

Location:				Chilterns AONB											
Option name and description:				CRAG proposal for Chiltern Tunnel Extension											
				12/08/2014											
OPTIONS CONSIDERED:				Proposed Scheme at hybrid Bill		Option T1i – this option is no longer being promoted by CRAG and therefore not assessed at this stage.		Option T2i		Option T3i		Option T2A		Option T3A	
OPTION DESCRIPTION				The 'base case'.		A subsurface alignment (bored tunnel; short section 1.45km of cut-and-cover tunnel to portal) with a 700m gap structure at Mantle's Wood.		A subsurface alignment (bored tunnel; short section 1.45km of cut-and-cover tunnel to portal) with 700m gap structure at Durham Farm – with an enlarged vent shaft at Little Missenden to remove TBM's.		A subsurface alignment (bored tunnel to portal) with gap structure at Durham Farm.		A subsurface alignment (as Option T2i) with 1.45km of cut-and-cover tunnel but no gap structure.		A subsurface alignment (as Option T3i) with no gap structure.	
Key Sustainability Issue	Topic	STAGE: Construct or Operation	EDA Considered (incl. Topic and Ref no.) <i>Comment</i>	QUALITATIVE IMPACT DESCRIPTION and/or QUANTITATIVE ASSESSMENT	RATING	QUALITATIVE IMPACT DESCRIPTION and/or QUANTITATIVE ASSESSMENT	RATING	QUALITATIVE IMPACT DESCRIPTION and/or QUANTITATIVE ASSESSMENT	RATING	QUALITATIVE IMPACT DESCRIPTION and/or QUANTITATIVE ASSESSMENT	RATING	QUALITATIVE IMPACT DESCRIPTION and/or QUANTITATIVE ASSESSMENT	RATING	QUALITATIVE IMPACT DESCRIPTION and/or QUANTITATIVE ASSESSMENT	RATING
				temporary significant effect. Some locations in Aylesbury along the A41 Bicester Road were identified where there will be significant residual effects from road traffic emissions.											
				No significant residual effects on air quality from dust emissions are considered likely.											
	Op		No significant residual effects are anticipated for air quality in this area during operation.	o	Not assessed	N/A	Operational traffic levels would be the same as the Proposed Scheme. No change to impacts.	o	Operational traffic levels would be the same as the Proposed Scheme. No change to impacts.	o	Operational traffic levels would be the same as the Proposed Scheme. No change to impacts.	o	Operational traffic levels would be the same as the Proposed Scheme. No change to impacts.	o	Operational traffic levels would be the same as the Proposed Scheme. No change to impacts.
	Sound and vibration	Const		Construction noise effects were identified for locations within South Heath. Approximately 50 dwellings on Sibleys Rise, Bayleys Hatch and Frith Hill will experience significant adverse effects from construction of the South Heath green tunnel. Residents will experience typical	o	Not assessed	N/A	The construction noise impacts identified arising from the Wendover Green Tunnel works would no longer occur due to the propose location of the bored tunnel termination point. However, new construction noise impacts arising from activities within the tunnel drive site on	+++	The construction noise impacts arising from both the Wendover and South Heath green tunnels would be removed by this option. The additional bored tunnel may result in new construction noise impacts at the tunnel drive sites leading to effects over	+++	The construction noise impacts identified arising from the Wendover Green Tunnel works would no longer occur due to the propose location of the bored tunnel termination point. However, new construction noise impacts arising from activities within the tunnel drive site on	+++	The construction noise impacts arising from both the Wendover and South Heath green tunnels would be removed by this option. The additional bored tunnel may result in new construction noise impacts at the tunnel drive sites leading to effects over	+++

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								activities would affect the character of the dry valley and views from Kings Ash and Dunsmore.  Construction activity relating to the removal of excavated material from chainage 44+600 to 55+750m would equate to 590,000 lorry movements within the AONB. This would increase adverse visual impacts for potential receptors along the haul routes. There is potential for the material excavated from the north portal to be stored at Stoke Mandeville construction site and exported by rail increasing adverse impacts experienced by the nearby settlements of Stoke Mandeville, North Lee and Weston Turville.		the character of the dry valley and views from Kings Ash and Dunsmore.  Excavated material, plant and construction activity located at the southern portal would not differ greatly from that of the Proposed Scheme. Construction activity relating to the removal of excavated material from chainage 44+600 to 55+750m would equate to 590,000 lorry movements within the AONB. This would increase adverse visual impacts for potential receptors along the haul routes. There is potential for the material excavated from the north portal to be stored at Stoke Mandeville construction site and		material excavated from the north portal to be stored at Stoke Mandeville construction site and exported by rail increasing adverse impacts experienced by the nearby settlements of Stoke Mandeville, North Lee and Weston Turville, but reducing potential impacts along the haul roads. Other than the Cut and Cover tunnel south of Wendover and the vent shafts the large majority of construction activity is below ground in tunnel resulting in a major improvement in landscape and visual impacts in comparison to the Proposed Scheme.		located at the southern portal would not differ greatly from that of the Proposed Scheme. The excavated material from chainage 44+600 to 55+750m would equate to 210,000 lorry movements within the AONB. This would increase adverse visual impacts for potential receptors along the haul routes. There is potential for the material excavated from the north portal to be stored at Stoke Mandeville construction site and exported by rail increasing adverse impacts experienced by the nearby settlements of Stoke Mandeville, North Lee and Weston Turville, but reducing potential impacts along haul roads. Other than the vent	

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								Additionally there would be greater construction impacts associated with the construction compound at the north portal which would be in operation 24 hours a day during tunnel construction.							

Recommended option	Option T3i	Reason:	Although all tunnel options would have environmental improvements over the Proposed Scheme, Option T3i would provide the greatest length of bored tunnel which would greatly reduce the impact to surface assets including the landscape within the AONB, biodiversity, cultural heritage, infrastructure and agricultural land as well as reducing the visual and noise impacts reported for the Proposed Scheme. There would be some adverse impacts during construction due to spoil management, at the intervention gap construction and at the tunnel drive construction compound at the north portal.
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#### Assumptions

1. The appraisal has been based on the information provided by Atkins Engineering Design Team at the time of appraisal (please note: no digital information has been provided and appraisals have been undertaken from drawings only).
2. The comparison of options has been undertaken using the Proposed Scheme (as presented within the Environmental Statement) as a base case.
3. All impacts reported here are potential predicted impacts and will need to be confirmed by subject to surveys, assessment, professional interpretation and judgement as part of the Environmental Impact Assessment process.
4. Advice has been obtained from topic specialists in Agriculture, Community, Cultural Heritage, Landscape, Sound and Vibration, Ecology, and Water.
5. Potential impacts have been identified on the basis of a mitigated scheme (Proposed Scheme).
6. Construction noise impacts are based on qualitative judgement taking account of information provided by Atkins Engineering Design Team on potential construction methods. Where applicable, this information is also set out in section 6 and table 7.1 of the associated engineering sift report.
7. Property demolitions, loss, or direct impacts to designated features and resources are addressed as construction phase impacts.
8. Construction impacts for cultural heritage has assumed that all construction activity within the land required, temporarily or permanently, for the Proposed Scheme, will result in the removal of archaeological assets. Operational impacts for cultural heritage considers the impacts on the setting of heritage assets.
9. The assessments have been scored based on the HS2 Ltd guidance i.e. the Proposed Scheme is scored as neutral and all other options are scored either better than or worse than the post consultation route alignment:

---	Major worsening on the Comparator Scheme
--	Minor worsening on Comparator Scheme
o	Neutral / no change to Comparator Scheme
++	Minor improvement on Comparator Scheme
+++	Major improvement on Comparator Scheme
N/A	Not applicable