

A417 Missing Link  
TR010056

8.19 Summary of Applicant's Oral  
Submissions at Issue Specific  
Hearing 2 (ISH2)

Planning Act 2008

APFP Regulation  
Infrastructure Planning (Applications: Prescribed Forms and  
Procedure) Regulations 2009

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Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning  
(Applications: Prescribed Forms  
and Procedure) Regulations 2009**

**A417 Missing Link**

Development Consent Order 202[x]

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## 1 Introduction

- 1.1.1 This note summarises the submissions made by National Highways ("the Applicant") at the Issue Specific Hearing regarding Environmental Matters held on 27 January 2022 ("the Hearing") in relation to the Applicant's application for development consent for the A417 Missing Link ("the Scheme").
- 1.1.2 Where the Examining Authority ("the ExA") requested further information from the Applicant on particular matters, or the Applicant undertook to provide further information during the hearing, the Applicant's response is set out in this document. This document does not purport to summarise the oral submissions of parties other than the Applicant, and summaries of submissions made by other parties are only included where necessary in order to give context to the Applicant's submissions in response, or where the Applicant agreed with the submissions of another party and so made no further submissions itself (this document notes where that is the case).
- 1.1.3 The structure of this document follows the order of items published by the ExA on 10 January 2022 ("the Agenda"). Numbered agenda items referred to are references to the numbered items in the Agenda. The Applicant's substantive oral submissions commenced at Item 3 of the Agenda, therefore this note does not cover Items 1 and 2 on the Agenda which were procedural and administrative in nature.

## 2 Appearances

- 2.1.1 Alex Minhinick of Burges Salmon LLP confirmed that he represents the Applicant and would introduce specialists in the areas to be discussed during the Hearing at the appropriate time.

## 3 Item 3 – assessment of alternatives

- 3.1.1 Michael Goddard, Project Director for National Highway, also appeared during this agenda item for the Applicant.
- 3.1.2 The Applicant's position is that the options assessments carried out are robust and based on the appropriate level of information in light of the *Stonehenge* judgment. The Applicant referred to its Responses to the ExA's Written Questions (ExQ1) 1.1.6 and 1.1.7 (Document Reference 8.4, REP1-009) and the Applicant's Comments on Responses to the ExA's Written Questions (ExQ1) (Document Reference 8.13, REP2-014).
- 3.1.3 The Applicant confirmed in the Hearing that it has considered whether there has been a substantial change in circumstances requiring the revisiting of any options considered and is of the position that there has not been a substantial change of circumstances meriting such an exercise. The Applicant identified how previous decisions and assumptions have been reinforced by the detailed investigations it has carried out as part of the Environmental Statement for the Scheme.
- 3.1.4 The level of information considered at the options stage was appropriate given there were 30 options to consider in total and, because the Scheme is landscape-led, the EAST tool was modified to include landscape considerations. Details of this procedure have previously been submitted within the Scheme Assessment Report (SAR) (Document Reference 7.4, APP-420) and Technical Appraisal Report (Document Reference 7.9, APP-425). Recent engagement has taken

place between the Applicant and CCB and the ExA's attention is drawn to Document Reference 8.5 (REP1-010) and Document Reference 8.6 (REP1-011) in this matter. The Applicant's position is that the Scheme is landscape-led and it will continue to engage with CCB to see if there is anything else that can be done in this regard. The Design Summary Report (Document Reference 7.7, (APP-423), justifies the current design of the Scheme and illustrates how this has been landscape-led and is different to a road scheme in another environment.

- 3.1.5 The Applicant's Responses to ExA Written Questions (ExQ1) 1.1.7 (Document Reference 8.4, REP1-009) explains why Option 30 was chosen as the preferred route with reference to the Scheme Assessment Report (Document Reference 7.4, APP-420) which expands on this further. Specifically, paragraphs 11.8.5 and 11.8.7 in the Scheme Assessment Report make it clear that one of the reasons why Option 30 was chosen was because it would divert the strategic road network away from the Cotswold escarpment edge, presenting landscape opportunities which stakeholders are broadly supportive of.
- 3.1.6 The Applicant is satisfied it has taken into account the climatic conditions of the Scheme. The Applicant has not identified any particular need to reduce speed limits on account of those climatic conditions.
- 3.1.7 In response to action point ISH2-AP1 (Document Reference EV-036), Option 12 was an option developed in the early 2000s and taken forward in comparison to Option 30. Previously known as the Modified Brown Route, Option 12 sought to keep as much of the new road within the existing alignment.
- 3.1.8 Option 12 was included in National Highways' assessment of six surface and tunnel options as an alternative surface solution, on the basis that early appraisal of route corridors indicated it would be within the established funding envelope. Both surface routes (Option 12 and Option 30) were shown to provide significant improvements on the existing situation.
- 3.1.9 The SAR (Document Reference 7.4, APP-420) sets out the appraisal of options. The Applicant would draw the ExA's attention to Section 6 of the SAR (Stage 2 engineering and safety assessment). This sets out the key rationale, opportunities and constraints for Options 12 and 30.
- 3.1.10 The SAR (Document Reference 7.4, APP-420) explains that Option 12 is "less direct" than Option 30 and that this is a primary reason for the difference in its Benefit Cost Ratio (BCR). This less direct route is on account of the significant curves required to pass the existing Air Balloon roundabout and difficult topography at Nettleton Bottom, whilst maintaining as much of the existing alignment as possible.
- 3.1.11 At 6.4km, Option 12 is almost 1km longer than Option 30 (5.6km at the time of that assessment) and the effect of this on monetised benefits is shown in Section 8 of the SAR (Document Reference 7.4, APP-420) (Economic assessment). Table 8.3 of the SAR demonstrates the particular effects on the economic efficiency of business users and providers. Additionally, Option 30 was assessed to have a lower net present value of costs due to the methods of construction enabled by an offline route. These higher benefits and lower costs combine to give Option 30 a higher BCR.
- 3.1.12 Junction layouts differed between the two schemes for engineering reasons related to level differences and geology. At that time, both options re-used a section of the existing A417 for access to the A436 (for Cheltenham, Oxford) and

so shared broad similarities for journeys to those destinations. Both options required drivers to 'loop back on themselves', using a section of the existing A417 before crossing over the new mainline using a bridge in the vicinity of the current Air Balloon roundabout.

- 3.1.13 Option 12 was forecast to provide some greater benefit to journeys to/from the A436 (SAR Figure 7.3) (Document Reference 7.4, APP-420) but, overall, the differing junction layouts had only a minor effect on BCR. Ultimately, Option 30 was selected based on a number of criteria including, but not limited to, its higher BCR. In response to action point ISH2-AP2 (Document Reference EV-036), the ExA's attention is drawn to Section 1.3 of the project's Technical Appraisal Report (History of the scheme) (Document Reference 7.9, APP-425). This sets out previous work undertaken to develop a solution to long-standing safety, congestion and air quality issues on the A417 around the Air Balloon roundabout.
- 3.1.14 Historic records for options considered during the early 2000s are incomplete but the Applicant is able to provide additional information to the ExA in the form of the First Value Management Workshop, Workshop Report (20 September 2003) appended at Appendix A to this summary. This Report indicates that a number of options were considered, and ended with two surface options being taken forward for further evaluation. Additionally, three 'sub-options' were also taken forward for further consideration but ultimately discounted.
- 3.1.15 The workshop Report provides a sifting matrix and an overview of the criteria used. The options considered were one tunnel (Option A - 27 August (Purple)) and two surface routes (Option B - Emma's Grove Loop (Green) and Option C - Emma's Grove Large Loop (Brown)). The Report concludes that Options B and C were similar in terms of performance against criteria, and both out-perform Option A (the tunnel option). It should be noted that Option C - Emma's Grove Large Loop (Brown) is substantially the same route as Option 12 assessed by the Applicant.
- 3.1.16 The Report concludes that, subject to agreement of the then Highways Agency's Standards staff, the two surface routes would be taken forward.
- 3.1.17 The Applicant stresses that the historic record is incomplete and that context to various points is missing. However, the workshop Report indicates that the surface routes have long been seen as the most viable solution for the A417 Missing Link.
- 3.1.18 In response to action point ISH2-AP3 (Document Reference EV-036), the Government's Roads Reform policy paved the way for longer term funding for the Strategic Road Network (SRN). This initiative informed the development of the Infrastructure Act (2015) which confirms that highways investments are to be structured within 5-year Road Periods. This is further detailed within Part 6 of National Highways' Licence to Operate, issued by the Secretary of State for Transport. The first Road Period started in April 2015 and ran through to April 2020.
- 3.1.19 In accordance with section 4 of the 2015 Infrastructure Act and Part 5 of National Highways' Licence to Operate, National Highways must prepare Route Strategies covering the whole of the SRN. The April 2015 Route Strategy covering Gloucestershire, Midlands and Wales set out the investment priorities for the SRN routes within this region. Key stakeholders identified the A417 Missing Link as their top priority for investment to support economic growth. This fed into the

Road Investment Strategy 1 (RIS1) with the Scheme eventually being developed within the second Road Period (RP2) covered by Road Investment Strategy 2 (RIS2) for the financial years 2020/21 to 2024/25.

- 3.1.20 National Highways manages scheme cost within its portfolio to ensure public money is used effectively. The A417 Missing Link project within the RIS1 had an initial estimated cost range of £250 - £500 million, which was subject to developing the scheme design and meeting the business case approval criteria. This categorisation was informed by previous attempts to develop a solution and was indicative whilst development of route options was being undertaken.
- 3.1.21 The SAR (Document Reference 7.4, APP-420) sets out the methodology used during the collaborative route option appraisal (see Section 4, Option identification, sifting and appraisal (PCF Stage 1)). Part of these appraisals were an early review of the 'most likely' cost for each route option but in early 2017 National Highways set those aside to ensure that that the options were not constrained by cost. On that basis, indicative costs were recorded within the EAST Plus tool but excluded from any of the results and rankings.
- 3.1.22 Costs for all options were based on design information available at the time and inclusive of an allowance for risk. Costs were developed using the same methodology and, throughout the project's development, the scheme cost has been reviewed as design information, survey data and other factors have matured.
- 3.1.23 In the autumn of 2017 options appraisal undertaken indicated that there were viable options that met scheme objectives, with two surface routes falling within the estimated cost range. Other options had capital costs far in excess of the range but also did not offer significant monetised benefits and had significant adverse environmental impacts. During the development of the project's Outline Business Case (OBC), and in the context of competing demands for investment between other transport schemes and public services, the cost range £250 - £500 million was confirmed in discussion between National Highways and with the Department for Transport (DfT).

## 4 Item 4 – biodiversity, ecology and the natural environment

- 4.1.1 Luke Casey, Ecology lead from Arup, also appeared for National Highways during this agenda item.

### Biodiversity Net Gain Clarification

- 4.1.2 As has been previously submitted, the ES Appendix 2.1 Environmental Management Plan (the "EMP") (Document Reference 6.4, (APP-317) is the key delivery mechanism for environmental mitigation relating to the Scheme. It is secured by Requirement 3 of the draft Development Consent Order ("the DCO").
- 4.1.3 The success of the wildlife crossings depends on the success of the habitats that connect them, importantly hedgerows and a 25 metre area with calcareous grassland over the Gloucestershire Way crossing and vegetation crossing overbridges. The ES Appendix 2.1 EMP (Document Reference 6.4, (APP-317) requires monitoring of habitat creation and the taking of remedial action where necessary. The overbridges provide more general ecological connectivity. In

comparison, the Gloucestershire Way crossing is providing essential mitigation for the Scheme.

#### Crickley Hill and Barrow Wake

- 4.1.4 The Applicant does not consider it necessary to close the car park at Barrow Wake to provide ecological mitigation in respect of the Scheme. This proposal raised by the Gloucestershire Wildlife Trust (GWT) and Natural England falls outside the remit of the Scheme and the Joint Councils have explained that there are processes in place through which Gloucestershire County Council (GCC) is investigating the possibility of measures for the car park. The Applicant's position remains that the car park is a relatively small area of 0.37 hectares and whilst calcareous grassland is a habitat of high value, the contribution of the change in terms of the biodiversity net gain calculation would be minimal, being less than 0.2% overall. The Applicant provided further detail on this point in Responses to the ExA's Written Questions (ExQ1) 1.3.1 at Deadline 1 (Document Reference 8.4, REP1-009).
- 4.1.5 Crickley Hill Country Park is currently used for recreation, as evidenced in the insight study provided by National Trust as part of its Written Representation (REP1-098). The majority of visitors to the Crickley Hill Country Park visit all parts of that site, including away from the viewpoints. Given the difficulty of doing so, very few visitors cross the A417 at present. The new crossing and the Air Balloon Way would provide a range of attractive circular routes of different lengths that would be used by visitors. In doing so, there would be a redistribution of visitors that would reduce recreational pressures of those on the existing Crickley Hill site.
- 4.1.6 The Applicant also noted that the replacement land being offered for area of Common Land acquired by the Scheme is of a significant area, and may become part of the SSSI in time. The planting of the area, on which GWT is being engaged, is aimed in part at that long term objective.

#### Ancient Woodland

- 4.1.7 The Applicant has assessed nitrogen deposition on areas of ancient woodland and concluded that the incremental increase of nitrogen deposition would impact species richness but would not result in any loss. The levels of nitrogen deposition on the ancient woodland are already above critical load, and these levels would only increase without the Scheme.
- 4.1.8 For clarity, the Applicant confirms that Emma's Grove is a scheduled monument, rather than an ancient woodland, an important factor in the consideration of the arrangement of the road between that site and Ullenwood. The Applicant asserts that it has done everything it can to mitigate the impact on Ullenwood through the design of the Scheme. The Applicant agrees with the ExA that the introduction of electric vehicles would reduce nitrogen deposition on the ancient woodland, though the timeframe and magnitude of that change is unclear.
- 4.1.9 There is only one area in which works would be required within 15 metres of Ullenwood and that is to the north-west near the A436 junction. This is partly driven by the existing A436 being within 15 metres of Ullenwood and a drainage swale impacting the buffer through the open field adjacent to Ullenwood, which is outside the canopy of woodland but falls within 15 metres. As such, and as identified in the ES Chapter 8 Biodiversity (Document Reference 6.2, APP-039), a



professional arboriculturalist clerk would advise on mitigation measures during the works.

### Habitats Regulation Assessment

- 4.1.10 The Applicant referred to its Statement of Common Ground (Document Reference 7.3 Rev 1, REP1-006) with Natural England had previously agreed with the Applicant's conclusion of a negligible risk of impacts from the Scheme upon the European eel population associated with the Severn Estuary Ramsar site. This agreement did not take account of any mitigation measures. As such, a conclusion of no likely significant effects upon the Severn Estuary Ramsar site is documented within the ES Habitats Regulation Assessment: Screening Report (Document Reference 6.5, APP-414). Natural England's revised view is that there is the possibility of eels being impacted by works in the absence of mitigation, and therefore the matter should be considered as part of the appropriate assessment stage of the Habitats Regulation Assessment process. This would allow the competent authority to take into account the relevant mitigation measures for fish, including the European eel, which are included within the Environmental Statement.
- 4.1.11 The Applicant agrees that, on a precautionary basis, the competent authority should undertake an appropriate assessment of the Scheme in relation to potential impacts on the European eel as a qualifying interest of the Severn Estuary Ramsar site. The Applicant's position remains that the mitigation described in the Environmental Statement (Document Reference 6.2, APP-031 to APP-049) would ensure that the Scheme would not adversely affect the integrity of the Severn Estuary Ramsar site, either alone or in combination with other plans or projects. The Applicant understands that Natural England agree with this position. The Applicant considers that existing submitted documents provide the information required by the competent authority to carry out the appropriate assessment of the Severn Estuary Ramsar site.
- 4.1.12 Further to action point ISH2-AP7 (Document Reference EV-036), the Habitats Regulation Assessment matrices have been updated (Document Reference 8.24) and are submitted alongside this written summary.

## **5 Item 5 – climate change**

- 5.1.1 Jessica Postance, Environmental lead from Arup, also appeared for National Highways during this agenda item.
- 5.1.2 The Applicant's position regarding carbon emissions and cumulative assessments is consistent across its projects.
- 5.1.3 The Applicant has carried out an adequate environmental assessment of the impacts of the Scheme, including climate change and the cumulative impacts of carbon emissions. Cumulative impact was taken into account by traffic modelling which informs the environmental assessments which have been carried out across a number of receptors, primarily climate change, air quality, and noise and vibration which were directly impacted by increasing traffic numbers. Consideration of cumulative effects is a key part of environmental impact assessment. The Design Manual for Roads and Bridges ("the DMRB") sets out how the cumulative effects of road projects are to be considered in LA104: Environmental Assessment and Monitoring. The Applicant's assessment of

climate, as discussed in ES Chapter 14 Climate (Document Reference 6.2, APP-045), was carried out in accordance with the DMRB document *LA114: Climate*.

- 5.1.4 The Climate Change Act 2008 does not impose a legal duty to impose carbon budgets at a regional or local scale. Overall compliance with carbon budgets is the responsibility of Government to manage. Paragraphs 5.17 and 5.18 of the National Policy Statement for National Networks is key in this regard in that any increase in carbon emissions resulting from a Scheme is not a reason to refuse development consent unless the increase in carbon emissions is so significant that it would have a material impact on the Government's ability to meet its carbon reduction targets. Following comments raised by the ExA at the Hearing, the Applicant looks forward to responding to any further Written Questions the ExA may have on this point.
- 5.1.5 The recent High Court decision regarding RIS2 was a challenge against the validity of the decision-making to adopt RIS2. Critically, the case was refused in the High Court and it is the Applicant's understanding that permission to appeal has also now been refused. The outcome was that RIS2 was upheld. It is worth noting that the judgment confirms that emissions in one sector can be balanced against emissions in another as part of an economy wide budget. The Court rejected the contention that the Secretary of State had been legally obliged to take into account a numerical assessment of how the predicted carbon emissions from RIS2 related to the carbon budgets or a cumulative assessment of emissions over a longer period, given these were not obviously material considerations for the purposes of setting RIS2.
- 5.1.6 In response to action ISH2-AP8, a written response to CEPP's Written Representation was provided as part of the Applicant's Response to Written Representations (Document Reference 8.11, REP2-012). A response to CEPP's "Part 2" Written Representations (REP2-022) is being provided separately in Comments on Responses Received by Deadline 2 (Document Reference 8.21) alongside this hearing summary at Deadline 3.

## 6 Item 6 – cultural heritage

- 6.1.1 James (Jim) Keyte, Cultural Heritage lead from Arup, also appeared for National Highways during this agenda item.
- 6.1.2 The Applicant referred to its Response to the ExA's Rule 17 Request (Response to Cultural Heritage Issues Raised, Document 8.14, REP2-015) and other matters related to Cultural Heritage. The Applicant rejects the assertion that the baseline data supporting the Environmental Statement was insufficient to assess the impact of the Scheme on heritage resources. The desk based gathering exercise included all sources of information commonly referred to when compiling the Desk Based Assessment in ES Appendix 6.2 Archaeological Assessment (Document Reference 6.4, APP-341). There are a limited number of areas within the DCO boundary where trenching was possible in these areas however it was not possible to mobilise a specialist team to undertake geophysics before submission of the DCO application, due to a very high demand for archaeological surveys nationwide. These areas will be surveyed during spring 2022 and the report shared with Historic England and GCC.
- 6.1.3 Trial trenching was undertaken during the six months prior to the submission of the DCO application. This was monitored weekly by the Applicant and GCC, with Historic England attending virtually, and the results recorded in the ES Appendix

6.5 Trial Trenching Report (Document Reference 6.4, (APP-344 to APP-347). These results were reviewed on an ongoing basis and incorporated into ES Chapter 6 Cultural Heritage (Document 6.2, APP-037). In preparing the ES, the Applicant was confident it had found significant archaeological remains and agrees with Historic England that it is impossible to identify these remains without stripping the entire area, which is inappropriate to do at this stage.

- 6.1.4 Further to the request for an updated DAMS/OWSI, the Applicant confirmed to the ExA that it intends to share those updated documents with Historic England by Friday, 4 February 2022 and that the discussions in relation to Requirement 9 are ongoing. Updates will be provided to the ExA as those conversations continue.

#### Emma's Grove and Peak Camp

- 6.1.5 By way of context, the Applicant is seeking to clear excessive vegetation at Emma's Grove to enhance the existing cultural heritage feature which are on the at-risk register as part of the Scheme. The Applicant is seeking temporary possession powers to enable that enhancement as part of the construction activities that will be taking place around Emma's Grove.
- 6.1.6 There is a further enhancement opportunity at Emma's Grove that currently falls outside the scope of the Application. The measures would involve long-term maintenance of the Barrows, most likely through low-level grazing to prevent future vegetation growth. Those enhancement measures are considered to be sufficient to substantiate a justification for compulsory acquisition over Emma's Grove. The Applicant instead seeks to secure that enhancement of the scheduled monument by acquiring the necessary access rights from the landowner, and is considering whether a section 253 agreement with the landowner is appropriate. However, the Applicant reiterates that it does not consider that additional enhancement to be necessary mitigation.
- 6.1.7 Peak Camp is a heritage asset upon which the identified adverse effect would not be significant. The hill fort is located where it is due to the element of control in the landscape. As such the opportunity for screening is limited, as previously submitted, given such screening will cut Peak Camp apart from what is an inherent part to its significance.

## **7 Item 7 – landscape**

- 7.1.1 Alan Kerr, Landscape lead from Arup, also appeared for National Highways during this agenda item. Jim Keyte continued to provide input on the matter of a holistic assessment.

#### Holistic approach

- 7.1.2 The Applicant rejects the assertion that the grouping of Peak Camp, Emma's Grove and Crickley Hill are of national significance. Peak Camp was excavated between 1980 and 1981, which confirmed that it was a Neolithic enclosure and contemporary with the earliest phase of activity at Crickley Hill. The excavation found no evidence of Bronze Age activity. As a result, while the monument would have been known to the builders of Emma's Grove, there is no evidence that they are related, saved for their topographical location. As such, Emma's Grove was excluded in the group value. In the case of the relationship between the Neolithic phase at Crickley Hill and Peak Camp however, the contemporary phasing of the monuments clearly links them in function. As has been previously submitted, it is

exceptionally difficult to take into account all interdependences and there is no specific methodology for doing so. ES Appendix 7.1 LVIA Policy and Guidance (Document Reference 6.4, APP-348) is in accordance with guidance from the DMRB which sets out that historic landscape is mainly a heritage topic and therefore in the Landscape and Visual Impact Assessment forms part of the baseline. During its assessment, the Applicant looked at the expression of historic landscape through existing features and the impact on those features within the landscape section of the Landscape and Visual Assessment.

### Landscape Strategy

- 7.1.3 Given the amount of information within the examination documents which are informing the design of the Scheme, the Applicant suggests that the flexibility available to it under the detailed design requirements is limited. Requirement 11 of the DCO provides that the authorised development is to be carried out so it is compatible with the preliminary design shown on the Works and General Arrangement Plans (Document Reference 2.4, Rev 1, APP-008 and Document Reference 2.6a, Rev 1, APP-010), unless otherwise agreed by the Secretary of State, subject to consultation with the local planning and highways authorities. To depart from the preliminary designs, the Secretary of State would need to be satisfied that such departures would not give rise to any materially new or worse adverse environmental effects, in comparison with those reported in the Environmental Statement. The Applicant's position remains that the Design Summary Report (Document Reference 7.7, APP-423) provides indirect control as a number of landscape-led matters emerge as commitments expressly identified in the ES Appendix 2.1 EMP (Document Reference 6.4, Rev 1, REP2-006), specific references to which are within the REAC table and have been previously submitted in Responses to the ExA's Written Questions (ExQ1) (Document Reference 8.4, REP1-009). These controls are secured in the DCO through Requirement 3 which ought to provide sufficient comfort that the detailed design of the crossing structures would be adequately and appropriately designed.
- 7.1.4 In response to action ISH2-AP12 (Document Reference EV-036), the Applicant would refer the ExA to its written summary of oral submissions at ISH1 (Document Reference 8.17) and, in particular, Appendix B to that document. An initial list of other DCOs in protected landscapes is provided, albeit investigations are ongoing to obtain all relevant background material.
- 7.1.5 The Applicant has engaged with the relevant stakeholders extensively on the design of the Scheme, which is described at length in the Consultation Report (Document Reference 5.1, APP-027). Following the ExA's comments and action ISH2-AP13 (Document Reference EV-036), the Applicant is considering the suggestion of a Design Code for the crossing structures forming part of the Scheme and will update the ExA once it has been able to do so.

## **8 Item 8 – transport**

- 8.1.1 Andrew Bamforth, Transport lead from Arup, also appeared for National Highways during this agenda item.
- 8.1.2 The Applicant's position is that there are areas other than the stretch of the A417 between Air Balloon and Brockworth where accidents currently occur, and that existing safety issues would be addressed by the Scheme. These include for

example, the cluster of accidents that currently occur at the Leckhampton Hill/A436 junction that would be addressed by the Scheme by the construction of the new Ullenwood junction.

- 8.1.3 The Applicant confirmed that the power under section 59 of the Highways Act 1980 is available to a local authority to recover extraordinary expenses to the extent that they arise. The Applicant will manage construction traffic through appropriate signage and such controls are secured through the ES Appendix 2.1 EMP (Document Reference 6.4 Rev 1, REP2-006) and the ES appendix 2.1 EMP Annex B CTMP (Document Reference 6.4 Rev 1 REP2-009) and the highway authority will be consulted on these measures. The Applicant does not foresee at this stage such extraordinary expenses arising and is of the view a section 59 agreement is unnecessary. The Applicant will continue its constructive discussions with the JCC in this regard and update the ExA should there be a change of position at a later date.
- 8.1.4 The Applicant's position remains that a new bridleway on the Leckhampton Hill is not necessary or proportionate and the package of walking, cycling and horse riding measures are sufficient. This position is agreed with the Walking, Cycling and Horse Riding Working Group ("the WCH Working Group") and set out in the Statement of Commonality (Document Reference 7.3 Rev 1, REP1-006). In response to action ISH2-AP16 (Document Reference EV-036), further details on the bridleway at Leckhampton Hill can also be found in the updated Statement of Commonality.
- 8.1.5 In response to ISH2-APP17 (Document Reference EV-036), further detail on the confusion which appears to have arisen in relation to Cowley Wood Lane/Daisy Bank Road is addressed in the Applicant's Comments on Responses to Written Representations Received by Deadline 2 (Document Reference 8.21) which accompanies this written summary.
- 8.1.6 In respect of Cowley Wood Lane, the Applicant's proposal is to prevent general vehicular access and instead the road would become a bridleway with a private means of access along it for certain properties. The means by which Cowley Wood Lane will be stopped up will be part of the Scheme's detailed design but it is intended to have gated access. That is an established method used across the country which allows for deliveries and emergency access. Cowley Lane would become a main point of access.
- 8.1.7 In relation to the written representation REP2-030 and the number of vehicles using Cowley Lane, the observed traffic data used in the development of the base model shows that for the average peak hour the traffic flows on Cowley Lane are low. The Applicant confirmed that it will be able to provide the observed data collected and used in the traffic modelling for Cowley Lane and Cowley Wood Lane. This data is being provided as part of the Applicant's Comments on Responses received at Deadline 2 (Document Reference 8.21), at Deadline 3.
- 8.1.8 The Applicant also confirmed that the daily traffic volume for Cowley Lane in the 2041 Do Something Scenario shown in Responses to Relevant Representations (Document Reference 9.3, REP1-008) Para 2.9.4 should read 118 rather than 188 as currently shown. The Applicant considers there to be adequate alternatives to Badgeworth Bridleway 125 (ES Chapter 12 Population and Human Health, Document Reference 6.2, APP-043) which should mitigate a possible increase in horse riders along Cowley Lane.

- 8.1.9 The new Ullenwood Roundabout would reduce congestion and delay along the A417 and therefore improve access to National Star College, which is a material matter to be taken into account. During construction of the Scheme, access would be unimpeded and further detail will be provided as the ES Appendix 2.1 EMP Annex B Construction Traffic Management Plan (Document Reference 6.4 Rev 1, REP2-008), which is to be updated during the detailed design stage. The Applicant has made commitments to National Star College to retain their access.
- 8.1.10 Addressing concerns from Mr Lavington, the Applicant confirmed that part of the B4070 is being realigned within the redline boundary and will have a narrow 6 metre wide carriageway. This will have traffic calming effects, encouraging reduced vehicle speeds on this road. The following explanation expands on that provided at the hearing by including specific references to examination documents.
- 8.1.11 Paragraphs 2.6.27 to 2.6.28 of ES Chapter 2 The Project (Document Reference 6.2, APP-033) set out further details on the proposed cross section details for the B4070. There is an existing 30mph speed threshold on the B4070 at the northern edge of Birdlip. North of this location, the B4070 is a national speed limit road (60mph for a single carriageway road). The proposed speed limits along the B4070 are illustrated on sheets 3 and 4 of the Traffic Regulation Measures – Speed Limits plans (Document Reference 2.7a, AS-041). In addition to providing a reduced carriageway width, the Applicant proposes an extension of the 30mph speed limit for 90 metres further north. A 40mph speed limit is proposed on B4070 Birdlip Road between the extended 30mph zone and the proposed Barrow Wake Roundabout. A 50mph speed limit is proposed on B4070 Barrow Wake Road between Barrow Wake Roundabout and Shab Hill junction. The Traffic Regulation Measures – Speed Limits plans (Document Reference 2.7a, AS-041) will updated in due course to move Point 16 on Sheet 3 to be coincident with Point 15 to reflect the above.
- 8.1.12 The Applicant has taken measures to address safe access to the Air Balloon Way through the Statement of Common Ground with the WCH Working Group (Document Reference 7.3, Rev 1, Appendix H, REP1-006) and the ES Appendix 2.1 EMP Annex F Public Rights of Way Management Plan (Document Reference 6.4, APP-323). In response to action ISH2-AP21 (Document Reference EV-036, the Applicant has considered this matter further but remains of the position that any further speed reductions beyond the boundary of the scheme is a matter for GCC to consider.
- 8.1.13 The Applicant also confirmed that with the construction of the Scheme there would be a reduction in the volume of traffic currently using local roads adjacent to the Scheme due to trips that currently avoid congestion on the A417, specifically at the Air Balloon roundabout. For example, the traffic modelling shows that with the construction of the scheme there would be reductions in traffic volumes through Elkstone, on the road between Brimpsfield and Birdlip and on Birdlip Hill, where daily volumes are forecast to reduce from 9700 vehicles per day to 3300 vehicles per day in 2041.
- 8.1.14 The Applicant confirmed that the bus shelter at the Air Balloon Roundabout is to be enhanced as a bat roost, as provided for in the ES Appendix 2.1 EMP (Document Reference 6.4, Rev 1 REP2-006). The Applicant is not aware that any compensation arises as a result of this beyond any arising from the compulsory acquisition of land in the usual way. In response to action ISH2-AP22, the

Applicant can confirm that it is the freehold owner of the land in which the bus stop is located, and it will be responsible for the long term maintenance of the bus stop in accordance with the EMP. The Applicant does not consider the Parish Council to have an interest in the relevant land parcel.

## 9 Item 9 – any other matters

- 9.1.1 The Applicant reiterated that the traffic model, in its current form, is based on a robust assessment of the current level of development. The impact of changes in employment patterns identified by the ExA in its questions during the hearing would not have a material impact on the traffic modelling.
- 9.1.2 In response to Mr Mendel's comments on the new Byway Open to All ("BOAT"), the Applicant's position, as has been previously submitted, is that the BOAT is essential mitigation of severance of existing routes, including unclassified roads, identified through design. ES Chapter 12 Population and Human Health Document Reference 6.2, APP-043) assesses the impacts of the BOAT on the population and human health. The BOAT has been consulted on as part of the Applicant's statutory consultation and this is addressed in the Consultation Report (Document Reference 5.1, APP-027). The BOAT was also discussed with the Walking, Cycling and Horse Riding Working Group ("the WCH Working Group") and further consulted on as part of the ES Appendix 2.1 EMP Annex F Public Rights of Way Management Plan (Document Reference 6.4, APP-323). The Applicant respectfully refers the ExA back to the compulsory acquisition tests referred to in CAH1 and asserts land acquisition to deliver the BOAT is essential mitigation to address the impacts of the Scheme. The Applicant understands the WCH Working Group is very supportive the BOAT being provided as part of the Scheme in order to offset the severance of other routes.

# Appendices



# Appendix A First value management workshop, workshop report (20 September 2003)



A417 COWLEY TO BROCKWORTH BYPASS  
IMPROVEMENT SCHEME

First Value Management Workshop  
30 September 2003

WORKSHOP REPORT



*Strategic Value Ltd*

Document control	
Issued by	Dick Beardsall
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## **A417 COWLEY TO BROCKWORTH BYPASS IMPROVEMENT SCHEME**

### **First Value Management Workshop**

**30 September 2003**

## **WORKSHOP REPORT**

### **1 INTRODUCTION**

The A419/A417 route between Junction 15 of the M4 and Junction 11a of the M5 is part of the Core Trunk Road Network. The 5.5km section of road between Cowley Roundabout and Brockworth Bypass is the only remaining single carriageway section on the 52km length between the M4 and M5 and in 2002, carried a daily average traffic of between 28,000 and 31,000 vehicles (AADT) with 15% HGV's on Crickley Hill. There is a major at grade junction with the A436 at the Air Balloon Roundabout which further constrains traffic flow and other sub-standard junctions and private accesses. As a result this section of trunk road has a poor safety record and suffers from severe congestion. Queues occur regularly at peak periods. As a consequence of the high traffic flows and steep gradients even minor incidents cause considerable disruption.

The alignment of the existing route is considered sub-standard, with steep gradients throughout its length; up to 10% on Crickley Hill (average of 7.5% for 1.7km), 5% on Birdlip Hill and up to 10% at Nettleton Bottom. Birdlip Hill forms the steep downhill approach to the A417/A436 Air Balloon Roundabout, which further compounds queuing issues.

The sub-standard highway alignment coupled with the increasing congestion problems has led to this section of road having a poor safety record, with 66 Personal Injury Accidents over a 5 year period. Assessment of the accident data has identified accident clusters at Nettleton Bottom, Birdlip junction, Air Balloon and Crickley Hill.

In 2000 WSP prepared Appraisal Summary Tables (AST's) separately for the Crickley Hill length and the Cowley to Air Balloon length. In addition they prepared an Environmental Scoping Study for an improvement to the Air Balloon Junction. These possible schemes were then brought together as a single project

In late 2001 HA appointed WSP to carry out an environmental study of potential road improvements including a tunnel. In March 2003 the study findings were published and the Minister asked the HA to further develop the grade separated, surface dual carriageway option, but to do no further work on the tunnel.

In accordance with the Highways Agency's Value for Money Manual, the Project Sponsor instructed that a Value Management workshop should be held to develop and evaluate the options. The workshop took place on 30 September at the British Empire and Commonwealth Museum, Bristol. This report provides a brief summary of the proceedings of the workshop and the main findings. The agenda and list of participants are attached at Appendix 1. The Recorder's notes of the discussions are attached at Appendix 2.

## **2 WORKSHOP OBJECTIVES**

The objectives of the Workshop were:

- To confirm the objectives for the scheme
- To identify and agree the options for the scheme and develop further options that may be worth consideration, and
- To agree the preferred option(s).

## **3 WORKSHOP PROCESS**

The workshop process covered five steps:

1. Review scheme background
2. Confirm scheme objectives
3. Develop options by
  - Eliminating any non-starters
  - Identifying other potential options
  - Generating and evaluating ideas to improve options
  - Agreeing shortlist of options for evaluation by the Workshop
4. Evaluate options against agreed criteria
5. Agree preferred option(s) to be taken forward

## **4 SCHEME BACKGROUND AND ENVIRONMENTAL CONSTRAINTS**

### **4.1 Scheme Background**

John Stock made a brief presentation introducing the background to the scheme.

He summarised the existing situation thus:

- The only remaining single carriageway section on A419/A417 route between M4 and M5
- Traffic flows currently between 28,000 and 31,000 AADT, with over 15% HGV's on Crickley Hill
- Congestion occurs frequently with queuing back to Brockworth and Nettleton, and occasionally back 1 mile to the dual carriageway south of Cowley
- Gradients on Crickley Hill of 8%
- 5% downhill approach to roundabout compounds queuing issues
- Poor safety record, 66 PIA's over a 5 year period
- Accident clusters at Nettleton Bottom, Birdlip junction, Air Balloon and Crickley Hill

## 4.2 Environmental Constraints

The proposed road is sited in an area of great environmental sensitivity. The principal features are:

- Landscape
  - Cotswold Area of Outstanding Natural Beauty
  - Outstanding topography, especially the scarp
  - Important geological and geomorphological features
  - Area of great tranquility
  - National Trust land at Crickley Hill
- Cultural Heritage
  - Numerous Sites of Archaeological Interest
  - 6 Scheduled Monuments
- Biodiversity
  - Sites of Special Scientific Interest
  - The Scrubbs National Nature Reserve
  - Key Wildlife Sites
  - Ancient Woodlands
- Water Environment
  - Major aquifer
  - Groundwater protection zone
- Access
  - Areas of common land
  - The Gloucestershire Way, the Cotswold Way, and other footpaths

Alison Rood (CA) drew attention to the importance of careful design of signage in view of the sensitivity of the area. This was noted by the Project Team.

## 4.3 Programme

Secretary of State announces Public Consultation & TPI	April 2004
Public Consultation	September 2004
ECI Contract	
Invitation to tender	October 2004
Award of contract	April 2005
Publication of draft Orders	July 2006
Public Inquiry	April 2007
Decision letter and Ministerial decision	November 2007
Orders Made	March 2008
Start of Works	June 2008

#### **4.4 Options**

John Stock summarised the options which have been identified and examined by WSP as follows:

- Tunnel Options
  - Short tunnel - Green
  - Medium tunnel - Purple
  - Long tunnel – Brown
  
- Off-line Options
  - Escarpment - Red
  - Direct route - Blue
  - Middle East – Dark Blue
  - Middle East – Black
  - Far East – Orange
  
- On-line Options
  - Study Report Option 2 - Blue
  - 27 August 2003 - Purple
  - Emma's Grove Loop - Green
  - Emma's Grove Large Loop – Brown
  
- Barrow Wake Modification
- Crickley Hill Adjacent Carriageway
- Crickley Hill Narrow Lanes

Plans and details of these options have been given in the Workshop Handbook and are not repeated here.

All of the options require approval to departures from standards. These were summarised as follows:

- Crickley Hill
  - Uphill lane to utilise existing road
  - Lane Widths
  
- On-line Options - Air Balloon Radii
  - Study Report – radius 85m in junction
  - 27 August 2003 – radius 85m with some transition, in junction
  - Emma's Grove Loop – radius 165m, on mainline
  - Emma's Grove Large Loop – radius 255m, on mainline
  
- On-line Options - Air Balloon
  - Middle East (Black) – radius 420m, on mainline
  - Far East (Orange) – radius 1020m, on mainline

It was noted that the problems associated with the tight radii are made more severe by the steep vertical gradient and it would probably be necessary to apply a speed limit to the new road. A meeting is to be held shortly with the Agency's Standards staff to discuss these issues.

The estimated cost of the surface options was around £65M and of the tunnel options around £200M. In both cases these figure are works costs only and exclude preparation and supervision, optimism bias, risk, land and compensation, etc. and VAT.

In all the on-line options, it is proposed to move the Air Balloon roundabout northeast to the Lewckhampton Road intersection.

## **5 SCHEME OBJECTIVES**

The over-arching objective of the scheme is provided by the Regional Planning Guidance, (RPG 10) objective for the improvement of the A419/A417 Swindon to Gloucester route.

*The Workshop agreed* that the specific objectives of the scheme are:

- To improve safety
- To make journeys more reliable
- To respect the environment

## **6 REVIEW OF OPTIONS**

*The Workshop agreed* that the following options were not worth pursuing further:

a) All tunnel options, principally due to the

- Excessive costs and high cost risks
- Impact on the aquifer
- Earlier decision of Secretary of State that a tunnel option should not be considered further
- In addition, for the short (green) and medium (purple) tunnel options, there are also all the problems associated with the off-line options (see below).
- In addition, for the medium (purple) tunnel option, it is considered impractical to promote a scheme passing directly beneath Birdlip.

There are also numerous technical problems associated with these options.

b) All the off-line options, principally due to the

- Impracticality of promoting a scheme which significantly intrudes further into the AONB when practicable on-line options at similar cost exist
- Opposition of the Statutory bodies
- In addition, for the Direct and Escarpment options, the visual impact and the impact on the aquifer would be totally unacceptable.

There are also numerous technical problems associated with these options.

c) The Study Report Option 2 (Blue) which has now been replaced by the other on-line options

d) The "Adjacent Carriageways on Crickley Hill" sub-option. Whilst this option reduces the footprint of the proposed road, the loss of trees which would otherwise be retained between the carriageways and the need to culvert Horsebere Brook, are thought to more than outweigh the benefits.

## 7 ADDITIONAL OPTIONS

The Workshop briefly considered what other options might be worth consideration. The following were discussed:

1. Build only one new carriageway and retain the existing route

**The Workshop agreed** that this was not worth pursuing. The proposal would fail to meet the scheme objectives and would incur many of the environmental disadvantages of a full solution.

2. Omit the slip road for Gloucester-bound traffic travelling on the A436 and route traffic southwards on the existing road to Birdlip junction.

**The Workshop agreed** that this was worth further consideration at the design stage in connection with the on-line options. However, it was noted that the volume of traffic would probably be too great to justify this approach.

3. Retain an improved Air Balloon Roundabout

**The Workshop agreed** that this was not worth pursuing. It would be difficult to accommodate the geometry and there would be significant safety problems with a 7% approach gradient. Lighting and signage would have major adverse impact.

4. Provide signals at existing Air Balloon Roundabout

**The Workshop agreed** that this was not worth pursuing. The proposal would fail to meet the scheme objectives and would incur the same safety, signage, and lighting problems of a new roundabout.

5. Signalised Junction at Air Balloon

**The Workshop agreed** that this was not worth pursuing. The proposal would be difficult to promote, would not address the side-road issues, and would have limited life. There would also be the same safety, signage, and lighting problems associated with a roundabout.



## 8 EVALUATION OF OPTIONS

### 8.1 Options to be evaluated

The following options remained to be evaluated:

- Option A - 27 August (Purple)
- Option B - Emma's Grove Loop (Green)
- Option C - Emma's Grove Large Loop (Brown)

In addition, the following sub-options were retained for evaluation at design stage:

- Barrow Wake Modification (from Handbook)
- Narrow carriageways on Crickley Hill (from Handbook)
- Omit Gloucester-bound slip for A436 traffic (from Workshop)

These three sub-options were ignored in the evaluation.

### 8.2 Basis of the evaluation

#### 8.2.1 Criteria

*The Workshop agreed* that the following criteria, and their relative weightings, should be used in evaluating the remaining options:

	Weight
Safety*	10
Economy (journey time reliability)*	10
Landscape (including visual impact)**	10
Water resources and the water environment **	10
Cost risk	9
Buildability	9
Noise**	8
Archaeology**	8
Ecology**	8
Accessibility*	8
Sustainability (optimisation of materials use etc.)**	7
Short-term impact	7
Maintainability	7

The criteria marked with a single asterisk reflect three of the government's objectives set out in 'A New Deal for Transport – Better for Everyone'.

The criteria marked with two asterisks all reflect the fourth of the government's objectives - protect and enhance the built and natural environment.

(The fifth government objective - promote the integration of all forms of transport and land use planning – was not thought to be a material factor in the current scheme.)

Three of the remaining criteria represent aspects of the ease of delivery of the scheme and the fourth concerns the ease of maintenance of the completed road. They are defined as follows:

- Cost risk – the extent to which the construction cost of the option is thought to be subject to significant increase
- Buildability – the ease with which the option can be constructed
- Short-term impact – the degree to which the construction of the option is likely to impact on road users, the local people, and the environment. This includes noise, dust, delays etc.
- Maintainability – a relative measure of the difficulty/cost of maintaining the completed option.

### 8.2.2 Scoring

Each option was scored against each criterion using the scoring system:

5	As good as a highways scheme can be
4	Good
3	OK, acceptable
2	Less than desirable
1	Poor, unacceptable

### 8.3 Process

The Workshop reviewed each option against each criterion and entered the scores in the Value Matrix (see Table 1). The matrix then multiplies each score by the weighting for that score and then provides the total weighted points for that option.

Finally the table shows the ranking of the options on the basis of total weighted points, with 1 being the highest and 3 the lowest.

Note: normally the matrix would include the "value" of each option where the value is given by the total weighted points divided by the capital or whole-life costs. In this case, the costs of the three options are considered to be the same (within the level of accuracy of the current estimates) and therefore the total weighted points give a direct measure of the value of each option.

Table 1: Value Matrix

Selection Criteria	W	Option A 27 August (Purple)		Option B Emma's Grove Loop (Green)		Option C Emma's Grove Large Loop (Brown)	
		S	W*S	S	W*S	S	W*S
Safety	10	1	10	2.5	25	3	30
Economy	10	1	10	3	30	3	30
Landscape	10	2	20	2	20	2	20
Water	10	2	20	2	20	2	20
Cost risk	9	2	18	3	27	3	27
Buildability	9	2	18	3	27	3.5	31.5
Noise	8	2	16	2	16	2	16
Archaeology	8	3	24	2	16	2	16
Ecology	8	1	8	3	24	3	24
Accessibility	8	1	8	4	32	4	32
Sustainability	7	3	21	3	21	3	21
Short-term Impact	7	2	14	2	14	2	14
Maintainability	7	2	14	3	21	3	21
<b>Total Points</b>	<b>111</b>		<b>201</b>		<b>293</b>		<b>302.5</b>
<b>Points Ranking</b>			<b>3</b>		<b>2</b>		<b>1</b>

#### 8.4 Evaluation

In scoring the options, the participants made the following differentiating points:

##### *Safety*

Option A takes the through traffic on slip roads with very tight radii. Gradients would be greater than present. The roundabout with steep approaches is retained for major traffic flows.

Options B and C avoid the roundabout for major traffic flows but have tight radii.

##### *Economy (journey time reliability)*

The roundabout is retained in all Options for A436/B4070 traffic flows.

##### *Cost risk*

Constructing the new carriageways between the existing roads in Option A provides a very tight working area with little room for manoeuvre.

##### *Buildability*

Constructing the new carriageways between the existing roads in Option A provides a very tight working area with little room for manoeuvre. Traffic management during construction for Options B and C would be simpler.

*Archaeology*

Both Options B and C extend into potentially sensitive areas.

*Ecology*

Option A has unacceptable impact on Crickley Hill and greater impact on the escarpment. Options B and C are likely to reduce impact on Barrow Wake SSSI.

*Accessibility*

Option A has no easy access to Cold Slad

*Maintainability*

Increased requirement for structural elements in Option A creates longer-term maintenance liability.

Note: More detailed comments are set out in the Recorder's record of the discussions (Appendix 2).

**8.5 Commentary on results of the evaluation**

The results show that there is little to choose between Options B and C: both appear to provide acceptable solutions.

Option A scores poorly compared with B and C. Most importantly, it scores only 1 against the safety and economy criteria, two of the primary objectives of the scheme.

As the unweighted scores for Options B and C are so close and are so much higher than for Option A, these results are not sensitive to the weighting given to each criterion.

***The Workshop agreed*** that, subject to the outcome of the meeting with the Highways Agency Standards staff later this month, the two Emma's Grove Loop Options (options B and C) should be taken forward and that the 27 August Option (Option A) should be dropped.

**9 ACTIONS**

***The Workshop agreed*** the following actions:

1. Dick Beardsall to complete draft workshop report and send to WSP Friday 3<sup>rd</sup> October 2003.
2. WSP to issue draft to participants on Friday 3<sup>rd</sup> October 2003.
3. Participants to respond on matters of fact by Friday 10<sup>th</sup> October 2003.
4. Environmental constraints plan to be issued in hard copy to all participants with on-line options indicated.
5. Final report to be issued to all.

**WORKSHOP AGENDA**

09:45	Coffee
10:00	Welcome by the Project Sponsor (David Radway)
10:05	Introduction to the Workshop (Dick Beardsall)
10:15	Brief comments on the project (John Stock)
10:30	Ideas generation and evaluation
12:00	Agreement of options
12:30	Lunch
13:15	Options Evaluation
14:45	Action Planning
15:30	Close

**WORKSHOP PARTICIPANTS**

<b>Organisation</b>	<b>Name</b>	<b>Position</b>
Highways Agency	David Radway Antonia Glyde David Patterson Frank Mohan Peter Wray Chris Foreman	Project Sponsor Environmental Advisor Senior Geotechnical Advisor Transportation Advisor Network Services Structures Advisor
WSP	John Stock Tony Zandona Victoria Allen	Project Manager Project Director Environmental Co-ordinator
Cooper Partnership	Hazel Osborne	Landscape Architect
Environment Agency Countryside Agency GoSW Gloucestershire CC	Chris Brown Alison Rood Peter Dawson Barry King	(Morning only)
Strategic Value Limited WSP	Dick Beardsall Barry O'Driscoll	Facilitator Recorder

**Reporter's Record of Discussions**

Comment	By Whom
Severe congestion? Basis for this conclusion. Queuing back to Brockworth Bypass, and Nettleton Bottom frequently. Sometimes queues extend back 1 mile onto dual carriageway south of Cowley roundabout.	PD TZ/JS
Would you look at imposing a speed limit on tight radius (Emma's Grove Loop)? What level 50/60mph? Probably	BK JS
Doesn't vertical gradient compound problems associated with tight horizontal radii? Yes	PD JS
Noted that it is possible to drive the M4/M5 interchange loops at 70 without undue discomfort. May not be necessary to impose reduced speed limit. Given the proposed curvature would you require advance warning signs? Yes. Worth noting that people adapt driving speeds to suit road character.	DR VA TZ
Possibility that a High Court challenge could proceed if road not built to standards. Thinks precedent has been set elsewhere, but unsure of outcome. Mitigation would need further consideration as design developed.	BK DB/DR
Need to minimise environmental impact on local road network. Basis of local road design is to remove need for Air Balloon junction structure.	BK DR
Emma's Grove Loop (EGL) and Emma's Grove Large Loop (EGLL) are principally identical at intersection with Air Balloon, lying in a 7m deep cutting. Air Balloon roundabout relocated to Leckhampton Road intersection.	JS
Cost information not available at this stage. On-line are broadly similar, although EGL may be marginally cheaper due to reduced structural requirements (but may need higher/longer ret walls, etc).	JS
Options include full grade separation. Can we utilize Air Balloon roundabout for partial movements? TBC (see later)	PD
Outline costs: £65M (on-line), £200M (tunnel) Off-line: Far East cost more due to longer route, Escarpment + Direct Route likely to cost as tunnel (should be discounted without further cost consideration)	JS
Query HA Risk Assessment for scheme: is £200M Tunnel for further consideration in 10 year programme. Tunnel scheme has been discounted from further consideration by Minister. What is status of £65M on-line scheme? Being developed.	BK DR BK DR
One environmental constraint to be considered is the tranquility of the route. Off-line options may disrupt tranquility to east, with visual impact on plateau also to be considered. Noise reductions?	AG

Comment	By Whom
Noted that the site is within an important geological and geomorphological area. Risks with ground conditions and hydrogeology.	DP
Significant issue for widening on Crickley Hill.	BK
What are the exact boundaries of the areas on Crickley Hill?	DP
Tiny tail of SSSI extends to existing road (south side) which must be damaged if Crickley Hill improved- no option.	JS
We want to optimize cut features to display limestone. Where sands and clays are present we don't want to interfere.	DP
Design development seeks to do this – cut at Air Balloon, at-grade further west.	JS
Noted that Regional Planning Guidance 10 objective provides the high level scheme objective	DR
Objectives highlighted. Deemed to be agreed, although relativities to be considered later.	Note
Tunnels?	
The £200M initial cost estimate for the tunnel was based on limited data. The more detail that is added to the tunnel options will add further cost to estimate (optimism bias, etc).	TZ
Upper limit of cost determined by relative benefit.	FM
Noted that the £65M on-line scheme gives $BCR \leq 2$ , whereas tunnel gives $BCR < 1$ (with realistic cost).	JS
Considered that a traffic signal improvement with limited 10year operational life would be better than a robust scheme that stays on shelf.	BK
Opportunity to close old road and reinstate route back to "green" route?	PD
Has been done once before, but not considered viable here.	AG/JS
Recreate old road network (30 years ago) is as far as we can go.	JS
Less cut the better.	EA
Signage impacts on AONB. The transfer of signs from Air Balloon roundabout to links provides opportunity to reduce impact.	AR
Signage can be well hidden, and we would look to optimize design (reduced x-heights, spacings, etc).	JS
Concern about landscape treatment at Nettleton Bottom (sensitive location).	AR
<b>Afternoon Session</b>	
Query Environmental objective for the scheme: is it respect the environment (Transport White Paper) or protect and enhance the environment (HA)?	AG
Queried whether scheme will provide potential for betterment of the existing environment?	BK
Safety:	
27 <sup>th</sup> August considered poor, whereas loops are inherently safer (but still below desirable minimum standards).	
Economy:	
27 <sup>th</sup> August considered poor in economy terms, as 2/3 traffic must pass through junction, whereas loops have different junction strategy.	

**Comment**

**By Whom**

**Landscape:**

No differentiating factors on landscape issues.

**Cost Risk:**

Consideration that TPI entry risk double counts the final score. Agreed to omit score.

**Water:**

No differentiating factors on water issues. Concerns at Nettleton Bottom due to depth of cut which can only be bottomed out when groundwater mapped out.

**Buildability:**

Loops pass through more stable land, so lower cost risk. Loops are further from escarpment, which is advantageous. EGLL is more off-line, therefore reduced impact on extg carriageway.

**Noise:**

EGLL will have larger noise impact on 2 properties, whereas 27<sup>th</sup> August will have deep cuttings impacting on two areas of common land, plus scheme will be on face of scarp with road noise heard in Crickley Hill Park. Whilst there may be more potential to create noise mitigation from EGL and EGLL, it is considered too difficult to differentiate the 3 options based on current information.

**Archaeology:**

EGL and EGLL will impact on SAM setting and archaeological potential more so than 27<sup>th</sup> August scheme.

**Ecology:**

EGL and EGLL are likely to reduce impacts on Barrow Wake SSSI, with EGLL slightly better than EGL. Some trees removed at Emma's Grove, but these are considered of little value. Potential for rock cuttings and establishment of calcareous grasslands.

**Accessibility:**

Considered that EGL and EGLL will significantly improve accessibility (vulnerable road users, equestrians, establish local highway network). No junction at Cowley will impact on Brimpsfield and other local settlements. 27<sup>th</sup> August scheme does not address access for Cold Slad.

**Potential for Enjoyment:**

Deleted from matrix. Suggestion that potential for enjoyment could be addressed somewhat through adopting standards other than DMRB for this route due to its impact on AONB. Considered that this should be considered further during design stage.

BK

**Safety in construction:**

Deleted. Considered to be a sub-set of buildability.

**Sustainability:**

EGLL will invariably produce more material than the other options (although this is unquantified). Similar drainage impacts. Considered that there are no differentiating factors on sustainability.

**Short-term impacts:**

Noise, lorry movements, dust, visual impacts, etc will be the same for each option.



**Comment**

**By Whom**

**Maintainability:**

EGL and EGLL will have less hard engineering solutions (structures, geotechnics) so must be better in maintenance terms.

BK queried whether departures would be reviewed on safety grounds, or safety and congestion grounds.

BK

There is a congestion consideration on 27<sup>th</sup> August route (traffic bunching on approach to merge), less on EGL and EGLL.

TZ

27<sup>th</sup> August scheme can't be discarded until discussion held with SSR to determine whether 165m/255m radii would be acceptable in principle.

JS/ DR

No further options proposed by participants. JS invited comments after the meeting, either verbal or electronic.