



**Brighton & Hove
City Council**

**Proposed Submission City Plan Part 2
Brighton & Hove Development Plan April 2020**

Hearing Session: 9 November 2021 (AM)

**Additional Transport Topic Paper in Response
to Matter 6, Question 2**

Document Reference: BHCC29

BRIGHTON & HOVE CITY COUNCIL

1. This Topic Paper builds on the Transport Topic Paper (TP07) that was included with the submission documents in order to address specific issues raised by the Inspector with regard to representation made by Highways England (now known as National Highways). It also provides relevant further detail and context. The issues the Inspector has requested to be covered are addressed in turn below.

Identify those site allocations (H1 and H2) that are likely to impact the junctions of concern, along with their timescales for delivery. The outstanding areas of concern, as defined by Highways England at this stage are understood to be A27 Junctions 3 and 4, Carden Ave and Patcham Interchange respectively.

2. The transport modelling analysis that has been undertaken to support the City Plan Part Two allocates traffic generated by development sites in each Development Area (identified in City Plan Part One) to a specific junction on the Strategic Road Network (SRN) where traffic would logically be most likely pass through. These are as follows:
 - DA1 Brighton Centre and Churchill Square Area - A23 (London Road)
 - DA2 Brighton Marina, Gas Works and Black Rock Area – Falmer Interchange
 - DA3 Lewes Road – Falmer Interchange
 - DA4 New England Quarter and London Road – A23 (London Road)
 - DA5 Edward Street and Eastern Road – Falmer Interchange
 - DA6 Hove Station – A2038 (King George VI Avenue/Dyke Road Avenue)
 - DA7 Toads Hole Valley – A2038 (King George VI Avenue/Dyke Road Avenue)
 - DA8 Shoreham Harbour – A293 Hangleton Link
3. The quantum of development arising from identified development sites in the rest of the city was assumed to affect all SRN junctions equally due to the fairly even geographical spread of the allocations. Strategic site allocations outside of these development areas (SSA1 Brighton General Hospital and SSA3 - land at Lyon Close) were considered separately due to the larger amount of proposed development and were allocated to a specific junction – J1 B2123 (Falmer Road) and J5 A2038 (King George VI Avenue /Dyke Road Avenue) respectively.
4. The figures for the generation of traffic from sites and this overall approach to distribution have been agreed with National Highways (NH), formerly known as Highways England, and have been modelled for each junction.
5. Whilst this is the agreed approach for the purposes of the modelling, it is recognised that in reality individual development sites outside of the Development Areas will have greater impacts at certain junctions, even if the cumulative effect has been agreed to be fairly evenly spread. Taking this into account, sites (both within and outside Development Areas) where traffic is considered more likely to mostly affect Junctions 3 and 4 are set out in Table 1 below:

	Indicative Units	Expected timescale for delivery
J3 – Carden Avenue		
Former Hollingbury Library	10	2025-2030
Land at Ladies Mile, Carden Avenue	35	2025-2030
Land to north east of Coldean Lane	242	2022-2024 (under construction)
Land north of Varley Halls, Coldean Lane	12	2025-2030
<i>TOTAL</i>	<i>299 (242 permitted)</i>	
J4 - Patcham Interchange		
25 Ditchling Rise / rear of 57-63 Beaconsfield Road, Brighton	15	2025-2030
George Cooper House, 20-22 Oxford Street, Brighton	10	2021/22 (under construction)
City College, Pelham Tower (and car-park), Pelham Street,	100	2023-2025 (under construction)
87 Preston Road, Brighton, BN1 4QG	25	Completed and proposed for deletion from CPP2
Preston Park Hotel, 216 Preston Road, Brighton	22	2022/23 (planning consent granted)
Land at and adjoining Horsdean Recreation Ground, Patcham	25	n/a - Proposed for deletion under MM108
<i>TOTAL</i>	<i>197 (157 permitted)</i>	

Table 1: site allocations (H1 and H2) that are likely to impact the junctions of concern

6. Table 1 shows that 80% and 81% of the development considered likely to affect J3 and J4 respectively has already gained planning consent and in many cases is under construction or completed. It should be noted that on brownfield sites there will be a net change in trip generation rather than a wholesale increase (which would only be the case if the site was not previously developed), as the trips generated by the new development will be partially offset by those associated with the previous permitted use of a site.

The position of National Highways and the Council regarding any mitigation that is required, the ways in which that could be delivered and timescale in each case.

7. The changes in the number of trips expected to pass through each junction during peak hours as a result of the proposed distribution of development in CPP2 compared to the flows tested in the 2014 STA based on CPP1 is set out in Table 2 below.

Junction	Cumulative effects of additional CPP2 development trip distribution
J1 B2123 (Falmer Road) ¹	-106
J3 Carden Avenue	+19
J4 A23 (London Road)	-13
J5 A2038 (King George VI Avenue) /Dyke Road Avenue	+188
J6 A293 Hangleton Link	+29

Table 2: Cumulative effects of additional CPP2 development trip distribution at A27 junctions

8. It is important to note that the need for updated junction mitigations does not result from significant changes to the absolute volume of traffic using the SRN junctions. Table 1 indicates that the changes to the number of trips at the majority of the junctions due to the cumulative effects of the proposed development in CPP2 are minor and in some cases decrease compared to that modelled during the preparation of CPP1, with the exception of the increase of 188 at J5 which largely stems from the significant amount of development proposed in the Hove Station area. The need to update the previously agreed mitigations stems from revisions that were made to the modelling process to reflect requests from NH – this included the distribution of trips which affected the volume of traffic using the various junction arms. Also Systra’s review of the previously mitigations indicated that in some cases they did not meet contemporary design standards. NH’s subsequent review of this part of the assessments confirmed that the revised trip generation and trip distribution data is robust and acceptable for the purposes of the junction assessments.
9. In order to ensure the safe and effective operation of the SRN from the development proposed in the City Plan (as a whole) the Council has worked positively with NH to agree revised junction mitigations in response to their representations on the Plan. The Council agrees that these are necessary to ensure the effective and safe operation of five of the six junctions² on the SRN that were considered though the CPP1 STA in 2014.

Statement of Common Ground

10. NH has not yet responded to the Council’s request to agree a Statement of Common Ground (SOCG). This has been pursued with them with urgency since being raised in the Inspector’s Initial Questions. In the absence of an agreed SOCG, set out below is the Council’s understanding of the points of agreement with NH.
11. Table 3 below sets out the locations on the SRN which are affected by CPP2 and provides an overview of the identified impacts. In this table, the ‘2030

¹ This junction is outside of the Brighton & Hove administrative area

² J2 was deemed not to require further assessment as a result of National Highways’s comments on the BHCC methodology. It should also be noted that the Falmer Interchange (J1) is situated outside of the Brighton & Hove administrative area.

Reference Case' refers to modelling of each junction to reflect a scenario where the CPP2 development does not take place. By comparing the results of these models to the corresponding data for the models incorporating the CPP2 development (and the proposed mitigation measures), judgement has been made on the suitability of the proposed mitigation to specifically address the impacts of CPP2.

Location	Overview of impacts identified
Junction 1 – Falmer Interchange	The modelling concludes that there are no impacts to Junction 1 which require mitigation. The agreed distribution of CPP2 traffic results in a small reduction in traffic flows, and no significant increases at any junction arms
Junction 3 – A27 / Hollingbury Interchange	The 2030 reference case modelling indicates that there will be significant congestion affecting multiple arms of the junction on both its northern and southern sides, and that this includes queues which extend beyond the length of the A27 Eastbound off-slip, as well as queuing within the circulatory systems of the junction. CPP2 results in a relatively small absolute increase in vehicle trips at this location, the additional trips place further pressure on the A27 slips and the internal circulation; this requires mitigation to address a potential future worsening of safety concerns.
Junction 4 – A27 / A23	The 2030 reference case modelling indicates that there will be very significant congestion and queuing on both the A27 Eastbound off-slip and the A27 Westbound off-slip in the AM and PM peaks; these queues would be expected to potentially extend beyond the available safe storage of the slip roads. Despite the overall amount of traffic passing through the junction being expected to slightly decrease, the updated distribution of trips means the proposed development results in there being slightly more traffic using the A27 slips (but slightly less on certain other arms of the junction) as well as elsewhere in the junction and it is therefore agreed that mitigation of these impacts is required.
Junction 5 – A27 / King George VI / Devils Dyke Road	The 2030 reference case modelling indicates that there will be extensive queuing and delay at both the northern and southern sides of the junction, with the A27 slip roads showing particular issues in the AM and PM peaks. The addition of CPP2 traffic does not have a material impact upon any part of the junction, but due to the existing issues it is agreed that mitigation of these impacts is necessary to avoid any worsening of the junction's performance, particularly with regard to safety.
Junction 6 – A27 / A293 (Hangleton Link)	The 2030 reference case modelling shows that existing issues with delay and queuing on multiple arms of the junction (northern and southern sides) will worsen, with several arms exceeding 100% DoS in the AM and PM peaks. The addition of CPP2 traffic includes additional impacts to the A27 slips and it is agreed that these impacts require mitigation to resolve.

Table 3: Locations on the SRN (A27) which are impacted by CPP2

12. To address these impacts, National Highways and BHCC have worked with the Council's transport consultants Systra to propose a set of measures for the SRN junctions listed above (with the exception of J1). The proposed measures have been refined and through extensive dialogue with NH regarding technical aspects of the modelling process, with the outcomes of the agreed modelling summarised below (including explanation of how the measures address the specific impacts of CPP2).

Junction 3 – A27 / Hollingbury Interchange (Carden Avenue)

13. The proposed mitigation provides the greatest overall capacity at the junction whilst also assuring that safety issues with the slip road queues do not occur in practice, and that as such the proposed mitigation is appropriate given the limited "absolute" impact in terms of additional vehicle trips directly attributable to CPP2.

Junction 4 – A27 / A23 (Patcham Interchange)

14. The proposed mitigation scheme results in very significant improvements from the 2030 reference case, bringing queues well within the capacities of the off-slips and internal circulatory.

Junction 5 – A27 / King George VI Avenue / Devils Dyke Road

15. In the AM peak, the junction as a whole (northern and southern sides) has improved performance compared to both the 2030 reference case and the original 2014 mitigation proposals for CPP1, indicating that the specific impacts of CCP2 have been mitigated. In the PM peak, all parts of the junction (northern and southern) show a very significant improvement over the 2030 reference case.

Junction 6 – A27 / A293 (Hangleton Link)

16. The modelling of the proposed junction mitigation scheme shows that there will be very substantial benefits to multiple arms of the junction. Queue lengths in all areas remain within available storage capacities. As such, it is expected that implementation of the proposed mitigation measures will address the expected impacts of CCP2.

17. NH's assessment of the mitigation measures has concluded that overall, when compared with the June 2014 STA modelling:

- The Feb 2021 CPP2 Mitigation J3 performs worse, particularly on the southern part of the junction.
- The Feb 2021 CPP2 Mitigation J4 has a mixture of links that perform better and worse.
- The Feb 2021 CPP2 Mitigation J5 performs better.
- The Feb 2021 CPP2 Mitigation J6 performs better.

18. With regard to the performance of Junction 3, the mitigation measures proposed by Systra in the February 2021 scheme design have been undertaken in a manner which minimises impacts to the A27 off-slips; an associated effect of this is that delays on other arms of the junction are increased. The specific modelled changes in Mean Maximum Queues (MMQ) in passenger car units (PCUs) and Degree of Saturation (DoS) for the A27 slip roads are shown for the 2014 mitigation schemes and the February 2021 mitigation proposals below.

Junction Arm	2014 STA Mitigation		February 2021 CPP2 Mitigation	
	MMQ	DoS	MMQ	DoS
A27 Eastbound Off-slip (AM)	24.5	94.0	16.0	83
A27 Westbound Off-slip (AM)	9.9	72.0	12.7	97.6
A27 Eastbound Off-slip (PM)	34.6	99.3	19.8	79.4
A27 Westbound Off-slip (AM)	13.3	85.0	21.1	97.6

Table 4: Comparisons of Mean Maximum Queues and Degree of Saturation at J3 (2014 STA Mitigation and Proposed February 2021 Mitigation Measures)

19. The queue lengths in all cases are well within the available storage on the slip roads (approx. 40 PCUs). The westbound off-slip forms part of the southern part of the junction and the NH comment in paragraph 17 above corresponds to this.

20. With regards to Junction 4, a similar approach has been taken; the specific modelled changes for the A27 slip roads are shown in the table below.

Junction Arm	2014 STA Mitigation		February 2021 CPP2 Mitigation	
	MMQ	DoS	MMQ	DoS
A27 Eastbound Off-slip (AM)	6.5	67.0	14.6	97.3
A27 Westbound Off-slip (AM)	26.5	91.00	12.6	88.4
A27 Eastbound Off-slip (PM)	4.1	70.0	44.9	121.6
A27 Westbound Off-slip (AM)	12.8	79.6	12.6	89.9

Table 5: Comparisons of Mean Maximum Queues and Degree of Saturation at J4 (2014 STA Mitigation and Proposed February 2021 Mitigation Measures)

21. It is noted that the Eastbound off-slip in the PM peak hour is expected to record a DoS figure of over 100% and a mean maximum queue of 44 PCUs. However, the corresponding figures for the 2030 reference case (where the existing non-signalised roundabout junction is assumed to remain in place) are a Ratio of Flow to Capacity (RfC) figure of 1.74 (equivalent to 174% DoS) and an expected maximum queue length of 98 PCUs. The February 2021 mitigation therefore represents a substantial improvement on the 2030 reference case;

the expected queue lengths under the 2021 mitigation proposals would also remain within the available capacity of the slip road, which is not expected to be possible in the 2030 reference case.

22. For both junctions 5 (A27 / King George VI Avenue / Devils Dyke Road) and 6 (A27 / A293 (Hangleton Link), the proposed mitigation measures perform significantly better for all slip roads (and indeed all other junction arms) than the previously accepted 2014 STA mitigation schemes; the majority of all junction arms also show better performance and greater spare capacity than the 2030 reference case models.

Road Safety Audits

23. The Council's understanding is that the remaining concerns with J3 and J4 are primarily associated with the safety impacts to the SRN and the ability of the proposed schemes to mitigate against these. NH has requested that a series of Road Safety Audits (RSAs) be undertaken in respect of all the proposed mitigation schemes. The Council's consultants do not expect the RSAs to raise any major issues which would necessitate material changes to the proposed mitigations.
24. A brief for the work by appropriate Auditors has been prepared by SYSTRA on behalf of BHCC and NH's approval for both has been sought on multiple occasions since July 2021, with the most recent correspondence indicating that it will be assumed that NH are content with both if no response was received by Thursday 4 November. As no response was received, the auditors have now been instructed to commence work on the RSAs.

Delivery

25. Costings for the proposed mitigation measures have been drawn up by Systra and are set out in Table 6 below. These are included in the Council's updated Infrastructure Delivery Plan (IDP) which is due to be considered at Tourism, Equalities, Communities & Culture Committee on 25 November 2021. Inclusion in the IDP formerly recognises the need to implement the measures and sets out potential funding sources.
26. Funding will be secured for the necessary mitigations at J5 through an agreed CIL payment to be paid upon commencement of application BH2018/03633 (development of Toads Hole Valley).
27. The IDP indicates that funding for the other junctions will be addressed through a range of sources which could include contributions from future planning applications, bids for external capital grants (for example through national government or the Local Enterprise Partnership), the council's Transport capital programme and/or wider capital budget, prudential borrowing e.g. through the Public Works Loan Board. Some funding from S106 sums has already been secured - £115,000 from the development at Land off Overdown Rise, Mile Oak

(H2 site) for the Hangleton Link (A293) junction, and East Sussex County Council have secured approximately £350,000 for the Falmer junction (mostly via applications associated with the American Express Community Stadium).

28. Timescales for implementation require further discussion and agreement with NH, taking into account the need to manage the SRN and local road network and avoid multiple projects being undertaken simultaneously due to the potential consequent impacts on the network.

Infrastructure project	Delivery agency	Indicative costs - 21/22 - 29/30	Funding available	Outstanding Funding requirement	Funding sources
Junction 1 Falmer Hill/B2123 (Priority 4)	BHCC & National Highways	£ 1,731,240	£ 340,000 -	£ 1,391,240	BHCC CIL & S106, ESCC S106 (secured), central govt capital grant, LEP funding, BHCC Capital programme (including prudential borrowing.)
Junction 3 Carden Avenue (Priority1)	BHCC & National Highways	£ 2,111,130	£ -	£ 2,111,130	Central govt capital grant, LEP funding, BHCC Capital programme (including prudential borrowing.)
Junction 4 Patcham Interchange (Priority 2)	BHCC & National Highways	£ 1,619,730	£ -	£ 1,619,730	central govt capital grant, LEP funding, BHCC Capital programme (including prudential borrowing.)
Junction 5 - Devils Dyke Interchange (Priority 3)	BHCC & National Highways	£ 1,460,970	£ 1,460,970	£ -	CIL payment upon commencement of BH2018/03633 Toads Hole Valley
Junction 6 A27/A293 (Priority 5)	BHCC & National Highways	£ 1,360,800	£115,970 -	£ 1,244,830	BHCC CIL & S106 (secured), central govt capital grant, LEP funding, BHCC Capital programme (including prudential borrowing.)
TOTAL		£ 8,283,870	£ 1,460,970	£ 6,366,930	

Table 6: Funding for Junction Mitigation Measures

Without prejudice, the Inspector would also like the Council to consider carefully any implications this matter would have for the soundness of H1 and H2 sites, should the Inspector share the concerns of National England (if indeed they are outstanding). The topic paper should therefore go on to address, in those circumstances, how the matter could be dealt with in the Plan.

29. The specific representation raised by NH during the preparation of CPP2 was *“whether the cumulative impact of traffic that would be created by the housing development sites allocated in CPP2 on the SRN (in particular the junctions on the A27) had been included within the strategic modelling undertaken for CPP1. If so, the previously agreed junction mitigation work would be able to accommodate the future traffic levels. If not, further consideration of appropriate mitigation may be required in order for HE to be satisfied that the effects of the development proposed in CPP2 would not have an unacceptable impact on the operation of the SRN.”*
30. As set out in paragraph 8 above, the concerns that have arisen with the operation of the J3 and J4 (the ‘junctions of concern’) are not as a result of the any increases in traffic movements in absolute terms associated with the cumulative impact of additional site allocations included within CPP2.
31. It is therefore not considered that this matter is a soundness concern for Policies H1 and/or H2 as the cumulative impact of the development proposed in CPP2 has been demonstrated to have a negligible effect on the number of peak-hour trips through those junctions. Removal of particular sites would not therefore have an insignificant impact, indeed if these policies were deleted in their entirety the expected amount of traffic passing through the junctions would remain broadly similar and the mitigation measures would still be required.
32. The need for the principle of mitigation measures arises because of the extent of planned development in CPP1, which is not subject to the current examination. The cumulative impact of the CPP2 allocations does not in itself significantly affect the performance of the SRN junctions, rather it is the agreed amendments to the trip distribution and modelling assumptions.
33. The review of the mitigation measures previously agreed has indicated that revisions are required due to updated design standards. This means that the previously agreed mitigation measures would need updating whether or not CPP2 was being produced.

Other Considerations

34. The Council wishes to highlight a number of other considerations which could lessen the impact of the development proposed in the City Plan Part Two on the SRN junctions.

Type of Development

35. Most of the sites included in Policy H1 are within the existing central built-up area and are likely to be developed as flats, to enable appropriate policy-compliant densities to be achieved. These developments will also generally include:
- standard parking set at maximum levels and minimums for disabled driver parking (as defined within the council's Parking Standards for new development (SPD14)) and set out in Appendix 2 of the City Plan Part Two;
 - good access to sustainable and public transport; and
 - Travel Plans and other associated travel reduction measures, including additional infrastructure if considered necessary, as required by Policy DM35.
 - CPP2 Policy DM36 also supports and encourages car-free residential developments which by their nature are likely to have a minimal effect on traffic using the SRN.
 - In particular, criterion (e) of Policy H2 "Provision is made for sustainable transport infrastructure improvements that provide and promote sustainable transport and improved safe pedestrian and cyclist access to and through the site to support the development"
36. The cumulative effect of these measures can be expected have an impact in reducing the additional site-based, longer distance car-borne journeys that could pass through the SRN junctions during the weekday peak hour periods.
37. As an example, the large residential element of the consented scheme at Sackville Trading Estate (Policy SSA4) is comprised entirely of flatted units. The development will provide 142 parking spaces for the 564 residential units. Whilst this does not place a limit on the number cars owned by the future residents, during the consideration of the application the overspill parking on surrounding roads was estimated to be a maximum of 20 vehicles. The low level of expected car use appears incompatible with the trip rate assumptions requested by NH as set out in Table 7 below, and suggest the impact on the SRN from this development could be lower than accounted for in the revised modelling.

Covid-19

38. NH's interest relates to the volume of traffic projected to pass through the SRN junctions in peak periods (i.e. the am and pm 'rush-hour' peaks). The medium to long-term impacts on working patterns resulting from the covid-19 pandemic are uncertain, but a consensus is emerging that 'hybrid' working patterns combining office and home working are likely to be commonplace. It would seem plausible therefore that the typical weekday volume of inbound and outbound commuting both within Brighton & Hove and between the city and other locations beyond the administrative boundaries that uses the SRN junctions may be reduced. Whilst no detailed analysis of the effect of this has taken place in the Brighton & Hove context, the future projections of traffic levels

in the peak periods could therefore be lower than previously forecasted. If this transpires, the pressure on the SRN junctions on the A27 in Brighton & Hove will be less than previously assumed for an equivalent amount of new housing development.

39. The programmed Review of City Plan Part One will allow for full consideration and additional evidence gathering in relation to this issue.

Proportion of Brownfield Sites

40. The majority of the additional residential development proposed within the City Plan Part Two, including the vast majority of the H1 sites and the strategic site allocations in Policies SSA1 – SSA4, is on brownfield sites. Therefore there will be a net change in trip generation, including by car/vehicle, rather than a wholesale increase (which would only be the case if the site was not previously developed), as the assessment of trips generated by the new development could be partially offset by those associated with the previous permitted use of a site.

Trip Rate Assumptions

41. At the request of NH, the trip rates used in the modelling during updates for CPP2 differ from those previously used and accepted as part of the previous two STAs (2013 and 2014), as shown in Table 7 below.

Previous Residential Trip Rates			
AM Peak Hour		PM Peak Hour	
Arrivals	Departures	Arrivals	Departures
0.1	0.2	0.3	0.2
Revised Residential Trip Rates			
AM Peak Hour		PM Peak Hour	
Arrivals	Departures	Arrivals	Departures
0.2	0.3	0.3	0.2

Table 7: Comparison of Trip Rates Used in Modelling for CPP1 and CPP2

42. This will have had the effect of increasing the number of expected trips passing through the SRN junctions even if the amount of development assumed in the modelling remaining constant. In effect an assumption of 0.2 and 0.3 means that for every 5 or 3 1/3 dwellings respectively, one vehicle will pass through an SRN junction during peak hour.
43. These trip rates assumptions could over-estimate number of trips generated which pass through the SRN junctions at peak time, particularly given the factors influencing the type of development in Brighton & Hove that are set out above. Again, taking the example of the Sackville Trading Estate scheme where parking demand is estimated to be 164 spaces for 564 flats, it seems unlikely that 169 trips through the SRN junctions would be generated during peak hours (using a trip rate assumption of 0.3).