Asthall Barrow Roundabout	15	15	15	0	0	0
Eynsham*	Stanton Harcourt Road / West Eynsham (New junction)	3	3	4	0	0	0
Witney	Jubilee Way / Cogges Hill Road / Oxford Hill	77	47	79	3	0	0
Witney	Jubilee Way / A4095	34	26	29	-1	0	0
Witney	Bridge Street / Newland / Woodgreen Hill	9	11	13	0	0	0
Witney	West End / Bridge Street	60	9	65	1	0	-1
Witney	Bridge Street / High Street / Mill Street	54	7	7	-1	0	0
Witney	Burford Road / Deer Park Road	35	29	46	-1	0	0
Witney	Deer Park Road / Curbridge Road / Thorney Leys	48	10	33	4	0	3
Witney	Ducklington Lane / Station Lane / Thorney Leys	38	33	48	-2	0	0
Carterton	Burford Road / Alvescot Road / Brize Norton Road / Black Bourton Road	21	21	26	0	0	0
Carterton	Monahan Way / Upavon Way	24	27	29	2	0	0
Brize Norton	B4477 / Burford Road	1	1	1	0	0	0
Brize Norton	B4477 / Minster Road / Brize Norton Road	9	9	10	0	0	0
Chipping Norton	Horsefair / London Road / Banbury Road / Over Norton Road	96	9	138	-2	0	0
Chipping Norton	Market Place / West Street / New Street	14	5	33	0	0	0

Table A-2 – Junction performance: Volume/Capacity (%)

Area	Junction	ST1			Change from DS2		
		AM	IP	PM	AM	IP	PM
A40	A40 / Wolvercote Roundabout (West)	72	70	69	0	0	0
A40	A40 / Canalside Quarter Junction	72	65	70	0	0	0
A40	A40 / Eynsham Road	64	52	66	0	0	0
A40	A40 / Cassington Road	57	48	60	0	0	0
A40	A40 / Approach to Cassington Road	87	73	86	0	0	0
A40	A40 / Eynsham Roundabout	81	73	93	-1	0	0
A40	A40 / Witney Road	58	60	67	0	0	0
A40	A40 / Eynsham P&R	55	49	53	0	0	0
A40	A40 / West Eynsham / Salt Cross (New junction)	74	57	69	0	0	0
A40	A40 / Shores Green (EB on-slip)	68	57	59	1	0	0
A40	A40 / Shores Green (WB off-slip)	37	35	41	0	0	0
A40	A40 / Shores Green (WB on-slip)	85	64	88	0	0	0
A40	A40 / Shores Green (EB off-slip)	53	38	51	0	0	0
A40	Shores Green (EB off-slip) / B4022	42	34	50	0	0	0
A40	Shores Green (WB on-slip) / B4022	73	52	78	-1	0	0
A40	A40 / Ducklington Lane (WB on-slip)	41	31	46	0	0	0
A40	A40 / Downs Road	83	53	75	-2	-4	-3
A40	A40 / Brize Norton Road	42	37	48	-4	-5	-7
A40	New A40 Roundabout (Carterton Site F)	27	23	31	1	0	-1
A40	A40 / Asthall Barrow Roundabout	46	34	48	-1	0	-1
Eynsham*	Stanton Harcourt Road / West Eynsham (New junction)	61	36	59	0	0	0
Witney	Jubilee Way / Cogges Hill Road / Oxford Hill	71	62	83	0	0	0
Witney	Jubilee Way / A4095	85	51	58	2	0	0
Witney	Bridge Street / Newland / Woodgreen Hill	79	75	84	-1	0	0
Witney	West End / Bridge Street	97	81	92	0	0	0
Witney	Bridge Street / High Street / Mill Street	77	66	72	0	0	0
Witney	Burford Road / Deer Park Road	95	63	67	3	0	-1
Witney	Deer Park Road / Curbridge Road / Thorney Leys	83	41	90	-2	1	1
Witney	Ducklington Lane / Station Lane / Thorney Leys	57	45	70	1	-1	-1
Carterton	Burford Road / Alvescot Road / Brize Norton Road /Black Bourton Road	60	45	70	1	0	2
Carterton	Monahan Way / Upavon Way	32	19	30	3	0	1
Brize Norton	B4477 / Burford Road	39	28	42	4	1	2
Brize Norton	B4477 / Minster Road / Brize Norton Road	38	28	45	-1	-5	-3
Chipping Norton	Horsefair / London Road / Banbury Road / Over Norton Road	82	73	87	0	0	0
Chipping Norton	Market Place / West Street / New Street	75	69	89	0	0	0

Stub Connector Delay Methodology and Rationale

Consistent with the Strategic Transport Modelling Report, delays reported on the sub-connector representing the wider industrial area at the Stanton Harcourt Road / Eynsham junction have been excluded from the junction performance assessment. Sensitivity testing confirmed that these delays are a modelling artefact arising from the network coding and do not reflect a genuine junction capacity constraint. Their exclusion ensures consistency with the approach adopted in the Strategic Transport Modelling Report.