Report No.
ES13059

London Borough of Bromley

PART ONE - PUBLIC

Decision Maker:	**Environment Portfolio Holder** **For pre-decision scrutiny by the Environment PDS Committee on**
Date:	**25th June 2013**
Decision Type:	Non-Urgent Executive Non-Key
Title:	**LEESONS HILL JUNCTION UPGRADE**
Contact Officer:	Ismiel Alobeid, Senior Traffic Engineer Tel: 020 8461 7487 E-mail: Ismiel.Alobeid@bromley.gov.uk
Chief Officer:	Nigel Davies, Executive Director of Environment & Community Services
Ward:	Cray Valley East & Cray Valley West

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1. Reason for report

During the recent Chislehurst Bridge closure a right turn ban was introduced at the junction of Leesons Hill and Station Road with Sevenoaks Way to aid traffic flow; the right turn bans are still present and continue to reduce congestion on the A224. Some residents are now requesting that the right turn ban be removed as their local journey time has increased and Members have asked officers to investigate alternative solutions to the issue of congestion at this junction.

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2. RECOMMENDATIONS

2.1 That the Portfolio Holder approves Option 2, the widening of the A224 Sevenoaks Way, to allow the introduction of dedicated right turn lanes and the reintroduction of right turn manoeuvres into Leesons Hill and Station Road.

2.2 That authority is delegated to the Executive Director of Environment and Community Services, in consultation with the Portfolio Holder and Ward Members, to approve the scheme's detailed design.

Corporate Policy

1. Policy Status: Existing Policy:
2. BBB Priority: Quality Environment:

Financial

1. Cost of proposal: Estimated Cost: £175k
2. Ongoing costs: Non-Recurring Cost:
3. Budget head/performance centre: TfL Funding for Congestion Relief and Casualty Reductions 2013-14.
4. Total current budget for this head: £244.4k allocated to this scheme, of which £186.5k is the uncommitted balance
5. Source of funding: TfL LIP Funding 2013/14

Staff

1. Number of staff (current and additional): 4
2. If from existing staff resources, number of staff hours: 90

Legal

1. Legal Requirement: Non-Statutory - Government Guidance
2. Call-in: Applicable

Customer Impact

1. Estimated number of users/beneficiaries (current and projected): All motorists using the A224..

Ward Councillor Views

1. Have Ward Councillors been asked for comments? Yes
2. Summary of Ward Councillors' comments: Ward Members from both adjacent Wards appreciate the reasons for the right turn ban. However, they are sympathetic to local residents who are requesting that the right turns be reinstated.

3. COMMENTARY

3.1 As part of the diversionary routing during the reconstruction of the bridge on Chislehurst Road, traffic modelling was conducted in order to maximise traffic flow around the diverted route, which included the Leesons Hill junction with the A224. Modelling of the Leesons Hill junction with Station Road and Sevenoaks Way showed that by banning right turn movements congestion would be reduced. This right turn ban has remained in place since the reopening of the bridge in November 2012, as the ban has continued to benefit traffic flow along the A224.

3.2 A decision was taken by the Portfolio Holder in April 2013 to keep the ban in place at least until the completion of the Nugent Retail Park traffic signal scheme, planned for autumn 2013. However, following complaints from local residents that the ban is causing localised inconvenience, the Portfolio Holder asked officers to investigate alternatives to the right turn ban, which is currently in place.

3.3 Four options are now being put forward as possible alternatives to the current design. All options except Option 3 include right turn movements.

- Option 1A: The installation of a roundabout, with two controlled pedestrian crossings, one on the southern arm of Sevenoaks Way and another on the northern arm.

- Option 1B: The installation of a roundabout, with one controlled pedestrian crossing on the southern arm of Sevenoaks Way, twenty metres away from the junction (toward the junction with Station Approach).

- Option 2: To widen and modify the existing junction, creating two lanes ahead with dedicated right turn lanes for vehicles wishing to turn into Leesons Hill and Station Road. The signals would also later be linked to other signals on this route via urban traffic control (UTC) to improve traffic flow along the A224.

- Option 3: Do nothing; leave the signals as they are currently, with a right turn ban in place, but link to nearby traffic signals via urban traffic control (UTC) to improve traffic flow along the A224.

- Option 4: To leave the junction as it is but to revert to allowing right turn movements into Leesons Hill and Station Road, as was the case before the temporary closure of the bridge on Chislehurst Road in November 2011.

Option Details

3.4 **Option 1A:** This design would feature a roundabout equipped with two pelican type crossings, one on each arm of Sevenoaks Way. The carriageway would need to be widened to accommodate the roundabout. The current all-round pedestrian stage would not be available, as the traffic signals would be decommissioned. Although pedestrian flow is relatively low during the day there is a safety concern if all round pedestrian facilities are removed. The two pelican type crossings should offer pedestrians a good opportunity to cross the A224, but pedestrian wishing to cross Leesons Hill or Station Road, at this junction, would have to do so using uncontrolled crossings. Note: Research reveals that vehicular collisions are more likely at a roundabout than a traffic signal junction; however, accidents at signal junctions are usually more severe in nature. This option would result in longer peak time delays on the A224 than at present (see Table 3 below). The estimated cost for this option is £135,000.

3.5 **Option 1B:** This design would also feature a roundabout with a pelican crossing on the southern arm of Sevenoaks Way about 25 metres from the junction, to minimise the congestion due to pedestrian delay. A recent survey revealed that the majority of pedestrians cross at this location, towards the bus stop and train station. Pedestrians wishing to cross the other three arms would need to use an uncontrolled crossing point. As with the above option there will be a concern for pedestrians especially those with mobility and visibility impairment. Widening of the carriageway will be required. This option would result in shorter peak time delays on the A224 than at present (see Table 4 below). The estimated cost of this option is £107,000.

3.6 **Option 2:** Widening the A224 at the junction to provide dedicated right turn lanes in addition to two lanes ahead in both directions would be most functional as it would provide all round pedestrian crossing stage along with optimum traffic flow whilst allowing right turners. However, it would require greater carriageway widening than needed for a roundabout, which may prove to be expensive due to the levels of underground services such as gas, electric, water, cable TV and BT. In order to convert footways into carriageways some of the above services may need to be relocated. This option would result in shorter peak time delays on the A224 than at present (see Table 5 below). The estimated cost of this option is £175,000.

3.7 **Option 3:** Do nothing; this is obviously the cheapest option which gives fairly good traffic flow through the junction and all round pedestrian crossing facilities (see Table 6 below). However, with this option no right turns are allowed from Sevenoaks Way into Leesons Hill or Station Road, which has resulted in longer journeys for some local residents and some “rat running” in local roads. It is also proposed that this junction will be linked to the proposed traffic signals for Nugent centre via an UTC system.

3.8 **Option 4:** Revert back to previous traffic design prior to the bridge closure without a right turn ban in place (see Table 7 below). This will also be an inexpensive option that allows all round pedestrian demand, however, as the modelling shows, congestion on the A224 will be greatly increased. This option would result in much longer peak time delays on the A224 than at present. The estimated cost of reintroducing right turn movements at the junction is £3,200.

3.9 The volume of vehicular and pedestrian traffic has a bearing on all designs. Tables 1 and 2 below give an idea of vehicular and pedestrian traffic for a typical morning peak flow.

Table 1 Traffic Flow at Junction: (morning peak traffic flow 8 – 9am)

Origin	Destinations	Vehicles / Per hour (PCU) passenger carrying unit = 1 car
Sevenoaks Way (Southbound)	Right into Leesons Hill	73
	Ahead into Sevenoaks Way	833
	Left into Station Road	130
Cray Avenue (Northbound)	Right into Station Road	85
	Ahead onto Sevenoaks Way	771
	Left into Leesons Hill	77
Leesons Hill (Westbound)	Right into Sevenoaks Way	111
	Ahead into Station Road	203
	Left into Sevenoaks Way	163
Station Road (Eastbound)	Right into Sevenoaks Way	100
	Ahead into Leesons Hill	132
	Left Sevenoaks Way	80
Total Flow		2,758

Table 2 Pedestrian movements (morning peak traffic flow 8 – 9am)

Across Sevenoaks Road Southern Arm	Across Sevenoaks Road Northern Arm	Across Leesons Hill	Across Station Road	Total Pedestrians crossing during the peak period
88	15	27	7	137

Table 3 Oscady Modelling Results for Option 1 A

(Roundabout with two controlled pedestrian crossings at junctions, north & south arm of Sevenoaks Way)

AM Peak Flow	(RFC) RFC of 0.85 = good traffic flow above this figure and congestion will occur.	Vehicular Queues Per/hour
Arm 1 (Sevenoaks Way) SB	1.06	38.92
Arm 2 (Station Road)	0.65	1.76
Arm 3 (Sevenoaks Way) NB	1.10	53.94
Arm 4 (Leesons Hill)	0.88	5.91
Overall Result Total Queue		100.53

Table 4 Oscady Modelling Results for Option 1B

(Roundabout with one controlled pedestrian crossing on the Southern arm of Sevenoaks Road, twenty metres away from the junction)

AM Peak Flow	(RFC)	Vehicular Queues Per/hour
Arm 1 (Sevenoaks Way) SB	1.00	21.31
Arm 2 (station Road)	0.66	1.89
Arm 3 (Sevenoaks Way) NB	0.95	12.10
Arm 4 (Leesons Hill)	0.98	12.53
Overall Result Total Queue		47.83

Table 5 Linsig Modelling Results for Option 2

(Three lanes with pedestrian demand; widened carriageway to allow extra lanes on the A224)

AM Peak Flow	Practical Reserve Capacity (PRC) Degree of saturation 85% = traffic good flow	Vehicular Queues Per/hour
Sevenoaks Way NB. Ahead and Left	87.4 %	7.4
Sevenoaks Way NB. Ahead and Right	88.4%	8.7
Sevenoaks Way SB, Ahead and Left	96.2%	11.6
Sevenoaks Way SB Ahead and Right	95.8%	11.8
Leesons Hill , Ahead , Left and Right	96.4%	13.0
Station Road, Ahead ,left and Right	58.8%	3.2
Total network delay	PRC for network = (-7.1)	56.8

Table 6 Linsig Modelling results for Option 3

(Current traffic signal arrangement on site with pedestrian demand)

AM Peak Flow	Practical Reserve Capacity (PRC) Degree of saturation, 85% = good traffic flow	Vehicular Queues Per/hour
Sevenoaks Way NB. Ahead and Left	89.5 %	8.2
Sevenoaks Way NB. Ahead and Right	89.3%	8.1
Sevenoaks Way SB, Ahead and Left	96.2 %	11.6
Sevenoaks Way SB Ahead and Right	99.4%	15.8
Leesons Hill , Ahead , Left and Right	99.0%	15.3
Station Road, Ahead ,left and Right	58.8%	3.2
Total network delay	Overall PRC = (- 10.5)	63.1

Table 7 Modelling result for Option 4

(Showing junction with right-turn operation in place as was in place prior to the Chislehurst bridge closure, with pedestrian demand)

AM Peak Flow	Practical Reserve Capacity (PRC) Degree of saturation 85% = good traffic flow, above this figure and congestion will occur	Vehicular Queues Per/hour
Sevenoaks Way NB. Ahead and Left	113.8 %	64.6
Sevenoaks Way NB. Ahead and Right	158.3%	25.3
Sevenoaks Way SB, Ahead and Left	175.9 %	118.3
Sevenoaks Way SB Ahead and Right	126.3%	112.9
Leesons Hill , Ahead , Left and Right	176.4%	32.3
Station Road, Ahead ,left and Right	82.5%	5.5
Total network delay	Overall PRC = (- 96%)	358.97

Safety Considerations

3.10 Independent safety audits of each design have been undertaken. Both roundabout options would introduce additional risks and difficulties for pedestrians, as either two or three arms of the junction would not have any controlled crossing facility. Leesons Hill has a fairly high crossing rate for pedestrians and for cyclists using the off road cycle route.

3.11 Another issue raised is the possible high vehicle approach speeds on the A224, where the main traffic flow is found, increasing the risk for drivers entering the roundabout from either Leesons Hill or Station Road.

3.12 If option 2 was to be introduced – the widened carriageway with dedicated right turn lanes – there could be an issue with limited opportunities for right turners, which could lead to drivers taking chances and turning when they should not. However, to remove this risk a dedicated right turn stage would need to be introduced into the signals sequence, but any such facility would remove the traffic flow advantages created by this design so could not be recommended.

Recommendations

3.13 In light of all the evidence provided, Option 2 – widening the carriageway to introduce two lanes ahead on the A224 plus a dedicated right turn lane into both Leesons Hill and Station Road – would provide the greatest benefits: congestion on the A224 would be minimised, pedestrian movements would be catered for on each arm of the junction, the safety of vehicle occupants would be maximised, and local residents would not be inconvenienced by being unable to turn right from the A224.

3.14 The only other option that could be considered would be Option 3 i.e. to maintain the status quo and leave the right turn bans in place, but this would continue the disbenefit for local residents and other drivers who would wish to turn right from the A224. There would however be no cost if this option were to be agreed.

4 POLICY IMPLICATIONS

4.1 Two of the key aims set out in the Environment Portfolio Plan 2013-16 are to "Improve the road network and journey times for all users" and "Promote safe and secure travel"

5 FINANCIAL IMPLICATIONS

5.1 The estimated cost of the various options are summarised in the table below: -

Option	**Cost £'000**
Option 1A	135
Option 1B	107
Option 2	175
Option 3	0
Option 4	3

5.2 The report is recommending that the Portfolio Holder approves Option 2 that costs £175k. This can be funded from the TfL 2013 /14 LIP funding for Congestion Relief and Casualty Reductions that has an allocation of £244.4k set aside for this scheme. An uncommitted balance remains of £186.5k to meet these costs.

Non Applicable Sections:	Legal and Personnel Implications
Background Documents: Access on website (Decision) or via Contact Officers	Portfolio Holder Decision on 26/4/13 re TRAFFIC CONGESTION NEAR THE NUGENT CENTRE, PROPOSED TRAFFIC SIGNALS - Decision Ref ENV12027 OSCADY, roundabout traffic modelling results. Linsig, traffic signal modelling results. Various survey documents