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Development Management
(Aylesbury Area)
Planning, Growth & Sustainability
Buckinghamshire Council

22nd December 2022

F.A.O. Sue Pilcher

Dear Sue

Application Number:	22/03783/APP
Proposal:	South East Aylesbury Link Road (Phase 2) improvement scheme including dual carriageway (for the Stoke Mandeville Relief Road and to provide connection with the South West Aylesbury Link Road), new roundabout, lighting columns, maintenance bays and access points, diverted public right of way, uncontrolled crossing, provision of two shared cycle/footways, noise bunds and barriers, relocated field accesses, grass verges, road restraint systems, mammal tunnel, flood compensation storage areas, woodland planting, landscaping, habitat creation, drainage ponds and swales, substation and associated infrastructure and earthworks
Location:	Field To North Of Hall End Adjacent To Lower Road Stoke Mandeville Buckinghamshire.

Thank you for your request for comments on the South East Aylesbury Link Road (SEALR) Phase 2 Transport Assessment which was submitted on the 10th November 2022.

Background

As part of the proposals for HS2, a new single carriageway bypass is proposed to divert the A4010 around the west of Stoke Mandeville, reconnecting with the B4443 Lower Road again to the north of Stoke Mandeville. This proposal is known as the Stoke Mandeville Relief Road (SMRR). The SMRR gained permission through the HS2 Hybrid Bill that received Royal Assent in 2017.

Traffic modelling has indicated that this re-alignment would increase congestion at the A413 gyratory within Aylesbury town centre, leading to increased traffic, queuing and delays. To address this, the South East Aylesbury Link Road (SEALR Phase 1) scheme provided a new road to connect the B4443 Lower Road with the A413 Wendover Road. SEALR also contributed to a long-term vision to deliver an orbital route around Aylesbury, together with proposed link roads that will be delivered through large housing projects to the south east of Aylesbury, which are allocated in the adopted VALP. SEALR Phase 1 received permission in July 2021.

The proposed scheme, to be delivered by BC, is a dual carriageway upgrade to the design of the (northern) part of the SMRR, from the previously consented single carriageway road. It also includes a new roundabout at its south-western end which will connect with the southern part of the SMRR and the proposed South West Aylesbury Link Road (SWALR).

Gleeson Homes have submitted a planning application for a mixed-use development on the land north east of the HS2 railway known as Land at South West Aylesbury (application ref: 18/04346/ AOP). This application includes for provision of the SWALR, which is to connect with the southern part of the SMRR

and SEALR Phase 2 at the proposed roundabout junction. The SWALR link road is proposed to be a single carriageway road, but with land safeguarded for the future upgrade to dual carriageway. This road will be subject to a separate consenting process as part of the proposed residential development.

Proposal

BC is seeking to obtain detailed (full) planning permission to upgrade the northern part of the consented Stoke Mandeville Relief Road (SMRR) to dual carriageway status. SEALR Phase 2 will provide a 500m section of dual carriageway and a roundabout, linking in to B4443 Lower Road as the western arm of the consented SEALR Phase 1 roundabout. The proposed scheme will provide a connection between the B4443 Lower Road to the east with a new roundabout to the west.

The proposed scheme will have a role in relieving congestion and improving connectivity around Aylesbury. The TA explains that the scheme has a number of primary objectives as follows:

- To maintain current levels of network performance at the Stoke Road Gyratory and the A413, A4010 and B4443 arterial roads after the A4010 realignment is completed.
- To support the unlocking of development opportunities and creating conditions for growth of existing and new businesses in Aylesbury.
- Increase provision for walking and cycling in the town to help encourage active travel via the delivery of two cycle routes and, in turn, reduce car use (congestion).
- Increase the effectiveness of the realigned A4010 as a key north/ south corridor.
- To secure good local connectivity for all road users for movements to, from, within and around Aylesbury.
- Relieve pressure on a key blue light route (access to Stoke Mandeville Hospital).

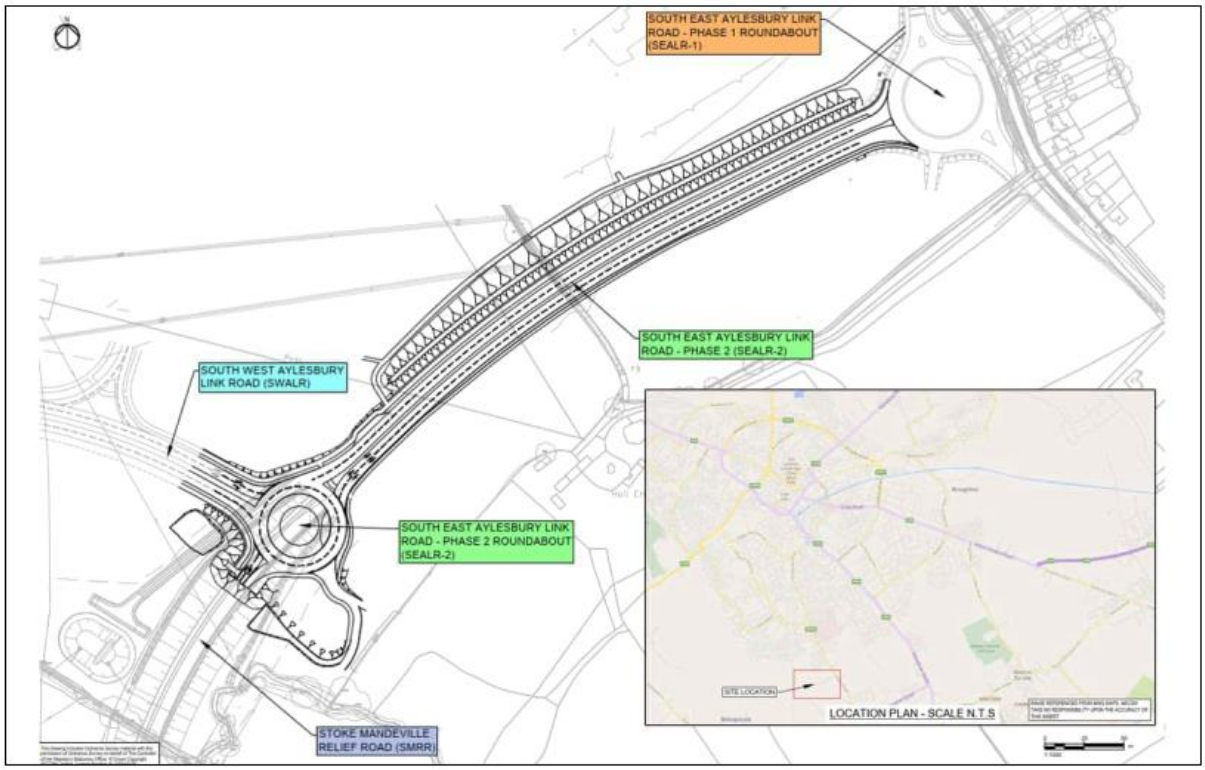
Design

A four-arm roundabout connecting B4443 Lower Road, SEALR Phase 1, and the proposed scheme will represent the eastern extent of the scheme. The link road will follow an east to south-west alignment for approximately 450m before reaching the roundabout junction linking in with the SWALR and the remainder of the SMRR to the south which will continue to be delivered by HS2.

The SWALR is currently proposed to be delivered as a single carriageway, but with safeguarded provision for the future upgrade to a dual carriageway. The SWALR entry/exit at the roundabout has therefore been designed to accommodate a dual carriageway in the interests of future proofing, this will taper to a single carriageway outside the extent of the SEALR Phase 2 scheme.

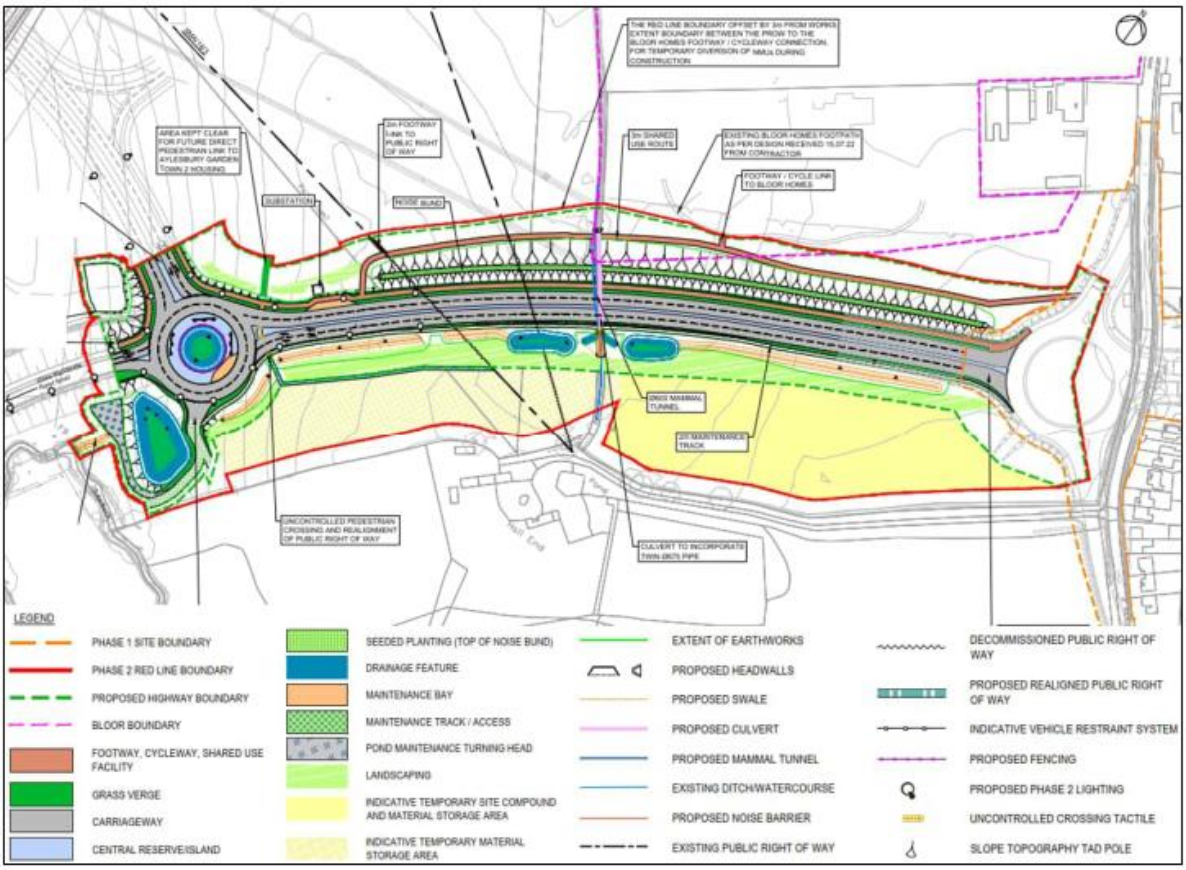
A connectivity plan showing the proposed scheme and its context with the SMRR, the SWALR and SEALR Phase1 is shown in Figure 7 of the TA reproduced below.

Figure 7 – Connectivity Plan



A plan of the proposed road is shown on Figure 8 in the TA reproduced below.

Figure 8 – Proposed Scheme



A four-arm roundabout connecting B4443 Lower Road, the proposed scheme and the SEALR Phase 1 dual carriageway will represent the eastern extents of the scheme. This roundabout includes an Inscribed Circle Diameter (ICD) of 69m and two circulatory lanes and two lane approaches on all arms. The design of the roundabout was approved as part of the SEALR Phase 1 planning application and was designed to allow for the Phase 2 scheme to come forward. The western arm of this roundabout is superseded by the SEALR Phase 2 scheme to accommodate the dual carriageway road. All other arms are to be kept as designed as part of the SEALR Phase 1 planning application.

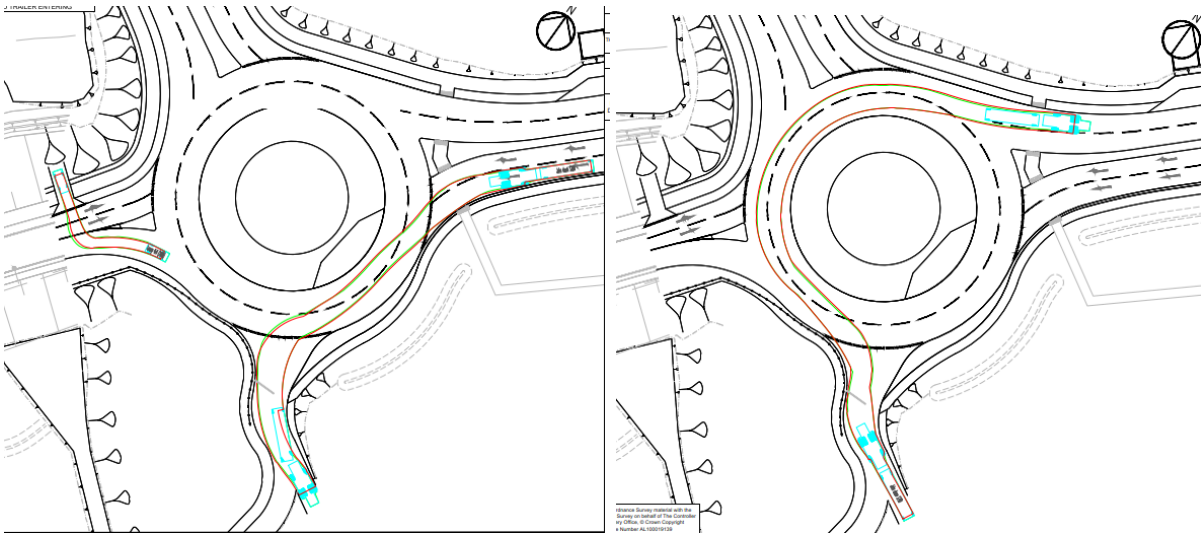
The Phase 2 link road will consist of a two lane dual carriageway along a north-east / south-west alignment and will be subject to a 40 mph speed limit along its extent consistent with the Phase 1 design.

A shared three metre wide footway / cycleway will run adjacent to the carriageway on the northern side. A second parallel three metre wide footway / cycleway will also be provided north of this, located to the north of a bund and connecting with the footway / cycleway adjacent to the road near the western roundabout. Additionally, footpaths will be provided to divert the existing PRoWs which currently run northwards and north-westwards from Hall End Farm. No street lighting is proposed along these routes, though illuminated solar studs will be provided along the footway / cycleway adjacent to the carriage way on the northern side.

The proposed scheme will include a roundabout junction at the western extent. This four-arm roundabout will connect the proposed scheme with the southern part of the SMRR which will be delivered by HS2 to the south and the SWALR to the west and a field access to the south, as shown in Figure 8. This roundabout will feature an ICD of 60m and two circulatory lanes with two lane approaches on all arms to accommodate the traffic flows anticipated within the future forecast year of 2036. The roundabout and all approaches will have street lighting. A gated agricultural access will form a fourth, south-eastern, arm to the roundabout.

A Drawing demonstrating forward and inter visibility has been provided and demonstrates that adequate visibility can be achieved.

Swept path analysis drawings have been provided of the western SEALR Phase 2 / SWALR/ SMRR Roundabout and demonstrate that an articulated HGV can stay in its lane on the roundabouts, with the exception of the gated field access on the western roundabout where the vehicle is required to use both running lanes to access and egress the field access. An exert is shown below.

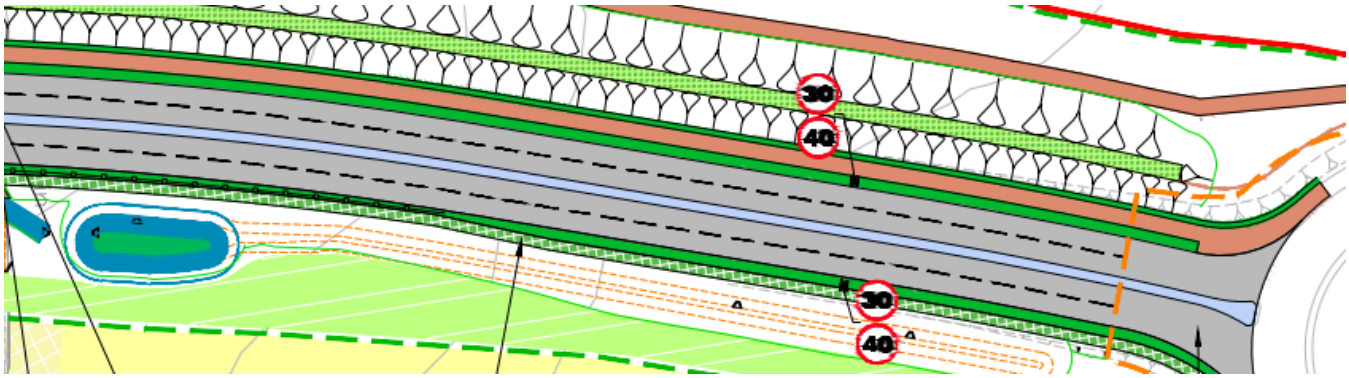


Although this was not raised in the September 2022 review of the Road Safety Audit, BC is concerned that this layout would result in collisions on the roundabout. BC require the applicant to relax the radius

of the field access, in line with the original design, which would allow large vehicles to access and egress the site using one running lane only.

A Stage 1 Road Safety Audit has been conducted on the design of the Phase 2 Link Road and a Designer's Response has been provided. Most recommendations have been accepted, however there are a number of recommendations that have not been accepted.

1) *Proposed maintenance/ access track parallel to westbound carriageway of link road.*



The RSA states:

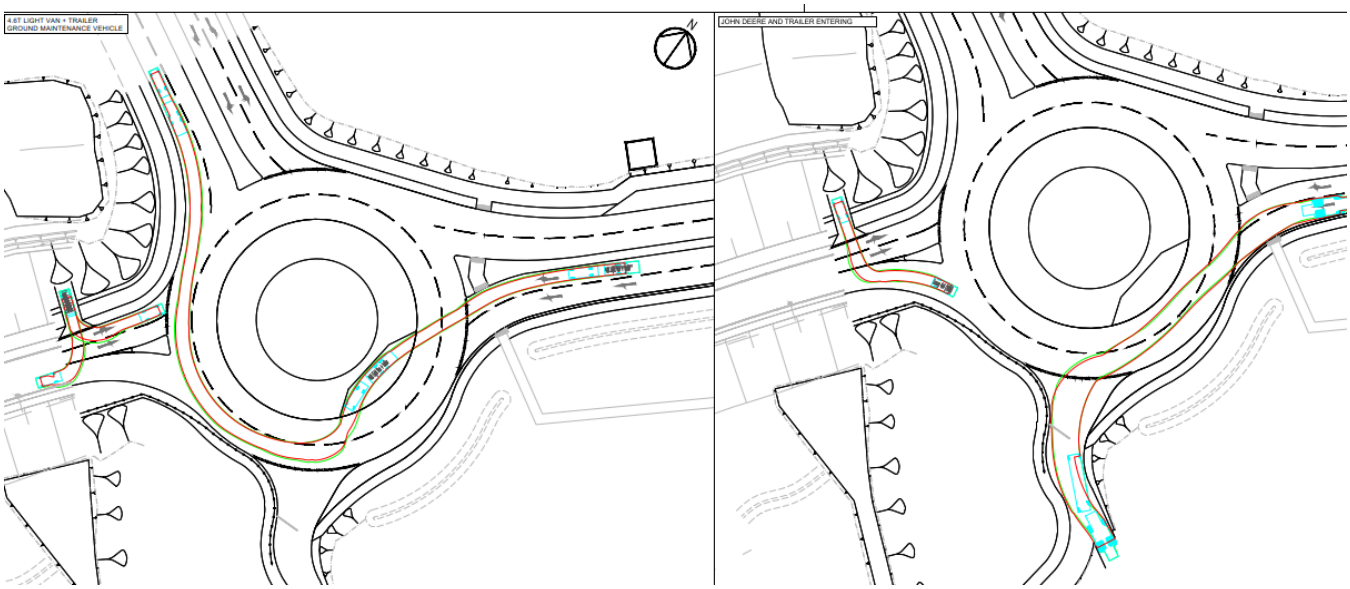
> *"A 2m wide maintenance track (the purpose and likely usage of which is unclear) is proposed adjacent and parallel to the westbound phase 2 link carriageway, segregated only by a narrow verge. If this track is to be used by vehicles, there are the following risks:*
>
> - *Westbound drivers on the link road may be distracted/ confused by the presence of vehicles on their nearside on the track, particularly if they have headlights on for example;*
> - *There may be inadequate clearance between track users and vehicles in the westbound nearside lane of the SEALR; and*
> - *Lighting columns are positioned within the maintenance track which may result in vehicles encroaching into the link road to bypass them; and*
> - *Part of the track sits behind the proposed 'indicative vehicle restraint system' midway along the link. Track users will therefore not be protected from the water hazards in this area and it is unclear whether they will have adequate working width behind the barrier and between the water hazards. Users may be at risk of injury should a vehicle collide with the barrier or should their vehicle enter the water.*
>
> *The above concerns could result in unsafe conditions for road users on the link road and the maintenance track."*

In response the TA states:

> "*Rejected. The proposed 2m wide reinforced grass maintenance track has been provided to facilitate maintenance of the planted drainage features, such as grass cutting and litter picking, and will only be used by small, wheeled maintenance equipment/vehicles (such as ATVs). Furthermore, usage will be infrequent and for maintenance purposes only*."

BC are concerned about the proximity of the maintenance track to the road and require the track to be positioned further south.

2) *Proposed gated maintenance access on northern side of western arm of roundabout. Access point located close to roundabout entry/ exit. Swept paths indicate potential conflicts.*



The RSA states:

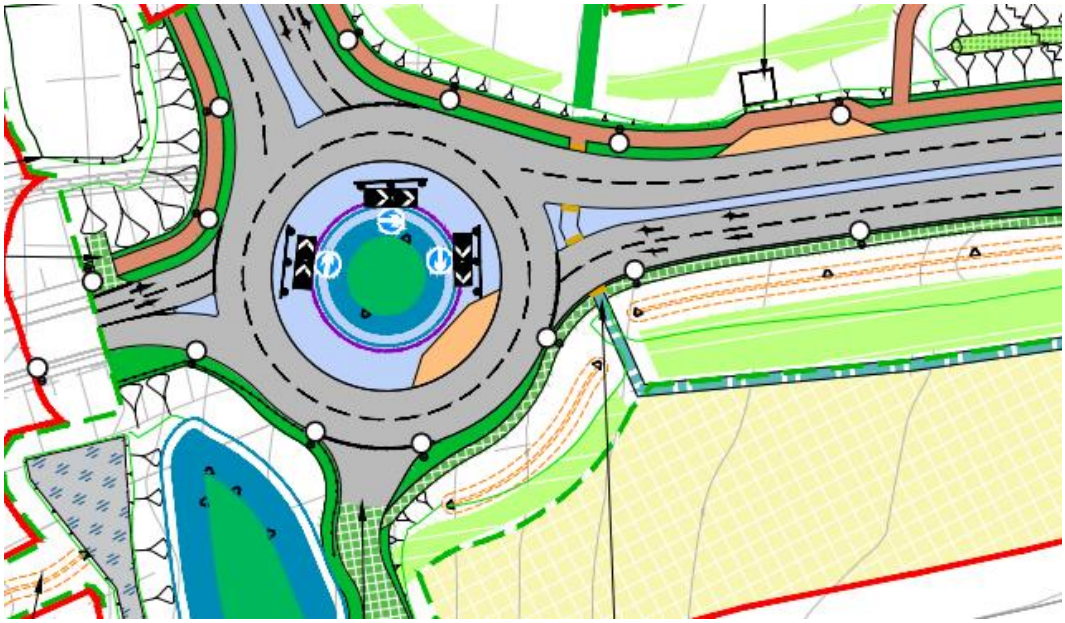
> *"The location of the HS2 maintenance access close to the roundabout is of concern, i.e. in terms of the impact it would have on the roundabout (gap seeking right turners waiting on the exit arm to turn right into the access being struck by other vehicles exiting the roundabout or rear end shunts on the western arm approach as following drivers are unlikely to expect vehicles to be slowing/ turning immediately upstream of the access).*
>
> *However, if the movements are infrequent, and undertaken by the types of vehicles as understood in communications from the design team, namely "the design vehicle being a 4x4 vehicle. Use of the access will be infrequent and will only be used for embankment maintenance and grass cutting" then this is not expected to constitute a significant road safety issue. Although it is acknowledged that 4x4 vehicles are smaller than the agricultural vehicles which were shown turning in/ out of the access in the initial swept path layouts audited, the design team should ensure that these vehicles are still able to turn in/ out of the access safely/ without slowing too significantly on the approach*
>
> *It is recommended that the access is relocated further west on this arm of the roundabout and that wider radii is used to ensure traffic accessing/ exiting the access is able to do so without encroaching on the opposing traffic lane."*

The TA states:

> "*Rejected. Use of the proposed vehicle crossover to provide maintenance access will be infrequent as acknowledged above by the auditors hence not anticipated to pose a safety issue*."

BC are concerned that right turning vehicles entering and exiting this access need to cross opposing lanes which would increase the risk of collisions. BC require the radii to be relaxed and changed into a left in left out only access to remove right turn movements into the access.

3) *Proposed roundabout central island. Location of maintenance layby may result in collisions between road users*



The RSA states:

> "*It is recommended that the layby is relocated. Consider whether the layby is required."*

The TA states:

> "*Rejected Use of the substation maintenance bay will be infrequent hence not anticipated to pose a safety issue"*

It is assumed that the above is a typing error and should say roundabout central island.

BC are concerned about potential conflict and require the maintenance bay to be removed from the roundabout and repositioned in a more suitable location.

4) *Substation maintenance bay*

The RSA states:

> "*The likely usage (frequency/ vehicle type) of the substation maintenance bay is unclear. The location of the bay relatively close to the exit of the roundabout may result in road safety issues with respect to a) vehicles slowing immediately having left the roundabout to access the bay (rear end shunts) and/ or b) vehicles pulling out of the bay at inappropriate times (not helped by having to look sharply back over their shoulder for approaching traffic) resulting in collisions with following traffic exiting the roundabou*t."

The TA states:

> "*Use of the substation maintenance bay will be infrequent hence not anticipated to pose a safety issue*."

BC are concerned about the location of this substation maintenance bay and the applicant is therefore required to be move it to the roundabout entry of the northern (SWALR) arm rather than the exit of SEALR Phase 2.

Traffic Impact Scenarios

The assessment of the proposed scheme has been undertaken utilising the Aylesbury Transport Model (ATM). The ATM is a cordon model of the Countywide model for Buckinghamshire maintained by Transport for Buckinghamshire.

A summary of strategic modelling scenarios and committed development and infrastructure is included in Table 9 of the TA reproduced below:

Table 9 – Summary of Scenarios and Infrastructure and Committed Developments

Scenario Reference	Scenario	Committed Infrastructure	Committed Development
2024 (A)	Do Nothing	Stoke Mandeville Relief Road (A4010 Realignment, single carriageway) Eastern Link Road (North) Stocklake Link Road (Rural) SEALR Phase 1	Berryfields Aylesbury East Kingsbrook
	Do Something	2024 (A) Do Nothing plus: Proposed Scheme (dual carriageway replacement of northernmost section of Stoke Mandeville Relief Road)	-
2024 (B)	Do Nothing	2024 (A) Do Nothing plus: Eastern Link Road (South) Southern Link Road	2024(A) Do Nothing plus: Woodlands (1,100 dwellings, 60 extra car units, 107,800 sqm employment space, 18,553 sqm retail, two primary schools and 3,500 sqm leisure) Hampden Fields (3,700 dwellings and 100,000 sqm employment)
	Do Something	2024 (B) Do Nothing plus: Proposed Scheme	-
2036	Do Nothing	2024 (B) Do Nothing plus: SWALR	2024(B) Do Nothing plus: Aylesbury South West, Remaining balance of VALP housing allocation
	Do Something	2036 Do Nothing plus: Proposed Scheme	-

Junction Modelling

An assessment has been made of the change in traffic flow at each of the junctions for each assessment year.

Table 10 from the TA provides a summary of the numerical and percentage change in vehicular trips travelling through each junction in the peak hours for each of the scenarios assessed. The majority of junctions experience no significant change in vehicular trips with percentage change ranging from -2% to 2%.

As Table 10 is difficult to read due to the large amount of information, it would be helpful to receive a table demonstrating the impact of the scheme on the Walton Street Gyratory in all scenarios. This junction in the centre of Aylesbury is expected to reach practical capacity in 2036 and a clear demonstration of the impact of the scheme on this junction is therefore required.

Table 11 from the TA, reproduced below, sets out the junctions that will be assessed, including those at either end of the link road and any junctions with a 5% or more increase in traffic flow on any arm in any scenario. As a result of this assessment, the operation of four junctions was assessed in more detail.

Table 11 – Summary of Junctions to be Assessed in Each Scenario

Number	Junction	2024(A) AM	2024(A) PM	2024(B) AM	2024(B) PM	2036 AM	2036 PM
1	A41 Aston Clinton Road / Aylesbury Road	x	x	x	x	x	x
2	A41 Aston Clinton Road / New Road	x	x	x	x	x	x
3	A41 Aston Clinton Road / Richmond Road / Bedgrove (incorporating Broughton Lane)	x	x	x	x	x	x
4	A41 Aston Clinton Road / A4157 / King Edward Avenue	x	x	x	x	x	x
5	A41 Aston Clinton Road / Park Street / Tesco / Walton Road	x	x	x	x	✓	✓
6	A413 Walton Street / A413 Wendover Road / Stoke Road	x	x	x	x	x	x
7	A413 Wendover Road / Camborne Avenue	x	x	x	x	x	x
8	A413 Wendover Road / SLR / SEALR Phase 1	x	x	x	x	x	x
9	A413 Wendover Road / Silver Birch Way	x	x	x	x	x	x
10	A413 Wendover Road / A4010 Station Road	x	x	x	x	x	x
11	A4010 Station Road / B4443 Lower Road / A4010 Risborough Road	x	x	x	x	x	x
12	B4443 Lower Road / SMRR North or SEALR Phase 2 / SEALR Phase 1	✓	✓	✓	✓	✓	✓
13	B4443 Lower Road / Winterton Drive / Stoke Mandeville Hospital	x	x	x	x	x	x
14	B4443 Lower Road / B4443 Mandeville Road / Stadium Approach / Churchill Avenue	x	x	x	x	x	x
15	A148 Oxford Road / Ellen Road / Thame Road South	x	x	x	x	x	x
16	A418 Oxford Road / Coldharbour Way	x	x	x	x	x	x
17	ELR(s) South Roundabout	x	x	x	x	x	x
18	ELR(s) North Roundabout	x	x	x	x	x	x
19	ELR(n) South (Stocklake) Roundabout	x	x	x	x	x	x
20	ELR(n) North (Village) Roundabout	x	x	x	x	x	x
21	A418 / ELR	x	x	x	x	x	x
22	SLR Signals	x	x	x	x	x	x
23	SLR / New Road	x	x	x	x	✓	✓
24	SLR / Marroway	x	x	x	x	x	x
25	SMRR South / SWALR / SEALR Phase 2	x	x	x	x	✓	✓

Junction 5: A41 Aston Clinton Road / Park Street / Tesco Access/Walton Road

This junction takes the form of a 6 arm roundabout, including access to the Tesco superstore and an access to garages only west of the Walton Road arm.

The proposed junction has been assessed with the ARCADY module of Junctions 9 for the 2036 situation only. The 2024 (A) and 2024 (B) scenarios have not been assessed as the percentage change analysis has identified that the proposed scheme has a positive impact on this junction in these scenarios.

Flows have been checked and are correct. It has not been possible to check the geometry as no plan has been provided of this junction. The applicant is required to provide a drawing annotated with ARCADY measurements.

Table 12. Junction 5 Capacity Modelling Results

Scenario	AM Peak (08:00-09:00) Max RFC	AM Peak (08:00-09:00) Max Q	PM Peak (17:00-18:00) Max RFC	PM Peak (17:00-18:00) Max Q
2024 (A) Do Nothing	Not Assessed		Not Assessed	
2024 (A) Do Something	Not Assessed		Not Assessed	
2024 (B) Do Nothing	Not Assessed		Not Assessed	
2024 (B) Do Something	Not Assessed		Not Assessed	
2036 Do Nothing	0.75	2.9	0.53	1.1
2036 Do Something	0.72	2.5	0.53	1.1

Summary of junction performance

	AM						PM					
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
	Existing Layout - 2036 DM											
1 - A41 Tring Road	D1	2.9	9.77	0.75	A	23 % [1 - A41 Tring Road]	D2	1.1	5.61	0.53	A	73 % [1 - A41 Tring Road]
2 - Walton Road		1.1	7.49	0.53	A			0.6	4.76	0.38	A	
3 - High Street		0.9	3.92	0.48	A			0.7	3.09	0.40	A	
4 - Park Street		0.5	4.09	0.32	A			0.4	3.41	0.28	A	
5 - Tesco Access		0.0	4.19	0.04	A			0.2	4.34	0.16	A	
	Existing Layout - 2036 DS											
1 - A41 Tring Road	D3	2.5	8.87	0.72	A	30 % [1 - A41 Tring Road]	D4	1.1	5.62	0.53	A	73 % [1 - A41 Tring Road]
2 - Walton Road		1.2	7.61	0.56	A			0.6	4.75	0.37	A	
3 - High Street		0.9	3.88	0.47	A			0.7	3.09	0.40	A	
4 - Park Street		0.5	4.09	0.33	A			0.4	3.42	0.28	A	
5 - Tesco Access		0.0	4.19	0.04	A			0.2	4.33	0.16	A	

A review of the summary table indicates that the implementation of SEALR Phase 2 in the 2036 Do Something scenario will provide a slight improvement in the AM peak hour on the A41 Tring Road in queueing and degree of saturation compared to the 2036 Do Nothing scenario. SEALR Phase 2 appears to have no effect on the junction in the PM peak hour.

The results demonstrate that the junction is expected to operate with spare capacity which indicates that the impact of the proposed development would be acceptable. Mitigation measures are therefore not required, but this will need to be confirmed when the geometry has been checked.

Junction 23: Southern Link Road / New Road

This proposed junction takes the form of a signalised junction and has been assessed using LinSig. The 2024 (A) and 2024 (B) scenarios have not been assessed as the percentage change analysis has identified that the proposed scheme has a positive impact on this junction in these scenarios.

The geometry of the model has been checked and is correct and consistent with the agreed Hampden Fields model.

The flows have been checked and are slightly higher than those in the flow charts, which are in vehicles so are assumed to have been entered correctly as PCU's. The ahead flows on the SLR are not visible on the flow charts to check. Please provide amended flow charts for all 2036 scenarios, including the ahead flows on the SLR.

The summary results from the Transport Assessment are copied below.

Table 13. Junction 23 Capacity Modelling Results

Scenario	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Max DoS	Max Q	Max DoS	Max Q
2024 (A) Do Nothing	Not Assessed		Not Assessed	
2024 (A) Do Something	Not Assessed		Not Assessed	
2024 (B) Do Nothing	Not Assessed		Not Assessed	
2024 (B) Do Something	Not Assessed		Not Assessed	
2036 Do Nothing	71.3%	25.2	91.2%	47.9
2036 Do Something	71.5%	24.9	91.2%	43.1

The full results of the analysis are set out below in Tables 1 and 2.

Link		AM Peak		PM Peak	
		% Sat	Modelled Queue	% Sat	Modelled Queue
1/1	SLR East Ahead/Left	62.6	18	90.2	43
1/2+1/3	SLR East Ahead/Right	6437	22	91.2	48
2/1+2/2	New Road South	71.0	10	90.9	14
3/1	SLR West Ahead/Left	69.4	23	61.2	18
3/2+3/3	SLR West Ahead/Right	71.3	26	63.2	21
4/1+4/2	New Road North	60.8	8	80.2	10
	Cycle Time	240		240	
	%PRC	26.2		-1.4	

Table 1: LinSig Results, 2036 Do Minimum

Link		AM Peak		PM Peak	
		% Sat	Modelled Queue	% Sat	Modelled Queue
1/1	SLR East Ahead/Left	62.7	18	89.5	38
1/2+1/3	SLR East Ahead/Right	65.0	22	91.2	44
2/1+2/2	New Road South	71.4	10	90.5	16
3/1	SLR West Ahead/Left	69.7	22	60.5	16
3/2+3/3	SLR West Ahead/Right	71.5	25	62.4	19
4/1+4/2	New Road North	58.5	7	69.6	8
	Cycle Time	240		240	
	%PRC	25.9		-1.4	

Table 2: LinSig Results, 2036 Do Something

The modelling demonstrates that the junction is likely to be at capacity in the Do Minimum PM peak hour in 2036 with a Practical Reserve Capacity (PRC) of -1.4 and saturation greater than 90% on the SLR East and New Road South arms. There appears to be a slight improvement on the SLR East and West arms in the 2036 Do Something Scenario.

The modelling indicates that the junction has spare capacity in the AM peak hour. The PRC of the overall junction reduces slightly by 0.3% in the Do Something AM peak hour but there is a reduction in the maximum queue on the SLR of one vehicle.

The modelling indicates that the impact of the proposal on the operation of the junction is likely to be minimal and mitigation measures are therefore not required.

J12: B4443 Lower Road / SMRR North (SEALR Phase 2 / SEALR Phase 1 Roundabout)

This is the eastern junction of the proposed scheme and takes the form of a 4 arm roundabout. The Do Nothing scenarios use the model approved for the SEALR Phase 1 application. The Do Something scenarios adjust this model to account for the SEALR Phase 2 dual carriageway on the western arm of the roundabout.

The geometry has been checked. The Do Nothing model is consistent with the previously agreed SEALR model. The geometry in the Do Something model is the same on three arms but includes changes on the western approach in line with the proposed dualling scheme. The geometry on the western approach is consistent with the plan that has been provided. The flows have been checked and are correct.

All scenarios have been modelled. The results of the analysis from Table 14 of the Transport Assessment are copied below. The full results from the output file by arm are also shown below.

Table 14. Junction 12 Capacity Modelling Results

Scenario	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Max RFC	Max Q	Max RFC	Max Q
2024 (A) Do Nothing	0.69	2.2	0.70	2.4
2024 (A) Do Something	0.70	2.2	0.62	1.6
2024 (B) Do Nothing	0.82	4.1	0.85	5.5
2024 (B) Do Something	0.83	4.4	0.75	2.8
2036 Do Nothing	0.84	4.8	0.80	3.9
2036 Do Something	0.84	4.7	0.83	4.7

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	Proposed Geometries - 2024A DM													
A - SEALR E	D1	0.4	2.58	0.28	A	5.55	34 % [D - B4443 N]	D2	0.3	2.33	0.26	A	5.76	24 % [C - SM W]
B - B4443 S		0.5	4.20	0.33	A				0.4	3.78	0.29	A		
C - SM W		1.5	6.14	0.60	A				2.4	8.37	0.70	A		
D - B4443 N		2.2	6.97	0.69	A				1.6	5.70	0.62	A		
	Proposed Geometries - 2024A DS													
A - SEALR E	D3	0.4	2.59	0.28	A	5.58	34 % [D - B4443 N]	D4	0.3	2.34	0.26	A	5.80	23 % [C - SM W]
B - B4443 S		0.5	4.22	0.33	A				0.4	3.77	0.29	A		
C - SM W		1.5	6.18	0.61	A				2.4	8.48	0.71	A		
D - B4443 N		2.2	7.01	0.70	A				1.6	5.71	0.62	A		
	Proposed Geometries - 2024B DM													
A - SEALR E	D5	1.4	4.28	0.58	A	8.79	13 % [D - B4443 N]	D6	1.4	4.17	0.59	A	9.99	4 % [C - SM W]
B - B4443 S		0.6	5.69	0.38	A				0.6	5.59	0.38	A		
C - SM W		3.0	11.52	0.75	B				5.5	20.49	0.85	C		
D - B4443 N		4.1	11.73	0.82	B				2.8	8.58	0.74	A		
	Proposed Geometries - 2024B DS													
A - SEALR E	D7	1.4	4.31	0.58	A	9.13	12 % [D - B4443 N]	D8	1.4	4.14	0.59	A	9.99	4 % [C - SM W]
B - B4443 S		0.6	5.74	0.38	A				0.6	5.51	0.38	A		
C - SM W		3.1	11.82	0.76	B				5.5	20.51	0.85	C		
D - B4443 N		4.3	12.39	0.82	B				2.8	8.58	0.74	A		
	Proposed Geometries - 2036 DM													
A - SEALR E	D9	1.8	4.97	0.64	A	9.75	10 % [D - B4443 N]	D10	3.7	7.95	0.80	A	12.06	5 % [B - B4443 S]
B - B4443 S		2.0	10.48	0.67	B				3.9	19.91	0.80	C		
C - SM W		2.5	10.44	0.72	B				3.9	15.97	0.80	C		
D - B4443 N		4.8	13.79	0.84	B				3.3	10.04	0.77	B		
	Proposed Geometries - 2036 DS													
A - SEALR E	D11	2.0	5.34	0.67	A	9.97	10 % [D - B4443 N]	D12	4.0	8.34	0.81	A	13.07	3 % [B - B4443 S]
B - B4443 S		2.2	11.52	0.69	B				4.7	23.93	0.83	C		
C - SM W		2.5	10.42	0.72	B				4.1	16.74	0.81	C		
D - B4443 N		4.7	13.79	0.84	B				3.3	10.17	0.78	B		

The modelling indicates that, although there is a small increase in RFC from 0.8 to 0.83 and queue length increase from 3.9 vehicles to 4.7 vehicles on the Lower Road South arm in the 2036 PM peak hour, all arms are likely to operate with spare capacity in all DS scenarios.

Lane Simulation

The junction has also been assessed using the ARCADY lane simulation option which takes into account the turning proportions and user-specified lane designations. The lane simulation analysis is consistent with that produced for the SEALR proposal with the exception of the western approach which has been updated in accordance with the proposed dualling scheme.

The results of the lane simulation analysis for the Do Something scenarios from Table 15 of the Transport Assessment are set out below, they are similar but do not match the results included in the output file.

Table 15. Junction 12 Lane Simulation Capacity Modelling Results

Column heading	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Max RFC	Max Q	Max RFC	Max Q
2024 (A) Do Nothing	Not Assessed		Not Assessed	
2024 (A) Do Something	0.98	72.3	0.78	3.0
2024 (B) Do Nothing	Not Assessed		Not Assessed	
2024 (B) Do Something	0.98	100.3	0.90	7.0
2036 Do Nothing	Not Assessed		Not Assessed	
2036 Do Something	0.96	47.7	0.91	8.1

The results from the output file are copied below. The analysis suggests that there may be significant queuing on the B4443 northern approach to the junction in the 2024 and 2036 AM peak hours, as vehicles on the B4443 give way to eastbound traffic from SEALR Phase 2. The RFCs show that the junction exceeds practical capacity and approaches theoretical capacity in the 2024 and 2036 AM peak hours.

Summary of junction performance

	AM							PM						
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
	Proposed Geometries [Lane Simulation] - 2024A DS													
A - SEALR E	D3	0.8	4.71		A	35.70	% [ ]	D4	1.1	4.92		A	11.51	% [ ]
B - B4443 S		0.9	7.04		A				0.9	6.52		A		
C - SM W		2.8	9.18		A				3.6	10.28		B		
D - B4443 N		25.9	81.97		F				5.2	18.49		C		
	Proposed Geometries [Lane Simulation] - 2024B DS													
A - SEALR E	D7	2.5	8.65		A	86.89	% [ ]	D8	6.1	15.42		C	20.13	% [ ]
B - B4443 S		1.3	8.36		A				1.2	9.34		A		
C - SM W		2.7	9.56		A				5.2	15.09		C		
D - B4443 N		104.1	235.62		F				10.1	33.12		D		
	Proposed Geometries [Lane Simulation] - 2036 DS													
A - SEALR E	D11	4.8	9.09		A	46.06	% [ ]	D12	8.1	16.40		C	20.84	% [ ]
B - B4443 S		2.9	13.53		B				4.3	21.02		C		
C - SM W		2.5	8.31		A				2.7	9.64		A		
D - B4443 N		51.6	132.78		F				11.1	36.18		E		

It has not been possible to establish the impact of the scheme on this junction using the ARCADY lane simulation assessment as the Do Minimum scenarios have not been assessed.

The applicant is therefore required to provide DM scenarios of the lane simulation modelling in order for BC to review the effect of the scheme on this junction and consider whether proposed roundabout operation is adequate

J25: SMRR South / SWALR / SEALR Phase 2

This four-arm roundabout will connect the SEALR Phase 2 with the southern part of the SMRR, which will be delivered by HS2, to the south and the South West Aylesbury Link Road (SWALR) to the west. The fourth arm is a field access.

The proposed junction has been assessed with the ARCADY module of Junctions 9. The geometry has been checked and is consistent with plan provided. The flows have been checked and are correct.

The results of the assessment from Table 16 of the Transport Assessment are reproduced below with the results by arm taken from the output file also shown below.

Table 16. Junction 25 Capacity Modelling Results

Column heading	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Max RFC	Max Q	Max RFC	Max Q
2024 (A) Do Nothing	Not Assessed		Not Assessed	
2024 (A) Do Something	Not Assessed		Not Assessed	
2024 (B) Do Nothing	Not Assessed		Not Assessed	
2024 (B) Do Something	Not Assessed		Not Assessed	
2036 Do Nothing	Not Assessed		Not Assessed	
2036 Do Something	0.69	2.2	0.67	2.0

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
	Proposed Layout - 2036 DM									
1 - SMRRD (NE)	D1	1.2	3.85	0.55	A	D2	1.1	3.36	0.53	A
2 - SMRR (SW)		2.3	9.23	0.70	A		2.1	8.70	0.68	A
3 - SWALR (W)		0.8	3.57	0.46	A		0.8	3.12	0.44	A
	Proposed Layout - 2036 DS									
1 - SMRRD (NE)	D3	1.4	4.11	0.58	A	D4	1.2	3.50	0.55	A
2 - SMRR (SW)		2.2	9.02	0.69	A		2.0	8.56	0.67	A
3 - SWALR (W)		0.9	3.57	0.46	A		0.9	3.27	0.47	A

The modelling demonstrates that the junction is likely to operate with a significant amount of spare capacity and queues of less than 3 vehicles in both the Do Minimum and Do Something scenarios. The assessment therefore suggests that the junction can accommodate the forecast vehicle demand.

The junction has also been assessed using the lane simulation option. The results are set out in Table 17 of the TA reproduced below which does not include the Do Minimum.

Table 17. Junction 25 Lane Simulation Capacity Modelling Results

Column heading	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Max RFC	Max Q	Max RFC	Max Q
2024 (A) Do Nothing	Not Assessed		Not Assessed	
2024 (A) Do Something	Not Assessed		Not Assessed	
2024 (B) Do Nothing	Not Assessed		Not Assessed	
2024 (B) Do Something	Not Assessed		Not Assessed	
2036 Do Nothing	Not Assessed		Not Assessed	
2036 Do Something	0.79	4.5	0.86	6.7

The results by arm taken from the output file also do show the Do Minimum. The lane simulation assessment also suggests that the junction can accommodate the forecast vehicle demand. It is therefore considered that the proposed roundabout operation is adequate.

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
Proposed Layout [Lane Simulation] - 2036 DM										
1 - SMRRD (NE)	D1	2.9	8.33		A	D2	2.7	6.86		A
2 - SMRR (SW)		4.4	16.77		C		8.1	32.58		D
3 - SWALR (W)		2.6	8.89		A		1.8	6.81		A
Proposed Layout [Lane Simulation] - 2036 DS										
1 - SMRRD (NE)	D3	3.4	9.06		A	D4	2.7	7.25		A
2 - SMRR (SW)		4.5	15.85		C		6.7	26.56		D
3 - SWALR (W)		2.4	8.20		A		2.0	7.93		A

Summary

In summary, the provision of the proposed scheme is considered to have some overall benefit on the operation of the transport network in the study area, with a neutral or beneficial impact on 80% of junctions assessed, including the Stoke Road Gyratory.

BC have concerns with regards to the design of the western SEALR Phase 2 / SWALR/ SMRR Roundabout and require a number of changes to be made:

- The applicant is required to relax the radius of the field access, in line with the original design, which would allow large vehicles to access and egress the site using one running lane only.

- The applicant is required to relax the radii of the HS2 access on the western approach and change it into a left in left out only access to remove right turn movements into the access.

- The applicant is required to remove the maintenance bay on the Roundabout and reposition it in a more suitable location.

Following review of the Road Safety Audit BC also have concerns with regards to the design of the road:

- BC are concerned about the proximity of the maintenance track located south of the westbound carriageway to the road and require the applicant to reposition the track further south.

- The applicant is required to reposition the substation maintenance bay, which is currently located at the exit of the western roundabout on the eastbound section of SEALR Phase 2, to a location near the entry of the roundabout, possibly at the northern (SWALR) arm.

An assessment has been made of the change in traffic flow at each of the junctions for each assessment year.

BC requires a table demonstrating the impact of the scheme on the Walton Street Gyratory in all scenarios.

The majority of junctions experience no significant change in vehicular trips, but four junctions were assessed in more detail.

The modelling of the SEALR Phase 1 / Phase 2 Eastern Roundabout indicates that all arms will operate with spare capacity in all DS scenarios and the impact of the proposal on the operation of the junction is minimal.

However, lane simulation analysis of the DS scenarios suggests that there may be significant queuing on the B4443 northern approach to the junction as vehicles on the B4443 give way to eastbound traffic from SEALR Phase 2. The applicant is required to provide DM scenarios of the lane simulation modelling in order for BC to review the effect of the scheme on this junction and consider whether proposed roundabout operation is adequate.

The SMRR South / SWALR / SEALR Phase 2 Western Roundabout is expected to operate with a significant amount of spare capacity and queues of less than 3 vehicles in both the 2036 Do Minimum and Do Something scenarios.

The applicant is required to provide a drawing annotated with ARCADY measurements for the A41 Aston Clinton Road / Park Street / Tesco Access/Walton Road Roundabout. The modelling results indicate the impact of the proposed development would be acceptable and mitigation measures are therefore not required, but this will need to be confirmed with when the geometry has been checked.

The applicant is required to provide updated flow charts for 2036 which include the ahead flows on the Southern Link Road / New Road junction. The modelling suggests that this signalised junction is likely to be at capacity in the Do Minimum PM peak hour in 2036 with a Practical Reserve Capacity (PRC) of -1.4 and saturation greater than 90% on a number of arms. However, the implementation of SEALR Phase 2 is likely to create a slight improvement in this peak hour and mitigation measures are therefore not required.

I should therefore be grateful if the applicant could be invited to submit additional information that responds to and seeks to address the highways comments raised in this response.

Yours sincerely

Sarah Halsey

Highways Development Management
Planning Growth & Sustainability