SQA-8569 - Scheme Impact Report (SIR)

Cycle Enfield - A1010 North corridor

June 2019

EVERY JOURNEY MATTERS

Contents

Purpose

The Scheme Impact Report (SIR) is to be used to identify the impact of implementing a scheme on the network to provide the client/sponsor and Planned Intervention (PI) team with all of the required information to make an informed decision on the project.

The Scheme Impact Report (SIR) will be initiated and submitted by the scheme sponsor / promoter. Traffic Engineering (TE) Signals will complete the Signals Design Technical Assurance section. The SIR is then handed to Road Space Management (RSM) Outcomes Management, to inform on the integrity of the modelling and network impact. Once complete, the SIR is handed back to the sponsor/client who will then submit the scheme to RSM's Planned Interventions for approval.

A SIR must be completed for all schemes planned for implementation on the Transport for London Road Network (TLRN), Strategic Road Network (SRN) and on borough roads if bus operation is also impacted.

Scheme types:

- Aggregation of schemes in the area
- Significant changes to large sections of the network
- Major schemes
- Large schemes
- Small to medium schemes – localised impacts
- Low or no impact schemes

All of these scheme types require a SIR to assess the impact on the network.

Reference documents

Document Number	Document Title
SQA-0448	Signal Design Review Sheet
SQA-0064	Design Standards for Signal Schemes in London
SQA-0184	Model Audit Process (MAP) Overview

Document Control for Scheme Submission

Version	Date	Prepared by	Reviewed by	Approved by

Contact Details

Scheme Sponsor		Date Signed
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Network Impact Specialist Team		Date Signed
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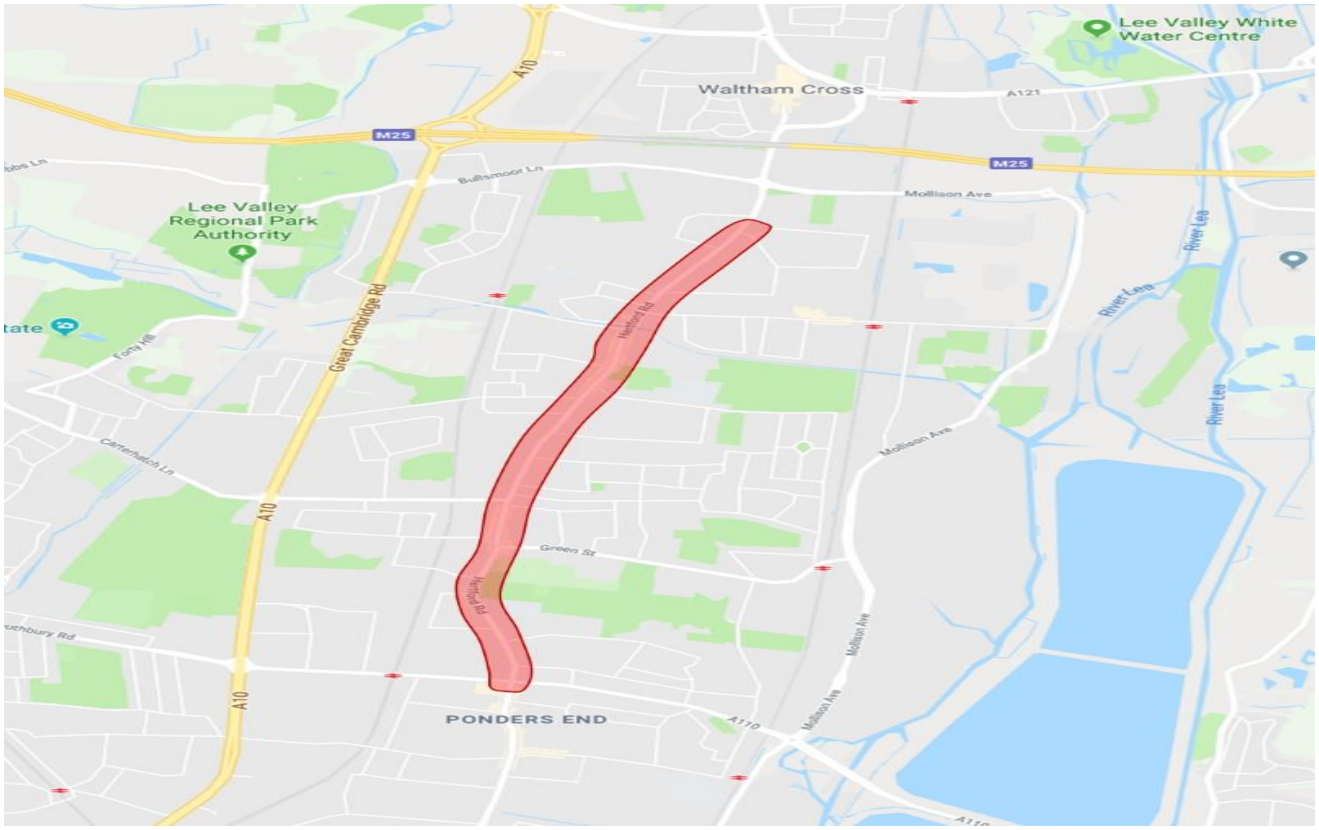
Scheme Summary

Name:	Cycle Enfield - A1010 North corridor		
Type of scheme:	Cycle and public realm improvement scheme		
Borough:	Enfield	**Road Network:**	SRN
Location & scope of works:	A1010 (Hertford Road) between junction of Southbury Rd/Nags Head in the south and junction of Holly Rd/Mandeville Rd in the north. Cycle facility implementation, modelling & design.		



Scheme objective (from Scheme Brief form):	As part of the Mayor's Healthy Streets agenda, the programme is focussed on encouraging Londoners to use cars less and walk, cycle and use public transport more. Through the delivery of features that make cycling safer and more convenient, the programme targets people who currently make short car journeys that could easily be cycled or walked instead. The main objectives of this scheme are the reduction of traffic on the congested corridor with the promotion of physical activity through cycling and walking. Furthermore, the enhancement of the street environment aims to make it more attractive to visit, shop and live.
Scheme justification & benefits (from Scheme Brief form):	Based on robust data analysis it is believed that the provision of safe and continuous cycle facilities, combined with the public realm improvements, will be key contributing factors to attract people to use these provisions making this scheme a success. Traffic modelling and bus impact assessments were undertaken and the A105 - Green Lanes corridor scheme was used as a recent successful example.

	It is envisaged that in the medium term this will lead to a reduction in traffic which will have substantial benefits in the form of reduced levels of congestion and an improvement in traffic and bus journey times. This will result in a reduction of pollutant levels (improved air quality) and reduction of noise and vibration levels. In addition to this, it is expected that the physical activity undertaken by people using the scheme will promote a healthier lifestyle.
Changes to scheme brief	The original extents of the A1010 north corridor (which ended at the junction with Hertford Road/Bullsmoor Lane/Mollison Ave at the northern end) has been reviewed and reduced by the LB Enfield. The segment between Holly Road and the above mentioned junction has now been descoped from this commission.

Traffic Engineering: Safety checks

Designs approved in Principle:	Yes
Proposed signal layout designs for 32/016; 32/048 & 32/190 have all been through the Engineering Traffic Signals stage 1 & 2 safety checks and signed off.	

Safety review (including safety timings:	Yes
Buildability Review:	Yes
Maintainability Review:	Yes

Comments or additional supplementary information:

Signal Design Technical Assurance of design drawings listed in Appendix.

This Assurance constitutes "Approval in Principle". Full AMD Technical Approval of the Signals Design will be given in detailed design.

Changes to layout or facilities following public consultation or in detailed design may affect the timings, buildability, maintainability and safety assessment of the design(s).

Prohibited movements require Traffic Management Orders prior to implementation.

Model Integrity

Modelling in line with MAP Standards:	LMAP	**Yes**
	TMAP	No
	VMAP	No
Date of traffic flow data:		Jul '15, Apr '16
Traffic peak times modelled:	AM peak	**Yes**
	Off-peak	No
	PM peak	**Yes**
	Weekend	No
Strategic modelling undertaken:	ONE	No
	Other	No
Scenarios modelled:	Base	**Yes**
	Future Base	No
	Do Something	**Yes**
	Sensitivity	No
Feasibility modelling undertaken in Linsig:		**Yes**

Key modelling assumptions/exceptions:

Verification of the validity of the original scheme flows was carried out by comparing July 2018 on street Degree of Saturation (DoS) readings against updated LinSig base model outputs at 32/016 & 32/048. It was found that the new base models validated against 2018 conditions so these flows are fit for purpose.

As the modelling assessment for this scheme was LinSig only, before and after general traffic, bus and cycle journey times do not exist.

However the modelled delay at each of the junctions has been totalled to show the expected change in delay to each bus route which passes through the scheme. The values below are banded, whilst the specific absolute results can be found in the accompanying A1010 North Bus Journey Time Assessment report.

In the absence of VISSIM modelling Network Performance have agreed that this is an appropriate methodology to assess bus

journey time impacts, however:

- There is an increased margin of error in the delay results calculated by LinSig at junctions where the Degree of Saturation (DoS) is above 90%. This is applicable in the proposed scenario at every one of the junctions modelled by LinSig in this scheme (32/016, 32/048, 32/190)
- The absolute change in delay value as represented in the results table cannot be guaranteed to a high degree of accuracy
- Results are not as accurate as if VISSIM modelling had been carried out (however a VISSIM model of this network would have been very difficult to validate given the large distances between signalised junctions)

Inter peak scenario was not tested as traffic flows are significantly less for all movements compared to the AM and PM peak under base conditions.

Network Impact Assessment:

Walking

32/048

- The signalised crossing over Hertford Road on the south-side of the junction is to be converted to an uncontrolled crossing. Pedestrians will be able to cross over to the island when the northbound carriageway is held on red, but rely on the pedestrian and cycle stage 4 being demanded for them to cross over the southbound carriageway without being opposed by motorised traffic. However even if stage 4 is demanded pedestrians will still have to cross informally in gaps between cyclists.
- The loss of this signalised crossing will increase the safety risk at this junction as pedestrians may choose to cross the road informally in gaps between motorised traffic instead of waiting for a gap between cyclists, or if they get stranded on the island because pedestrian and cycle stage 4 is not demanded
- The alternative is for pedestrians who need to cross over the south-side of Hertford Road to use the signalised facilities on the other arms of the junction instead - they would have to use the staggered crossing on the northside of the junction then the crossing over Ordnance Road (or vice-versa) which would result in a significant increase to pedestrian wait times of around 100 seconds during both peaks and in both directions

- On the north-side of the junction the conversion of a straight-across crossing to a staggered crossing increases the maximum pedestrian wait time across this arm, particularly for pedestrians making the crossing in the west to east direction which will experience an increase of over a minute during both peak periods

- The green man for the crossing over Ordnance Road will run for an extra 5 seconds which will slightly reduce the maximum pedestrian wait time during the AM peak but during the PM peak the wait time will still increase due to the necessary jump in cycle time from 88 to 96 seconds

- Pavement space lost along west-side of junction to make room for cycle lane
- New shared space added on north-east corner of junction, potential for increased risk of collisions with cyclists

32/190

- The existing signalised crossing over Hertford Road on the north-side of the current give-way roundabout in this location is a standalone pedestrian crossing. As part of the conversion of the roundabout into a signalised junction, this crossing will become part of the new junction Method of Control so maximum pedestrian wait time will increase as it will be necessary to run the new junction at a 96 second cycle time.

- There is currently a zebra crossing over Green Street meaning there is no wait time to cross, however a new signalised crossing will be introduced as part of the new junction arrangement which will significantly increase the maximum pedestrian wait time.

32/016

- Method of Control in the proposed scenario is practically as existing, therefore the impact to maximum pedestrian wait times is negligible
- The one second difference comes about because the green man runs alongside the existing cycling phase at this junction which is green for a minimum of 7 seconds. However, as the latest standards for a cycling phase minimum is only 5 seconds the green man is able to run down to its actual minimum of 6 seconds instead (although as an aside, due to intergreen updates the cycling phases will actually run for at least 8-12 seconds depending on which direction it is serving)

The signalised crossings 32/117 outside the College of Haringey, Enfield and North East London (CHENEL) and 32/191 just north of Green Street are being retained. Meanwhile the signalised crossing 32/118 by Tyberry Road will be converted to a zebra and cycle priority crossing. Other existing zebra crossings will be retained plus new zebra and cycle priority crossings will also be added in four other locations: by Carterhatch Lane, Addison Road, Longfield Avenue and Turkey Street.

Region/Area	Cycle Time (s)					
	AM Peak		Off-peak		PM Peak	
	Base	*DS*	*Base*	*DS*	*Base*	*DS*
Region 1219 - A1010 Hertford Road / Ordnance Road	104	104	N/A	N/A	88	96
New UTC Region - A1010 Hertford Road / Green Street	N/A	96	N/A	N/A	N/A	96
Region 517 - A1010 High Street / Nags Head Road	120	120	N/A	N/A	120	120

Average pedestrian maximum wait times and journey times
AM Peak

Location		Base Model	Do Something	Difference
32/048 - cross over A1010 Hertford Road south-side of junction (west to east)	Average ped max wait times (s)	98	197	99
	Average ped journey times (s)			
32/048 - cross over A1010 Hertford Road south-side of junction (east to west)	Average ped max wait times (s)	98	202	104
	Average ped journey times (s)			
32/048 - cross over A1010 Hertford Road north-side of junction (west to east)	Average ped max wait times (s)	98	164	66
	Average ped journey times (s)			
32/048 - cross over A1010 Hertford Road north-side of junction (east to west)	Average ped max wait times (s)	98	115	17
	Average ped journey times (s)			
32/048 - cross over Ordnance Road	Average ped max wait times (s)	98	93	-5
	Average ped journey times (s)			
32/190 - cross over A1010 Hertford Road north-side of junction	Average ped max wait times (s)	35	88	53
	Average ped journey times (s)			
32/190 - cross over Green Street	Average ped max wait times (s)	0	90	90
	Average ped journey times (s)			
32/016 - cross over any arm	Average ped max wait times (s)	113	114	1
	Average ped journey times (s)			

Average pedestrian maximum wait times and journey times
PM Peak

Location		Base Model	Do Something	Difference
32/048 - cross over A1010 Hertford Road south-side of junction (west to east)	Average ped max wait times (s)	82	181	99
	Average ped journey times (s)			
32/048 - cross over A1010 Hertford Road south-side of junction (east to west)	Average ped max wait times (s)	82	186	104
	Average ped journey times (s)			
32/048 - cross over A1010 Hertford Road north-side of junction (west to east)	Average ped max wait times (s)	82	155	73
	Average ped journey times (s)			
32/048 - cross over A1010 Hertford Road north-side of junction (east to west)	Average ped max wait times (s)	82	107	25
	Average ped journey times (s)			
32/048 - cross over Ordnance Road	Average ped max wait times (s)	82	85	3
	Average ped journey times (s)			
32/190 - cross over A1010 Hertford Road north-side of junction	Average ped max wait times (s)	35	88	53
	Average ped journey times (s)			
32/190 - cross over Green Street	Average ped max wait times (s)	0	90	90
	Average ped journey times (s)			
32/016 - cross over any arm	Average ped max wait times (s)	113	114	1

52/010 - cross over any arm	Average ped journey times (s)			

Network Impact Assessment:

Cycling

32/048

- Advanced Stop Lines (ASL) are added to the A1010 Hertford Road northbound and Ordnance Road approaches to improve safety for cylists by allowing them to position themselves in front of other road users
- Cycling lanes to be added both northbound and southbound on A1010 Hertford Road to improve protection for cyclists
- An early release of 4 seconds added on the A1010 Hertford Road northbound arm, giving cyclists the opportunity to get a headstart over motorised vehicles helping reduce the likelihood of collisions
- Shared space to be added on north-east corner of junction to remove the chance of conflict between cyclists and other left turning vehicles from A1010 Hertford Road to Ordnance Road, also improving journey times for cyclists making this turn

32/190

- The conversion to a signalised junction from a give-way roundabout aims to improve safety for cyclists
- The new junction design includes a northbound cycle route via the service road off Hertford Road to improve protection for cyclists by removing the chance of conflict with the main corridor traffic flow
- A dropped kerb is included to allow cyclists from Green Street to access the northbound cycle route along the service road
- ASLs to be added to the Hertford Road northbound arm enabling right turning cyclists to position themselves in front of other vehicles, aswell as improving protection for confident cyclsits who choose not to use the northbound service road route
- ASL also to be added to the Green Street approach
- Cycling lane to be added on the Hertford Road southbound approach with an entry path onto Green Street allowing cyclists to bypass the signals for a faster journey through the junction
- Southbound cyclists travelling ahead on Hertford Road will not run alongside any other traffic phases (running with the pedestrian crossing stage instead), eliminating the possibility of conflict with any motorised vehicles

32/016

- The existing cycle lanes along Nags Head Road and Southbury Road will be widened, especially around the corners of the junction where extra space will be unlocked by building out additional pavement space
- Cycle lanes will also be added along the A1010 High Street on both the northbound and southbound arms improving safety for cyclists
- The cycling crossings to connect the east/west arms have been retained plus additional crossings have been added to connect the north/south arms
- The cycling crossings will run in parallel with the all-round pedestrian stage eliminating the chance of conflict between cyclists and motorised vehicles
- Cyclists on any approach who are turning left can bypass the signals for a faster journey through the junction
- Cyclists on any approach who are travelling straight ahead will have to wait for the all-round cycling/pedestrian crossing stage
- Cyclists on any approach who want to turn right will have to wait the length of up to two full cycle times (4 minutes) two receive two consecutive all-round cycling/pedestrian crossing stages. There is a chance that cyclists will not wait this long and either mix with traffic (increasing the risk of collision) or cycle through the middle of the junction illegally to turn right during the all-red to traffic stage. This could increase the chance of collisions with other cyclists or pedestrians crossing.

As the modelling assessment for this scheme was LinSig only, before and after cyclist journey times do not exist.

Cycle Journey Times

Route	Direction	Base Model		Do Something		Difference	
		AM	PM	AM	PM	AM	PM

Network Impact Assessment:

Bus Network - Mitigated Impacts

As the modelling assessment for this scheme was LinSig only, before and after bus journey times do not exist.

However the modelled delay at each of the junctions has been totalled to show the expected change in delay to each bus route which passes through the scheme. The values below are banded, whilst the specific absolute results can be found in the accompanying A1010 North Bus Journey Time Assessment report.

In the absence of VISSIM modelling Network Performance have agreed that this is an appropriate methodology to assess bus journey time impacts, however:

- There is an increased margin of error in the delay results calculated by LinSig at junctions where the Degree of Saturation (DoS) is above 90%. This is applicable in the proposed scenario at every one of the junctions modelled by LinSig in this scheme (32/016, 32/048, 32/190)
- The absolute change in delay value as represented in the results table cannot be guaranteed to a high degree of accuracy
- Results are not as accurate as if VISSIM modelling had been carried out (however a VISSIM model of this network would have been very difficult to validate given the large distances between signalised junctions)

The analysis below relates to these Average Delay per Bus by Route values.

Route 121
- Route 121 travels for about 3km through the A1010 North scheme, through every modelled junction, travelling along Southbury Road on approach to 32/016, up the A1010 Hertford Road then turning right onto Ordnance Road (and vice-versa in the opposite direction).
- During the AM peak in the northeast direction the additional delay is expected to be up to a minute, mainly caused by the impact of shortening the length of the Southbury Road eastbound left turn flare at 32/016 and converting the Green Street give way roundabout into a signalised junction (32/190).
- During the PM peak in the northeast direction the additional delay is expected to be over a minute. The majority of this additional delay is down to the shortened eastbound left turn flare at 32/016 which is expected to experience an even greater level of delay as flows along Southbury Road are much higher during the PM peak period.
- During the AM peak in the southwest direction the additional delay is expected to be over a minute, caused in part by the changes at 32/048 which result in the Ordnance Road left turn green signal running for less time, but mainly because of the impact to the southbound right turn at 32/016, which will heavily suffer as the road layout changes from two long lanes and a short flare to only one long lane and two short flares.
- However the largest increase in additional delay as a result of the A1010 North scheme is expected to be over three minutes to the southwest direction during the PM peak. Over two minutes of this delay is due to the aforementioned changes to the southbound road layout at 32/016 alone, where it isn't possible to allocate as much green time to this approach due to the higher flows along Southbury Road during the PM peak.

Route 191
- Route 191 travels through the scheme twice, along the A1010 Hertford Road for less than a kilometre between Eastfield Road and Carterhatch Lane and then as the route crosses 32/016 east/west along Nags Head Road/Southbury Road.
- The impacts during the AM peak are minor, but during the PM peak in the southbound direction the additional delay is expected to be up to minute. This delay is localised to when the 191 travels eastbound through 32/016, where the shortened eastbound left turn flare will cause delay to the straight ahead traffic (as flows along Southbury Road are much higher during the PM peak period).
- Route 191 could experience a reduction in delay of over a minute during the PM peak in the northbound direction. This reduction in delay is localised to where the 191 travels westbound through 32/016 as the Nags Head Road layout is barely changing but this approach will now receive more green time as it runs at the same time as Southbury Road (which requires additional green time to deal with the reduction in road capacity).

Route 279
- Route 279 travels directly north/south along the A1010 corridor through the entire scheme.
- The impacts during the AM peak are minor, however during the PM peak the additional delay in both directions is expected to be up to a minute. This delay is caused by converting the Green Street give way roundabout into a signalised junction (32/190) plus the loss of the nearside lane on the southbound direction to 32/048 which buses are currently able to use to bypass the general traffic queue. The impact however at 32/048 is not as great as it would have been if it hadn't been mitigated by an increase in cycle time at this junction from 88 to 96 seconds during the PM peak (which will subsequently increase pedestrian wait times).

Route 307
- Route 307 travels along Southbury Road on approach to 32/016, up the A1010 Hertford Road for about a kilometre then turns right onto Green Street (and vice-versa in the opposite direction).
- The impacts in the northeast direction are up to a minute during the AM peak, and over a minute during the PM peak. This additional delay is caused by shortening the length of the Southbury Road eastbound left turn flare at 32/016 and converting the Green Street give way roundabout into a signalised junction (32/190). The increased delay expected at 32/190 is broadly the same during both peak periods but the impact is greater at 32/016 during the PM peak because of the higher flow along Southbury Road.
- Route 307 is expected to experience a high level of additional delay in the southwest direction during both peak periods. This impact is predicted to be over 2 minutes in the AM peak and over 3 minutes during the PM peak. This additional delay is caused by converting the Green Street give way roundabout into a signalised junction (32/190) which will have major impacts to delay on Green Street, plus the changes to the southbound road layout at 32/016 which will impact on the southbound right turn. During the AM peak the majority of the additional delay comes from the impact to Green Street where it will not be possible to allocate as much green time as in the PM peak because flow along the A1010 southbound is higher during the AM and thus needs more green time to remain within capacity. In the PM the majority of the additional delay will be experienced at the 32/016 southbound right turn, where it isn't possible to allocate as much green time to this approach due to the higher flows along Southbury Road during the PM peak.

Route 313
- Route 313 travels east/west through 32/016 along Southbury Road/Nags Head Road.
- The westbound impacts during the AM peak are minor plus during the PM peak there could be a potential reduction in delay of over a minute. This reduction in delay would come about as the Nags Head Road layout is barely changing but this approach will now receive more green time as it runs at the same time as Southbury Road (which requires additional green time to deal with the reduction in road capacity).
- Additional delay of up to 30 seconds in the AM peak and up to a minute in the PM peak is expected in the eastbound direction through 32/016. This will be caused by the shortened eastbound left turn flare, which will also delay the straight ahead traffic. During the PM peak the impact is greater as flows along Southbury Road are much higher.

Route 327
- Route 327 only travels through the scheme in the northbound direction. The 327 joins the A1010 Hertford Road at Turkey Street and travels through 32/048.
- The expected impacts during the AM peak are minor while during the PM peak there could be a potential reduction in delay of up to 30 seconds. This reduction in delay would come about because there aren't major changes being proposed to the A1010 Hertford Road northbound layout at 32/048 but this approach will receive additional green as it runs at the same time as the southbound direction (which requires more green time to deal with the reduction in road capacity).

Routes 349 & 377
- Routes 349 and 377 follow identical routes through the scheme, only travelling through 32/016 along Southbury Road turning right onto A1010 High Street southbound (and vice-versa in the opposite direction).
- There are only minor impacts expected in both directions during either the AM or PM peak periods.

Route 491
- Route 491 only travels through 32/016 along Nags Head Road turning left into A1010 High Street southbound (and vice-versa in the opposite direction).
- There are only minor impacts expected in the northeast direction during both the AM and PM peak periods. Likewise for the

southwest direction during the AM peak.
- In the southwest direction there could be a potential reduction in delay to the 491 of over a minute during the PM peak. This reduction in delay would come about as the Nags Head Road layout is barely changing but this approach will now receive more green time as it runs at the same time as Southbury Road (which requires additional green time to deal with the reduction in road capacity).

In addition there is an approximately 300m long stretch of bus lane northbound on the A1010 Hertford Road which will be lost as a result of this scheme. This bus lane is located from just south of Broadlands Avenue adjacent to the College of Enfield, Haringey and North East London through to about 50m short of the Green Street give-way roundabout. This bus lane is operational between 16:00-19:00 and is travelled through by routes 121, 279 and 307. An attempt has been made within the separate A1010 North Bus Lane Removal Assessment report to quantify the negative effect that the loss of this bus lane would have on bus journey times during the PM peak. Within this report the limitations of the methodology used to quantify the impact have also been outlined. The impacts reported are not based on audited and approved LinSig model outputs.

AM Peak

Route description	Direction	Frequency (bus/hr)	Average Delay per Bus by Route (seconds)		
			Base Model	*Do Something*	*Difference*
121	Northeast	6	1-2 mins	2-3 mins	30-60 secs
	Southwest	7	3-5 mins	5-10 mins	1-2 mins
191	North	6	2-3 mins	2-3 mins	-(0-30) secs
	South	7	1-2 mins	2-3 mins	0-30 secs
279	North	9	2-3 mins	2-3 mins	0-30 secs
	South	10	3-5 mins	3-5 mins	0-30 secs
307	Northeast	6	0-1 mins	1-2 mins	30-60 secs
	Southwest	4	1-2 mins	3-5 mins	2-3 mins
313	West	3	1-2 mins	1-2 mins	-(0-30) secs
	East	3	0-1 mins	1-2 mins	0-30 secs
327 (Northbound only)	North	3	0-1 mins	0-1 mins	0-30 secs
349	Northwest	6	1-2 mins	1-2 mins	-(0-30) secs
	Southeast	6	0-1 mins	0-1 mins	0-30 secs
377	Northwest	2	1-2 mins	1-2 mins	-(0-30) secs
	Southeast	2	0-1 mins	0-1 mins	0-30 secs
491	Northeast	4	2-3 mins	2-3 mins	-(0-30) secs
	Southwest	4	1-2 mins	1-2 mins	-(0-30) secs

PM Peak

Route description	Direction	Frequency (bus/hr)	Average Delay per Bus by Route (seconds)		
			Base Model	*Do Something*	*Difference*
121	Northeast	6	5-10 mins	5-10 mins	1-2 mins
	Southwest	7	2-3 mins	5-10 mins	3-5 mins
191	North	7	5-10 mins	5-10 mins	-(1-2) mins
	South	7	1-2 mins	2-3 mins	30-60 secs
279	North	10	5-10 mins	5-10 mins	30-60 secs
	South	10	1-2 mins	2-3 mins	30-60 secs
307	Northeast	6	1-2 mins	2-3 mins	1-2 mins

307	Southwest	4	1-2 mins	3-5 mins	3-5 mins
313	West	4	2-3 mins	1-2 mins	-(1-2) mins
	East	3	1-2 mins	2-3 mins	30-60 secs
327 (Northbound only)	North	4	1-2 mins	0-1 mins	-(0-30) secs
349	Northwest	6	1-2 mins	1-2 mins	0-30 secs
	Southeast	7	0-1 mins	0-1 mins	-(0-30) secs
377	Northwest	2	1-2 mins	1-2 mins	0-30 secs
	Southeast	2	0-1 mins	0-1 mins	-(0-30) secs
491	Northeast	4	2-3 mins	2-3 mins	-(0-30) secs
	Southwest	4	2-3 mins	1-2 mins	-(1-2) mins

Network Impact Assessment:

Environment

As a result of this scheme queuing is expected to increase in many locations which could increase emissions, particularly around the Green Street junction where existing queues are low as it runs effectively as a give-way roundabout.

Conversely, by improving cycling facilities along the A1010 Hertford Road this may encourage a mode shift away from motorised vehicles towards pedal cycles which could lower emissions.

Network Impact Assessment:

Freight & Servicing

The removal of parking spaces off the A1010 Hertford Road means that servicing vehicles will also now be unable to use them. Where these parking spaces are relocated to the side roads this may cause inconvenience if this is further away from the shop being delivered to.

Impact to freight vehicles will be the same as for general traffic at the junctions modelled.

Network Impact Assessment:

General Traffic

As the modelling assessment for this scheme was LinSig only, before and after general traffic journey times do not exist.

32/048

- The loss of the near-side southbound lane at this junction mean that left turning and straight ahead traffic will be merged into the same lane. This has caused an increase in the length of the southbound queue up to a maximum of 141 metres during the AM peak and 127 metres during the PM peak.
- The proposed DoS on the southbound approach during the AM peak is the highest value at this junction - 92%, along with the DoS for the Ordnance Road left turn during the AM peak too.
- The largest increase in DoS at this junction is on the Ordnance Road left turn approach which will jump from 63% to 91% DoS during the PM peak. This is because this approach will recieve less green time in the proposed scenario because of the need to allocate this green time to the A1010 Hertford Road southbound approach instead to deal with the lane reduction.
- Increases in DoS and queue lengths have in part been mitigated against during the PM peak by increasing the cycle time at this junction from 88s to 96s.
- DoS and queue lengths on the A1010 Hertford Road northbound approach may improve because it will receive more green time as it runs at the same time as the southbound (which requires additional green time to deal with the reduction in road capacity).

32/190

- The A1010 Hertford Road/Green Street give-way roundabout is being converted to a signalised junction. This will significantly increase queue lengths, especially on the A1010 southbound approach where queue lengths are predicted to increase by about 100 metres during both peaks.
- Apart from for the A1010 Hertford Road northbound approach proposed DoS values on all arms are expected to be above 85% and the highest DoS value will be on the A1010 Hertford Road southbound approach - 97% during the AM peak. This indicates that the junction will operate with very little resilience or spare capacity.
- However one of the advantages of converting to a signalised junction is that contingency plans and procedures can be created for use in situations such as a road traffic accident, or during long term or unplanned emergency roadworks. TfL will be able to make strategic decisions to aid particular traffic movements or diversion routes.
- Another advantage of signalisation is that SCOOT Bus Priority will be installed which has the potential to benefit buses travelling through the junction, by either extending the green time to get a bus through at the end of a green signal or by cycling back sooner to an approach where a bus is waiting by the stop-line. Nevertheless it is unlikely that implementation of Bus Priority will offset the impact to DoS and queue lengths caused by signalisation.

32/016

- This junction already runs with no resilience so the changes to remove capacity on the southbound and eastbound approaches have predictably pushed the junction over the edge.
- The existing highest DoS values is 100% on the Nags Head ahead & left turn approach during the PM peak respectively. The highest proposed DoS value will be 104% on the A1010 High Street southbound right turn approach. In the PM peak, modelling showed that it was not possible to run the junction at a 120 second cycle time without at least one approach running with a DoS above 100%. Increasing the cycle time above 120 seconds is not an option given that there is an all-round pedestrian stage at this junction and pedestrian flows are high.
- The main changes at this junction resulting from the proposals are on the A1010 High Street southbound and Southbury Road eastbound approaches. The southbound approach will change from two long lanes and a short flare to only one long lane and two short flares. On the eastbound approach Southbury Road the length of the left turn flare will be shortened. Unsurprisingly these arms are expected to experience the largest impact to DoS and queue lengths as a result. During the AM peak the DoS on both the Southbury Road eastbound ahead and left turn approach and the A1010 High Street southbound right turn approach will be over 90% whilst during the PM peak both will be over 100%. Large queue length increases on both these approaches is expected too, especially during the PM peak where the queue length will double on the A1010 southbound right turn approach and increase by nearly 100 metres on the Southbury Road eastbound ahead & left approach from 196m to 280m. This queue will stretch past the Tesco car park access junction 32/069 to the west of 32/016.

- There are no major changes proposed to the other arms of the junction and this is reflected in the minor changes predicted to the DoS and queue lengths on these arms.

A lot of parking bays are being removed, being replaced by the cycle lane along the A1010 Hertford Road. This could lead to more vehicles turning right into side roads to find alternative parking spaces which could cause further delay to general traffic journeys along Hertford Road.

AM Peak

Route description	Direction	JT Time Bands (mins)		
		Base Model	*Do Something*	*Difference*

PM Peak

Route description	Direction	JT Time Bands (mins)		
		Base Model	*Do Something*	*Difference*

Degrees of saturation (values in %)

Link/Road	AM Peak			Off-peak			PM Peak		
	Base	*DS*	*Difference*	*Base*	*DS*	*Difference*	*Base*	*DS*	*Difference*
32/048 A1010 SB left turn only	22	N/A	-				20	N/A	-
A1010 SB ahead (+ left turn in proposed)	88	92	**4**				93	89	**-4**
Ordnance Road left turn	76	92	**16**				63	91	**28**
Ordnance Road right turn	69	76	**7**				58	72	**14**
A1010 northbound	74	80	**6**				97	84	**-13**
32/190 - A1010 southbound	95	97	**2**				75	86	**11**
Green Street	41	93	**52**				48	87	**39**
A1010 northbound	33	73	**40**				66	89	**23**
32/016 - A1010 SB ahead & left	80	73	**-7**				64	65	**1**
A1010 southbound right turn	68	92	**24**				79	104	**25**
Nags Head Road WB ahead & left	96	95	**-1**				100	86	**-14**
Nags Head Road WB right turn	23	28	**5**				34	43	**9**
A1010 NB ahead & left	93	89	**-4**				88	90	**2**
A1010 northbound right turn	85	85	**0**				84	84	**0**
Southbury Road EB ahead & left	82	93	**11**				98	102	**4**
Southbury Road EB right turn	41	43	**2**				43	35	**-8**

Queue length (values in metres)

Link/Road	AM Peak			Off-peak			PM Peak		
	Base	*DS*	*Difference*	*Base*	*DS*	*Difference*	*Base*	*DS*	*Difference*
32/048 A1010 SB left turn only	18	N/A	-				13	N/A	-
A1010 SB ahead (+ left turn in proposed)	111	141	**30**				115	127	**12**
Ordnance Road left turn	70	90	**20**				41	66	**25**
Ordnance Road right turn	29	32	**3**				19	24	**5**

A1010 northbound	52	59	**7**				118	85	**-33**
32/190 - A1010 southbound	90	191	**101**				18	116	**98**
Green Street	4	62	**58**				6	68	**62**
A1010 northbound	3	36	**33**				12	94	**82**
32/016 - A1010 SB ahead & left	97	90	**-7**				67	68	**1**
A1010 southbound right turn	47	66	**19**				49	98	**49**
Nags Head Road WB ahead & left	116	112	**-4**				150	96	**-54**
Nags Head Road WB right turn	6	6	**0**				9	10	**1**
A1010 NB ahead & left	100	99	**-1**				79	93	**14**
A1010 northbound right turn	29	29	**0**				29	28	**-1**
Southbury Road EB ahead & left	101	140	**39**				196	280	**84**
Southbury Road EB right turn	19	20	**1**				19	18	**-1**

Network Impact Assessment:

Taxis

No changes to taxi provision.

Impact to taxis will be the same as for general traffic at the junctions modelled.

Healthy Streets Criteria

Pedestrian

1	Are pedestrian wait times 74 seconds or less?	No
2	Do pedestrian crossings double cycle?	Yes
3	Are pedestrian crossings protected from exit blocking?	No
4	Is pedestrian linking possible at staggered crossings?	N/A
5	Will pedestrian system tools be implemented?	No
6	Can all pedestrians clear the footway in one cycle/invitiation period?	Yes
7	Is overcrowding on footways or central islands prevented?	Yes

Cycles

1	Can all cycles clear the stopline in one cycle?	Yes
2	Has cycle progression (e.g. offsets) been applied?	N/A
	CSH	
	QW	
	Other	
3	Are cycle movements prevented from exit blocking?	Yes
4	Have cycle wait times been minimised?	Yes
5	Will cycle SCOOT be implemented?	No

Buses

1	Has UTC Bus Priority been applied?	Yes
2	Are bus lane entry points free from obstruction and queueing?	N/A
3	Have bus speeds/journey times been improved or maintained?	No
4	Are buses able to clear the stop line in one cycle?	No

4	

General Traffic

1	Will call/cancel be applied at this location?	**Yes**
2	Have offsets been set for the predominant movement by time of day?	**N/A**
3	Have strategic traffic movements been prioritised over non-strategic traffic movements?	**Yes**

Overview Summary

						
Cycling	Walking	Bus Network	Environment	Freight/Servicing	General Traffic	Taxis

Healthy Streets Criteria

Have Healthy Streets Criteria objectives been met?	Partially met

The scheme proposals will drastically improve cycling facilities on the A1010 Hertford Road.

The scheme proposals will increase pedestrian wait times at all the signalised junctions. In particular there will be significant increases to maximum pedestrian wait times across Green Street and at the Ordnance Road junction 32/048. However additional zebra crossings are proposed which will improve pedestrian wait times for the people wanting to cross in these locations

The scheme proposals will increase bus delay on five of the nine bus routes which travel through the area of the scheme. Bus routes 121 & 307 travelling in the southwest during the PM peak will experience the greatest increase in delay, of over 3 minutes.

Summary

Overall the scheme proposals will benefit existing cyclists, and providing a continuous, safe facility should help attract more people to choose to cycle which could lower the number of car journeys taken in this area.

However, the majority of pedestrians, car users and bus passengers will experience a delay to their journey if they are travelling through one of the three signalised junctions along the route. If they travel through multiple of these junctions the impact is compounded.

Additional Information

List of additional documents (to be included with SIR submission or links provided):

Document title	Date last updated

File Information:

File created by (oneLondon user name):	gordonsheppard
Date/time Excel copy was created:	01/08/2019 11:14
Date/time PDF copy was created:	

Additional comments:

Traffic Signal Approved Proposed Layout Drawings:

PRO/32/016/05A

PRO/32/048/08

PRO/32/190/04

This document was created using SIR Files Generator v1.4

Scheme Overview

RSPG Version	Changes	Date
1		11/11/2011

Cycling		
Walking		
Bus Network		
Environment		
Freight & Servicing		
General Traffic		
Taxis