APPLEGREEN PLC

DEADLINE 2 SUBMISSIONS

relating to

M42 Junction 6
Development Consent Order Application

APPENDIX 1 - RESPONSES TO EXAMINING AUTHORITY'S FIRST WRITTEN QUESTIONS

24th June 2019

Abbreviations used in this Response

Applegreen	Applegreen Plc
Applegreen MSA	Applegreen Motorway Service Area
Applegreen MSA planning application	Planning application reference no: (PL/2016/02754/MJFOT)
DCO	DCO
ES	Environmental Statement
ExA	Examining authority
Extra	Extra MSA Solihull Ltd
Extra MSA	Extra Motorway Service Area
Extra MSA planning application	Planning application reference no: PL/2015/51409/PPOL
HE	Highways England
J	Junction
MSA	Motorway Service Area
NPPF	National Planning Policy Framework
NPS	National Policy Statement
PS	Planning Statement
SMBC	Solihull Metropolitan Borough Council
SSD	Stopping Sight Distance

ExQ1 ref:	Question to:	Question:	Applegreen plc Response
1.0.3	SMBC	**Motorway Service Area (MSA)** Could SMBC provide an update on the progress of the two undetermined planning applications for MSAs at Junctions 4 and 5?	The Applegreen MSA is the subject of planning application made on 27th October 2016. It is not the subject of any objections from SMBC's technical consultees. Highways England is maintaining a holding position pending final resolution of certain minor technical and procedural matters. SMBC accepts, having attended meetings between Applegreen and Highways England, that there are no 'show stoppers' or insuperable constraints to the Applegreen MSA from a Highways England perspective. As of the morning of 24th June 2019, Applegreen has received from Highways England the finalised Road Safety Audit (RSA) report for the proposed MSA at Junction 4 of the M42. Having reviewed the finalised RSA it is clear that it does not contain any new or material issues that cannot either be dealt with in the RSA Designer's Response Report or at detailed design stage. In relation to timescales, the RSA Designer's Response Report will be sent to Highways England before the close of business on Tuesday 25th June 2019, while the GG104 Safety Risk Assessment, which is required to append the RSA and the Response Report, will be sent to Highway England by the close of business on Friday 28th June 2019. With the exception of the departures submission, for which Applegreen is awaiting a response from Highways England on a procedural matter, the submission of the RSA Designer's Response Report and the GG104 should give final resolution to all outstanding Highways England matters. For clarity a copy of the departures report was submitted to Highways England by email on 17 May 2019. Subsequently Highways England made a request for the departures to be uploaded onto its DAS 3 system which is currently not possible as the DAS 3 system is designed to accept new departures. The scheme being promoted by Applegreen at Junction 4 of the M42 does not introduce any new departures. Applegreen considers that the Applegreen MSA planning application meets the unmet MSA need and is preferable to the Extra MSA planning application in a number of key material respects. In particular: • The significant detrimental highways impacts will not arise and will not involve 4 major departures from the Design Manual for Roads and Bridges as is the case with the Extra MSA application • It is materially smaller with 7.5ha of 'hard' development, compared to 13.7 ha with the Extra MSA, and an overall site area of 12.2 ha compared to 61.75 ha • It has a significantly reduced impact on the Green Belt

			• Landscape and visual impacts are substantially less • It does not involve the loss of any Ancient Woodland, nor does it cause harm to the settings of a Grade 2* listed building as is the case with the Extra MSA In this context, Applegreen considers that it would be open to SMBC, and would be entirely reasonable and lawful, to grant permission for the Applegreen MSA and refuse permission for the Extra MSA.
1.0.4	Applicant, SMBC and Extra MSA Solihull Ltd and Applegreen plc	**MSA** Paragraph 4.3.5 of the ES explains that north facing slip roads were removed from the proposed new Junction 5a as it was considered that the junction is too close to Junction 6 and providing them would cause safety and operational issues. Paragraph 3.1.9 of the ES states that "*Although the MSA currently does not benefit from planning consent, Highways England has engaged with the applicant for the MSA and has sought to ensure that, where practicable, the design of Junction 5A would not preclude delivery of the MSA, should the MSA be authorised by SMBC following the implementation of the Scheme."* However, the proposed MSA for Junction 5a includes northern slip roads. Could the Applicant, SMBC and Extra MSA Solihull Ltd and Applegreen plc comment on this potential contradiction.	While the DCO scheme does not include the provision of north facing slip roads, for the reasons stated in paragraph 4.3.5 of the ES (APP-049), its location and layout design have been heavily influenced by the desire to accommodate the potential future provision for access to the MSA proposal and its associated north facing slip roads. Consequently, a clear contradiction is evident. Without providing for the MSA there would be potential to locate the junction further north, reducing the impact on Aspbury's Copse (Ancient Woodland), to reduce the size of the western roundabout or provide a free flow junction rather than a dumb bell junction, which is a more efficient and the standard layout for a junction with one way facing slip roads connecting to a single side road. As part of its Project Control Framework, Highways England produce reports at each of its Stage Gates for approval. A Scheme Assessment Report (Appendix A of this response) was produced for Stage Gate 2 Approval for options selection. At paragraph 5.2 of the Scheme Assessment Report the following was stated *"The new dumb-bell junction incorporates a western roundabout which is increased in size compared to the eastern roundabout to accommodate the higher level of traffic and provide access for the potential MSA."* Please note that Appendix A has, due to its large file size, be issued to the DCO Case Team via a 'SharePoint' download link. The document can also viewed in its original location via the following web link: https://highwaysengland.citizenspace.com/he/m42-junction-6-improvement/supporting_documents/Scheme%20Assessment%20Report%20%20Final.pdf Highways England has recognised that the additional operational and safety risks associated with providing sub-standard north facing slip roads are not outweighed by any benefit of increased resilience in the network as set out in Preliminary Environmental Information Report (Appendix F of this response) paragraph 3.2.25, particularly given that traffic forecasts suggest that they would have limited use. It should be noted that throughout the various stages of optioneering and consultation, all options for a southern junction close to Solihull Road have included either north facing slip roads or parallel northern links to Junction 6. This has precluded a free flow junction being considered at this location. Clearly a free flow junction is considered to be an appropriate form of junction as this was the layout proposed by Highways England as Option 3 at the public

			consultation. This junction would have been located further north, closer to junction 6, where its layout would not have been constrained by the desire to accommodate the MSA proposals. It is noted that, under a process separate from the DCO application, namely, the planning application for the Extra MSA, Highways England has accepted the north facing slip roads associated with the MSA proposal, despite the weaving distance between Junction 5a and Junction 6 introducing a significant departure from standard (being less than 1.2km, against a minimum standard distance of 2km). This matter had to be taken to the National Safety Control Review Group (NSCRG) for consideration. In their letter of 19th December 2017, in relation to the Extra MSA planning application (Appendix B of this response), Highways England stated *"The evidence recently provided for the comparable M1 Leicester Forest East weaving length would suggest that the risks associated with the proposed weaving length between the M42 MSA northbound merge and junction 6 diverge are likely to be tolerable when the residual safety risk arising from this issue is considered against the wider safety benefits of the scheme."* Clearly if there was a suitable alternative to the Extra MSA proposal, as indeed there is with the Junction 4 MSA scheme, there would be no need to provide the north facing slip roads at Junction 5a or to compromise the design or safety of the DCO scheme to accommodate them.
1.0.5	Applicant	**MSA** Has the positioning of the proposed MSA influenced the proposed siting and design of Junction 5a? If it has, should this be determinative given that the planning application remains undetermined and there is an alternative site at Junction 4 being considered under a separate planning application?	The development of options and the selection of the preferred scheme are detailed in Chapter 4 of the Environmental Statement (APP-049). Paragraph 4.2.46 explains that three options where selected to take to public consultation Option 2P, Option 2R and Option 2R East, which were renamed as Option 1 (formerly Option 2R), Option 2 (formally 2R East) and Option 3 (formerly Option 2P). Option 2R and 2R East included identical dumb-bell junctions between M42 J5 and J6. There can be no doubt that the proposed siting and design of Junction 5a has been influenced by the positioning of the proposed MSA. This is evidenced in the M42 Junction 6 Technical Appraisal Report (Appendix C of this response). Please note that Appendix C has, due to its large file size, be issued to the DCO Case Team via a 'SharePoint' download link. The document can also viewed in its original location via the following web link: https://highwaysengland.citizenspace.com/he/m42-junction-6-improvement/supporting_documents/Technical%20Appraisal%20Report_web.pdf The Technical Appraisal Report was produced by Highways England as part of Stage 1 Gateway approval. Appendix G of the Technical Appraisal Report contains a number of Design Narratives for the different options being considered at that time. The Design Narrative for Option 2R is contained in Mouchel's TN0059 dated 28/9/16. On page 1 of this note, under description of proposals, the following information is provided:

			"Description of Proposals *Following a decision in September 2016 to promote MSA and the preliminary result of the TUBA assessment of selected 4 options (2Q, 2P, 11A, 11B) the need to design a simplified southern junction option derived a new option 2R.* *Option 2R as shown on drawing HE551485-MOU-GEN-M42 J6-SK-D-0207 utilises amended MSA layout with dual carriageway link towards Birmingham Airport and the Clock Roundabout. The access to and from Catherine de Barnes Ln and Brickhill village is accommodated via two staggered slip roads. The proposed MSA dumbbell layout is utilised with some modifications – western roundabout is increased in size and south facing slip roads are converted to parallel merge/diverge from the proposed taper merge/diverge layout"* It is clear from the above that Option 2R, which forms the basis of the scheme subject to the DCO, was developed by taking the MSA junction proposal and modifying it slightly to accommodate the link road towards the Airport / Clock Interchange. This connection to the MSA proposals is reiterated on page 2 of the note. ***"Slip road layouts*** *The proposed slip road layouts for the new southern junction are aimed to maximise use of the proposed MSA scheme design, ……"* ***"MSA dumbbell roundabout GSJ*** *Option 2R aims to take maximum advantage of the proposed MSA GSJ design provision. The key difference is in the western roundabout changes. In order to connect the fifth arm of the airport link connection the roundabout size is required to be increased to 100m ICD – the current design shows 60m ICD……"* At this point the layout of Junction 5a became inextricably linked to the proposed MSA junction, influencing any future changes in respect of its form or location. This can be seen in the work reported in Appendix 4 of the M42 Junction 6 Improvement Planning Statement (APP-173). Appendix 4 contains a technical note prepared by Highways England's consultants reporting an exercise they had undertaken looking at the location of Junction 5a. Paragraph 3.2 defines that the objective of the study was to review the location of the proposed Junction 5A to see if it is in the optimum position and minimises the impact on Aspbury's Copse ancient woodland. The study looked at the potential to move the junction 50m further north to reduce its impact on Aspbury's Copse. This study looked at four options for the location of Junction 5a, known as options A-D. Among the constraints considered by the study was the impact on the MSA proposals. These included, as detailed in para 3.15, the impact of the north facing slip roads on the Shadowbrook Lane bridge and, as detailed in para 3.16, the impact of further reducing the weaving distance between J5a and J6. If these MSA related constraints were not included in the study, the conclusions may well have been different, recommending a 50m or greater positioning of the

			junction further north, significantly reducing the impact on Aspbury's Copse and improving the sub-standard weaving distance between Junction 5 and Junction 5a. At para 3.32 of the technical note the following is reported when considering locating the junction further north and providing the same SSD as currently proposed: *"By moving the junction 50m north and providing a sub-standard SSD on the northbound diverge, this would further reduce the impact on the adjacent Aspbury's Copse ancient woodland as compared to option C. Approximately 3089m^2 (1772m^2 to the west and 1317m^2 to the east) of ancient woodland would be affected by this junction arrangement. This is a 55% reduction of ancient woodland that is impacted compared to option A"* The study concluded by dismissing the options that considered moving the junction further north (options C and D). The reasons for this were set out in paragraphs 5.1 and 5.2 of the technical note. It should be noted that the currently proposed scheme for junction 5a is referred to as option B in the note. *"5.1 A concern of pursuing options C and D was that these options would preclude the future development of the MSA from constructing any north facing slip roads, should such a MSA scheme be determined acceptable in principle. To eliminate this risk, Option B was selected as the preferred solution on the basis that it had the least environmental impact compared to Option A. Option B would affect an additional 174m^2 of ancient woodland as compared to Option D."* *"5.2 Whilst the MSA planning application is currently pending with SMBC for decision, there is a risk that if MSA application gets approval before the start of the M42 J6 Improvement scheme, significant design changes would be required for the Junction 5A of the M42 scheme to make it consistent with MSA proposals. This possibility raises a risk that any option other than Option B would require rework and a re-evaluation of the MSA planning documents."* It is clear from the above that any consideration of changing the form or location of the Option 2R or 2R East dumbbell junction were heavily influenced and constrained by the potential impact of these changes on the MSA proposal.

1.0.6	The Applicant, SMBC, WCC, Extra MSA Solihull Ltd and Applegreen plc, David Cuthbert	DRMB (4.35) indicates that for Rural Motorways (as the M42 nominally is) the desirable minimum weaving length must be 2km. However, the distance likely to be available between any north facing slip roads at junction 5a and the south facing slip roads at junction 6 is roughly 1.7km. In view of the high traffic flows on the M42 (nearly 7,000 vph northbound by 2041 in the AM peak and over 6,000vph southbound, APP-174, Figure 7.2) a longer weaving section might be warranted or desirable. What is the justification for countenancing the potentially sub-standard arrangement envisaged?	As a point of clarification, according to Highways England, the weaving distance between J5a and J6 on the northbound carriageway will be **1.15 km**, not the 1.7km mentioned in the ExA's question. Highways England's view is set out in an email of 23rd May 2016 reproduced in Appendix D to this response. A description of the situation that will arise is set out on page 3 of the email and reproduced below: ***"Northbound Weaving Length – Overview*** *TD 22/06 'Layout of Grade separated Junctions' which applies to new junctions on existing motorways, requires a weaving length of 2km for a rural motorway. The proposed northbound weaving length is 1.15km which is a departure from TD 22/06.* *The maximum peak hour (2018 base year am peak) M42 northbound flow between junctions 5 and 6 is 5568vph with 1775vph (27% of total flow) diverging at junction 6. The predicted corresponding merge flow from the MSA is 364vph with the traffic model suggesting that 97vph will diverge at junction 6. The proportion of HGVs in the mainline flow is 15.1%. The designer has stated that the current 85%ile speeds northbound on the M42 between Junctions 5 and 6 is 56mph. It should be noted that this is under DHS operation."* The traffic model predicts that of the 364vph joining the motorway from the MSA, 97vph (or 27%) will diverge at junction 6. This means that they are assumed to stay in the slow lane between the two junctions and not conflict with traffic in the other lanes. This is considered to be a very high proportion given the proximity of the MSA to junction 6 and it would appear that the model has simply applied the existing proportion of M42 vehicles leaving at Junction 6 to the MSA traffic, rather than considering whether people would use an MSA just before leaving the motorway. In Applegreen's experience only a very small proportion of motorists that have visited an MSA leave the motorway at the next junction. If the proportion of MSA vehicles exiting at Junction 6 were lower, the quantum of vehicles trying to weave in the sub-standard weaving length to stay on the motorway would be even higher. It should be noted that according to DMRB this weaving traffic needs three times as much road space as vehicles continuing in the slow lane. It should be noted that the proposed weaving length that has been achieved, has only been accomplished through the proposed introduction of All Lane Running on the section of the M42 between Junction 5 and Junction 6. The way the weaving length is measured differs with All Lane Running (ALR), to the way it is measured with the current Dynamic Hard Shoulder (DHS) running regime. The former giving a longer weaving length measurement. Although introducing ALR will theoretically provide a longer weaving length, it introduces safety risks associated with variable operating systems on a relatively short length of motorway. There would be DHS between Junction 3a and Junction 5, ALR between Junction 5 and Junction 6 and DHS between Junction 6 and Junction 7. Following review by the National Safety Control Review Group (NSCRG), Highways England has

			accepted the necessary Departure for the sub-standard weaving length. Highways England's position on this was set out in their letter to SMBC of 19 December 2017 at page 7 (Appendix B of this response): *"The evidence recently provided for the comparable M1 Leicester Forest East weaving length would suggest that the risks associated with the proposed weaving length between the M42 MSA northbound merge and junction 6 diverge are likely to be tolerable when the residual safety risk arising from this issue is considered against the wider safety benefits of the scheme. Taking this into account, together with the use of smart motorway technology on the M42 and the likely benefits that will be provided by the MSA, including a reduced potential for fatigue and crossover related incidents, it is felt that the departure for the northbound weaving length is approvable in principle subject to the following conditions being satisfied:….."* The above statement makes it clear that there will be safety issues associated with the sub-standard weaving length that would only be considered tolerable if they were accompanied by the benefits a new MSA would bring to fatigue related accidents. If there is a viable alternative MSA scheme on this section of the M42 that does not introduce a sub-standard weaving length, as indeed there is with the Junction 4 MSA scheme, then there is no reason to accept the added safety risk of the north facing slip roads at junction 5a.
1.0.7	The Applicant, SMBC, WCC, Extra MSA Solihull Ltd and Applegreen plc	Other than potential trips to and from the MSA proposed at junction 5a, please enumerate other journeys that might depend on the provision of north facing slip roads at junction 5a and outline the circumstances in which such trips might serve a useful purpose.	There are a number of references in the DCO submission documents that explain that there is little merit of providing north facing slip roads at Junction 5a. In the Environmental Statement Chapter 4 (APP-049), at paragraph 4.3.5, it is explained why north facing slip roads were dropped from the proposals: *"The north facing slip roads which were part of the proposed Southern Junction designs were also removed, as the junction is too close to Junction 6, and providing them would cause safety and operational issues. The traffic model also showed very limited usage for these slip roads."* This is reiterated in the Transport Assessment Report (APP-174), where at paragraph 1.4.3 it explains the reason for removing the north facing slip roads: *"…..The north-facing slip roads have also been removed as traffic modelling shows little or no demand for use."* This lack of demand is not surprising when the proposed highway network and connections are considered. The only journeys with the potential to use the north facing slips would be from the A45 west of Junction 6 to the M42 north of junction 6. They could also be used by traffic travelling between the M42 north of Junction 6 and the airport/NEC but the travel distance differences would be very similar to movements to and from the A45 west of Junction 6. If travel distances are compared between the A45 adjacent to the end of the runway and the M42 at

<table>
<tr><td></td><td></td><td></td><td>the merge/diverge of the north facing slips of junction 6, the following journey length comparison are obtained:
<table><tr><th>Route</th><th>Distance via Junction 6 (number of stop lines)</th><th>Distance via Junction 5a (number of stop lines)</th></tr><tr><td>A45(W) to M42(N)</td><td>2.1km(1)</td><td>6.2km(2)</td></tr><tr><td>M42(N) to A45(W)</td><td>2.6km(3)</td><td>6.2km(3)</td></tr></table>
It can be seen from the table above that any traffic choosing to route via any north facing slip roads at Junction 5a would have to travel nearly three times the distance and encounter as many or more stop lines. On this basis it is not surprising that traffic modelling does not forecast much demand for these slip roads.</td></tr>
<tr><td>1.0.8</td><td>The Applicant, SMBC, WCC, Extra MSA Solihull Ltd and Applegreen plc</td><td>Sensitivity tests have been undertaken entailing provision at junction 5A for the proposed motorway service area (MSA) [APP-174, 3.9]. What are the results of those tests?</td><td>Applegreen awaits the results of the sensitivity test incorporating the MSA into J5A, and wishes to reserve the right to comment on the results at the Deadline 3 stage.</td></tr>
<tr><td>1.0.9</td><td>The Applicant, SMBC, Extra MSA Solihull Ltd and Applegreen plc</td><td>Do the tests referred to in ExQ1.0.8 entail ARCADY outputs for the roundabouts at junction 5A? If so, what are the results and what do they demonstrate? If there is no ARCADY output, please justify its absence.</td><td>Applegreen reserves the right to comment once it has seen the results of the tests. However, Applegreen believes that statements made in the DCO application [APP-173, 2.4.5, 4.2.3i, and Appendix 4 generally; and APP-174, 3.9] effective state / imply that J5A can satisfactorily accommodate the requirements of the DCO project in combination with the proposed MSA. This needs to be demonstrated through ARCADY assessment that can be scrutinised by Interested Parties as part of the DCO examination process.</td></tr>
<tr><td>1.0.10</td><td>The Applicant, SMBC, Extra MSA Solihull Ltd and Applegreen plc, Mr David</td><td>In the absence of an MSA at junction 5a, would a junction designed along the lines indicated by Mr David Cuthbert [AS-018] be more efficient and represent something close to the optimum arrangement?</td><td>J5a is, for the purposes of the DCO project, required to perform one function, namely to provide egress from the northbound M42 to the new dual carriageway link road, which runs from J5a to the Clock Interchange; and to provide access from this link road back onto the M42 southbound. In short the J5a is characterised by one way (south) facing slip roads, connecting to a single road. As described subsequently, all such existing junctions identified in Applegreen’s review, have a free flow arrangement of a type similar to that provided by Mr Cuthbert (in AS-018). Such arrangements are demonstrably preferable and more efficient to a dumb-bell configuration (as proposed in the DCO scheme) as:
• They do not introduce unnecessary delays whereas, with the dumb-bell arrangement all traffic is</td></tr>
</table>

	Cuthbert		required to slow down at the point of give way despite there being very little if any circulating traffic. The presence of the roundabouts together with the need to give way is a less efficient arrangement as even without any conflicting traffic movements it will introduce an element of geometric delay. • They avoid negative environmental consequences in terms of impacts upon noise and air quality associated with traffic slowing down and then accelerating away from the give way line. With a free flow arrangements traffic would be more likely to maintain a constant speed when leaving or joining the motorway. • They avoid the junction being used to facilitate 'U' turns on the motorway, with such movements adding an element of delay for other vehicles using the junction. • The junction motorway overbridge need only cater for traffic travelling in a single direction and therefore can be less wide. • Roundabouts, with their requisite land take and lighting requirements etc. are not required. The junction design provided by Mr Cuthbert, whilst demonstrably preferable to the proposed dumb-bell arrangement, could be further optimised in that the northbound off slip road radii could be tightened to decrease the impact on the Ancient Woodland at Aspbury's Copse. It could be materially further improved by way of moving the free flow junction further to the north. This would: • Avoid impacts on the Ancient Woodland altogether. • Avoid or reduce the substandard weaving length between J5 and the new J5a. In order to evidence the foregoing, a review has been undertaken of all the "M" roads in England including the M6 Toll Road. Motorway standard "A" roads have not been included in this review. All junctions where a single road connects to a motorway have been identified and categorised on the basis of whether they have one or two way facing slip roads and whether they take the form of a free flow junction or an interchange. In this case free flow is defined as when traffic can move between the motorway and the side road without passing through a give way or stop line. The results of this review are set out in the table below and plans of the junctions are shown in Appendix E.

TABLE 1: EXISTING MOTORWAY JUNCTION FORM

Road Number	Junction Number	One or two way facing slip roads	Free flow or Interchange
M1	2	One way	Free flow
M1	4	One way	Free flow
M1	32	Two way	Free flow
M1	17	One way	Free flow
M1	21a	One way	Free flow
M1	35a	One way	Free flow
M1	43	One way	Free flow
M1	10	Two way	Interchange
M1	45	Two way	Interchange
M11	9	One way	Free flow
M18	3	Two way	Free flow
M2	4	Two way	Interchange
M20	3	One way	Free flow
M23	9	Two way	Interchange
M25	19	One way	Free flow
M25	4	Two way	Interchange
M27	4	Two way	Free flow
M3	8	One way	Free flow
M3	6	Two way	Interchange
M4	7	Two way	Free flow
M4	21	One way	Free flow
M4	19	Two way	Interchange
M4	22	Two way	Interchange
M40	3	One way	Free flow

M40	8	One way	Free flow
M42	3a	One way	Free flow
M5	4a	Two way	Free flow
M5	20	Two way	Interchange
M5	8	Two way	Interchange
M53	2	Two way	Free flow
M57	3	One way	Free flow
M6	8	Two way	Free flow
M6	32	Two way	Free flow
M6	10a	One way	Free flow
M6	25	One way	Free flow
M6	30	One way	Free flow
M6 Toll	A5195	Two way	Free flow
M6 Toll	A5	Two way	Free flow
M60	2	One way	Free flow
M60	8	Two way	Interchange
M62	35	Two way	Free flow
M62	37	Two way	Interchange

The review identified 42 junctions on the motorway network which connect to a single road. Of these junctions 19 had slip roads facing in one direction and 23 had slip roads facing in both directions on the motorway. **All** of the junctions which had slip roads facing one way were free flow.

In conclusion, it is clear that the junction form proposed in the DCO has been selected to accommodate north facing slip roads. This arrangement has demonstrable disbenefits and evidence from a review of the motorway network shows that this type of interchange is only used to connect a motorway to a single road when slip roads are provided in both directions.

1.7.28.	Applicant	**Ancient Woodland** It is noted that Chapter 4 (alternatives) of the ES states that a southern junction option is considered to represent the only viable solution to improve Junction 6. It is also noted that paragraphs 4.4.19 to 4.4.21 of the ES state that the proposed layout of M42 Junction 5a was developed to reduce the impact of the scheme on ancient woodland at Aspbury's Copse. However, can the Applicant explain why the dumb-bell layout for Junction 5a cannot be moved further north to avoid or further minimise the encroachment of the southern slip roads and associated works into or immediately adjoining Aspbury's Copse, particularly as the scheme is not constrained by providing slip roads to the north?	Locating the junction further north to reduce the impact on Aspbury's Copse was considered. This can be seen in the work reported in Appendix 4 of the M42 Junction 6 Improvement Planning Statement (APP-173). Appendix 4 contains a technical note prepared by Highways England's consultants reporting an exercise they had undertaken looking at the location of Junction 5a. Paragraph 3.2 defines that the objective of the study was to review the location of the proposed Junction 5A to see if it is in the optimum position and minimises the impact on Aspbury's Copse ancient woodland. The study looked at the potential to move the junction 50m further north to reduce its impact on Aspbury's Copse. Among the constraints considered by the study was the impact on the MSA proposals. These included, as detailed in para 3.15, the impact of the north facing slip roads on the Shadowbrook Lane bridge and, as detailed in para 3.16, the impact of further reducing the weaving distance between J5a and J6. If these MSA related constraints were not included in the study, it is considered most likely that the conclusions and junction position would have been different. It appears logical that the junction would have been moved north by 50m or more, significantly reducing the impact on Aspbury's Copse and improving the sub-standard weaving distance between Junction 5 and Junction 5a. At para 3.32 of the technical note, the following is reported when considering locating the junction further north and providing the same Stopping Sight Distance (SSD) as currently proposed: *"By moving the junction 50m north and providing a sub-standard SSD on the northbound diverge, this would further reduce the impact on the adjacent Aspbury's Copse ancient woodland as compared to option C. Approximately 3089m^2 (1772m^2 to the west and 1317m^2 to the east) of ancient woodland would be affected by this junction arrangement. This is a 55% reduction of ancient woodland that is impacted compared to option A"* The study concluded by dismissing the options that considered moving the junction further north (options C and D). The reasons for this were set out in paragraphs 5.1 and 5.2 of the technical note. It should be noted that the currently proposed scheme for junction 5a is referred to as option B in the note. *"5.1 A concern of pursuing options C and D was that these options would preclude the future development of the MSA from constructing any north facing slip roads, should such a MSA scheme be determined acceptable in principle. To eliminate this risk, Option B was selected as the preferred solution on the basis that it had the least environmental impact compared to Option A. Option B would affect an additional 174m^2 of ancient woodland as compared to Option D."* *"5.2 Whilst the MSA planning application is currently pending with SMBC for decision, there is a risk that if MSA application gets approval before the start of the M42 J6 Improvement scheme, significant design changes would be required for the Junction 5A of the M42 scheme to make it consistent with MSA proposals. This possibility raises a risk that any option other than Option B*

<table>
<tr><td></td><td></td><td></td><td>would require rework and a re-evaluation of the MSA planning documents."
It is clear from the above that any consideration of changing the form or location of the dumbbell junction were heavily influenced and constrained by the potential impact of these changes on the MSA proposal and its north facing slip roads.</td></tr>
<tr><td>1.7.29.</td><td>Applicant</td><td>Ancient Woodland
It is noted that the horizontal alignment of Solihull Road would remain largely the same as the existing to minimise land-take, although the new alignment would move off-line slightly to the north by 10m on the approaches to the overbridge, where the embankment height would be at its peak of 7.5m. Paragraph 3.5.21 of the ES explains that this offset would contribute towards reducing the amount of land-take required within Aspbury's Copse ancient woodland, and mitigating adverse impacts on properties to the south of the existing Solihull Road. However, if a new Solihull Road overbridge is to be built, can the Applicant explain why can't it, and the raised vertical alignment of its approaches, be positioned further to the north so as to avoid or further minimise encroachment into the Aspbury's Copse? Although the general arrangement drawings show relatively steep embankments to the raised sections of Solihull Road, they appear to take a considerable amount of land around the edges of the Aspbury's Copse. How would such earthworks be constructed without causing additional harm?</td><td>The location of the Solihull Lane Bridge is intrinsically linked to and constrained by the form and location of Junction 5a. The northbound off slip has to pass under the Solihull Lane bridge and climb up to the raised western roundabout of the dumbbell interchange. If the bridge were to be located further north it would have to be higher, or the slip road gradient would have to exceed the desirable maximum. The height of the bridge is determined from the level of the proposed slip roads not by the level of the M42. This is confirmed by the fact that the Solihull Road bridge is some 6 metres higher than the proposed bridge connecting the two dumbbell roundabouts, see below
<table>
<tr><th>Location</th><th>Approximate proposed level (AOD)</th></tr>
<tr><td>Solihull Road Bridge</td><td>115m</td></tr>
<tr><td>M42 under Solihull Road Bridge</td><td>102m</td></tr>
<tr><td>Northbound off slip under Solihull Road</td><td>107m</td></tr>
<tr><td>Southbound on slip under Solihull Road</td><td>106m</td></tr>
<tr><td>Link Bridge between roundabouts</td><td>109m</td></tr>
</table>
The currently proposed height of Solihull Road bridge is set by the height of the proposed slip roads passing underneath it. They in turn are climbing up from the motorway to connect to the roundabouts of the dumbbell interchange. The height of these is in turn fixed by the bridge link between the two across the M42.
If a free flow junction were provided, in a similar form to that proposed by Mr Cuthbert (AS-018), rather than the proposed dumbbell interchange, the connector road from the M42 northbound carriageway to the link road could be at or below existing ground level allowing the Solihull Road Bridge to be positioned further north and potentially lower. The Solihull Road bridge would still need to be high enough for the connector road from the link road to the M42 southbound to pass underneath it. If it were a free flow link it could start to drop in level as soon as it has crossed the M42 unlike the currently proposed southbound on slip which cannot start to drop in level until it leaves the eastern dumbbell roundabout.</td></tr>
</table>

1.11.7.	The Applicant, Arden Hotel, Applegreen PLC, Birmingham Airport, The Motorcycle Museum, Extra MSA Solihull Limited, Genting Solihull Limited, NEC Limited SMBC and WCC	A feature of the traffic at Junction 6 on the M42 is its variability, both at peak times and over the year in response to exhibitions, events and holidays etc. Moreover, this variability appears to significantly affect congestion. In the TA this variability is addressed by the year of parking and traffic data obtained from the NEC and the resulting traffic flow on South Way for 2017 [APP-174, Figures 6.4-6.6]. However, the 2016 peak hour modelled flows of 782 AM and 762 PM [APP-174, Figure 6.2], reflect the average actually observed (600-800). It is therefore inevitable (not just possible) that flows higher than the modelled flows will occur quite frequently (and from the daily distribution, APP-174 Figure 6.4) on about 37% of days. The traffic modelling would thus appear to effectively ignore much of the variability identified, some of which is substantial. Is that a fair assessment? And, if not, why not?	It is not clear whether Highways England have considered this variability in flow when considering the acceptability of the north facing slips associated with the Extra MSA proposal. If the variability of flow is linked to events at the NEC, it is likely to be reflected by higher flows trying to leave the M42 northbound at Junction 6 and conflicting with traffic leaving the MSA in what is a sub-standard weaving section.
1.11.8.	The Applicant, Arden Hotel, Applegreen PLC, Birmingham Airport, The Motorcycle Museum, Extra MSA Solihull Limited, Genting Solihull Limited, NEC Limited SMBC and WCC	What are the effects of such variation on the operation of junction 6? Perhaps examine those effects at $\mu+\sigma$ and at the 85%ile of the observed daily and peak hour distributions [APP-174, Figures 6.4-6.6] with the aid of LinSig, if appropriate. If LinSig would not be appropriate, please explain why.	Applegreen would refer to its response to question 1.11.7. It reserves the right to comment further depending on the Applicant's response to questions 1.11.7 and 1.11.8.

1.11.9.	The Applicant, Arden Hotel, Applegreen PLC, Birmingham Airport, The Motorcycle Museum, Extra MSA Solihull Limited, Genting Solihull Limited, NEC Limited SMBC and WCC	How do those higher volumes of traffic leaving the NEC via South Way compare with the annual and peak hour distributions of traffic recorded in the TA [APP-174, Figures 6.4-6.6]?	Applegreen is not providing a response to this question as it relies on information which the Applicant must provide in the first instance. Applegreen reserves the right to comment on that response.
1.11.10	The Applicant, Arden Hotel, Applegreen PLC, Birmingham Airport, The Motorcycle Museum, Extra MSA Solihull Limited, Genting Solihull Limited, NEC Limited SMBC and WCC	What is the effect of including weekends, school holidays and Bank Holidays on those distributions of traffic leaving the NEC [APP-174, Figures 6.4-6.6]?	Applegreen is not providing a response to this question as it relies on information which the Applicant must provide in the first instance. Applegreen reserves the right to comment on that response.

1.11.12	Arden Hotel, Applegreen PLC, Birmingham Airport, The Motorcycle Museum, Extra MSA Solihull Limited, Genting Solihull Limited, NEC Limited SMBC and WCC	What are the views of the Local Authorities and the operating businesses mainly served by the Clock Interchange and junction 6 on the approach to the likely variations in traffic flows in the TA [APP-174]?	This question is directed at the Local Authorities and the operating businesses served by the Clock Interchange in the first instance. Applegreen is not in a position to respond at this stage but reserves the right to comment on responses to this question.
1.11.18	The Applicant, Arden Hotel, Applegreen PLC, Birmingham Airport, The Motorcycle Museum, Extra MSA Solihull Limited, Genting Solihull Limited, NEC Limited SMBC and WCC	The LinSig analysis for the Clock Interchange shows that the improved junction will operate within capacity, but only just during the AM peak with a PRC of just 1% (Table 7.9 of the TA [APP-174]). What are the consequences for the analysis of the variations or additions in traffic flows that are likely to occur? Please provide a comparable LinSig analysis for the current situation.	Applegreen would refer to its response to question 1.11.12. It reserves the right to comment further depending on the Applicant's response to questions 1.11.12 and 1.11.18.