MID SUSSEX TRANSPORT STUDY

TRANSPORT IMPACT OF SCENARIOS 7 AND 8

NON-TECHNICAL SUMMARY

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1. SUMMARY

1.1 Work Undertaken

1.1.1 Mid Sussex District Council (MSDC) commissioned SYSTRA to:

- Build a strategic highway model to underpin the Mid Sussex Transport Study (MSTS); and
- Update the Mid Sussex Transport Study to test the impact of proposed development on the strategic and local transport network and upon significant routes in Ashdown Forest (adjacent to but outside of Mid Sussex District).

1.1.2 The work is further divided into the following stages:

- 2017 Base Year Highway Model Production and Validation
- 2031 Reference Case Scenario;
- 2031 Development Scenarios including MSDC local plan developments;
- 2031 Preferred Development Scenarios including potential mitigation schemes

1.1.3 The 2017 Base Year Highway Model has been validated in line with the DfT's WebTAG guidance. The modelling is considered to be reliable and accurate for the purposes of this study, as well as an input for wider work including air quality modelling.

1.2 Scenarios Tested

1.2.1 The 2031 Development Scenarios including MSDC local plan developments have been refined over a number of iterations. The 2031 Reference Case Scenario has also been updated during this time.

1.2.2 Scenario 7 and Scenario 8 represent refined scenarios as part of the Council's plan making process, including SA, to help inform preparation of the Draft Site Allocations DPD and select a preferred option. This summary focusses on the outcomes of these two Scenarios, as well as the next steps. The main report and Appendices provide more detail on the preparatory model development and forecasting assumptions. The previous scenarios are described in other Technical Notes.

1.2.3 The Reference Case represents the performance of the road network in 2031, and includes any committed highway infrastructure, development in the district and background growth to this date. This acts as a baseline when assessing the impacts of the Development Scenarios.

1.2.4 Scenarios 7 and 8 build on the 2031 Reference Case and assess proposed Local Plan development and supporting infrastructure in 2031. Development Scenario 7 includes 27 housing development sites beyond the Reference Case, and Development Scenario 8 assesses 30. There are 26 housing development sites included in both Scenarios. **Table 1** summarises the housing units considered in each Development Scenario, and how they compare to the 2031 Reference Case, which is constant to both scenarios.

1.2.5 Both Scenarios also include a large employment site, the Science and Technology Park (subsequently referred to as S&T park) located north of the A2300 near Burgess Hill. The locations of the housing sites, and the S&T Park are shown in **Figure 1**.

Table 1. Housing units Considered in Mid-Sussex in Development Scenario 7, and Development Scenario 8

SCENARIO	TOTAL UNITS CONSIDERED	TOTAL UNITS COMPARED TO REFERENCE CASE 5	TOTAL HOUSING SITES COMPARED TO THE REFERENCE CASE
2031 REFERENCE CASE 5	11,334	-	-
2031 SCENARIO 7	13,631	*2,297*	*27*
2031 SCENARIO 8	13,357	*2,023*	*30*

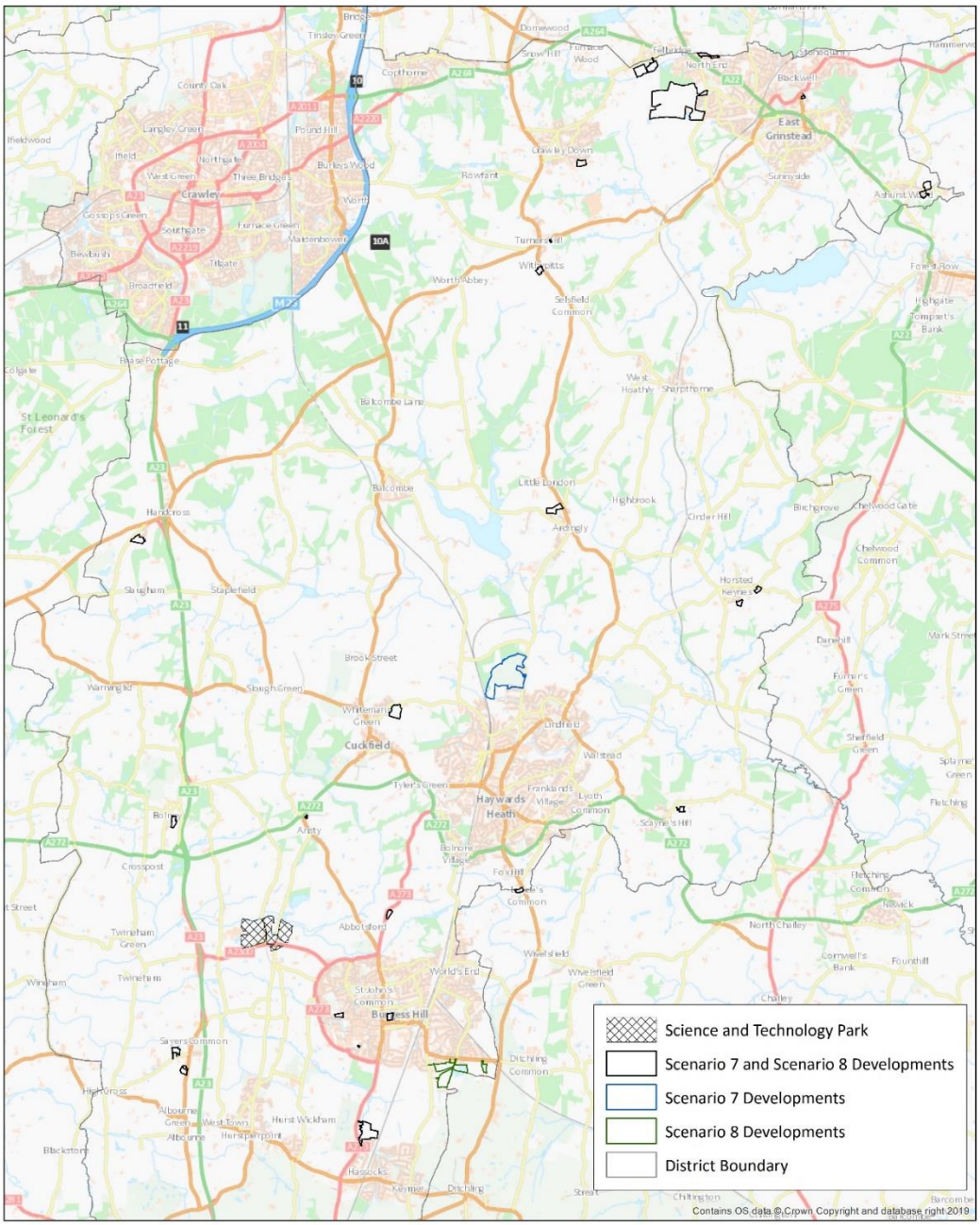

Figure 1. Location of Development Sites Considered in 2031 Development Scenario 7 and Scenario 8

1.3 Scenario 7 and 8 *without* Mitigation

Traffic Flow Impacts

1.3.1 Both scenarios generate significant additional traffic centred around the **A2300** and nearby roads, in the AM and PM Peak. The additional demand on the A2300 in particular results in significant rerouting on Cuckfield Road (north and south of the A2300) and the A272 through Ansty. There are also impacts on the A273 through Hassocks, B2036, B2116 and B2117.

1.3.2 The **A23/A2300 dumbbell junction** appears to be significantly affected and in the PM peak traffic is avoiding this junction in favour of the alternative routes mentioned above.

1.3.3 Due to the forecast congestion on the **A264** at Felbridge, there are significant flow impacts on alternative routes such as the B2110 through Turner's Hill.

M23 and A23

1.3.4 On the **A23** there are traffic flow impacts of up **10%** on the section between the A272 and B2110. It is considered that these are largely attributable to the S&T park.

1.3.5 Development Scenario 7 and 8 both forecast that **seven** southbound sections of the A23 are forecast to have a 'notable flow increase' in the AM peak, and **nine** northbound sections are forecast to meet the same criteria in the PM peak.

'Severe' Junctions

1.3.6 **'Severe'** junction impacts occur at **eight** junctions in Scenarios 7 and 8:

- C7 A272 / B2036, Ansty
- S1 A23 / A2300 Southbound On-Slip, Burgess Hill
- S2 A23 / A2300 Eastern Roundabout, Burgess Hill
- S5 A2300 / Northern Arc Spine Road, Burgess Hill
- S6 Junction Road / B2113, Burgess Hill
- S8 A273 / B2116 (Stonepound), Hassocks
- S9 A23 / A281 Eastbound On-Slip, Pyecombe
- S22 Valebridge Road / Junction Road / Leylands Road, Burgess Hill

1.3.7 One further junction is forecast to have a 'severe' impact in Scenario 7 only:

- N7 B2028 Turners Hill Road / Wallage Lane, Crawley Down

1.3.8 **Table 2** summarises the number of junctions in each Scenario identified as being 'severely' impacted, and **Figure 2** shows the locations of these junctions.

Table 2. Number of 'severe' junctions in 2031 Scenario 7 and 2031 Scenario 8 compared to the 2031 Reference Case

SCENARIO	NUMBER OF SEVERELY IMPACTED JUNCTIONS
2031 SCENARIO 7 VS. 2031 REFERENCE CASE 5	9
2031 SCENARIO 8 VS. 2031 REFERENCE CASE 5	8

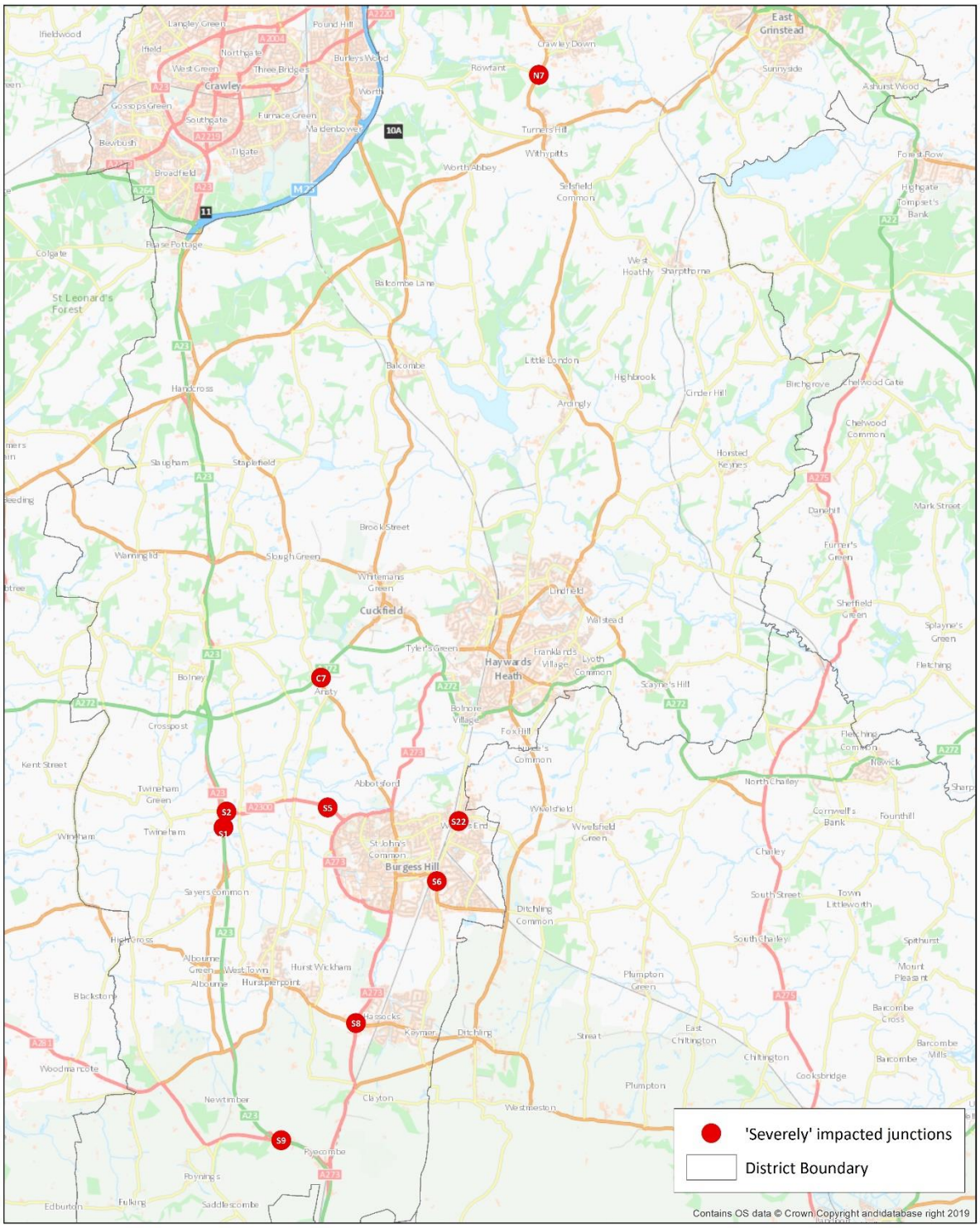

Figure 2. Location of 'severely' impacted junctions in 2031 Scenario 7 or 8 compared to the 2031 Reference Case

1.4 Proposed Mitigation

1.4.1 A set of mitigations have been proposed to alleviate the 'severe' impacts identified as a result of the developments tested in Scenario 7 and 8.

1.4.2 **Sustainable mitigation** has been considered initially. Following discussion with West Sussex County Council, specific measures have been proposed at each site based on the location and opportunity for enhancement to bus services and active modes.

1.4.3 The proposed sustainable mitigation goes some way to reducing the transport impact of the developments, but outline **highway mitigation measures** have also been considered to address the remaining 'severe' impacts. These have been tested in the Scenario 7 and Scenario 8 *with* mitigation model runs. **Table 3** summarises the proposed highway mitigation measures.

Table 3. Proposed highway mitigation included in 2031 *with* mitigation Scenarios

ID	AREA	JUNCTION	OUTLINE MITIGATION PROPOSAL
C6	Haywards Heath	B2036 / Ardingly Road, Whitemans Green	None
C7	Haywards Heath	A272 / B2036	Minor widening on A272 eastern arm
C10	Bolney	A23 / A272 Bolney Road	None
S2	Burgess Hill	A23 / A2300 Eastern Roundabout	Free flow for A23 Southbound off-slip to A2300 Eastbound and partial signalisation
S5	Burgess Hill	A2300 / Northern Arc Spine Road	Lengthening of A2300 western arm flare
S7	Hurstpierpoint	B2117 / B2116 Hurstpierpoint	None
S8	Hassocks	A273 / B2116 Hassocks (Stonepound)	None

1.5 Scenario 7 and 8 *with* Mitigation

1.5.1 The proposed mitigation successfully removes the 'severe' impacts on most non-strategic routes, and the A2300. Following mitigation, Scenario 7 and 8 *with* mitigation runs have **two** 'severely' impacted junctions. These are shown in **Figure 3**, and listed below:

- C7 A272 / B2036, Ansty
- S1 A23 / A2300 Southbound on-slip

1.5.2 The proposed mitigation at the eastern roundabout releases a 'bottleneck' which contributes to the 'severe' impact remaining on the slip road merge with the A23. This has not been mitigated due to limited options (without major works on the A23). This severe impact will need to be addressed through alternative means, to be agreed with Highways England.

1.5.3 The proposed mitigation does not forecast any further sections of the A23 to have a 'notable flow increase' compared to the 2031 Reference Case, beyond those identified in the *without* mitigation scenarios.

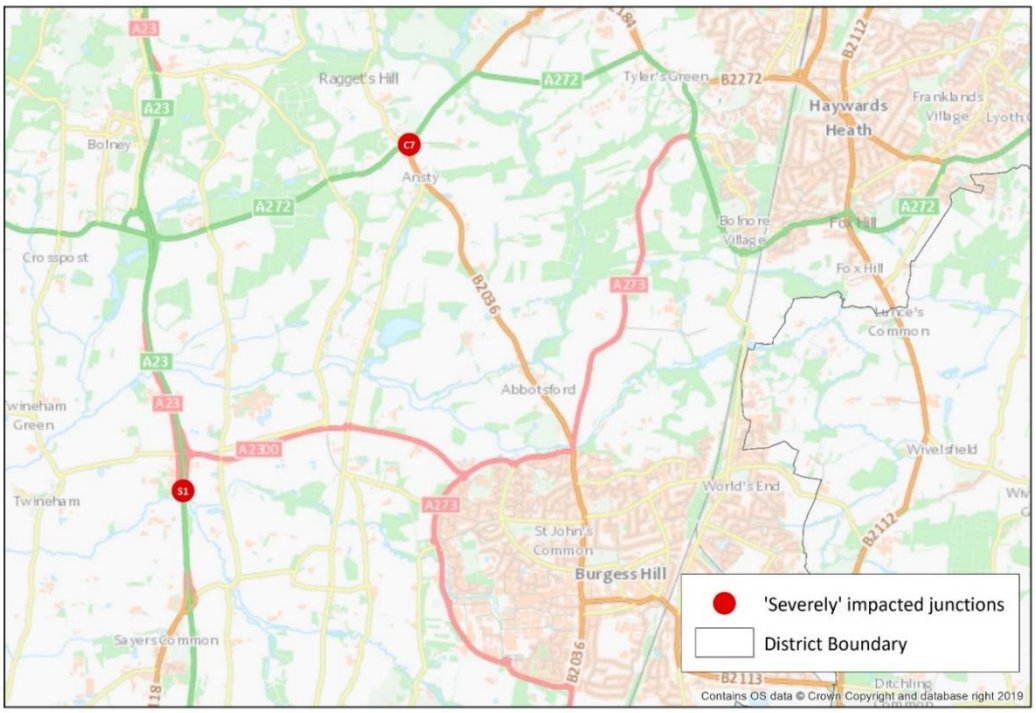

Figure 3. Location of 'severely' impacted junctions in 2031 Scenario 7 or 8 *with* mitigation compared to the 2031 Reference Case

1.6 Key Locations Commentary

Further information about key locations, and the potential outcomes of further scenarios is contained below. It should be noted that such outcomes can only be confirmed by full runs of the model, due to the number of journeys and routings being modelled.

A23/A2300

1.6.1 The A2300 and its dumbbell junction with the A23 is a focus of the impacts of Scenarios 7 and 8. It is apparent that the pressure on this junction, on the eastern roundabout and the southbound A23 on-slip in particular, is largely due to the S&T park, predominantly in the PM for journeys leaving the park and heading south, hence there is a 'severe' impact at the slip-road in the *with* mitigation scenarios.

1.6.2 The congestion forecast on the A2300 in the *without* mitigation scenarios causes traffic to re-route on alternative routes to such as the A272 through Ansty, A273 through Hassocks, B2036, B2116 and B2117.

Proportion of slip-road users from S&T park

1.6.3 In the PM peak Scenarios approximately 25% of vehicles on the A23 / A2300 southbound on-slip are from the S&T Park.

Sustainability percentage reduction required to remove the 'severe' impact

1.6.4 The model suggests that a 35% reduction of road users from the S&T Park in the PM peak, would remove the 'severe' impact on the A23 / A2300 slip road in the *with* mitigation scenarios. Sustainable measures of this scale are also likely to encourage other road users, outside of the S&T Park, to move to sustainable transport options.

Potential Impact of reduced S&T park

1.6.5 With most of the 'severe' impacts occurring at junctions around the A2300, it is likely that these are largely attributable to the S&T Park. It is therefore probable that a S&T Park of a reduced size (by 2031) would result in fewer, or no 'severe' impacts in the *with* mitigation scenarios. These outcomes can only be confirmed by undertaking full model runs.

Trip Distribution and Trip Rates

1.6.6 The distribution assumptions of traffic to and from the park is crucial to these considerations, as are the assumed trip rates. Therefore, this should be considered further in any further work.

A264/A22

1.6.7 This signalised junction is currently regarded as a 'hotspot' where delays are experienced and it would be expected that further congestion will occur by 2031.

Rerouting

1.6.8 The A264 / A22 junction is forecast to operate over capacity in the 2031 Reference Case, with high delays. The developments in Scenario 7 and 8 slightly increase the traffic at the

A264 / A22 junction, but also on alternative routes where traffic is routing to avoid the queues at this junction and find the most cost-effective journey. This means the model does not forecast 'severe' impacts at the A264 / A22 junction, but does on alternative routes, such as at B2028 Turners Hill Road / Wallage Lane in Crawley Down.

1.6.9 Online route planners suggest that even in current conditions alternative routes on local 'B' roads including those suggested by the model are viable, and therefore it is reasonable to expect this would happen in reality in 2031.

Proportion of re-routers

1.6.10 When a junction reaches capacity in the model, delay will increase significantly, and extensive rerouting will occur if more cost-effective options are available. The model forecasts that the congestion on the A264 will cause traffic travelling to the Imberhorne Lane development from the west to route via the B2110 through Turners Hill.

1.6.11 In Scenario 7, the PM peak model shows increases of up to around 180 vehicles on the B2028 through Crawley Down towards Turner's Hill and about 120 additional vehicles travelling east on the B2110 at Turner's Hill towards Imberhorne Lane. This is a mix of traffic relating to the Imberhorne site, the smaller sites in the north of the District and re-routed traffic from the reference case seeking to avoid the A264. This outcome is similar in Scenario 8 (the impact on the B2028 is slightly lower) and the mitigation scenarios.

1.7 Next Steps

1.7.1 It is recommended that further model runs are undertaken in order to refine the proposed mitigation, and ultimately mitigate against all 'severe' impacts on the road network and to inform future plan stages.

A2300

1.7.2 Further model runs are recommended to improve the forecast performance of the A2300, its junction with the A23, and the impact of the S&T Park. Future runs should consider:

- Excluding the S&T Park to confirm its contribution to the 'severe' impacts in the *without*, and *with* mitigation scenarios
- Increasing the proposed sustainability measures at the S&T Park in the *with* mitigation scenarios, as outlined in 1.6.4, to reduce the 'severe' impacts
- Further reviews of:
  - Number of trips assumed to be generated by the S&T Park, and the distribution
  - Further sustainability measures that could help reduce the number of road users at the S&T Park

1.8 Conclusion

1.8.1 When assessing the impact of 2031 Development Scenario 7 and Scenario 8 against the 2031 Reference Case in the Mid-Sussex Strategic Highway Model, nine and eight junctions respectively are forecast to be impacted 'severely.

1.8.2 The proposed sustainable measures and highway mitigation measures are considered largely successful. with only two 'severe' impacts being identified in each Scenario. Modelling results suggest that this is a result of the A23 operating at capacity in the 2031 Development Scenarios, as a result of the additional traffic generated by the S&T Park on the A2300.

1.8.3 It is considered that the two outstanding 'severe' impacts can be mitigated against, and will be addressed as part of the ongoing work to inform the next planning stage.

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