Technical Note 4

Title	**Land South of White Rock, Paignton – Assessment of the Proposed Toucan Crossing**				
Prepared by	Felicity Flanagan	**Checked by**	Roger Key	**Reviewed by**	Roger Key
Date	6th April 2017			**Version**	1.0

1. General

The purpose of this Technical Note is to set out the reasoning for not providing a staggered crossing at the proposed northern crossing on A3022 Brixham Road and to assess the full impact of the proposed crossing in this location. The Toucan crossing layout, illustrated on drawing 0734-023RevA, is enclosed as Appendix A.

2. Project Background

The Land South of White Rock development site lies to the west of the A3022 Brixham Road and southwest of Paignton. The site is bounded to the north by a separate residential housing development known as White Rock, to the east by A3022 Brixham Road, and to the south and west by agricultural land. It is proposed that the site is accessed via a new four-arm roundabout at which A3022 Brixham Road forms two arms.

The adjacent section of Brixham Road is currently subject to a 40mph speed limit. This is proposed to be reduced to 30mph within the vicinity of the site, extending south to the existing 30mph restrictions south of the junction of A3022 Brixham Road with Hunters Tor Drive.

It is proposed to construct a number of controlled and uncontrolled pedestrian and cycle crossing points across the A3022 along the site frontage to serve the development site and existing properties to the east of the Brixham Road. The standards in terms of crossing type, location and visibility requirements were set out in Technical Note 3.

The crossing options set out in Technical Note 3 were discussed with Torbay Council's (TC) Highway Department at a meeting on 7th March 2017. Feedback from the meeting on the crossing options put forward was provided by Adam Luscombe (Team Leader/ Strategy and Project Delivery, Torbay Council) via email on the 10th of March. In relation to the northern crossing location identified in Technical Note 3, support was given in principle to the location of the crossing and it was stated that "*as long as 80m [visibility] could be provided from the signal head, and the maximum possible from 2.5m back that this could be accepted".*

TC had also previously set out (in an email from David Pickhaver (Senior Strategy and Project Officer, Torbay Council) dated 2nd February) that the northern crossing should be staggered. KTC considered that this was not the correct form of crossing for this location and outlined, in Technical Note 3, guidance for the use of staggered crossings which is set out in LTN 2/95. Paragraph 5.2.3 of the guidance states "*where the road is more than 15m wide a staggered crossing layout should be provided. If the road width is greater than 11m, a staggered layout should be considered".*

TC also requested that a location south of that shown in Technical Note 3 be considered. Therefore, a signal-controlled, staggered crossing within the approach to the roundabout was investigated, using a widened extension of the proposed traffic splitter island on the northern A3022 Brixham Road arm of the roundabout to provide space for a stagger. Technical Note 3 states:

"*A rough assessment of the expected peak single lane flow on the approach to the crossing was undertaken and suggested a flow of approximately 1,200 vehicles per hour, or 20 vehicles per minute. This is equivalent to a ratio of flow to capacity of a single lane of about 0.6, so assuming a minimum 60 second cycle time, with up to 15 seconds of red time to allow for pedestrian and cycle crossing time, the predicted flow could produce an average queue of about five vehicles each time the pedestrian phase of the signals is called. This would require the crossing to be located a minimum of 25m (five car lengths) from the exit from the roundabout. With this in mind this would place a potential crossing directly in front of the access drive to an existing dwelling with frontage onto A3022, where the boundary wall and hedge directly abut the highway and there is no footway.*

To avoid the above problem, a crossing point located approximately midway between the two dwellings with frontages on the east side of the A3022 was investigated."

In Adam Luscombe's 10th March email it was stated:

“*We [Torbay Council] discussed the staggered approach further. The concern is queue lengths and therefore we would look for you [KTC] to demonstrate that queueing traffic as a result of the crossing would not be significant and would be safely visible to other vehicles approaching. A staggered crossing could reduce the queue length by reducing the crossing time for pedestrians and cyclists. This would need calculating to assess the full impact. This is an important consideration both to the north and south of the crossing”.*

As previously stated, this Technical Note, therefore, reviews the reasoning for not providing a staggered crossing in the northern crossing layout and aims to assess the full impact of the proposed crossing in this location.

3. Policy Background

Relevant guidance within the National Planning Policy Framework (NPPF) is set out below.

Paragraph 35 states:

“*. . .developments should be located and designed where practical to*

- *accommodate the efficient delivery of goods and supplies;*
- *give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;*
- *create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;*
- *incorporate facilities for charging plug-in and other ultra-low emission vehicles;*
- *consider the needs of people with disabilities by all modes of transport”.*

It is clear from the guidance that priority should be given to pedestrian and cycle movements.

4. Visibility to Toucan Crossing

With regard to the visibility of the crossing, it can be seen on drawings 0734-023RevA and 0734-030, both enclosed at Appendix A, that the crossing will be fully visible from the northbound exit of the proposed roundabout. The proposed crossing is located some 107m north of the northbound Brixham Road exit from the proposed roundabout.

A 2.5m X 80m visibility splay will be provided to the south of the crossing for pedestrians and cyclists, while 70m forward visibility will also be provided on the exit from the roundabout. All hedgerows will be set back outside the visibility splays.

To the northern side of the Toucan, 2.5m X 80m visibility to the crossing is provided on the development site side of the crossing. Along the eastern side of A3022 Brixham Road, 80m forward visibility will be provided to the signal head. Visibility from a pedestrian position is also available at 1.5m X 80m, and 2.5m X 50m for cyclists. The view from a 2.5m setback is restricted by two existing dwelling frontages.

5. Data Analysis – Pedestrian Flows and Signal Timings

The current proposals for Brixham Road include one signal controlled crossing, the introduction of a new four-arm roundabout junction with uncontrolled crossing points across each of the arms, and one uncontrolled pedestrian crossing location at the southern end of the site.

The main reason to provide the signal controlled crossing is to form a safe walking and cycling route between the site and White Rock Primary School. Morning trips to school would occur in the 08:00 – 09:00 morning traffic peak hour. A second reason for the crossing is to enhance links between the site and the existing Galmpton Warborough area, to provide new residents with access to the existing amenities and existing residents with improved access to the countryside.

The 2011 Census indicates that there are 3,027 households in the Churston-with-Galmpton ward, within which the site sits, and 676 children aged 4 to 15. Some 4 year olds will not be at school and some 16 year olds will be at school but the 4 – 15 age band is considered to be a reasonable proxy for the total children travelling to school. White Rock Primary School accepts children between the ages of 4 and 11. There were 400 children between these ages in the Churston-with-Galmpton ward in the 2011 census. For 450 dwellings the equivalent number of children would be 60.

Given the relatively short walk distances to local schools, and having regard to national data on travel to school travel modes, it is considered reasonable to assume that approximately 80% of school children would walk to the primary school. This would give a total of 48 pedestrian one-way school trips in the AM peak. Secondary age schools are in locations that would not generate demand to cross Brixham Road at the signal controlled crossing.

The findings of the 2015 National Travel Survey (published in September 2016) are set out in Table 5.1, below.

Table 5.1: National Travel Survey Findings – Proportions Accompanied to School	
Age	**Percentage**
Aged 7 - 10	90%
Aged 11 - 13	34%

It can be seen from the above that 90% of 7-10 year olds are usually accompanied by an adult on their journey to school. It also stated that 34% of 11-13 year olds were usually accompanied by an adult. No data is provided for children under 7 but for this analysis it has been assumed that all pupils under 7 will be accompanied, while, to give a robust analysis, it has been assumed that approximately half of 11 year olds will travel unaccompanied.

As stated above, census data revealed that there were 400 children in the Churston-with-Galmpton ward in the 2011 census aged between 4 and 11. Data is also available by age, allowing the number of children who will be accompanied on their walk to school to be estimated. This data is set out in Table 5.2 below.

Table 5.2: Ages of Children in Churston-with-Galmpton based on 2011 Census and Numbers of Children Accompanied to School				
Age	**Number**	**Combined Number**	**% Accompanied to School**	**Number Accompanied**
Age 4	38	141	100%	141
Age 5	49			
Age 6	54			
Age 7	44	194	90%	175
Age 8	65			
Age 9	42			
Age 10	43			
Age 11	65	65	50%	33
			Total	349

Table 5.2 indicates that 349 of the 400 (87%) children in Churston-with-Galmpton aged between 4 and 11 would be accompanied on their journey to school. If 87% of the 48 children predicted to

walk to school from the proposed development are individually accompanied by an adult, there would be an additional 42 pedestrian return school trips in the AM peak period. In practice many parents accompany more than one child to school, so this is considered to represent a significant over-estimate of the associated escort trips.

It is considered unlikely that the Toucan would be highly used for walk to work trips, with the link to the north of the site via White Rock and the link to the south of the site towards Churston, providing better links to employment areas.

Assumptions on Toucan operational cycle and timings are set out in Table 4.1 below. The figures are based on guidance and values set out in Table 8 of LTN 2/95.

Table 4.1: Toucan Crossings – Operational Cycle & Timings

Period	Signals Shown		Timings (Seconds)
	To Pedestrians	To Vehicles	
I	Red Standing Figure (Wait)	Green (proceed if way is clear)	Range 20-60s (fixed) Assume 45s
II	Red Standing Figure	Amber (stop unless not safe to do so)	3s (mandatory)
III	Red Standing Figure	Red (stop, wait behind stop line on carriageway)	2s
IV	Green Walking Figure with audible signal if provided (cross with care)	Red	4s
V	Black-out no signal shown (Do not start to cross)	Red	3s (fixed period)
VI	Black-out	Red	Range 0-22s (pedestrian extendable period). Assume 0s
VII	Black-out	Red	Range 0-3s (only appears on a maximum change if pedestrians are still being detected). Assume 0s
VIII	Red	Red	Range 1-3s Assume 1s
IX	Red Standing Figure	Red with Amber (stop)	2s
		Total	60s

If a typical non-green time for vehicles per crossing is 12 seconds (see assumptions in Table 4.1 items III to IX), then 20 signal cycles would occur between 08:40 and 09:00 and would result in 4 minutes of green time being lost within this 20 minute period (12s x 20 = 240/60 = 4 minutes), or a 20% reduction of green time otherwise available to vehicles during this period.

The school finish time does not correspond with the evening peak hour for traffic. During the evening peak hour the crossing would be called infrequently, as it is not anticipated to lie on a main route to work, so no loss of green time is specifically calculated for the PM peak hour period.

Based upon currently available data, the northbound predicted traffic flow on A3022 Brixham Road at the crossing in 2024 is 1,218 in the AM peak hour and 959 in the PM peak hour. (Flows will be investigated in more detail in the Transport Assessment using new traffic counts being undertaken in May 2017.) The southbound predicted flow at the crossing in 2024 is 786 in the AM peak and 1,042 in the PM peak.

6. Model Testing of Queuing at Signal Controlled Crossing

A LinSig model was set up to investigate the interaction between pedestrians using the signal controlled crossing and the vehicle queues generated by the loss of green time. The purpose of the model was to establish whether queuing traffic created by the proposed introduction of the crossing would block back onto the roundabout.

It was found that with the predicted 2024 AM peak hour plus development flows of 1,218 northbound and 786 southbound, no blocking back to the proposed roundabout occurred when the crossing was controlled by traffic signals. 132 pedestrian movements had been calculated above for the 08:40-09:00 peak 20 minute period. The 132 movements are inclusive of the 48 one-way pupil trips, 42 accompanying adult trips to school and 42 return adult trips, all being assumed to occur within the 20 minute period between 08:40-09:00. In the analysis, this was translated to an hourly pedestrian movement of 396 two-way, or 198 in each direction. In practice this is likely to greatly exaggerate the number of pedestrian movements, as large numbers of movements are not anticipated outside the main school start time.

The LinSig model was run on a 60 second cycle time, with an assumed pedestrian crossing time of 6 seconds (based on a 7.3m carriageway and a walk speed of $1.2ms^{-1}$) and an intergreen period of 6 seconds. This attempted to replicate an 'everyday' scenario where the extension to the pedestrian green time is not required (i.e. all pedestrians wait for the 'Green Man', and start to cross when the 'Green Man' is first displayed). With these parameters, the model indicated that the signal crossing would generate a northbound mean maximum queue (MMQ) between the crossing and the exit of the roundabout of 14.2 PCUs (Passenger Car Units), equivalent to approximately 81.5m in length. The MMQ is the estimated number of PCUs which have added onto the back of the queue up to the time when the queue finally clears. The distance between the proposed Toucan crossing and proposed site access roundabout junction to the south is approximately 107m, meaning that in 'everyday' scenarios there would be approximately 25.5m of clear carriageway/ clear visibility to the rear of the mean max queue. The Degree of Saturation for the northbound traffic movement would be 80.2%, which is within the conventional design guide figure of 90% for a new signal controlled location.

As a sensitivity test, the model was re-run allowing for a pedestrian to begin crossing as soon as the 'Green Man' has disappeared. Again assuming a pedestrian crossing time of 6 seconds (i.e. only able bodied people would attempt to cross after the pedestrian green time has ended) but this time allowing a 9 second intergreen (i.e. allowing the red time to vehicles to be extended by 3 seconds to allow the pedestrian to cross), the results showed a MMQ of 17.8 PCUs, or approximately 102m. This would leave clear carriageway between the rear of the queue and the roundabout. It should be noted that this is considered likely to be an infrequent occurrence in the morning school peak period as parents with children would wait for a 'Green Man' to appear to indicate they could cross safely. Consequently, this would represent an occasional worst-case scenario.

It can be seen from the above that a signal controlled crossing would not cause blocking back onto the roundabout in predicted 'everyday' circumstances and the sensitivity test, which allows for an extension to vehicular red time to occur, also indicates that blocking back onto the roundabout would not occur. It is, therefore, concluded that a signal controlled crossing is the preferred choice of crossing in the location north of the proposed roundabout and that a staggered crossing, which would introduce a delay to pedestrian and cyclist crossing times whilst attempting to reduce vehicular queue lengths, is not required.

PM peak flows have not been tested in LinSig due to the fact the PM peak for traffic flows does not coincide with school finishing times, which is predicted to be the major generator of pedestrian footfall across Brixham Road at this location.

The output file from these model runs, indicating the calculated 'everyday' MMQ and sensitivity test are included as Appendix B to this Technical Note.

7. Visibility to the Back of the Queue

As previously stated, the loss of green time per cycle at the signal controlled crossing could generate a typical northbound MMQ in the 20 minute AM peak of 14.2PCUs. The AM peak hour would generate a typical southbound MMQ of 5.6 PCUs.

The distance between the proposed Toucan crossing and proposed site access roundabout junction to the south is approximately 107m, which is capable of accommodating a queue of 19 vehicles. From the model run above, the typical MMQ length for northbound vehicles extends to 81.5m in the AM peak hour. Therefore, with the longer queue length of 81.5m to the south of the crossing, there would be approximately 25.5m of available carriageway/ visibility to the back of the queuing traffic from the roundabout. As previously stated a 2.5m X 80m visibility splay will be provided to the south of the crossing, while 70m forward visibility will also be provided on the exit from the roundabout, with all hedgerows set back outside the visibility splays. Consequently, northbound traffic queuing back at the crossing will be clearly visible to vehicles exiting the roundabout.

The distance between the proposed Toucan crossing and the existing bend in the A3022 Brixham Road to the northern end of the site is approximately 185m, or approximately 34 vehicle lengths. The model run shows the typical MMQ length for southbound vehicles extends to 32m in the AM peak hour. As the longest typical southbound queue would stretch 32m from the crossing to the back of the queue, there would be approximately 153m of available carriageway/ visibility from the back of the queuing traffic to the northern bend on A3022 Brixham Road. As previously stated 80m forward visibility will be provided for southbound vehicles to the signal heads of the Toucan crossing. Further north of the 80m visibility splay (along the section where existing dwellings front onto Brixham Road and a shared footway/cycle lies adjacent to the carriageway), Brixham Road is straight with good visibility for approximately 60m. On the final 45m north to the bend on Brixham Road, the southbound horizontal visibility becomes restricted due to the narrowing of the carriageway and the presence of vegetation, and the vertical visibility is restricted due to the presence of a crest curve. Proposed highway improvements to the bend are shown on drawings 0734-018 and 0734-020, also included in Appendix A. On-line widening to 7.3m and improvements to achieve 70m forward visibility, as well as an approximate 200mm reduction in carriageway level at the top of the crest curve, will improve visibility over that available at present. It can, therefore, be concluded that from the back of the longest calculated typical MMQ of 32m, 153m of visibility will be available (comprising the remaining 48m of the 80m forward visibility on the straight, the 70m forward visibility in the vicinity of the northern bend and the 45m to the bend).

Hence, there are no grounds for concern that queueing traffic would not be visible to approaching vehicles from either direction.

8. Summary

The above calculations are based upon robust assumptions and demonstrate that the introduction of a signal controlled Toucan crossing would not cause typical MMQs to stretch back as far as the proposed new roundabout junction to the south of the proposed crossing, nor to the bend on A3022 to the north.

It can be seen that the impact of the loss of green time to vehicles is not significant, the largest typical MMQ predicted under 'everyday' circumstances being 14 northbound and 6 southbound vehicles in the AM peak when predicted pedestrian demand, associated with trips to White Rock Primary School is at its highest.

PM traffic flows have not been modelled due to the traffic peak hour occurring after school end time, which is assumed to be the key pedestrian attractor for pedestrian movements across Brixham Road.

In a sensitivity test, when the largest typical MMQ of vehicles are present, there would still be clear carriageway between the rear of the queue and the exit of the roundabout, and approximately 153m of clear carriageway/visibility to the southbound queuing traffic from the bend on A3022 Brixham Road north of the site.

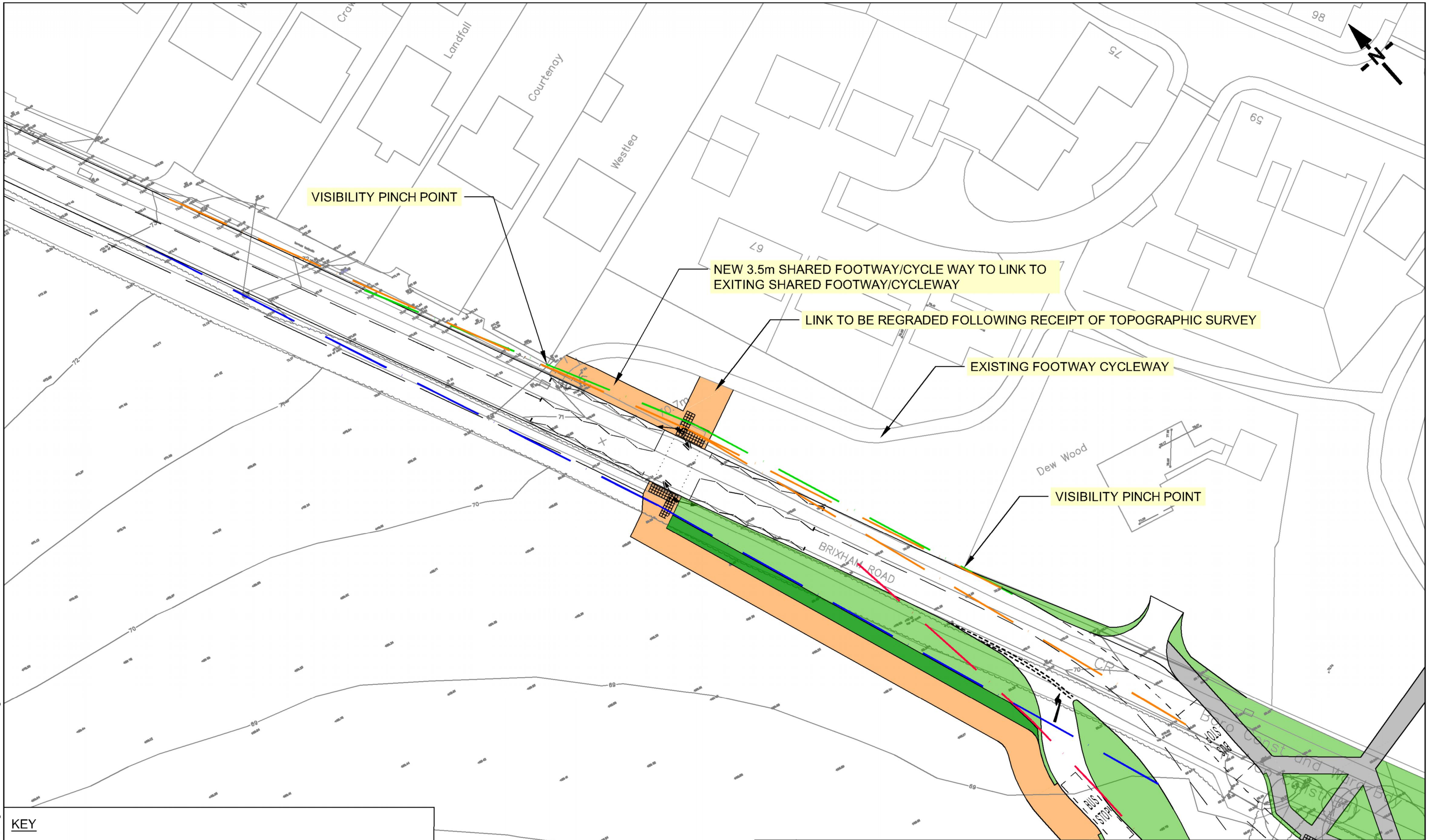
On the basis of the above analysis, there is no need to introduce a stagger to the crossing to reduce queue lengths.

The introduction of a stagger would also introduce an unnecessary delay to pedestrian and cycle movements, which conflicts with national policy to prioritise sustainable and active transport modes.

Visibility to queueing vehicles will not cause a safety concern, as 80m visibility distances will be provided to the crossing on all approaches, and planting of a new hedgerow to the south of the crossing will be outside the visibility splays.

Appendix A

Drawings



KEY

- 1.5m X 80m PEDESTRIAN VISIBILITY SPLAYS
- 2.5m X 50m PEDESTRIAN AND CYCLIST VISIBILITY SPLAYS
- 2.5m X 80m PEDESTRIAN AND CYCLIST VISIBILITY SPLAYS

REV		DR	CH	PA	DATE
A	Introduction of new section of shared footway/cycle along edge of carriageway to link to existing.	FF	DRK	DRK	MAR 17

LAND SOUTH OF WHITE ROCK, PAIGNTON

ABACUS PROJECTS LTD

POTENTIAL NORTHERN CROSSING
TOUCAN CROSSING

KEY TRANSPORT CONSULTANTS LTD
26 BERKELEY SQUARE
BRISTOL
BS8 1HP
Tel : 0117 920 9430
E-mail : info@key-transport.com

DRAWN BY	CHECKED BY	PASSED BY	DATE	SCALES @ A3 SIZE	ISSUE STATUS	DRAWING NUMBER	REV.
FF	DRK	DRK	FEB 17	1:500@A3	PRELIMINARY	0734-023	A

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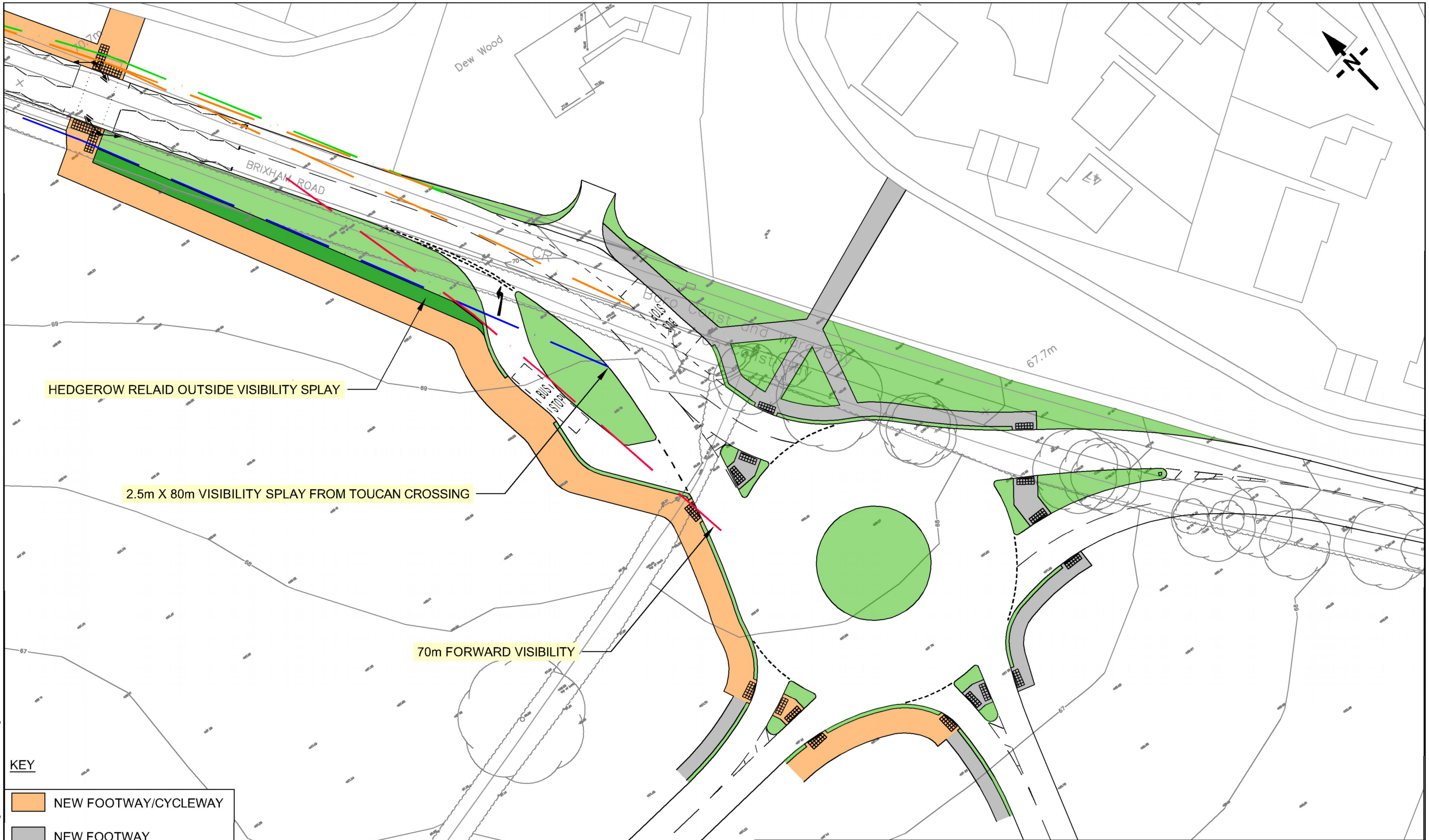

KEY

(orange)	NEW FOOTWAY/CYCLEWAY
(grey)	NEW FOOTWAY
(light green)	NEW VERGE
(dark green)	RELAID HEDGE

REV		DR	CH	PA	DATE

LAND SOUTH OF WHITE ROCK, PAIGNTON

ABACUS PROJECTS LTD

POTENTIAL BUS STOPS ON PROPOSED SITE ACCESS ROUNDABOUT OPTION 3

KTC
KEY TRANSPORT CONSULTANTS LTD
26 BERKELEY SQUARE
BRISTOL
BS8 1HP
Tel : 0117 920 9430
E-mail : info@key-transport.com

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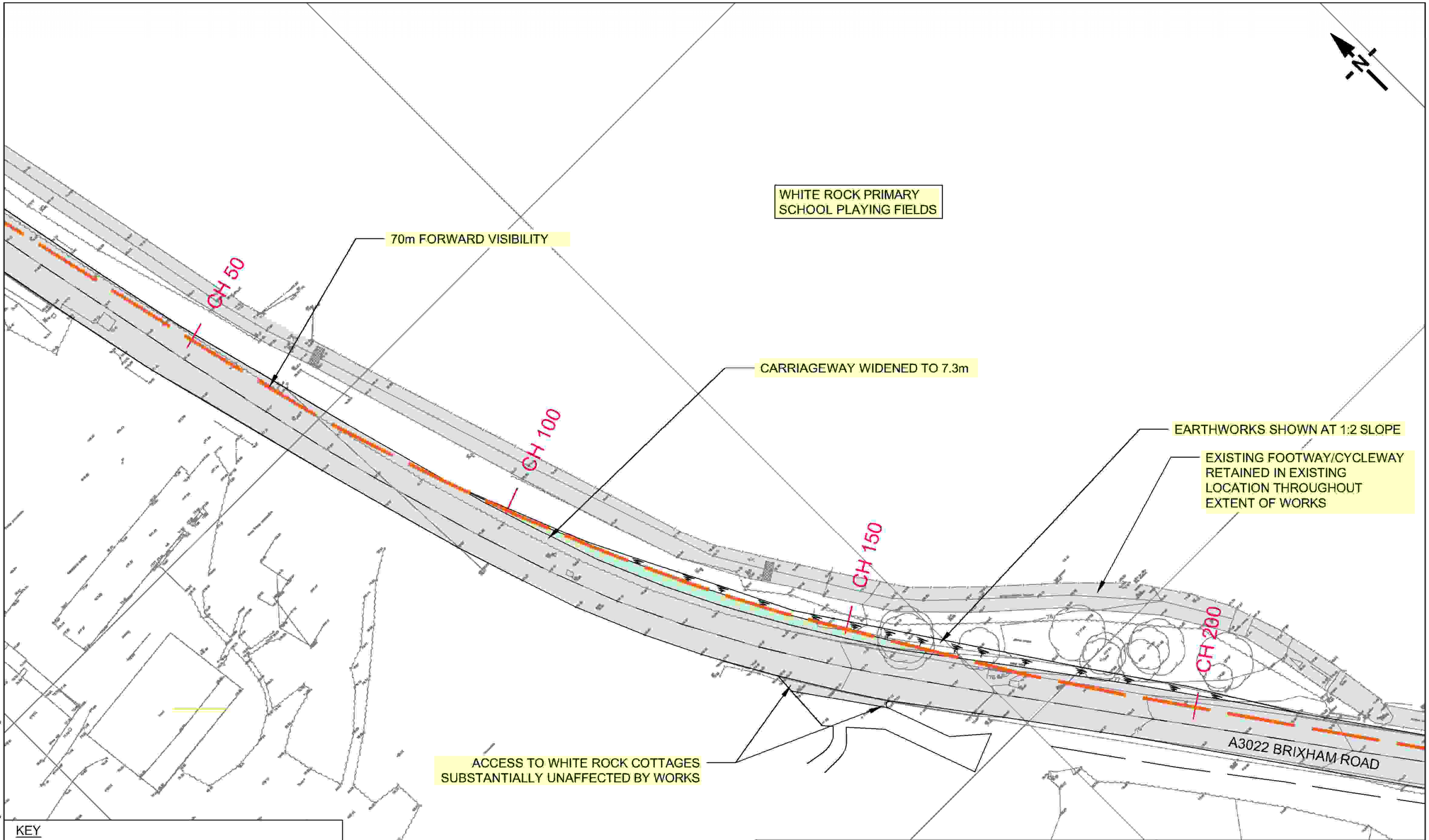

KEY

- 7.3m WIDE CARRIAGEWAY
- VERGE
- 70m FORWARD VISIBILITY ONE STEP BELOW DESIRABLE MINIMUM (30mph/60kph) TO TD9/93

REV		DR	CH	PA	DATE

WHITE ROCK 2, PAIGNTON

ABACUS PROJECTS LTD

ON-LINE ROAD WIDENING ON A3022 BRIXHAM ROAD TO 7.3m 70m FORWARD VISIBILITY

KTC
KEY TRANSPORT CONSULTANTS LTD
26 BERKELEY SQUARE
BRISTOL
BS8 1HP
Tel : 0117 920 9430
E-mail : info@key-transport.com

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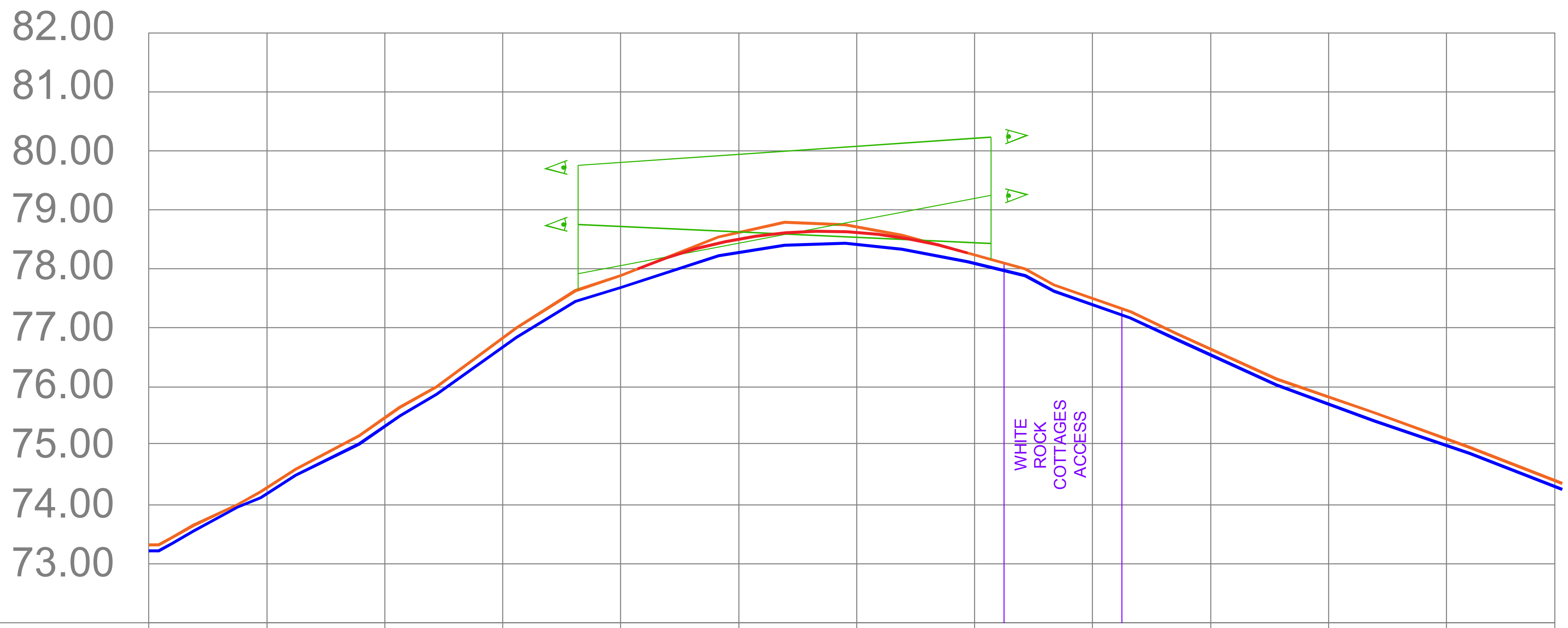
LONG SECTION



CHAINAGE	0.0	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	180.00	200.00	220.00
EXISTING CENTRE LINE LEVELS	73.32	74.28	75.43	76.83	77.89	78.62	78.72	78.24	77.50	76.64	75.79	75.07
PROPOSED CENTRELINE LEVELS						78.51	78.62					
PROPOSED VISIBILITY LEVELS	73.22	74.51	75.40	76.84	77.94	78.76	78.89	78.48	77.61	76.58	75.69	75.00

KEY

- EXISTING LEVELS ALONG THE CARRIAGEWAY CENTRELINE
- PROPOSED CARRIAGEWAY LEVEL (84m VERTICAL CURVE BASED ON TD9/93 ONE STEP BELOW DESIRABLE MINIMUM CREST K VALUE 10 FOR 30mph/60kph DESIGN SPEED)
- PROPOSED LEVELS ALONG THE 70m VISIBILITY SPLAY
- 70m FORWARD VISIBILITY FROM A DRIVER'S EYE HEIGHT OF 1.05m - 2m TO AN OBJECT HEIGHT OF 0.26m - 1.05m

REV		DR	CH	PA	DATE

WHITE ROCK 2, PAIGNTON

INVESTIGATION OF ON LINE WIDENING OF A3022 BRIXHAM ROAD TO 7.3m LONG SECTION ALONG 70m FORWARD VISIBILITY SPLAY

ABACUS PROJECTS LTD

KTC
KEY TRANSPORT CONSULTANTS LTD
26 BERKELEY SQUARE
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DRAWN BY	CHECKED BY	PASSED BY	DATE	SCALES @ A3 SIZE	ISSUE STATUS	DRAWING NUMBER	REV.
FF	DRK	DRK	JAN 17	H 1:1,000 V 1:100	PRELIMINARY	0734-020	

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Appendix B

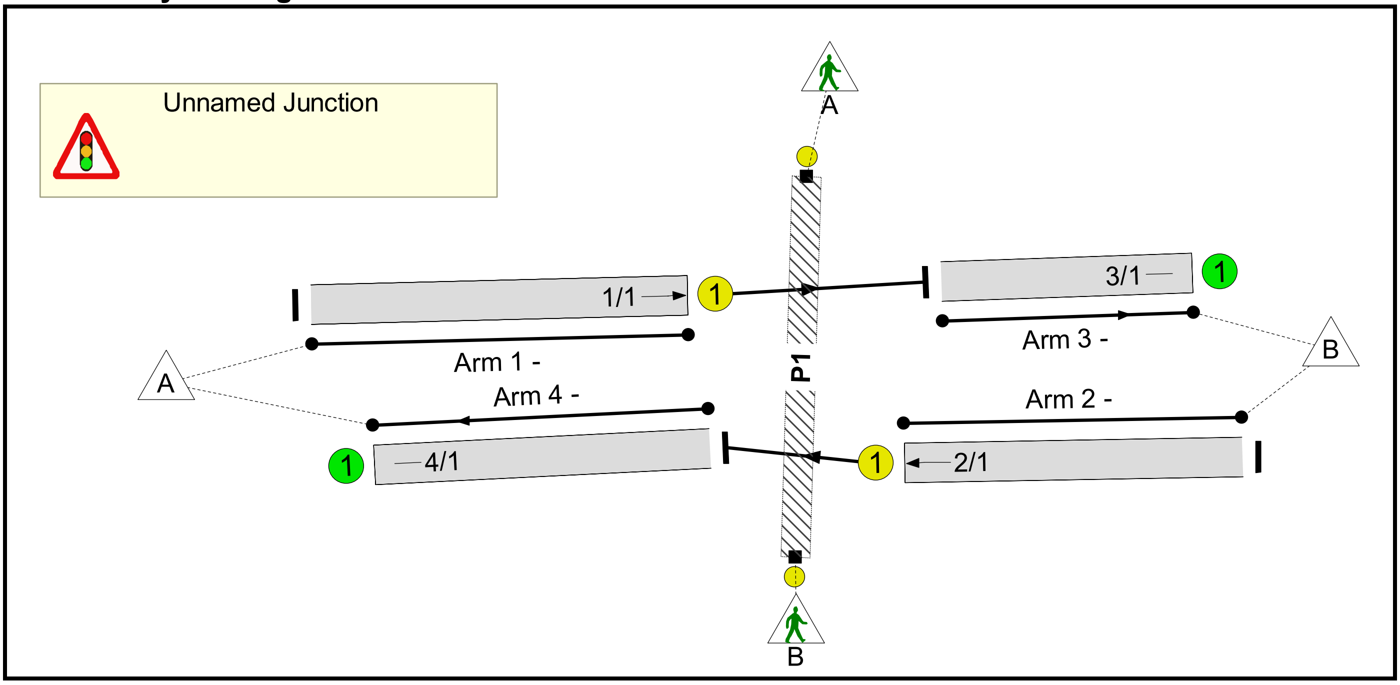
LinSig Modelling Output

Full Input Data And Summarised Results

User and Project Details

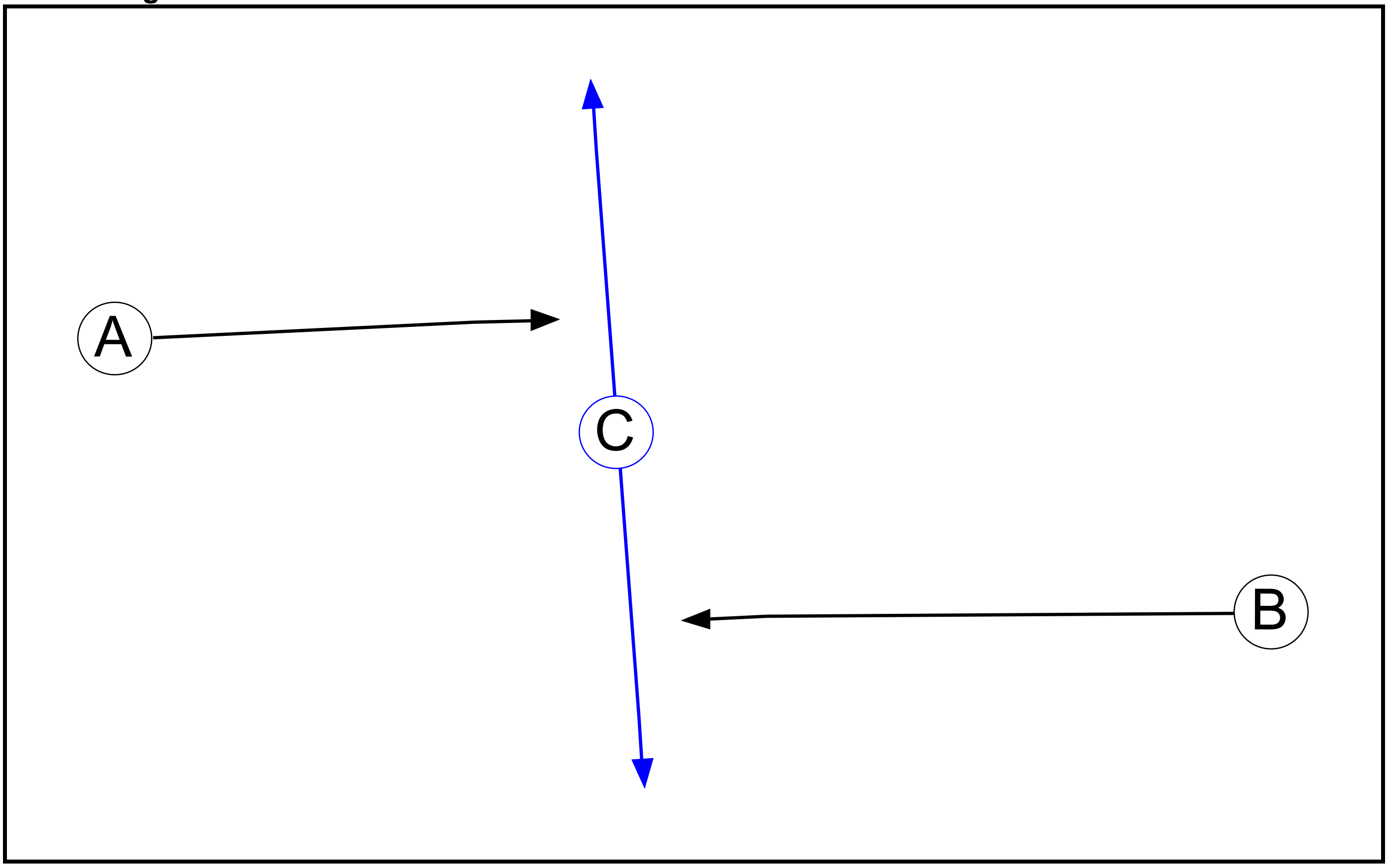
Project:	
Title:	
Location:	
File name:	Ped Crossing Model 'everyday' scenario.lsg3x
Author:	
Company:	
Address:	
Notes:	

Network Layout Diagram



Full Input Data And Summarised Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		40	40
B	Traffic		40	40
C	Pedestrian		4	4

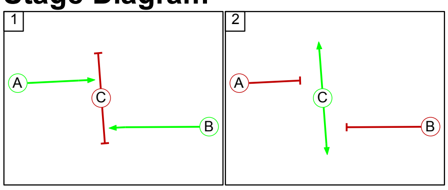
Phase Intergreens Matrix

	Starting Phase			
Terminating Phase		A	B	C
	A		-	5
	B	-		5
	C	6	6	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
From Stage		1	2
	1		5
	2	6	

Full Input Data And Summarised Results

Give-Way Lane Input Data

Junction: Unnamed Junction
There are no Opposed Lanes in this Junction

Lane Input Data

Junction: Unnamed Junction												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1	U	A	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 3 Ahead	Inf
2/1	U	B	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 4 Ahead	Inf
3/1	U		2	3	60.0	Inf	-	-	-	-	-	-
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Flow Group 1'	08:00	09:00	01:00	

FG1: 'Flow Group 1'

Traffic Flows, Desired

Desired Flow :

	Destination			
Origin		A	B	Tot.
	A	0	1218	1218
	B	786	0	786
	Tot.	786	1218	2004

Full Input Data And Summarised Results

Scenario 1: 'Scenario 1' (FG1: 'Flow Group 1', Plan 1: 'Network Control Plan 1')

Network Results

Item	Lane Description	Lane Type	Full Phase	Num Greens	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**80.2%**	**0**	**0**	**0**	**2.0**	**-**	**-**
Unnamed Junction	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**80.2%**	**0**	**0**	**0**	**2.0**	**-**	**-**
1/1	Ahead	U	A	1	45	1218	1980	1518	80.2%	-	-	-	1.4	12.2	14.2
2/1	Ahead	U	B	1	45	786	1980	1518	51.8%	-	-	-	0.6	5.0	5.6
3/1		U	-	-	-	1218	Inf	Inf	0.0%	-	-	-	0.0	0.0	0.0
4/1		U	-	-	-	786	Inf	Inf	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P1	Unnamed Ped Link	-	C	1	4	396	-	4800	8.3%	-	-	-	-	-	6.2

C1 PRC for Signalled Lanes (%): 12.2 Total Delay for Signalled Lanes (pcuHr): 4.57 Cycle Time (s): 60

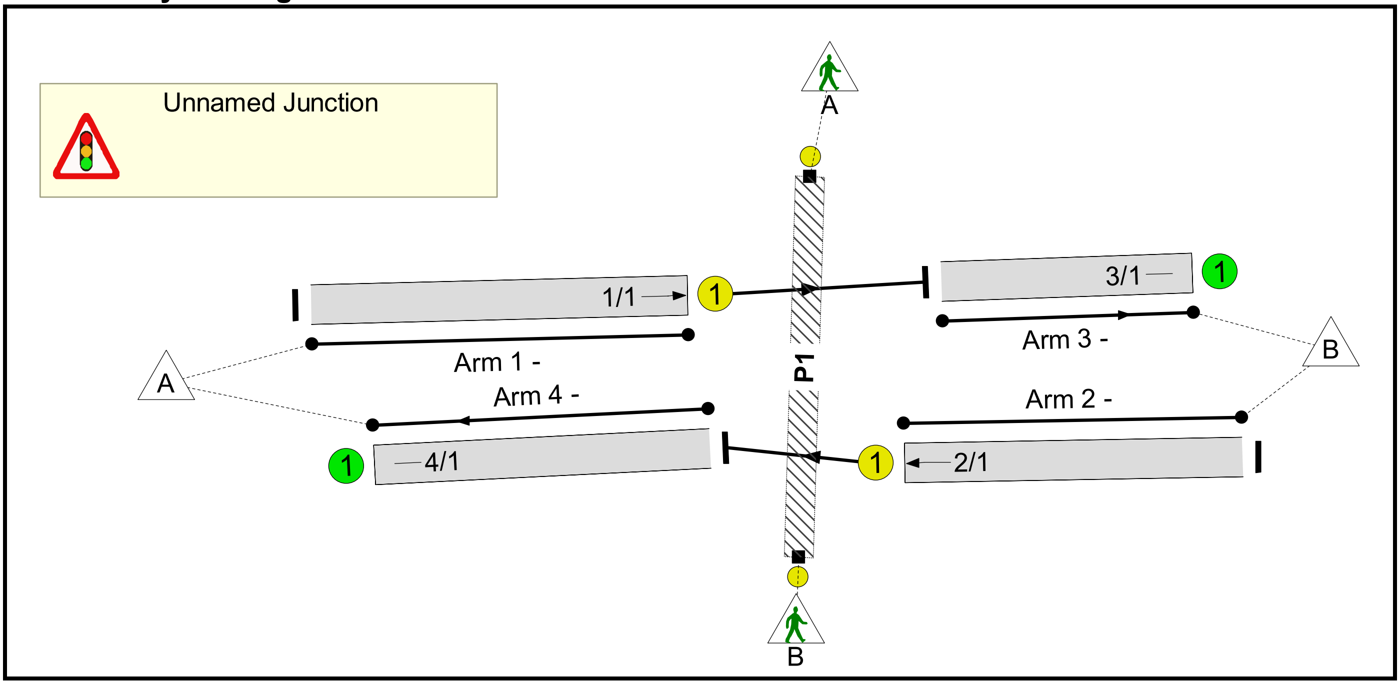
PRC Over All Lanes (%): 12.2 Total Delay Over All Lanes(pcuHr): 4.57

Full Input Data And Summarised Results

User and Project Details

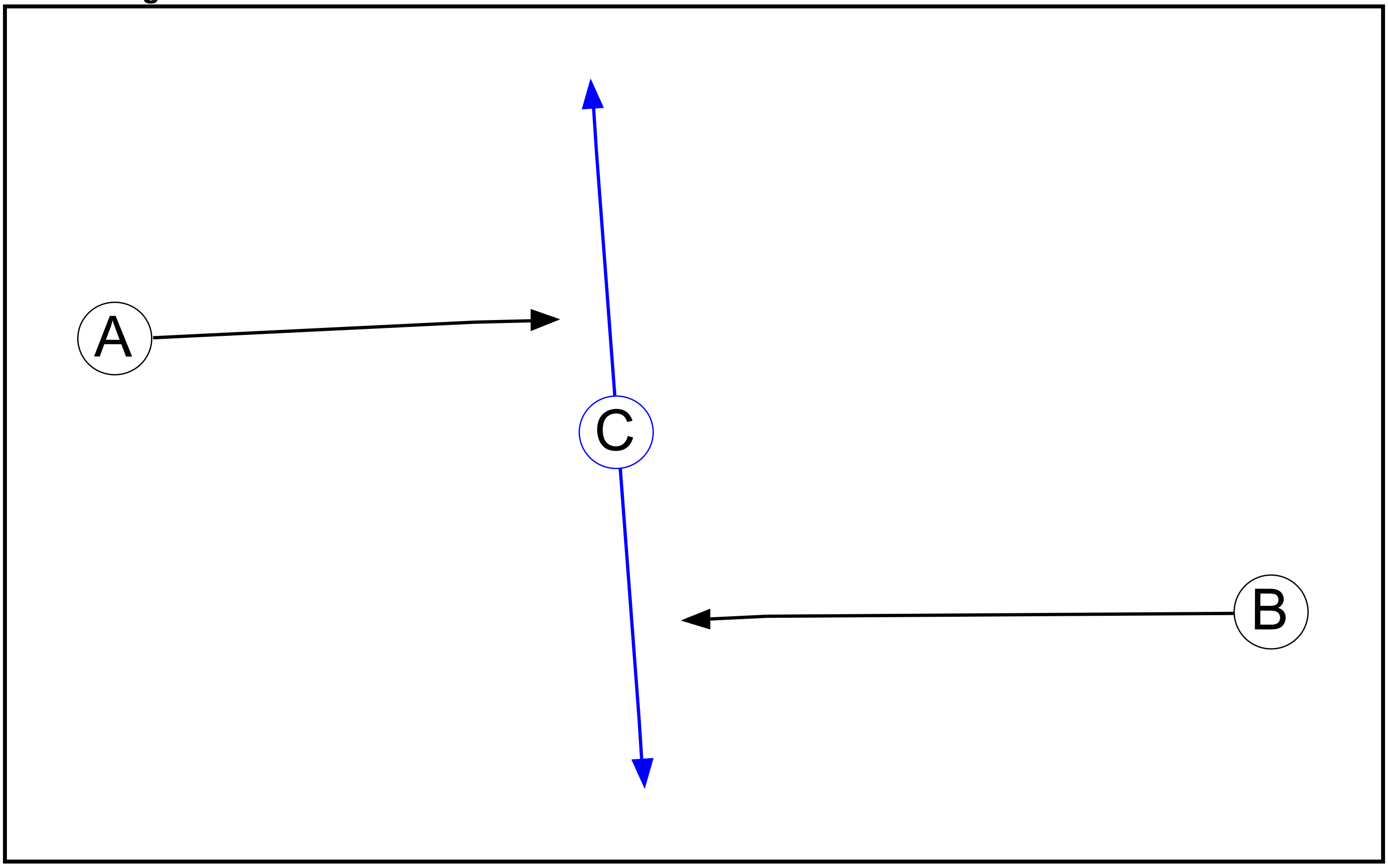
Project:	
Title:	
Location:	
File name:	Ped Crossing Model Sensitivity Test.lsg3x
Author:	
Company:	
Address:	
Notes:	

Network Layout Diagram



Full Input Data And Summarised Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		40	40
B	Traffic		40	40
C	Pedestrian		4	4

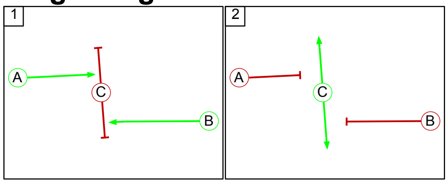
Phase Intergreens Matrix

	Starting Phase			
Terminating Phase		A	B	C
	A		-	5
	B	-		5
	C	9	9	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
From Stage		1	2
	1		5
	2	9	

Give-Way Lane Input Data

Junction: Unnamed Junction
There are no Opposed Lanes in this Junction

Full Input Data And Summarised Results

Lane Input Data

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1	U	A	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 3 Ahead	Inf
2/1	U	B	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 4 Ahead	Inf
3/1	U		2	3	60.0	Inf	-	-	-	-	-	-
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Flow Group 1'	08:00	09:00	01:00	

FG1: 'Flow Group 1'

Traffic Flows, Desired

Desired Flow :

	Destination			
Origin		A	B	Tot.
	A	0	1218	1218
	B	786	0	786
	Tot.	786	1218	2004

Full Input Data And Summarised Results

Scenario 1: 'Scenario 1' (FG1: 'Flow Group 1', Plan 1: 'Network Control Plan 1')

Network Results

Item	Lane Description	Lane Type	Full Phase	Num Greens	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**85.8%**	**0**	**0**	**0**	**3.0**	**-**	**-**
Unnamed Junction	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**85.8%**	**0**	**0**	**0**	**3.0**	**-**	**-**
1/1	Ahead	U	A	1	42	1218	1980	1419	85.8%	-	-	-	2.1	14.9	17.8
2/1	Ahead	U	B	1	42	786	1980	1419	55.4%	-	-	-	0.9	6.1	6.7
3/1		U	-	-	-	1218	Inf	Inf	0.0%	-	-	-	0.0	0.0	0.0
4/1		U	-	-	-	786	Inf	Inf	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P1	Unnamed Ped Link	-	C	1	4	396	-	4800	8.3%	-	-	-	-	-	6.2

C1 PRC for Signalled Lanes (%): 4.9 Total Delay for Signalled Lanes (pcuHr): 6.55 Cycle Time (s): 60

PRC Over All Lanes (%): 4.9 Total Delay Over All Lanes(pcuHr): 6.55