Cycle Enfield - A1010 North

Transport for London

A1010 North Bus Journey Time Assessment

001 | 3.0

30 January 2019

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Contents

Figures

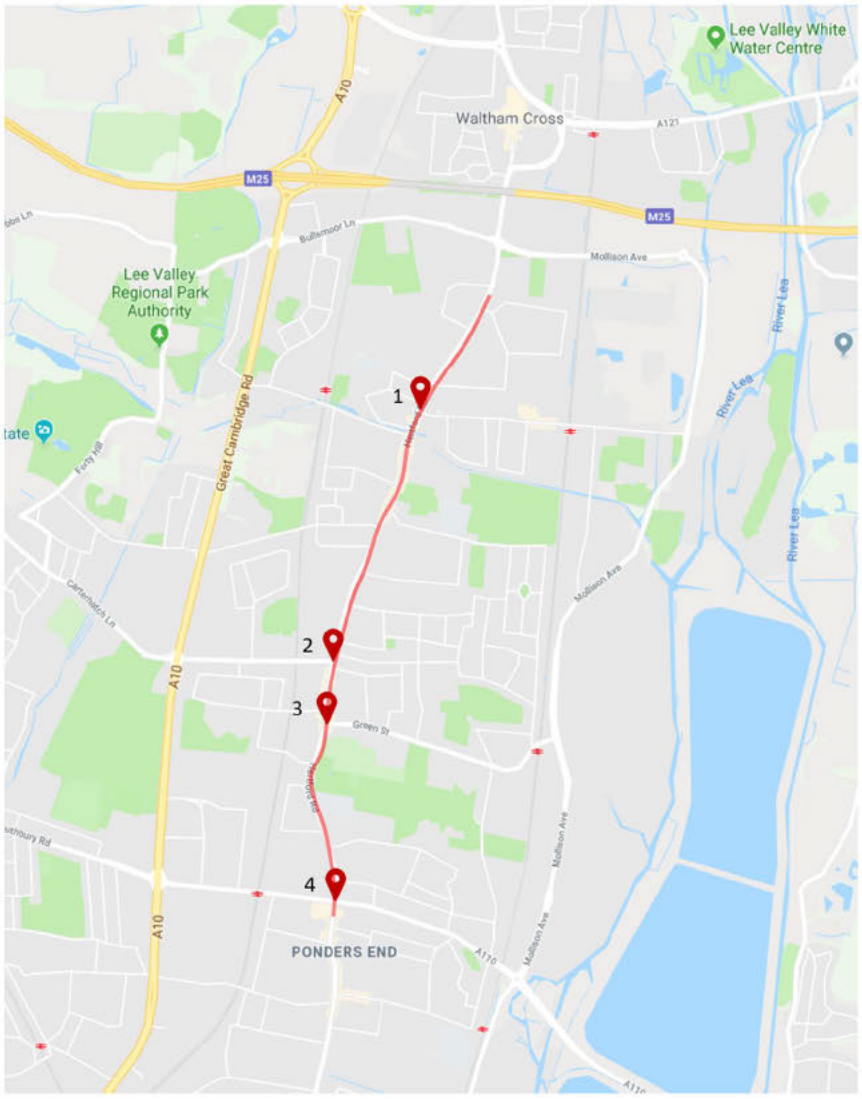
Tables

1. Introduction

This technical report summarises impacts to bus journey times resulting from the Cycle Enfield A1010 North scheme implementation.

1.1 Corridor Extents

The corridor extends from the A1010 / Nags Head Road / Southbury Road junction in the south to Holly Road / Mandeville Road in the north.



Junctions:

1. Ordnance Road
2. Carterhatch Lane
3. Green Street
4. Southbury Road / Nags Head Road

Figure 1-1: Scheme Extents

The A1010 / Nags Head Road / Southbury Road and A1010 / Ordnance Road signalised junctions are contained within both the existing and proposed journey time assessments. There are also two existing mini-roundabouts at the junctions with Carterhatch Lane and Green Street, the latter of which is proposed for conversion to a signalised junction.

1.2 Bus Routes

A1010 North corridor bus routings are presented graphically in Figure 1-2.

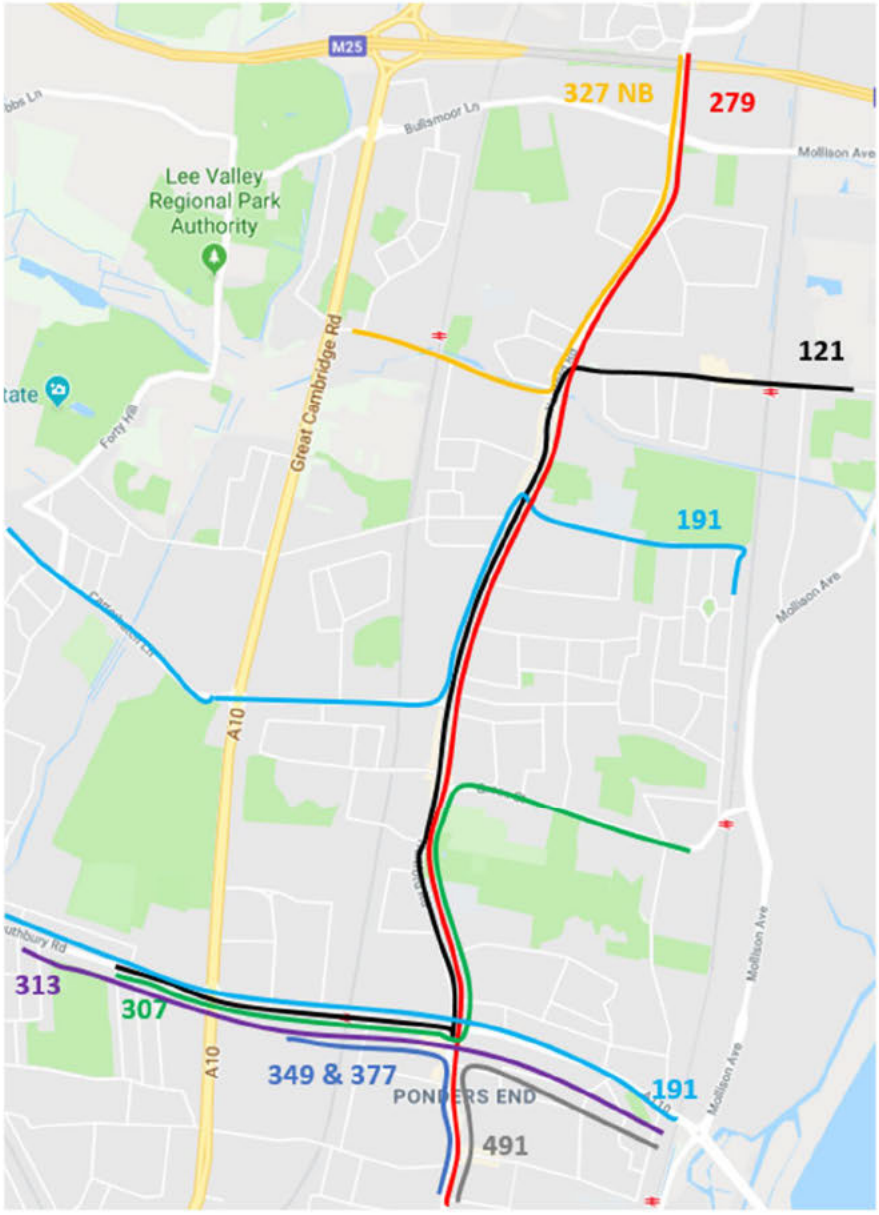


Figure 1-2: Corridor Bus Routes

Table 1-1: Peak Hour Bus frequency per Route and Direction

Route	Direction	AM	PM
121	Northbound	6	6
	Southbound	7	7
	Total	**13**	**13**
191	Northbound	6	7
	Southbound	7	7
	Total	**13**	**14**
279	Northbound	9	10
	Southbound	10	10
	Total	**19**	**20**
307	Northbound	6	6
	Southbound	4	4
	Total	**10**	**10**
313	Westbound	3	4
	Eastbound	3	3
	Total	**6**	**7**
327	Northbound	3	4
	Southbound	-	-
	Total	**3**	**4**
349	Northbound	6	6
	Southbound	6	7
	Total	**12**	**13**
377	Northbound	2	2
	Southbound	2	2
	Total	**4**	**4**
491	Northbound	4	4
	Southbound	4	4
	Total	**8**	**8**

1.3 Modelling

Table 1-2 outlines the junction modelling that has been undertaken and approved by Transport for London (TfL) in accordance with their Model Auditing Process (MAP) guidance. It should be noted that, as no formal guidance for Arcady modelling exists, TfL have undertaken a formal review of all roundabout modelling.

Table 1-2: Junction Modelling Summary

Junction	Arcady		LinSig	
	Existing	Proposed	Existing	Proposed
Ordnance Road			✓	✓
Carterhatch Lane	✓	✓		
Green Street	✓			✓
Nags Head Road			✓	✓

2. Methodology

2.1 Peak Hours

Table 2-1 outlines the A1010 North peak periods, derived from existing traffic survey data.

Table 2-1: Corridor Peak Hours

Peak Hour	Time
AM Peak	08:00-09:00
PM Peak	17:00-18:00

2.2 Assumptions

Table 2-2 details the assumptions and their associated input and/or parameter.

Table 2-2: Assumptions

Parameter	Assumption
Bus Boarders	As a result of the findings from '*TfL Accessible Bus Stop Design Guidance – Appendix B: Effects of introducing bus boarders*', it is anticipated that the proposed scheme will see benefits to bus journey times both from buses pulling away from the proposed bus boarders and from the reduction in boarding and alighting times.
Bus Stop Delay Time	
Bus 'Stacking'	It is considered unlikely that, given the number of routes and their associated frequencies, stationary buses will cause delay to the following bus when stopping.
LinSig Outputs	All LinSig outputs were obtained from TfL approved LMAP5 submissions.

2.3 Bus Route Movements

Table 2-3 and Table 2-4 outline each bus service within the scheme extents, and their movement through key junctions along the corridor.

Table 2-3: Northbound Bus Routings

Northbound	121	191	279	307	313	327	349	377	491
Southbury Road / A1010 North	✓	✓	✓	✓	✓		✓	✓	✓
Green Street / A1010 North	✓		✓	✓					
Carterhatch Lane / A1010 North	✓	✓	✓						
Ordnance Road / A1010 North	✓		✓			✓			

Table 2-4: Southbound Bus Routings

Southbound	121	191	279	307	313	327	349	377	491
Ordnance Road / A1010 North	✓		✓						
Carterhatch Lane / A1010 North	✓	✓	✓						
Green Street / A1010 North	✓		✓	✓					
Southbury Road / A1010 North	✓	✓	✓	✓	✓		✓	✓	✓

3. Results

Table 3-1 contains the modelled impact on bus journey time per route during both the AM and PM Peak periods. The values are derived from corridor delays plus the average delay per vehicle experienced at the main corridor junctions.

Table 3-1 Average Delay per Bus by Route (s)

Route		AM Peak			PM Peak		
		Existing	Proposed	Change	Existing	Proposed	Change
121	Northbound	100.1	154.2	**54.1**	332.8	419.7	**86.9**
	Southbound	239.0	310.6	**71.6**	173.6	388.4	**214.8**
191	Northbound	148.5	143.0	**-5.5**	431.3	347.1	**-84.2**
	Southbound	109.9	125.6	**15.7**	114.3	158.1	**43.7**
279	Northbound	127.5	146.2	**18.7**	320.4	362.3	**41.9**
	Southbound	202.2	208.3	**6.1**	117.6	156.7	**39.1**
307	Northbound	53.9	103.4	**49.5**	91.8	165.0	**73.2**
	Southbound	76.9	224.7	**147.8**	92.8	297.8	**205.0**
313	Westbound	107.3	102.3	**-5.0**	137.4	66.4	**-71.0**
	Eastbound	48.0	69.4	**21.4**	80.3	126.1	**45.8**
327	Northbound	30.3	34.5	**4.2**	62.5	34.2	**-28.3**
	Southbound	-	-	**-**	-	-	**-**
349	Northbound	75.4	61.4	**-14.0**	67.9	68.7	**0.8**
	Southbound	55.8	57.6	**1.8**	57.1	52.3	**-4.8**
377	Northbound	75.4	61.4	**-14.0**	67.9	68.7	**0.8**
	Southbound	55.8	57.6	**1.8**	57.1	52.3	**-4.8**
491	Northbound	147.7	141.9	**-5.8**	138.4	135.5	**-2.9**
	Southbound	107.3	102.3	**-5.0**	137.4	66.4	**-71.0**

Table 3-2 contains the average peak period two-way delay per bus service.

Table 3-2: Average Change in Delay per Two-Way Bus by Route (s)

Route		AM Peak	PM Peak
121	Two-Way	62.8	150.9
191	Two-Way	5.1	-20.2
279	Two-Way	12.4	40.5
307	Two-Way	98.7	139.1
313	Two-Way	8.2	-12.6
327	Northbound	4.2	-28.3
349	Two-Way	-6.1	-2.0
377	Two-Way	-6.1	-2.0
491	Two-Way	-5.4	-37.0

Table 3-3 displays the total peak hour delay.

Table 3-3 Total Peak Hour Delay by Route (s)

Route		AM Peak			PM Peak		
		Frequency (no.)	Existing	Proposed	Frequency (no.)	Existing	Proposed
121	Northbound	6	600.5	924.9	6	1996.7	2518.3
	Southbound	7	1673.1	2174.2	7	1214.9	2718.5
191	Northbound	6	891.2	858.1	7	3018.9	2429.8
	Southbound	7	769.0	879.2	7	800.2	1106.4
279	Northbound	9	1147.4	1315.4	10	3203.9	3623.2
	Southbound	10	2022.1	2083.0	10	1175.5	1566.6
307	Northbound	6	323.6	620.4	6	550.9	990.0
	Southbound	4	307.5	898.8	4	371.4	1191.2
313	Westbound	3	311.2	296.7	4	515.3	249.0
	Eastbound	3	158.4	229.0	3	232.9	365.7
327	Northbound	3	87.9	100.1	4	234.4	128.3
	Southbound	-	-	-	-	-	-
349	Northbound	6	452.4	368.4	6	407.4	412.2
	Southbound	7	368.3	380.2	7	376.9	345.2
377	Northbound	2	150.8	122.8	2	135.8	137.4
	Southbound	2	111.6	115.2	2	114.2	104.6
491	Northbound	4	590.8	567.6	4	553.6	542.0
	Southbound	4	429.2	409.2	4	549.6	265.6

Table 3-4 summarises the modelled total delay, comparing existing against proposed, and includes the resulting average delay per bus resulting from scheme implementation.

Table 3-4: Total Peak Delay and Overall Average Delay per Bus (s)

Peak	Total Delay - Existing	Total Delay- Proposed	Change (s)	Average Delay per Bus (s/bus)	
AM Peak	10394.9	12343.0	1948.1	22.0	**28.7**
PM Peak	15452.4	18694.0	3241.6	35.2	