Hi James,

We have provided clarification on the four questions posed by SCC Highways. For clarity, these questions have been reiterated in ***bold italics***, with our answers provided below:

1) Please send raw survey data for each of the modelled junctions, used to inform the traffic flow diagrams. Please also clarify what year survey data was collected.

The raw data can be found here: https://we.tl/t-9xsFp1kdXD

The survey data was collected in October 2022, however for the modelling scenarios, these flows were factored up based on TEMPRo data, to apply to 2024. The TEMPRo factors for Tandridge 008 have been provided below:

AM: 1.008092161

PM: 1.00769404

2) Please provide flow diagrams for all modelled scenarios.

The traffic flow diagrams can be found attached.

3) Is the applicant able to provide any justification or reasoning behind the estimated 10% modal shift figure used for some scenarios? This assumes that an additional 1 in 10 driving trips will be moved to alternative modes as a result of the measures provided and this has not been adequately justified in the documents provided.

The second SCC Highways Response stated the following:

"The HRN has not provided a 'with mitigation' scenario to reflect the potential impacts of the proposed sustainable transport measures or the potential impacts of the proposed capacity measure on Mid Street."

Hence in our response to that comment we sought to provide an illustration of what the effect would be of a certain level of modal shift i.e. 10%. It is clearly difficult to be precise on the level of shift any sustainable measures will achieve since this depends on a range of factors. If SCC required it, we could run an alternative level of shift e.g. 5%. However, we are not sure what this would achieve since the modelling results previously submitted show that the highway network will operate satisfactorily with no modal shift. Hence this exercise simply demonstrates the potential improvement in the situation over and above that nil shift scenario.

Based on analysis and professional judgement we selected a 10% shift for the exercise. Census 2011 data showed that the current modal split in the area for bus travel was 3% and the modal split for travel by bike was 1% (note 2021 Census was distorted by the pandemic). Due to the provision of regular electric shuttle bus services, an electric bike pool, and a significantly improved NCNR21, there is likely to be a shift from single occupancy vehicles to bus and cycle travel.

For clarity, the changes in trip generation have been provided below:

Mode	Modal Split	Trip Generation (2011 Census)	Trip Generation (adjusted)	Change

	2011 Census	Adjusted	AM	PM	AM	PM	AM	PM
Car	69%	59%	188	140	161	120	-27	-20
Bus	3%	10%	7	5	26	20	19	14
Cycle	1%	4%	2	2	10	8	8	6

This is considered to be a suitable modal shift for this exercise, based on the following:

- The increase in bus trips is anticipated to be an additional 19 trips in the AM peak hour, and 14 trips in the PM peak hour, resulting in a total of 26 and 20 bus trips in the respective AM and PM peaks. It is likely that the majority of commuting, education (especially secondary) and leisure trips will involve Redhill town centre, or other destinations via Redhill railway station and hence these people have the opportunity to shift to bus or cycle. As a check on bus capacity, the proposed electric bus provision comprises two 16-seater electric minibuses, travelling to and from the site every half an hour. This equates to 72 one-way, and 144 two-way bus seats per hour. Therefore, even if all bus trips were made by using the shuttle bus service, this would result in a peak occupancy of only 18% in the AM.

- Regarding cycle trips, for this illustration we have assumed an increase of 8 trips in the AM peak hour and 6 in the PM peak hour, resulting in a total of 10 cycle trips in the AM and 8 in the PM peak. The Client is committed to provide a minimum of 20 electric bicycles from the outset, with more to be provided subject to demand. Furthermore, significant upgrades to the NCNR21 and connecting routes are proposed to better connect future site users to Redhill town centre.

4) Has the applicant considered the potential impact of delivering the proposed pedestrian crossings on nearby assessed junctions? If so, how has this been reflected in the modelling? If not, what is the rationale behind not doing so?

The proposals/potential improvements to provide pedestrian crossings at the Park Works Road / A25 / Mid Street and Church Hill / A25 / Cooper's Hill Road have been considered within the modelling process, however they ultimately were not included within the Junctions 9 assessments. This is due to the traffic modelling software not allowing certain junction features to run simultaneously, in addition to the software not being sensitive enough to account for the benefits of the gaps created in traffic that are created when the crossing is called, aiding vehicles to egress the minor arms. It was for these two reasons that it was decided that the crossings would not be included in the capacity analysis.

Notwithstanding this, we have now modelled both junctions with puffin crossings, in the proposed development scenarios. However this requires the junctions to be modelled without accounting for the fact that movements from major arms onto minor arms will disrupt the flow of vehicles along the major arms (i.e. A25). However, an analysis of the modelling results allows us to account for this shortcoming in the software, as explained below. The updated modelling results are attached. The proposed development models have been run without the 10% modal shift (demand sets 1-6) as well as with the 10% modal shift (demand sets 7-12). Furthermore, a pedestrian flow of 60 pedestrians per hour has been assumed at each junction. It is likely that pedestrian flows would be significantly lower than this, however a robust scenario has been run. The modelling results are attached, with the 'Proposed Only' scenarios including puffin crossings.

- Park Works Road / A25 / Mid Street:
  - **With 10% Modal Shift Applied**: The peak RFC remains **0.90**, whilst the peak queue increase rises from **1.3** to **1.4** vehicles. This is insignificant, and once again, fails to account for the real-world vehicular benefits of providing the crossing, which creates gaps in traffic for vehicles egressing the minor roads. Furthermore, the queuing created by the movement from A25 (E) to Park Works Road, 'Stream A-D', is **0.0** in all peak hour periods, thus the shortcoming in the software making it unable to account for blocking is not a factor.
  - **Without 10% Modal Shift Applied**: The peak RFC remains **0.92**, whilst the peak queue increase rises from **1.9** to **2.0** vehicles. This is an insignificant change. Furthermore, the queuing created by

the movement from A25 (E) to Park Works Road, 'Stream A-D', remains at **0.0** in all peak hour periods.

- Church Hill / A25 / Cooper's Hill Road:
  - **With 10% Modal Shift Applied**: The peak RFC increases from **0.94** to **0.95**, whilst the peak queue increase rises from **1.5** to **1.9** vehicles. Once again, this is insignificant. Furthermore, the queuing created by the movement from A25 (W) to Coopers Hill Road, 'Stream C-B', features a peak queue of **0.2** vehicles (17:00-18:00). Not only is this negligible, but the right-turn lane has the capacity for 2.0 PCUs, thus easily accommodating a queue of **0.2** vehicles.
  - **Without 10% Modal Shift Applied**: The peak RFC increases from **0.96** to **0.97**, whilst the peak queue increase rises from **2.1** to **2.6** vehicles. Once again, this is insignificant. Furthermore, the queuing created by the movement from A25 (W) to Coopers Hill Road, 'Stream C-B', remains a peak queue of **0.2** vehicles (17:00-18:00). As previously, this is easily accommodated within the right-turn lane.

We trust this adequately addresses the queries raised.

Kind regards,

Ethan.

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5 attachments

Traffic Flow Diagrams.pdf
1064K

EXISTING ONLY - High Street - Mid Street - Park Works Road junction.pdf
569K

PROPOSED ONLY - High Street - Mid Street - Park Works Road junction.pdf
971K

EXISTING ONLY - Church Hill - High Street - Coopers Hill 240823.pdf
488K

PROPOSED ONLY - Church Hill - High Street - Coopers Hill 240823.pdf
778K