



## **Comments on HS2 Phase One environment statement**



**27<sup>th</sup> February 2014**

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Caption for front cover image: View of the Misbourne Valley from Wendover Woods. The proposals for HS2 will have a devastating effect on the landscape, wildlife, residents of and visitors to this beautiful valley in the Chilterns AONB.



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Date: 27.2.2014

Dear Secretary of State,

### **Comments on HS2 Environment Statement**

The Chilterns Conservation Board was established in 2004 by Parliament to promote the conservation and enhancement of the Chilterns Area of Outstanding Natural Beauty (AONB).

The Board objects to the development of High Speed 2 because of the significant and irreversible damage it would do to the nationally protected landscape of the Chilterns AONB.

The Conservation Board wishes to remind the Government that it is required to comply with the duty in Section 85 of the Countryside and Rights of Way Act 2000, namely that it "shall have regard to the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty."

The Environment Statement does not provide sufficient evidence that it has done so. The Board believes the impacts, both temporary and permanent, are under-stated. Further, where there are options to avoid those adverse impacts they have rarely been taken.

The Board is disappointed that insufficient consideration was given to routes which avoided the AONB entirely. The design specification for 400 kph is unnecessary resulting, as it does, in the need for a straight alignment which provides little flexibility to avoid sensitive areas. Given the short distance between London and Birmingham such a high speed brings little gain but increases the environmental damage considerably.

Similarly a lower speed would significantly reduce the noise pollution and the the number of affected people and blighted properties. The Conservation Board urges the Government to consider lowering the proposed design speed and use the opportunities this provides to lessen the environmental impact.

Given the serious deficiencies in the draft ES the Board expressed the view that HS2 Ltd/DfT should take sufficient time to prepare a robust, thorough, comprehensive and credible Environmental Statement. It is clear that, largely due to the constrained timetable, this has not been achieved. The ultimate effect will be that unnecessary and avoidable damage will be done to the environment.

If Parliament decides to go ahead with High Speed Two it is the view of the Chilterns Conservation Board that the section of line as it passes across the Chilterns AONB should be in a long bored tunnel from the M25 to beyond Wendover. Only then can it be claimed that the Government has complied with the letter and spirit of the duty in Section 85 of the Countryside and Rights of Way 2000. Not to do so undermines that the aim of designating and protecting the country's finest landscapes.

Yours sincerely



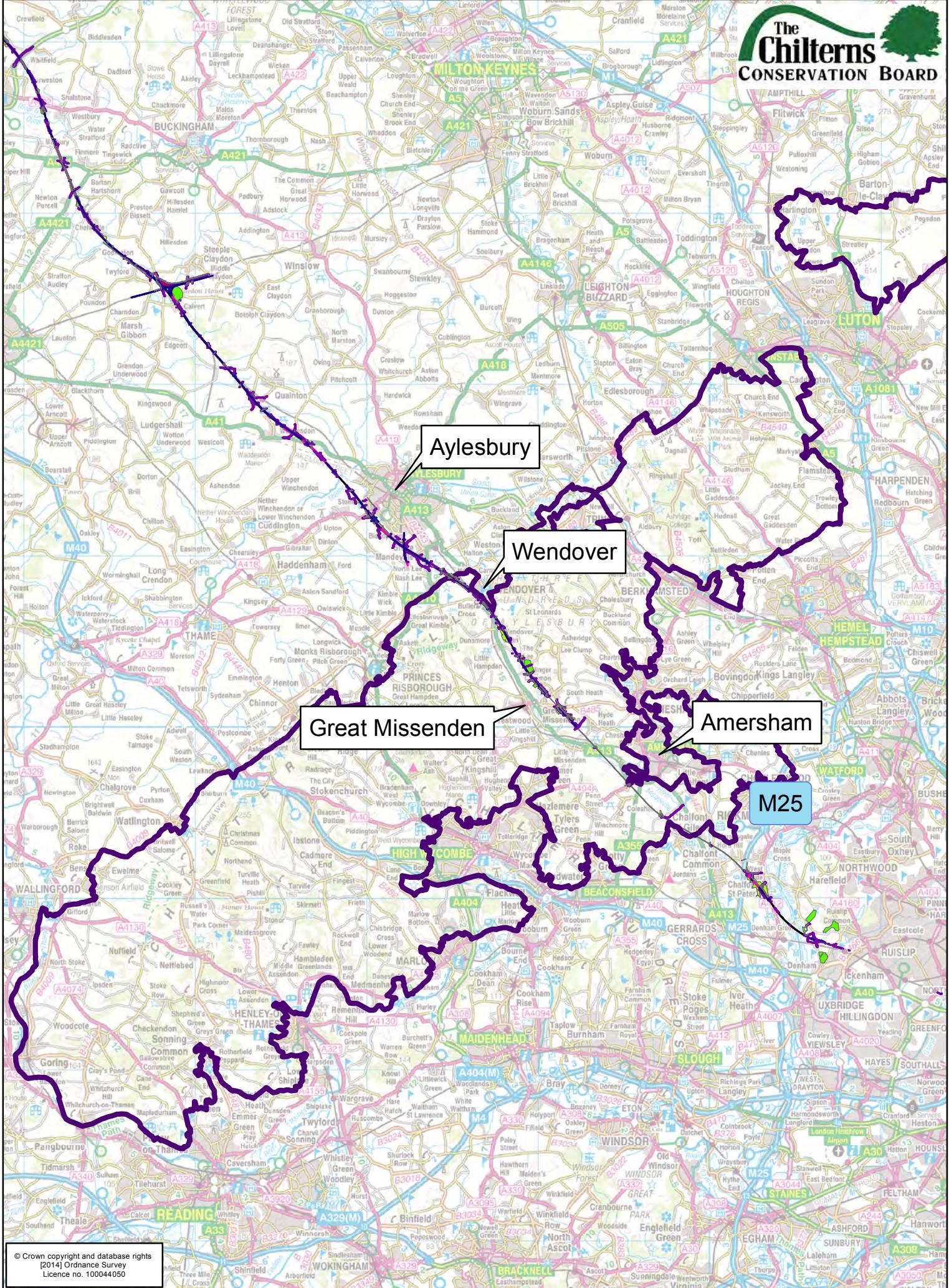
**Mike Fox**  
**Chairman**

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## **The Impact on the Chilterns Area of Outstanding Natural Beauty**

The Chilterns Area of Outstanding Natural Beauty was designated in 1965 and covers 833 square kilometres. It is one of the finest landscapes in England and Wales. The importance of caring for these special places is enshrined in legislation including the Countryside and Rights of Way 2000. Section 85 includes the following general duty on public bodies:

**85. - (1) In exercising or performing any functions in relation to, or so as to affect, land in an area of outstanding natural beauty, a relevant authority ( incl a Minister of the Crown) shall have regard to the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty.**

There is a considerable body of national and local planning policy which specifically aims to conserve and enhance Areas of Outstanding Natural Beauty. This means there are tight controls on any form of development, small or large.

To reinforce these national aspirations for the Chilterns AONB, in 2004 Parliament established the Chilterns Conservation Board. The Secretary of State appoints eight members directly to the Board to represent the national interest.

The Chilterns AONB is one of the most popular areas in Europe for walking, cycling and horse riding. There are over 50 million visits made annually for the purposes of enjoying quiet recreation (Tourism South East 2007).

The Chilterns Conservation Board opposes the proposed scheme because of the scale of temporary and permanent adverse impacts on the environment and its enjoyment which are contrary to the purposes of designation.

As proposed the High Speed Two will have the following permanent impacts on the Chilterns Area of Outstanding Natural Beauty.

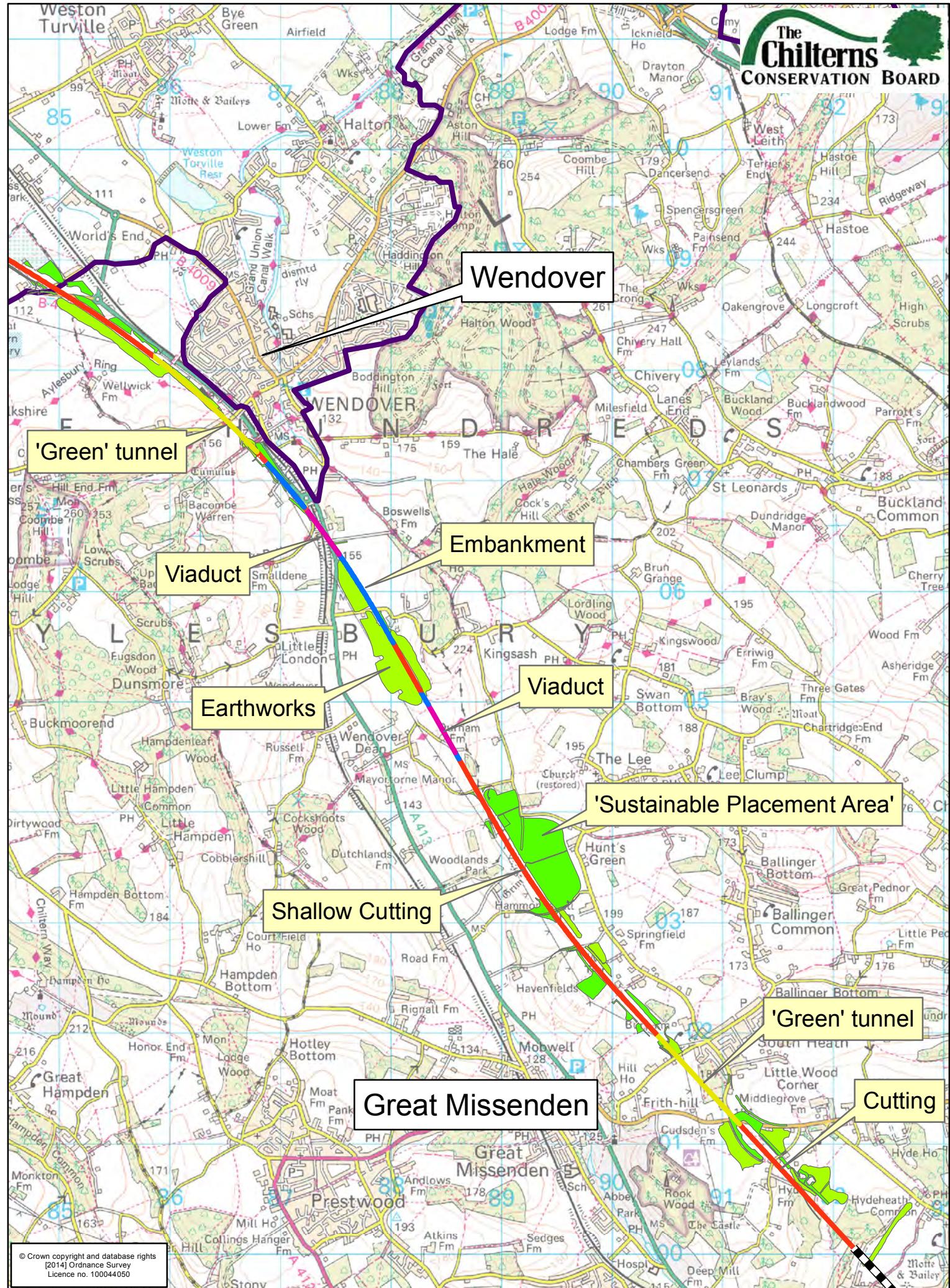
- 7 miles/11.5 kilometres of the route will be on the surface, embankment, viaduct shallow cuttings or cut and cover tunnels.
- 18 hectares of woodland will be destroyed including 10.2 hectares of Ancient Woodland.
- 41 kilometres of hedgerows including 5.6 kms of important and historic hedgerows will be destroyed.
- A 150 metre section of Grim's Ditch Scheduled Monument will be destroyed.
- 460 hectares of land will be taken for construction; 204 hectares will be permanently taken of which 194 ha's is currently productive farmland.
- Over 200 mature and veteran trees (outside of woodland) will be felled.
- 12 million tonnes of spoil will be generated and potentially dumped in the Chilterns AONB.
- 17 kilometres of security fencing.
- 5.5 kilometres of noise barriers up to 4 metres high.
- 3 vent shafts up 4 metres high covering 3,300 sq. metres each.

- 2 auto transformers electricity stations covering 2,200 sq. metres each.
- Up to 500 gantries carrying overhead wires.
- Two viaducts of 500 metres at Wendover Dean and Wendover up to 26 metre high including the gantries.
- Two so called green tunnels of 1 kilometre each of which involve complete excavation to a depth of up to 20 metres.
- An unknown number of telecommunication masts.
- Nine new bridges for roads, tracks and rights of way.
- 6 kilometres of redesigned and re-aligned country roads.
- Over 3.5 kilometres of new service roads.
- An unknown amount of lighting and light pollution caused by trains and flashing from the pantographs.
- Loss of ancient countryside.
- Loss of, and disturbance to, wildlife including loss of the entire Barn Owl population and severe restriction on the movement of mammals including deer.
- The creation of 29 settling ponds and flood swales.
- Over 1.8 kilometres of embankments and up to 16 metres high (with gantries of 8 metres on top).
- The visual intrusion and noise pollution of up to 36 trains per hour travelling at up to 360 kilometres per hour.
- Loss of amenity for over 10,000 residents living within 2 kms of the route.

Each one of these impacts would be a reason for refusing an “ordinary” planning application. The scale and breadth of the impacts listed needs to be considered individually and cumulatively. The conclusion of the Environmental Statement that the overall impact on the Chiltern AONB is not considered to be significant, but only moderately adverse, is not credible and is not supported by an objective analysis of the evidence.

If it is Parliament’s will that this railway is to be built on the current route then most of these adverse impacts could be avoided by a bored tunnel for the section of route through the Chilterns Area of Outstanding Natural Beauty.

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## HS2 - above ground structures

Environmental Statement (November 2013)

## **General Comments on Environmental Statement for HS2**

1. The Environmental Statement is an enormous document with a great detail of information provided. It is also difficult to navigate, inconsistent, in places contradictory and, often lacking in relevant detail with little or inadequate supporting evidence for the conclusions reached. The time available for responses, extended though it was, was inadequate given the size of the ES and complexity of the proposal. Had the draft ES been a higher quality and more comprehensive document it would have been a more reasonable timetable.
2. The hierarchy on which the ES and the design of the route were purportedly based, i.e. that of avoiding impacts rather than just mitigating them, is almost never adhered to. The result is a design which causes a large number of severe impacts. There are almost no examples of where the option of avoiding such impacts was taken. The result has been to militate rather than mitigate them.
3. The Conservation Board is concerned that the ES repeatedly under-states the impacts. In other places the poor quality of the report undermines the confidence that is needed. The objectivity of much of the analysis and the conclusions is in doubt given the conflicted nature of many of the companies contributing to the ES and also the design and possibly construction of the line itself.
4. It is clear that almost no changes of significance were made as a result of comments made by the Conservation Board and others on the draft Environmental Statement. Indeed, it is also clear from the short interval between the conclusion of the consultation on the draft ES and the publication of final ES, that it had already been written in large measure and there was never any likelihood of any comments being taken into account. The Conservation Board hopes that HS2 Ltd and DfT will demonstrate a greater willingness of to accept and act upon the comments made on this version.
5. The Chilterns is a nationally protected landscape. The landscape quality of an AONB is equivalent to that of a National Park and enjoys the same level of protection. However, whilst the Chilterns status as an AONB is identified, there is little evidence that the proposed design or assessment of environmental impacts give the necessary due regard to those special qualities.
6. The ES acknowledges the environmental benefits and advantages of a bored tunnel over the proposed design and yet, ignoring its own hierarchy to avoid damaging impacts, has chosen a surface route which involves destroying a significant amount of ancient woodland and depositing enormous quantities of spoil in the AONB.
7. The Chilterns Conservation Board is of the view that the Government has failed to comply with the duty in Section 85 of the Countryside and Rights of Way Act 2000 to give due regard to the special qualities of the AONB.
8. There is a general failure to understand that a nationally protected landscape is the sum of its parts with a time depth and cultural context. Instead the ES analyses individual components of the landscape often attempting to diminish their importance by claiming that only a small percentage of the heritage asset is being lost. This echoes the earlier attempt to undervalue the AONB by assigning values to individual land uses rather than as a nationally protected landscape which is an integration of many interconnected features, characteristics and qualities. By doing so the

Government is both undermining the concept of landscape and the designations put in place to protect it.

9. The minimal number of references to the Chilterns AONB Management Plan is a disappointing reflection of the failure to take into account fully why the Chilterns has AONB status.
10. The argument that the line is in a tunnel from the southern boundary of the AONB to Mantles Wood near Hyde Heath because it is in the AONB, lacks credibility unless the line northwards is also put in tunnel. On the contrary it is highly visible despite being in the heart of the AONB. The so called green tunnel, whilst keeping the line out of sight, nonetheless causes immense environmental damage during the construction phase with permanent, irreversible impacts. This suggests the tunnelled section was proposed due to cost considerations and not in order to avoid environmental damage.
11. The Chilterns Conservation Board believes that the only acceptable solution to avoid significant and permanent adverse environmental impacts is for the route to be in a bored tunnel for the entire length as it passes under the nationally protected Chilterns AONB.
12. The proposed design gives overdue weight to cost minimisation compared to the avoidance or reduction of environmental impacts. This represents a failure to accept or understand the purpose of the requirement to prepare an Environmental Statement. The requirement to identify potentially adverse impacts is so that options can be considered to avoid them. This ensures that environmental considerations are given considerable weight, as well as those of cost and practicality. The consistent failure to adopt measures to avoid adverse impacts will inevitably result in widespread and avoidable damage to the environment.
13. The most regrettable example of this is the decision to potentially dump up to 12 million tonnes of spoil, 90% of which is not required even for the construction and screening of the surface design chosen for the Chilterns. It is wholly disingenuous to suggest that this option has been selected both for environmental reasons and in response to local concerns about construction traffic using local roads.
  1. Firstly there has never been any discussion with the Conservation Board, local authorities or local communities on the alternative i.e. accept HGVs transporting spoil or having it dumped in the Chilterns. This option has obviously been chosen on cost grounds.
  2. Secondly, it is unacceptable to dump spoil on this scale in a nationally protected landscape. It is quite extraordinary that consideration is also being given to importing spoil from other parts of the line for dumping in the Chilterns AONB. This is a further example not just of failing to avoid a significant adverse impact but compounding it.
  3. Thirdly, it conflates temporary with permanent impacts. Transportation out of the AONB would involve large numbers of lorries but for a relatively short period. The impact of dumping is permanent. It is possible to design a transportation strategy that avoids these vehicles using local and minor roads, and local villages and towns. If we had been asked and given the choice, the clear preference of the Conservation Board and local communities is for the removal of the spoil from the area.

14. The Conservation Board is of the view that the PS has not been prepared according to HS2 Ltd/DfT's own design principles. The proposed spoil dumping is clearly not in accordance with following principles given in **Management of Surplus Excavated Materials, Deliverable Approach Statement HS2-HS2-CL-DAS-000-00005 P03 / Surplus Excavated Materials / 03 December 2013**

*"HS2 Ltd has agreed that on site disposal of surplus excavated materials may be appropriate where the following criteria are met:*

*a. There is no available and / or suitable landfill void space within a reasonable distance from the source of the material arising (e.g. 25 km by road); or*

There are several suitable sites within 25 kms including Pitstone Quarry and Calvert. Bucks CC has notified HS2Ltd of potentially suitable sites.

*b. The significant environmental impacts associated with the transportation of excavated material off site (for either disposal or recovery), as identified by the Environmental Impact Assessment, would be worse than those associated with depositing the material onsite or*

It is the view of the Conservation Board, local authorities, environmental groups and local communities that the environmental impacts of dumping spoil in the AONB are not acceptable. Given a choice, the temporary impacts of transporting this material out of the Chilterns AONB are preferable to dumping it in the AONB. No EIA has been undertaken on the specific transportation impacts in any event.

*c. There are clear environmental or social benefits of such an approach (e.g. land remediation or restoration, enhanced public open space provision, etc); and*

The depositing of large quantities of spoil in a national protected landscape does not confer any net environmental benefits

*d. The area of land is suitable for this type of material and is not located within nationally sensitive landscapes or on legally protected sites."*

As written it is clear that criteria (d). is a requirement, i.e. that a nationally sensitive landscape is not suitable. The proposal to dump up to 12 million tonnes of spoil in the Chilterns AONB fails to comply with all four design criteria.

It is not clear why these design principles were published on 3rd December 2013, after the publication of the Environmental Statement.

15. The Conservation Board is further concerned that the consideration of cost seems only to apply to minimising the expenditure by the Department for Transport. This railway line is being proposed in the national interest, purportedly to deliver benefits to the whole of UK society and economy. These benefits, mostly notional, are given very high values in the business case for HS2. It is only equitable, therefore, that the cost to the whole of society is taken into account. This has not been done. If this more enlightened, some might say fair, approach were to be taken the alignment and design of HS2 might be very different. It would certainly result in the section of line through the Chilterns AONB being put into a bored tunnel. Such an approach would also demonstrate that reasonable weight has been given to environmental impacts compared to those of cost and practicality.

16. Such a response would also be fully in line with the Government's policies on ecosystem services. Despite the Natural Environment White Paper being published a little over two years ago, and the Government and its agencies' advocacy of this approach, the Environmental Statement has not been prepared using these principles; indeed the term does not appear at all in the report - a curious and inexplicable omission. The inevitable consequence is that the ES not only fails to identify all the environmental impacts, but those that it does identify are understated as the full range of ecosystem services is not acknowledged or valued.
17. The Government's own words fully encapsulate the approach the Conservation Board believes should apply when considering the development of this railway.

"Most people rightly believe in the innate value of nature and our strong moral responsibility to protect it. But the value of nature to our economy and society, and to our personal well-being is also clearer than ever. Science, economics and social research have broken new ground, demonstrating that year by year, the erosion of our natural environment is losing us benefits and generating cost."

18. If it is Parliament's wish that HS2 be constructed, then the Chilterns Conservation Board requests that the length of line that crosses the Chilterns Area of Outstanding Natural Beauty be put in a long bored tunnel for as much of this length as possible. Nearly all of the adverse impacts identified by HS2 Ltd/DfT in the ES would be avoided; and the Government would then, clearly be complying with the letter and spirit of Section 85 of the Countryside and Rights of Way Act 2000 which is intended to ensure that Areas of Outstanding Natural Beauty are not damaged by major development.

## **Specific and overarching comments applicable to the whole of the Environmental Statement**

### **Methodology**

1. The hierarchy of impacts is supported, but the ES exhibits almost no examples of the preferred strategy of avoiding adverse impacts.
2. The precautionary principle must be applied at all times and it is clear that it has not been followed through. HS2 admits limited data is available and suggests that a 'reasonable worst case' is therefore the basis of assessment. Elsewhere the ES describes using a precautionary approach. However, the principal ecological issues are restricted to those that are recorded. It would, therefore, appear that a precautionary approach is not being followed through and reflected in the findings.
3. The ES fails to properly take into account cumulative impacts and there is generally a paucity of data on overall impacts. In addition, the assessments of impact and effect are confused and unclear.
4. Too many important potential effects are not assessed fully, but instead relegated to something that will be covered by the Code of Construction Practice (when that is eventually finalised).
5. Many 'temporary effects' are permanent. Temporary effects should not include the removal of vegetation, road realignments, loss of tranquillity, loss of local features, earthworks, changes to infrastructure – these are all permanent.
6. There has been a reliance on limited surveys (access, timings, quality) – even where existing data is available. The surveys that have been carried out have also been within limited time periods and it is doubtful that they will fully record the extent and value of habitat. However, it is clear that assessment of habitat relies primarily on survey work and does not take sufficient account of local records even where these are both current and comprehensive<sup>1</sup>. As a result, habitats are undervalued and species are underrepresented. This brings into question the validity of the use of the biodiversity offsetting metric (yet to be tested and verified) and the suggested compensation and mitigation measures.
7. There is poor LiDAR coverage. LiDAR promises to advance knowledge of the historic landscape but unfortunately data does not cover the AONB.
8. There are inadequate references to ongoing monitoring of environmental impacts and subsequent implementation of appropriate measures.
9. Recording prior to demolition is identified as mitigation. Avoidance and mitigation measures include investigation and recording prior to modification or demolition. The Board recognises the importance of investigation and recording but these are not avoidance and mitigation measures.
10. The geographic area assessed for impacts is generally too small resulting in an under stating of impacts, e.g. visual and noise.

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<sup>1</sup> Report to Ecological Technical Group, 14<sup>th</sup> January 2014

11. No weighting is attached to reputational damage which will affect the Chilterns attractiveness to visitors or as a place to live or do business.
12. The impacts on the community and local businesses have not been adequately recognised. The absence of any meaningful analysis of socio-economic impacts given in the ES gives little confidence this will ever be addressed fully.
13. The ancient historic character of the Chilterns is not recognised. HS2 has attempted to assess impact on individual features only, with no acceptance of the impact on landscape character or the historic importance of the wider landscape.
14. The urbanising effects of the railway, train and structures is not recognised at all.
15. The concept of tranquillity seems not be understood or how it needs to be conserved and enhanced.
16. The impact on generation of greenhouse gases is inadequate and likely to significantly underestimate the additional emissions that will be generated directly and indirectly by HS2.
17. The proposed mitigation will often have environmental impacts of their own which need to be assessed, but almost without exception haven't been.
18. The standards of mitigation must be future-proofed. That means working to standards far in excess of that in place today. Those are the results of past efforts to raise standards and will be regarded as wholly inadequate in the future. The long timescales of this project demand that whatever is put in place stands the test of time.
19. There has been a poor level of consultation to date. The Chilterns Conservation Board's, and others', experience of consultation has been various events where HS2 Ltd have presented various aspects of the proposals. Although views have been expressed at these meetings, at no time have participants experienced any level of dialogue where HS2 Ltd have accepted or acted upon comments. The Conservation Board is not aware of any changes to the HS2 proposals that have been made directly in response to requests or suggestions made previously by the Board.
20. There is little confidence that the ES or comments on the ES will result in any significant change to any aspect of the alignment and design as HS2 Ltd/DfT are giving environmental considerations a low weighting compared to cost and practicality (speed of build). This view has been reinforced by the inflexible attitude adopted by HS2 Ltd at previous Community Forum meetings.
21. Insufficient acknowledgement is given of the interrelationships between different environmental aspects. Two recent national policy statements give guidance on acceptable procedure. These are:
  - the *Overarching National Policy Statement for Energy (EN-1) July 2011* which states at paragraph 4.2.6 'The IPC should consider how the accumulation of, and interrelationship between, effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place', and
  - the *Draft National Policy Statement for National Networks – Dept. of Transport, December 2013*: which states at paragraph 4.13 'The Examining Authority should consider how significant cumulative effects and the interrelationship

between effects might as a whole affect the environment, even though they may be acceptable when considered on an individual basis with mitigation measures in place'.

22. Such an approach is vital if the true impact of the proposals upon the Chilterns AONB is to be adequately assessed.

## **Landscape and its assessment**

23. The Landscape and Visual Impact Assessments are considered to be inadequate. Different assessment approaches are used for the AONB and CFAs. The *Draft ES Consultation Report* (one of the Volume 5 Supporting documents) states that a different assessment approach and reporting has been used for the nationally designated AONB and the local CFAs within it (5.11.11 of this report). There is obvious disparity between the AONB (volume 3) and CFA (volume 2) assessments and Volume 5 LVIA section.
24. The number and level of significant impacts is much higher than the LVIA suggests. This is due to:
  - errors in assessment leading to many viewpoints being ruled out as not significant;
  - an insufficient number of viewpoints with none outside a 1km corridor (all the likely adverse landscape impacts will not be covered by the existing viewpoints);
  - too low a sensitivity being given to some receptors (e.g. many minor roads are important as scenic routes and therefore should not be recorded as 'low sensitivity');
  - the benefits of mitigation being overstated;
  - not all aspects of the proposal being assessed;
  - too many aspects of the scheme are yet to be designed to undertake an accurate assessment;
  - the assessors not demonstrating a proper understanding of the key characteristics and special qualities of the Chilterns;
  - the effects of sequential and combined views of different elements of the HS2 infrastructure and trains not being assessed.
25. Key characteristics of the AONB should form part of the CFA assessment e.g. - the significance of the Misbourne as one of the main valleys through the Chilterns and which is a distinctive landform other than the escarpment.
26. No assessment against the NPPF and the CRoW Act tests (to 'conserve and enhance the natural beauty of the area') has been undertaken. Each and every part of the AONB is important – it is irrelevant if other parts are unaffected.
27. New Landscape Character Areas (LCAs) have been described for Bucks when perfectly adequate LCAs already exist. The LCAs described in the ES:

- Do not have the same boundaries as those accepted by the local authorities;
- Have simplistic, poor descriptions;
- Do not assess key characteristics;
- Do not adequately examine impact on individual landscape character.

28. Assessment of impacts on LCAs and longer views are inadequate. The ZTV shows that the visual impact will extend well beyond 1km and, therefore, assessment of both LCAs and viewpoints should cover a wider extent.

29. The likely impacts on many LCAs are understated and the assessment that there will be little or no residual effect is wrong.

30. ZTVs do not include cranes (construction) or overhead wires (operation). Both these decisions are questionable, for anyone who has seen the significant visual impact of the HS1 overhead wires, their exclusion from the operational ZTV is clearly nonsensical.

31. Division between construction and operation within assessments is false. The Operational phase should not be restricted to an assessment of the impact of train operation but should also include the remaining impact of the cuttings, embankments and all other infrastructure the trains require to operate.

32. Clear assessment matrices and visual impact tables should be included within each CFA booklet.

33. Map book photomontages are of minimal practical use. The 'Landscape and visual assessment, Technical note – Approach to verifiable photomontages' that forms part of Annex G of the SMR addendum, a volume 5 supporting document, describes how the photomontages can be used to see how the proposals might appear in the field (8.1.3 and 8.1.4). This involves 40° sections enlarged to A3 size (image height being the full width) and held on a curved radius at 450mm from the eye. Such requirements are beyond the capabilities of the vast majority of residents, CFA representatives and organisations within the AONB and, as such, render the map book photomontages of minimal practical use.

34. Illustrated changes to existing elements are inaccurate, not all development and mitigation measures are shown and there is no indication of distance of the development from the viewpoint.

35. Have indirect effects been assessed? E.g. off-site road widening and the visual impact of traffic.

## Future land use

36. In HS2 Ltd.'s desire to give a gloss to their plans too often they use language which veers from objective technical description to commentary, even promotion. On other occasions the impacts are understated or the benefits of the mitigation overstated. A repeated mistake is to claim that the landscape above green tunnels will be reinstated. Woodland, including ancient woodland, cannot be reinstated.

37. In general the importance of ancient woodland is understated - all ancient woodland is of national importance.

38. Tree planting is still wrongly identified as mitigation for Ancient Woodland loss.
39. Impacts on forestry are understated as the resource has been assessed as low sensitivity. HS2 argue sensitivity should be low as the Chilterns have a higher than national average cover, therefore proportionally less is being removed. At the very least, resources should be compared against national targets for woodland cover. Effectively, the Chilterns are being penalised for being comparatively nearer these national targets than elsewhere in the UK. The low sensitivity for forestry includes ancient woodland which is disingenuous.
40. The benefits of landscape and habitat tree planting are over stated. Although the ES agrees that tree planting cannot replace ancient woodland, much is made of the benefits that will accrue in reducing habitat fragmentation and for individual species such as bat foraging.
41. The statement that ALL operational phase assessments of the impacts are non-significant by year 15 is wrong. Tree growth and landscaping won't be that good!
42. The absence of any meaningful statement on the use of spoil and its transportation is a considerable concern. In a nationally protected landscape it is not an acceptable strategy to deposit it on adjacent land. The creation of, so-called, false cuttings are no substitute for genuinely deeper cuttings (some with retained sides) which would provide more environmental benefit. The environmental impacts of the proposed strategy have not been assessed.
43. Sustainable Placement Areas - Overall, the proposals aim for a 'balancing' of excavated materials. Where excavated material cannot be used beneficially it will be taken to the Hunts Green Farm Sustainable Placement Area to avoid the effects of road transport. The *Draft ES Consultation Report* (one of the Volume 5 Supporting documents) suggests that these placement areas are placed where they have been requested (5.14.5 of the consultation report). The Sustainable Placement area at Hunt's Green Farm has NOT been requested by any of the CFA's within the AONB or any of their representatives and the Board understands that the land owner has not been consulted either.
44. The ES is not clear about how much excavated material is leaving or being brought into AONB – there will clearly be landscape and transport implications that should have been fully assessed. Sections 10, 11 and 12 of Volume 5 (Waste and Materials Assessment) tell us that some suitable material will be taken northwards for earthworks outside the AONB while other material from the Waddesdon and Quainton area will be brought into the AONB. None of the ES documentation gives details of amounts of material moved from or to the CFA's within the AONB. The Conservation Board is, therefore, unable to determine the amount of excavated material or demolition waste removed from or deposited within the AONB, the effects of movement of this material and, in the absence of detailed plans, the effects of the permanent earthworks.
45. Species requirements before replacement habitat is established have not been assessed adequately. Although mention is made of planting in advance where possible, there is no assessment of the impact on species communities in the period between habitat loss and fragmentation and the time any suitable replacement habitat takes to mature to a level where the requirements of individual species are met. The report merely states that adverse impacts will be reduced to have no significant effect – this is simplistic and flawed.

46. No adequate mitigation has been proposed for expected barn owl loss. The report clearly states that all breeding barn owls within 1.5km of the route will be lost. However, suggested mitigation is limited to exploring the possibility of siting nest boxes more than 1.5km away without any reference to existing barn owl territories. There is even the suggestion that this is 'likely to increase numbers of barn owls'. Such statements are misleading and at best naïve. The report offers no measures to prevent train strike which, with the roaming, territorial nature of these birds, will remain an ongoing problem throughout the life of the scheme.
47. No mention is made of the risk of train strike to other species that use the same foraging habitat as barn owls, e.g. Pipistrelle and Brown Eared bats.

## Land economy

48. There is no recognition that after construction there will be many parcels of unwanted, even abandoned, land that cannot be returned to their former uses. This potential impact needs to be recognised.
49. There are opportunities to improve the landscape, biodiversity and amenity of the area. For example, the undergrounding of powerlines and the use of low noise road surfaces. These opportunities should be identified and included in the proposal. None appear to have been.
50. Agriculture's sensitivity to change is confused. Larger holdings, where only a small proportion of the holding is lost, are deemed to have low sensitivity while small, less intensively used, units are also deemed to have low sensitivity.
51. Simplified Agricultural assessment relies too heavily on land loss and land quality. Far more account needs to be taken of the fragmentation and severance effect between areas of a holding and disruption of specific agricultural enterprises (e.g. separation of sheep grazing areas and the main holding). Such fragmentation and severance can have a devastating impact on profitability and viability.
52. Creation and establishment of mitigation, compensation and enhancement areas – there are no guarantees that planting will be maintained beyond the construction period. Section 12 of the CoCP suggests that maintenance of planting will occur during the construction period. The Draft Environmental Memorandum, which forms part of the Hybrid Bill Environmental Minimum Requirements, is so vaguely written as to give no confidence that any planting area will be successfully established. Statements describing maintenance include wording such as 'appropriate time' and 'sufficient period' and reducing 'the long term maintenance cost' cast doubt that good management will be paramount.
53. All mitigation measures are proposals. Although the nominated undertaker will have powers of compulsory purchase and, therefore, the capability of carrying out landscaping and planting, interviews with farmers and landowners indicate that they wish to see as much land returned to agriculture as possible and there is no appetite to accept habitat creation areas. The establishment and long term management of these areas therefore has to be questioned. The poor success of similar compensatory areas for existing schemes (not least HS1) does not represent an encouraging precedent.

54. No assessment has been undertaken of the loss of valued AONB views caused by infrastructure or mitigation planting (i.e. those that are recognised as special qualities of the AONB such as long cross valley views).
55. It is highly likely that much of the proposed new planting, and other landscape and habitat creation work, will be on private land outside the rail corridor. Any such works will require the agreement of the landowner. This is not mentioned. It is important because under such circumstances there can be no guarantee the work will ever take place, will be managed or maintained appropriately or even survive other than for a limited period post construction.

## **Transport and public rights of way**

56. The document fails to adequately define what is meant by temporary. For some effects if they persist more than a few months they should be considered permanent. For example, disruptions to local traffic flows which persist for several years effectively change how local people use local roads and should be considered permanent. Replanted woodland will take decades to mature so the change to the landscape is, effectively, permanent.
57. The assessment of impacts on traffic, both that on existing traffic and that generated by HS2, are wholly inadequate, even misleading.
58. There is no recognition of either the likely impacts on the services of Chiltern Railways and other users of the Chiltern Line, nor the restricted access to railway stations, notably Great Missenden and Wendover.
59. Greater consideration should be given to using local roads less and building temporary tracks for use by HS2 traffic. For example, HS2 traffic should not be using Potter Row or Frith Hill.
60. The use of lanes by walkers, cyclist and horse riders is not fully acknowledged.
61. Traffic delays and congestion are significant and traffic-related severance, for walkers, is a major adverse impact. However, travel mitigation is identified as the draft CoCP framework travel plan and workforce travel plan (Volume 5 appendix).

## **Public rights of way**

62. Previous recommendations that the Conservation Board made for public rights of way have been ignored. Re-routed paths still run parallel to the route. There is permanent loss of at least one footpath (LMI/21 – 5.4.6).
63. All of the public rights of way in the vicinity of the route will be damaged by the urban clutter associated with the project – cuttings and embankments, security fences, access roads, artificial bunds and landscaping and, not least, noise. These are completely alien intrusions into what Parliament intended should be a protected landscape and environment.
64. Access to facilities will be affected, including shops, pubs, restaurants, bike hire etc. In addition the following will also be detrimentally affected: visitor accommodation

near the route; tourism attractions; promoted routes in the area and popular visitor events.

## Water

65. No specific mention is made of water ecology. The Chilterns Tunnel will be in a saturated zone from the Little Missenden vent shaft to beyond the Chalfonts.
66. There are significant concerns about the loss of flow in the River Misbourne and Shardeloes and disruption to groundwater flows (possibly causing new pathways). This may arise from the presence of the tunnel and settlement. The effects may not be realised until years after construction is completed. Groundwater flow between catchments may be affected, there may be a risk of groundwater flooding and there may be a risk to potable water. The proposed scheme may exacerbate existing sewage flooding problems, and all of these are understated in the ES.
67. De-watering effluents discharged to soak-aways, re-charge wells or by pipeline to the River Misbourne may lead to increased pollution and this is a real concern.
68. The ES confuses winterbournes (that dry up seasonally) and chalk streams (that shouldn't). Chalk streams are a globally rare resource of international importance – they are not merely a Local BAP habitat as stated within the ES.
69. The ES wrongly identifies the River Misbourne as a Heavily Modified Water Body. The Misbourne is required to reach Good Ecological status by 2027 (WFD). This is a higher requirement than the 'good ecological potential' identified in the ES and affects all conclusions reached for quality and mitigation requirements.
70. The primary mitigation measure is monitoring. Monitoring is important but adequate measures to protect both the River Misbourne and the aquifer need to be in place.
71. The ES states that 'temporary effects on groundwater will be diluted in the aquifer'. This is a worryingly glib statement.
72. Measures to protect the Public Water Supply (PWS) include importing water and use of 'scavenger wells' to divert turbid water to watercourses. Have the costs and environmental impacts of these proposals been assessed?

## Design

73. Vertical alignment – without plan and profile maps, it is impossible to determine if this has changed. Updated Plan and Profile maps have not been made available. It is, therefore, difficult to say whether the vertical alignment has changed since the draft ES. However, overbridges are higher (the farm accommodation bridge to Havenfield Wood is now 6.5m above ground level, previously it was about 2m). Such changes in infrastructure will increase landscape and visual impact and should have been fully assessed.
74. The ES details no 'green bridges' within the AONB. These are required to reduce habitat fragmentation. Some overbridge approaches are planted to help habitat linkage – this is not adequate.

75. Design is crucial but no details are given. Volume 1, the 'Introduction to the Environmental Statement and the Proposed Scheme' refers to a later 'detailed design' stage. Design of all infrastructure related to the proposed scheme, from re-routed roads to viaducts, is crucial to the landscape and visual impact within the wider AONB. The highest standards of design and an independent design panel are required.
76. The power lines along the Misbourne Valley should be put underground as a rare example of providing an environmental benefit to the Chilterns.

## **Tourism**

77. Impacts on tourism and the loss of tourism earnings are not mentioned.

## **Noise**

78. The impacts of noise are dealt with superficially. The use of average noise levels is wholly unacceptable. It is accepted, as international best practice, for noise events such as passing trains, to use noise peaks (Lmax) and to give weight to the timing and frequency of those peaks. To use average noise levels to disguise these adverse impacts is misleading and unacceptable.
79. The proposed acceptable noise levels are too high. Laeq 50dB should be Laeq 40 dB as per WHO guidelines. The area assessed should extend beyond 1 kilometre.
80. The operational noise assessment is confused. Whilst admitting knowledge is limited, the report anticipates that there will not be any significant effects for bat populations. Although birds can habituate to loud noises, breeding success is reduced and the report does not provide compelling evidence that justifies the assessment that train noise will not have a significant effect.
81. Noise levels have to increase by 50% before the insulation trigger level is reached. This is unfair.

## **Comments on Non-technical summary**

### **1. Introduction**

#### **1.1 The project – phase one of HS2**

##### **Figure1**

This figure implies that the whole network is covered by Phase One when this is not the case. It appears that Figures 1 and 2 are the wrong way round. This basic error so early in the report undermines confidence in the professionalism of the document.

##### **Volume 2: Community Forum Area (CFA) reports**

This paragraph (third bullet on page 3) suggests that the CFA reports provide all the detail about the project and its likely impacts that people will need to look at. In practice there is a considerable need for cross referencing to documents which are not always easy to find. One example of this is the impact of the maintenance loop at Stoke Mandeville from the Chilterns. There is no mention of this loop in CFA report 10. It is only mentioned in CFA Report 11

##### **Volume 5: Appendices and map books**

This paragraph (sixth bullet on page 3) significantly underplays the importance of the Volume 5 documents and map books, many of which contain a great deal of additional material that requires comment.

### **1.2 Approach to the environment**

The text on these pages reads too much like hype and spin designed to mask the numerous likely significant detrimental impacts. It is most unfortunate that those consultancies primarily responsible for producing the Environmental Statement have a significant vested interest in HS2 going ahead. It would account for the serial understatement of negative impacts.

The Board is surprised to read that the environmental assessment 'has been the foundation of route selection'. HS2 Ltd has stated publicly that it did not consider any routes which avoided the Chilterns AONB. This suggests that environmental consideration played a minor part in the final route selection.

The principles outlined, based on a hierarchy where avoidance of damaging impacts is given the highest priority, appear not to have been consistently applied.

The ES states that some measures will lead to an overall improvement in the environment. This may be true in a small number of instances and to a minor extent. Neither the higher level assessment of environmental impacts nor the avoidance hierarchy can be trusted if they result in 20 kilometres of the route passing through a nationally protected landscape and the destruction of nationally protected ancient woodland and a Scheduled Monument. Neither is there any evidence of application of the precautionary principle. The general approach seems to be to underestimate impacts and then to apply modest mitigation rather than avoidance. This is compounded by the scarcity of evidence that the landscape has been assessed as a whole rather than its individual features nor of the cumulative impact. Both are requirements of an ES.

The Board is concerned that the mitigation options chosen appear to be based to cost saving rather than effectiveness. The best railways in the world will not come cheap. In an Area of Outstanding Natural Beauty special measures must apply.

The ES refers to the use of tunnels where 'appropriate and reasonably practicable'. A fully-bored tunnel under the whole of the Chilterns AONB has been proved to be both appropriate and reasonably practicable, whilst delivering environmental improvements on the proposed scheme and better value for money for Society.

The text states that earth mounding and planting would 'integrate the project into the local landscape'. The Conservation Board was created by Parliament to promote the conservation and enhancement of the AONB. In its expert opinion this claim is unfounded. Using several million tonnes of spoil to re-shape the natural topography of a nationally protected area is intrusive and damaging.

The creation of new habitats would not adequately compensate for the loss of irreplaceable habitats such ancient woodland and hedgerows.

The amount of land required for the project has not been restricted – a fully bored tunnel under the Chilterns AONB would massively reduce the area required.

The justification for dumping spoil in such large quantities is given as concern by local people about lorry movement on local roads. This is a distortion of what was said. Clearly local people do not want heavy traffic using local roads. However this is a false choice. At no time were local people asked if they would prefer the spoil to be dumped on their doorstep or removed from the area. In practice most of the spoil should be removed along the trace, specially constructed haul roads and A roads. It need not be moved along local roads through villages. It is wholly unacceptable to dump it in the AONB. It is apparent no alternatives were considered and the decision was made purely on cost and not environmental grounds.

### **1.3 Consultation and engagement**

These pages detail various forums that have been established. The claim that engagement has taken place significantly overplays the reality of what happened and their effectiveness. Most forums have resulted in no meaningful dialogue and certainly no material changes in the proposed scheme such that their purpose has been constantly questioned. An example of this was the failure at any forum meeting to explain that up to 12 million tonnes of spoil would be dumped in the Chilterns. As recently as October 2013 the Community Forum was told it would be up to 800,000 cubic metres.

The text states that consultation responses have 'informed the published EIA scope and methodology report'. There is no evidence to support this statement, quite the contrary. Numerous errors were pointed out in the draft ES and most of these have not been addressed. Many changes were sought with virtually none made or responded to.

#### **1. The case for Phase One of HS2**

##### **General comment**

The Board is not persuaded of the case for HS2. The changing justification from the draft to final ES suggests the Government itself is not clear of the purpose of HS2. There is insufficient supporting evidence to make such claims. The ES does not refer

to recent government statistics showing that there has been virtually no growth in inter-city rail travel in the last two years. The experience since 2010 in France is that demand for high speed rail is in decline.

## **2.2 Enhancing capacity and connectivity**

Mention is made of the potential to provide a link to Heathrow Airport. This has not been included in the business plan or benefit/cost ratio, nor have any of the potential environmental impacts been taken into account - this is a clear example of where cumulative impact assessment must be undertaken.

## **2.4 Controlling greenhouse gas emissions**

A claim is made that rail travel will become substantially decarbonised through increasing electrification. This depends upon a decarbonised energy mix from the national grid (unlikely in the medium term) and modal transfer from air (also unlikely). It may be necessary to build additional generating capacity to provide the significant amounts of electricity needed. This potential impact has not been assessed at all and is another example of a cumulative impact.

The text also states that the proposed scheme will result in substantial greenhouse gas emissions (which is not questioned), but then states that high speed rail is one of the most carbon-efficient means of transporting large numbers of people. In order for this statement to be true, it relies on speeds that are much lower than those proposed and loadings that would be much higher than those that are ever likely to be achieved.

If high speed trains run with low loading capacity the emissions per passenger mile will exceed all other forms of travel with the exception of short haul aviation. If the embedded carbon is taken into account even this differential falls sharply.

Although Britain is moving away from using gas, oil and coal-fired power stations, this is a slow process that it is unlikely to have any meaningful impact in relation to HS2. In addition, Britain is required by law to reduce road/car emissions which will mean that comparisons of future emissions must take this into account – this has not been done thus far. Furthermore, there are also likely to be reductions in distances travelled over time, which will also lead to reduced emissions. There is considerable evidence that people in the UK are making fewer and shorter journeys.

## **3. Description of the Phase One project**

### **3.1 Stations**

As there is no transport link between Curzon Street and New Street Station any claim that HS2 is part of an integrated transport network is unfounded. The time taken to make the journey on foot will eradicate most of the overall time savings compared to current services.

### **3.2 The route**

Mention is made of tunnels at South Heath and Wendover. It should be made clear that these are 'cut and cover' or 'green tunnels' rather than bored tunnels. They are completely different and have significantly greater environmental impacts.

The text fails to make any mention of the proposed maintenance loop at Stoke Mandeville – this would be a significant scar on the landscape and it should have been mentioned at this point.

#### Land required

The text states that land will be restored to its previous use following completion of the project. This is a bold claim, particularly as much of the land will have been detrimentally affected by being used for construction activity leading to it being degraded; such that its former use would not be possible.

#### Railway corridor

The railway will be continuously fenced with the type of fencing used dependent upon functional requirements and context. The Board is deeply concerned about this as the likely landscape impacts of such fencing have not been assessed. The type of fencing used on HS1 is ugly and intrusive.

### **3.3 Other components of the Phase One project**

#### **Tunnels**

This figure depicts a generic tunnel portal in a rural location – the Board hopes that should the proposed scheme be approved that a much better design is used than is shown. Attempts should be made to assimilate the portal into the landscape by at least covering the top with earth.

The land is unlikely ever to be restored once construction of 'cut and cover' or 'green tunnels' has taken place.

The text mentions the re-use of excavated material – the text should also consider whether the material needs to be re-used; in most cases it will not be needed and should be disposed of off-site.

There is no mention of the design for head houses – this should be addressed and assessed and in places like the Chilterns AONB designs of the highest quality should be used.

#### Cuttings and embankments

The text mentions the relationship between speed and alignment/gradient but fails to mention the actual proposed speed. The speed proposed has dictated the alignment and therefore design of the scheme and this should be highlighted in the text.

#### **Figure 8**

This depicts a generic cutting with shallow sides. It is, of course, possible to retain the sides of cuttings and the angles of the slopes can be adjusted thus reducing the amount of spoil generated. Retained cuttings will invariably have less environmental impact and for the volume of spoil created allow the railway line to be set more deeply into the landscape.

No mention is made of the maintenance loop that is proposed at Stoke Mandeville - this is a serious omission.

The first mention of the design speed (400kph) is made on page 20 – this late in the document.

#### Train control and telecommunications

Radio antennae will be mounted on extensions to the overhead line equipment. These will be sited every 2km and will have their own landscape and visual impacts which have not been assessed.

#### Road, public right of way, utility and watercourses diversions

Any proposed diversions need to be considered as part of a route-wide network approach – this has not taken place thus far.

#### Noise barriers

Noise barriers will have their own landscape and visual impacts which have not been assessed.

### **4. Construction and operation of the Phase One project**

#### **General comment**

This section should make clear distinctions between temporary and permanent impacts – this has not been achieved thus far.

#### **4.2 Construction management**

##### **Code of Construction Practice and local environmental management plans**

Local environmental management plans will apparently be developed in consultation with local communities. No timeline is given for this which should be addressed. In addition, the well-documented concerns about HS2 Ltd.'s previous attempts at community engagement should be taken account of.

#### Construction compounds

There will be 330 construction compounds along the route. Each one of these will require land, access and other facilities. Those that have overnight accommodation should be clearly identified and their size stated.

#### Working hours

Extensions to core working hours and days will be sought to take advantage of daylight hours and weather conditions. With longer, and normally drier, days in summer this will almost certainly mean that working hours will be extended into periods when more people will be detrimentally affected.

#### **Site restoration**

The text states that all temporary sites will be restored without detailing what condition should be achieved or whether it is possible. The text has the same caveat as applies elsewhere – 'where reasonably practicable', and the Board considers this to be an inadequate approach. Agricultural land and woodland (Ancient Woodland cannot be restored) are never likely to be restored.

No details are given about mitigation requirements. Is landowner consent required for compensatory habitat and landscape mitigation? No detail is given about future maintenance – who will maintain this if it is on private land and how will it be paid for?

#### **4.3 Services and operating characteristics**

##### HS2 trains

Two different trains are mentioned without giving any detail about these. It is assumed that whilst the high speed trains could not be specifically designed for HS2 the classic compatible trains will be unique to the British network.

The text at this point states that trains will travel at speeds of 'up to 360kph'. The text of the same document (at page 20) states that the trains will travel up to '400kph'. The Board is of the view that it is unreasonable to design the entire route to be capable of up to 400 kph. In the Chilterns a lower design speed, which would increase journey times by only seconds, would allow much greater flexibility in route alignment with the potential to reduce environmental and social impacts.

##### HS2 services

Trains will operate from 5am to midnight and there will be 'up to 18 trains per hour' in each direction. This level of service operates nowhere else in the world. The Board considers that this is an unrealistic design specification and should be reviewed and clarified with a more accurate prediction of levels of service. It also seems unwise to base an entire national network on one route with two tracks.

##### **Table 1**

This details the assumed journey times from Euston station. Some of the times given are already being achieved or close to being achieved, thus questioning the need for this additional service.

No consideration is given to where most journeys will originate from. Most people will have to drive from home to get to either an HS2 station or another station for a connecting service – these journey times should be built in to any calculations. It is the door to door time that matters to most people. In addition the likely CO<sub>2</sub> emissions from the journeys to and from stations should also be built in to calculations. There are likely to be significant increases in the CO<sub>2</sub> emissions as a result.

##### Operating staff

No account appears to have been taken of jobs that are likely to be lost on other lines, particularly along the West Coast Main Line. Though jobs are to be created, many will be for the continued employment of workers that are currently constructing the Crossrail project and these will therefore not be new jobs. The cost per full new job created will be very high and certainly higher than is normally accepted for public investment.

#### **4.4 Maintenance, stabling and service preparation**

The provision of two maintenance loops is mentioned. It seems odd to be suggesting the provision of one of the maintenance loops at Stoke Mandeville when the depot at Calvert is just a few minutes away.

Stabling will take place at various locations and the text states that the assessment of the environmental effects is summarised in Section 10 – it is not and this should have been included.

## **5. Preparation of the Environmental Statement**

### **5.1 Introduction**

The Board considers that the ES has failed to assess all possible options that are available that could avoid the most significant environmental impacts. Despite the recent Supreme Court ruling, the Board is not convinced that the ES has been prepared in accordance with European Directives and Government guidance applicable to the preparation of SEA and EIA. When account is taken of the lack of survey and other data to support many of the claims made, this puts a serious question mark over the validity of the consultation material. The further developments in the methodology and the changes in the proposed scheme have not been adequately addressed as part of the production of the ES and the current consultation is considered to be a sham.

One of the key aims, particularly in connection with climate change issues, is the need to reduce carbon emissions by reducing the demand for energy. To achieve this there must be a commensurate reduction in the need to travel. HS2 is based on the premise of increased need and pre-disposition to travel. It is, therefore, fundamentally in conflict with the aim of trying to address climate change issues.

### **5.2 Meeting environmental requirements**

The text at this point is confused and is a cause of significant concern. One paragraph talks about ensuring that the environmental effects of the project 'do not significantly exceed' those assessed in the ES and then later states that such effects should not be 'exceeded', whilst a third states that measures should be adopted to 'reduce' the adverse effects. These all mean quite different things and the Board suggests that the effects assessed in the ES should not be exceeded at all and, if possible, should be reduced.

It appears that contractors will have a significant say in what the EMRs will contain and this gives far too much power to vested interests.

All of the memorandums should be subject to wide public consultation and proper account should be taken of the responses.

## **6. Strategic, route-wide and local alternatives**

### **6.4 Route-wide alternatives**

#### Alternative train speeds

The Board considers that lower operating speeds should apply as these would allow for a more sinuous route and less environmental damage compared to the proposed scheme.

It is stated that increased journey time resulting from a lower speed would reduce economic benefits. This would only be the case if there was a direct causal relationship between time saved on this route and resulting economic gain. This has not been proved, especially as there has been reliance by HS2 Ltd on the argument that people cannot work on trains – this argument has been discredited and journey time is not as critical as formerly claimed. For information flight times between London and Glasgow and Edinburgh have increased by 15 minutes in the last 20 years without complaint or impact.

#### Alternative routes

The text states that the overall difference between the three route options in environmental terms 'was found to be marginal'. The preferred route, apparently, offers shorter journey times and economic benefits for less cost. However, HS2 Ltd/DfT did not take full account of the environmental costs. A fully bored tunnel under the Chilterns AONB would be cheaper for society as a whole, and less environmentally damaging.

#### Connection to Heathrow Airport

Work has been suspended on a direct HS2 link to Heathrow Airport. It is also the case that impacts of this link have not been considered as part of the business case.

### **7. Environmental overview**

The image on page 42 includes a visualisation of the Birmingham interchange station. The image shows at least 3 very large areas for car parking – all of which are shown as being full. The Board considers that the ES has failed to take account of the implications of such mass movement of people by car in terms of journey times and also in terms of impacts on CO<sub>2</sub> emissions. It also seems wholly unrealistic to expect large numbers to drive to central Birmingham in peak hours to catch a train.

#### **7.2 Agriculture, forestry and soils**

Storage of soil leads to its structural and biological degradation and this has not been taken account of in the ES.

#### **7.3 Air quality**

No mention is made of how passengers will get to the Birmingham stations and what the implications will be in terms of journey times and greenhouse gas emissions.

#### **7.5 Cultural heritage**

The tree planting that is proposed at Hartwell House may help mitigate some of the impacts but it is far-fetched to claim this will ensure 'the rural character of its setting is preserved'. The Board fails to see how the character can be preserved when HS2 would destroy the historic landscape and part of the heritage asset itself.

#### **7.6 Ecology**

Measures are apparently to be introduced to reduce the impacts on Bechstein's bat, though no detail is provided and having provided no detail the likely significant effects cannot have been assessed.

It is noted that the barn owl population is likely to be decimated due to train strike. It is wholly unrealistic to suggest this can be offset by erecting more barn owl boxes away from the line. This is wholly irrelevant and suggests a minimal understanding of the ecology of this species. The Hawk and Owl Trust has already dismissed this proposal.

No mention is made of the loss of Ancient Woodland. This is a serious omission and reflects the poor quality of the ES.

#### **7.8 Land quality**

There is no recognition or acceptance that restored land is unlikely to reach its former quality for many years if ever.

#### **7.9 Landscape and visual assessment**

This section fails to state that the AONB is a national designation subject to international recognition.

This section implies that the railway will not be intrusive because much of it would be in cutting or tunnel. This is not the case as a significant proportion of the route will be visible because: the head houses, access roads, fencing and other works associated with vent shafts will all be visible; cuttings will be artificial and involve significant engineering operations and destruction of habitats; trains and overhead line equipment (plus telecommunications equipment) will be visible above ground level; there will be alien features along much of the surface route (spoil heaps, acoustic fencing, surface water ponds and security fencing) and viaducts and embankments will introduce significant engineered elements into the landscape.

No account has been taken in this section of the loss of Ancient Woodland.

Maintenance of newly planted and landscaped areas is mentioned, though there is no detail about how long this maintenance will last. This should be detailed and should be for the longest possible period. In addition, maintenance should include for the replacement of any trees or other landscaping elements that are lost. It is not clear whether the landowner agreement is required in order to plant adjacent farmland with trees. If this is required and consent is not given, the environmental impacts will be quite different.

#### **7.10 Socio-economics**

No mention is made of the number of jobs lost - a serious omission.

In addition, no account has been taken either here or in section 7.4 (community) of the impacts on leisure and tourism and the effects on rights of way for example.

No mention is made of the impact on health. It is known, already, that affected communities are showing higher levels of stress and related ill-health effects.

#### **7.12 Traffic and transport**

This section fails to address the likely implications and requires the reader to look at a series of other documents many of which also fail to include the necessary detail. Lorry routes and travel plans should be addressed in detail as part of the CFA reports

as there will be implications at the local level, this has not taken place in a rigorous manner.

### **7.13 Waste and material resources**

This section of the ES fails to deal adequately with the likely implications of the deposition of spoil within the Chilterns AONB. There would be significant permanent and negative impacts arising from the dumping of spoil in the AONB. This operation is a cost saving exercise on the part of HS2 Ltd/DfT and is disingenuously dressed up as an environmental benefit requested by local people. Local people do not want the spoil and would prefer the temporary negative impacts arising from lorry movements (which are significantly over stated in the ES) instead. A haulage strategy could readily ensure that the spoil removal does not require use of local roads.

### **7.14 Water resources and flood risk management**

The ES contains no specific mention at this point of the important Chilterns aquifer and significantly underplays the likely effects on the River Misbourne and the aquifer.

In addition, the impacts of flood storage areas have not been adequately assessed.

## **8. Summary of environmental effects by CFA**

### **8.7 Colne Valley**

#### Agriculture, forestry and soils

This section confidently states that the sustainable placement area 'will be restored to agricultural land' when completed. This may be true in part but the quality of agricultural land is likely to be lower than prior to construction. Given these farms are not particularly productive or profitable as the land is largely Grade 3, it is likely to affect farm viability. A consequence is that it will trigger a change to land use and the farmed character of this area would change.

The construction of the project will result in the loss of productive land and agricultural production. It may reduce the capital value of the farm. It is assumed this has not been incorporated in the BCR for HS2.

### **8.8 The Chalfonts and Amersham**

#### Figure 21

The ES has failed to annotate the map with the Chilterns AONB.

#### The project

Mention is made of a number of utilities being installed. The opportunity should be taken to place all such utilities underground. This is not the case at present and the diversion of overhead powerlines and consequent increase in number of pylons in some instances has not been adequately assessed.

#### Water resources and flood risk assessment

The ES states that construction works could temporarily affect groundwater quality and public water supply. However, what the effects are likely to be, how long they will

last and what alternatives would be put in place for maintenance of drinking water supply are not detailed in any way.

## 8.9 Central Chilterns

### Figure 22

The ES has failed to annotate the map with the Chilterns AONB.

### The Project

New or diverted electricity pylons are mentioned. The opportunity should be taken to place such wires underground as part of the scheme, rather than retaining overhead wires and pylons.

This section fails to mention the loss of Ancient Woodland.

### Residual effects

The dumping of spoil has negative consequences for land quality and this has not been adequately addressed in this section or the ES as a whole.

### Agriculture, forestry and soils

Though 98ha of agricultural land will be permanently lost (which includes 78ha of high quality land), the ES has not found any adverse residual effects. The Board finds this to be very surprising.

This section also fails to mention the loss of Ancient Woodland.

### Cultural heritage

This section includes an extensive list of assets that will be lost yet the ES has not found any adverse residual effects. The Board finds this to be very surprising.

### Ecology

The ES mentions the permanent loss of Ancient Woodland and then seeks to divert attention away from this by mentioning new woodland planting. This will be comparatively poor quality habitat and cannot replace the Ancient Woodland lost. The ES has failed to take proper account of the adverse residual effects.

### Landscape and visual assessment

This section states that the scheme will significantly affect the character and appearance of the local landscape. This is inconsistent with the information contained in section 7.9.

### Sound, noise and vibration

Measures to manage noise are to be implemented through the CoCP. One of the measures detailed is 'tall screening' (this is frequently referred to). This is not detailed in the CoCP and no definition of it can be found in any other document, including the Glossary. If there are no details for what 'tall screening' is then the likely effects arising from its implementation cannot have been properly assessed.

### Traffic and transport

The scheme would result in numerous closures and diversions of roads and other rights of way (either permanently or temporarily). Increased travel distances and the likely significant effects on users are inadequately addressed in the ES. The costs of time and increased fuel use are not addressed and neither are the impacts on carbon emissions.

### Water resources and flood risk assessment

The scheme could affect groundwater quality and public water supply. However, the ES has failed to take account of the likely costs, either as part of the BCR or to consumers.

## **8.10 Dunsmore, Wendover and Halton**

### Figure 23

The ES has failed to annotate the map with the Chilterns AONB.

### The project

New or diverted electricity pylons are mentioned. The opportunity should be taken to place such wires underground as part of the scheme, rather than retaining overhead wires and pylons.

The supply of power to the proposed scheme is not detailed and the impacts arising from this do not appear to have been assessed.

This section fails to mention the loss of Ancient Woodland and also fails to take account of the fact that a number of the roads likely to be affected are ancient lanes.

### Residual effects

The Board considers that the scheme could affect groundwater quality and public water supply and this should be dealt with as part of this section of the ES. However, this section of the ES does not provide any detail about the likely significant impacts.

The dumping of spoil has negative consequences for land quality and this has not been adequately addressed in this section or the ES as a whole. Similarly, impacts on landscape, wildlife, amenity and character of the area are also inadequately addressed.

### Agriculture, forestry and soils

The effects of the deposition of a massive amount of spoil are not adequately addressed. The ES fails to give the likely area to be covered and the likely weight/volume.

Though 90ha of agricultural land will be permanently lost (which includes 58ha of high quality land), the ES has not found any adverse residual effects. The Board finds this to be very surprising.

This section also fails to mention the loss of Ancient Woodland.

### Cultural heritage

This section includes an extensive list of assets that will be lost yet the ES has not found any adverse residual effects. The Board finds this to be very surprising.

### Ecology

The ES mentions the permanent loss of Ancient Woodland and then seeks to divert attention away from this by mentioning new woodland planting. This will be comparatively poor quality habitat and cannot replace the Ancient Woodland lost. The ES has failed to take proper account of the adverse residual effects.

### Landscape and visual assessment

This section states that the scheme will significantly affect the character and appearance of the local landscape. This is inconsistent with the information contained in section 7.9.

The permanent effects on the landscape include the impacts arising from massive spoil heaps and also the nearby maintenance loop, as well as those listed. The ES has therefore failed to take proper account of the likely residual effects.

The ES claims that planting will result in 'a beneficial visual effect on users of the public right of way along Bowood Lane'. This statement beggars belief – how the introduction of the scheme with its associated structures and landscape destruction can lead to a beneficial effect is beyond comprehension.

### Sound, noise and vibration

Measures to manage noise are to be implemented through the CoCP. One of the measures detailed is 'tall screening' (this is frequently referred to). This is not detailed in the CoCP and no definition of it can be found in any other document, including the Glossary. If there are no details for what 'tall screening' is then the likely effects arising from its implementation cannot have been properly assessed. This should be addressed.

A similar situation arises with the use of the term 'tall noise barriers' – no definition for this is provided and no mention is made of this in the CFA10 reports or map book.

### Traffic and transport

This section of the ES fails to deal adequately with the likely implications of the deposition of spoil within the Chilterns AONB. There would be significant permanent and negative impacts arising from the dumping of spoil in the AONB. This operation is a cost saving exercise on the part of HS2 Ltd/DfT and is disingenuously dressed up as an environmental benefit requested by local people. Local people do not want the spoil and would prefer the temporary negative impacts arising from lorry movements (which are significantly over stated in the ES) instead.

The scheme would result in numerous closures and diversions of roads and other rights of way (either permanently or temporarily). Increased travel distances and the likely significant effects on users are inadequately addressed in the ES. The costs of time and increased fuel use are not addressed and neither are the impacts on carbon emissions.

## **8.11 Stoke Mandeville and Aylesbury**

### Figure 24

The ES has failed to annotate the map with the Chilterns AONB.

This section fails to take account of the likely residual effects on the SAC arising from construction traffic.

### Landscape and visual assessment

The permanent effects on the landscape also include the impacts arising from the maintenance loop, as well as those listed. The ES has therefore failed to take proper account of the likely residual effects.

## **9. Summary of route-wide environmental effects**

### **9.1 Introduction**

This section states that the text 'presents a summary of the likely residual significant effects' identified on a route-wide basis. However, the text that follows does not reflect this.

### **9.2 Chilterns Area of Outstanding Natural Beauty**

This section concludes that the project is 'unlikely to result in any significant adverse effects on the special characteristics of the Chilterns AONB', having briefly described a huge number of significant impacts (which is not an exhaustive list). The Board rejects the view expressed and takes exception to the disingenuous way that the text seeks to underplay the effects by stating that only a tiny fraction of the landscape of the AONB will be altered. This relates purely to an area of land and does not adequately address the implications in an independent and balanced way. The same method of description is used in connection with the landscape impacts ('limited to the Misbourne Valley') and impacts on woodland ('small proportion of the woodland in the AONB').

The list of changes is considered to be inadequate and should have included the impacts arising from the diversion of overhead powerlines and new pylons, and presence of ventilation shafts, head houses, auto-transformer stations and numerous balancing ponds.

The loss of sections of historic routes will affect the whole road – this has not been addressed.

## **Comments on Volume 1 – Introduction to the ES**

### **Environmental Statement – Volume 1, Introduction to the ES**

#### **1. Introduction**

##### *1.3 The need for EIA and the role of an Environmental Statement*

1.3.4 Third bullet point – there may be additional land requirements outside those shown on the Parliamentary Plans. There may be extra land requirements that will need to be assessed.

1.3.4 Seventh bullet point – noise fence barriers are shown on maps and described in the text but do not appear in profile thus the likely impacts cannot be fully assessed.

1.3.5 Second bullet point – limits of deviation are rather relaxed with no limits given for possible changes ‘vertically downwards’.

1.3.5 Third bullet point – limits of deviation are rather relaxed with a limit of ‘not exceeding three metres’ given for possible changes to the upward vertical limit except for stations, depots and ventilation shafts which do not appear to be subject to restrictions. Even a 3 metre deviation could cause significant changes to the scheme that would result in wider landscape impacts in some cases.

##### *1.4 Meeting environmental commitments after consent*

1.4.4 The nominated undertaker is to use reasonable endeavours to adopt measures to reduce the environmental effects provided that this does not add unreasonable cost or delay to the scheme. The Board is concerned that unless strict measures are applied this will lead to costs being cut and the scheme not being completed to the highest standards.

1.4.5 The Environmental Minimum Requirements (EMR) will include a Planning Memorandum which will set out an agreement between Government and local planning authorities relating to issues such as design and appearance of structures. For areas like the Chilterns AONB such an agreement should fully involve other statutory bodies such as the Chilterns Conservation Board and there is a need to ensure, in so doing, that there is full compliance with the statutory duties as detailed in the Countryside and Rights of Way Act 2000 (Section 85 in particular and the need to ensure conservation and enhancement of the natural beauty of the Chilterns AONB which would have to be exemplified by compliance with the AONB Management Plan and all supplementary documents such as the Chilterns Buildings Design Guide, building materials technical notes and the Environmental Guidelines for the Management of Highways in the Chilterns).

Table 1 (page 10) Priority Two states that for Design Aim 3 the project shall seek to avoid direct or indirect harm to valued landscape, water and ecological resources and that measures to achieve this would be commensurate with the sensitivity of the resources and level of their protection. The proposed scheme fails to meet this aim as the harm to the nationally protected Chilterns AONB and internationally rare chalk streams habitat has not been avoided and no special measures commensurate with the importance of the AONB and the chalk streams have been proposed that would mitigate the harm likely to be caused.

##### *1.6 The acquisition, use and return or disposal of land*

1.6.3 Further relaxation is given with the limits of deviation allowing the scheme to ‘deviate slightly from the centre line of works’ without specific distances being stipulated.

## **2. Background to High Speed Two**

### *2.6 Managing local impacts and effects*

2.6.1 and 2.6.2 The range of adverse impacts have been 'reduced as far as reasonably practicable' (2.6.1) and where adverse effects have been identified options for 'mitigating them have been explored' (2.6.2). It appears that no proper account has been taken of 'avoidance' of the harm prior to mitigation taking place.

## **3. Approach to consultation and engagement**

### *3.2 Consultation and engagement to date*

3.2.3 and 3.2.9 Engagement was undertaken in order to raise awareness of the programme, policies and documents and to 'encourage constructive participation' in the consultation process. The Community Forums have been attended by many local people and organisations, many of whom were actively trying to engage with HS2 Ltd and to try and be constructive in making suggested amendments. Many suggestions were made that would have improved the scheme or reduced the environmental impacts but virtually none of these have been taken on board or resulted in meaningful changes to the proposed scheme. This is hardly an exemplification of a constructive participation in the consultation process on the part of HS2 Ltd.

## **5. Permanent features of the Proposed Scheme**

### *5.4 Highways (roads) and public rights of way*

5.4.1 Road and public right of way realignments will be 'designed, to blend into their surroundings as far as possible, and to retain the existing character of the route'. This is a laudable aim though considered to be virtually impossible to achieve, particularly with some of the ancient routes that will be severed by the scheme, many of which are within the Chilterns AONB. The Board will expect compliance with the Countryside and Rights of Way Act 2000 (Section 85 in particular) and the need to ensure conservation and enhancement of the natural beauty of the Chilterns AONB. This which would have to be exemplified by compliance with the AONB Management Plan and all supplementary documents such as the Chilterns Buildings Design Guide, building materials technical notes and the Environmental Guidelines for the Management of Highways in the Chilterns.

### *5.5 Tunnels*

5.5.1 Cut and cover tunnels would result in 'temporary disruption at the surface' followed by 'the reinstatement of surface conditions'. This is a disingenuous statement – once the land is excavated it is very unlikely for it to be reinstated in the same condition (soil will be compacted, seed banks disturbed and habitats lost).

### *5.5 Tunnels (green tunnels)*

5.5.9 A green tunnel is constructed using a cut and cover method. This paragraph claims that the land would be 'returned to its former use'. Though this might possibly be the case in relation to rights of way for example, it is unlikely to occur with agriculture or sensitive habitats, and no mention is made of what condition the land would be in after the scheme is completed. Once the land is excavated it is very unlikely for it to be reinstated in the same condition (soil will be compacted, seed banks disturbed and habitats lost).

### *5.7 Ventilation and intervention (vent) shafts*

5.7.1 The design and external appearance of headhouses will be approved by relevant local authorities in order to 'fit in to the local surroundings'. For areas like the Chilterns AONB such approval should involve the full engagement of other statutory bodies such as the Chilterns Conservation Board and there is a need to ensure, in so doing, that there is full compliance with the statutory duties as detailed in the Countryside and Rights of Way Act 2000 (Section 85 in particular and the need to

ensure conservation and enhancement of the natural beauty of the Chilterns AONB which would have to be exemplified by compliance with the AONB Management Plan and all supplementary documents such as the Chilterns Buildings Design Guide, building materials technical notes and the Environmental Guidelines for the Management of Highways in the Chilterns).

#### *5.9 Viaducts and 5.10 Bridges*

5.9.2, 5.9.3, 5.9.4, 5.10.2, 5.10.4, 5.10.5 and 5.10.6      No assurances are given about the design and external appearance of viaducts and bridges and it appears that all will be to a standard construction of concrete and steel. For areas like the Chilterns AONB the design and appearance of viaducts and bridges should result from the full engagement of statutory bodies such as the Chilterns Conservation Board and there is a need to ensure, in arriving at a design solution, that there is full compliance with the statutory duties as detailed in the Countryside and Rights of Way Act 2000 (Section 85 in particular and the need to ensure conservation and enhancement of the natural beauty of the Chilterns AONB which would have to be exemplified by compliance with the AONB Management Plan and all supplementary documents such as the Chilterns Buildings Design Guide, building materials technical notes and the Environmental Guidelines for the Management of Highways in the Chilterns). The generic illustrations of viaducts, bridges and underpasses as shown in Figures 22, 23, 24 and 25 would all fail to achieve the purpose of the Chilterns AONB.

Figure 24      This details a cross section of a viaduct and includes a 'parapet noise fence barrier, 3m or 4m (above rail), provided in certain locations to increase noise mitigation and avoid or reduce significant noise effects'. The likely landscape impacts of such barriers would need to be fully assessed and it does not appear that this assessment has taken place thus far.

#### *5.14 Noise barriers*

5.14.2 and 5.14.4      Noise barriers could be 3m high or higher depending on their form and location. The likely landscape impacts of such barriers would need to be fully assessed and it does not appear that this assessment has taken place thus far.

#### *5.16 Track*

5.16.4 An assumption has been made that slab track will be used in bored tunnels and that 'whichever is the worst-case effect between ballast and slab will be used elsewhere'. This appears to state that the worst-case scenario will be assessed. The Board is concerned that once assessed in this way it is possible that the scheme will be implemented along such lines.

#### *5.17 Power supply*

5.17.6 to 5.17.12 and Figure 30      Various feeder stations would be required along the route. These include auto-transformer feeder stations, auto-transformer stations, mid-point auto-transformer stations and express feeder auto-transformer stations. When taken together this would mean that an auto-transformer station of some kind would be located every few miles. The text detailed in paragraphs 5.17.6 to 5.17.12 is not replicated in Figure 30 which appears to be missing a significant number of auto-transformer stations.

#### *5.18 Train control and telecommunications*

5.18.1 and 5.18.2      These paragraphs detail a series of additional developments including cable troughs, marker boards, cabinets and radio antennae added to the overhead line equipment masts all of which would lead to greater landscape impacts arising from the scheme that do not appear to have been assessed.

## **6. Construction of the Proposed Scheme**

### *6.3 Environmental controls during construction*

#### Purpose of the Code of Construction Practice

6.3.5 Further guidance on some issues is apparently to be prepared which will be based on 'industry good practice'. The Board considers that such advice should be based on 'best' practice.

#### Working hours

6.3.19 to 6.3.29 These paragraphs detail the core working hours then a series of deviations from those hours such that working could take place 24 hours a day for 365 days a year. The Board does not consider that this is appropriate and will make detailed comments about the Code of Construction Practice separately.

#### Management of construction traffic

6.3.33 This paragraph states that the number of private car trips 'will be reduced by encouraging alternative modes of transport or vehicle sharing'. This is a categorical and bold statement that has little likelihood of success unless draconian measures are put in place.

#### Handling of construction material and waste – excavated material

6.3.40 This paragraph states that the sites for dumping spoil have been selected on the basis of 'their suitability for the disposal' of spoil. The Board fundamentally disagrees with this and can find no evidence for any discussions having previously taken place with statutory bodies such as itself.

#### Noise and vibration strategy

6.3.48 According to this paragraph taller screening (as described in the draft CoCP) has been assumed, as required to avoid or further reduce impacts along the edge of the construction site boundary. The Board has no confidence that such a change will have been thoroughly assessed as part of the ES.

## **6.4 Advance works**

6.4.1 Various advance works are detailed. No mention is made of tree planting, a significant part of which would have to be undertaken in advance of the scheme commencing.

#### Further detailed environmental surveys

6.4.3 A whole series of further detailed, site specific environmental surveys are also proposed to be undertaken. These would include – ecological, archaeological and built heritage, hydrological, hydrogeological, geotechnical and contaminated land. Not many environmental topics appear to have been fully addressed prior to the publication of the ES and the continuing need for such surveys to still be prepared shows that the ES has not been adequately completed and has been rushed. Such surveys may well reveal important data that could not be taken fully into account.

## **6.6 Construction compounds**

6.6.2 This paragraph mentions workers' sleeping accommodation 'may be provided' at some sites and that these are indicated in CFA reports where they 'are expected to occur'. The provision of such accommodation should be more certain at this time and this should have been reflected in the ES.

## **6.12 Tunnels**

#### Green tunnels

6.12.13 and 6.12.14 These paragraphs talk about grading land to match the natural terrain, landscaping and restoration to the original or some alternative use. In most cases the

green tunnels will result in alien features with landforms being significantly altered from the original (the green tunnel to the south west of Wendover is a case in point). The use of stored material is also unlikely to lead to a land use that is the same as prior to the tunnel being constructed. These issues are not reflected in the document.

#### *6.13 Portals*

6.13.1 and 6.13.2 The text fails to give any detail about design though materials are specified (reinforced concrete).

#### *6.21 Site restoration and landscape treatment*

6.21.1 Landscape mitigation such as planting will be established 'during construction'. This is a fundamental failing of the proposed scheme in that planting (particularly any tree planting) should be undertaken well in advance of construction in order to allow the planting to start maturing and thus have beneficial impacts from the earliest possible time.

#### *6.23 Power supply*

6.23.3 Much of the access for construction of the power supply system will be via the local road network. Road access will be designed to take delivery of plant and equipment which 'may require widening part of the planned route from the nearest public highway'. Many of the roads that are likely to be used could not take widening without the character being fundamentally affected – such routes should be reinstated to their former condition following completion of the project and this should be dealt with in the ES.

### **8. Scope and methodology summary for environmental topics**

General comment – this section repeatedly makes the point that access was not obtained to all of the land where surveys were proposed or where data was needed to be collected in order to come to conclusions on the likely impacts on the environment. Such omissions are a major failing and demonstrate that the ES is incomplete and lacks rigour and is not based on the best and most up to date information.

#### *8.1 Agriculture, forestry and soils*

General comment – this section provides no detail at all about the likely implications for Ancient Woodland. This is a major omission as the impacts are likely to be significant.

#### *8.7 Landscape and visual*

8.7.6 and 8.7.8 These paragraphs state that certain vertical structures (cranes and overhead line equipment) are excluded from the zone of theoretical visibility since they 'rarely give rise to significant effects if they are the only elements visible'. The Board fundamentally disagrees with this assumption as such elements, whether temporary or permanent, are likely to have significant detrimental impacts which are more keenly felt particularly if they are the only elements visible. This would be compounded in a place like the Chilterns AONB where such features may well be the only discordant ones in the area. The ES should reflect this.

#### *8.11 Waste and material resources*

8.11.2 The scope of the ES does not, apparently, consider surplus excavated material that will be disposed of via sustainable placement (spoil heaps). This is a grave omission as the spoil heaps would have significant detrimental impacts on the environment and these should be fully scoped in and assessed.

#### *8.12 Water resources and flood risk*

8.12.14 The assessment assumes that railway track drainage will 'wherever possible' be kept separate from existing land drainage that crosses the route. The aim should

be that such drainage should 'always' be kept separate as significant contamination could occur.

8.2.16 The document states that there 'are limited borehole records available' from which to understand the local geological and hydrogeological conditions. The Board understands that there are extensive records for hydrogeological conditions in the area which should have been assessed in order to work out the local geological and hydrogeological conditions.

## **9. Approach to mitigation**

### *9.8 Ecology*

9.8.6 Apparently the scheme will 'seek to achieve a no net loss in biodiversity ... as far as reasonably practicable' whilst assessing loss against a 'modified version' of the DEFRA biodiversity offsetting metric. These statements are considered to be contrary to national policy which requires no net loss in biodiversity whilst seeking to achieve biodiversity gains. The Board is concerned that an amended metric will allow the scheme to be implemented without the necessary safeguards being in place.

### *9.10 Landscape and visual*

9.10.4 The Board takes some comfort from the statement in the third bullet point that the design or external appearance of bridges, viaducts and buildings 'will be subject to the approval of the relevant local authority'. It is a great shame that many of the other elements in this section are not also to be decided at the local level.

## **Comments on Volume 2 – Community Forum Area Reports**

### **Environmental Statement – Volume 2, CFAR 7 Colne Valley**

#### **2. Overview of the area and description of the Proposed Scheme**

##### **2.1 Overview of the area**

Figure 2 – This shows the area context for the proposed scheme without including the nationally protected Chilterns AONB as a key feature.

##### **2.2 Description of the Proposed Scheme**

2.2.7 Figure 3 – This details a cross section of the Colne Valley viaduct and includes a ‘parapet noise fence barrier, 3m (above rail), provided in certain locations to increase noise mitigation and avoid or reduce significant noise effects’. The likely landscape impacts of such barriers would need to be fully assessed and it does not appear that this assessment has taken place thus far.

2.2.7 Third bullet point on page 16 – this describes the diversion of high voltage overhead powerlines. The opportunity should be taken to remove overhead powerlines and place any diverted lines underground – this would result in a beneficial impact and should apply to all instances throughout the route where such powerlines are affected. In this case the proposed scheme (PS) would result in the removal of 4 pylons and associated powerlines, and their replacement with 7 pylons and associated powerlines. The likely landscape impacts of such a proposal would need to be fully assessed and it does not appear that this assessment has taken place thus far.

##### **2.3 Construction of the Proposed Scheme**

2.3.14 This paragraph details additional functions that will be accommodated at some compounds. Railheads are detailed yet none are to be provided within compounds in this CFA. The text demonstrates a standardised approach to preparation of the ES when the CFA reports are supposed to be locally focussed documents.

##### **2.3 Construction of the Proposed Scheme and 2.6 Route section main alternatives**

2.3.60, 2.6.58 and 2.6.59 These paragraphs detail the construction of slip roads onto the M25. Traffic from the proposed scheme would be joining the M25 at slow speed which will be likely to lead to significant amounts of congestion and consequent impacts on air quality, at least locally. These matters have not been addressed in the ES.

#### **3. Agriculture, forestry and soils**

##### **3.4 Effects arising during construction**

Avoidance and mitigation measures

3.4.1 to 3.4.34 This section purports to detail avoidance and mitigation, without providing any detail about any avoidance or the mitigation that ought to be provided for the permanent loss of best and most versatile agricultural land.

#### **4. Air quality**

General This section fails to take proper account of the likely implications arising from what will be significant numbers of heavy goods vehicle movements transporting spoil via local roads and the M25. The resultant traffic from the proposed scheme would be joining the M25 at slow speed which will be likely to lead to significant amounts of congestion and consequent impacts on air quality at least locally.

#### **6. Cultural heritage**

##### **6.5 Effects arising from operation**

6.5.8 The text notes that operational noise will remain a significant residual effect that no amount of planting and other mitigation measures would be capable of mitigating.

#### **7. Ecology**

General There are numerous references to gaps in data – the environmental baseline cannot be regarded as accurate or thorough with so much data still to be collected, analysed, considered and reported on. The deposit of the Hybrid Bill and publication of the ES should have been held back until the data had all been collected and properly considered. The implications of the Proposed Scheme for ecology and ecological networks still cannot be fully known at present.

The draft ES had mentioned that areas of open water and water margin vegetation would be shaded by the viaduct and that this would be assessed in the formal ES. No such reference has been made in the ES and one must therefore assume that the assessment has not taken place thus rendering the ES incomplete.

#### **7.3 Environmental baseline**

7.3.7 and 7.4.55 The Board welcomes the recognition in the ES that ancient woodland is an irreplaceable resource. It is also a national resource. It is a shame that the ES then fails to recognise the importance of the resource, which is often described as being of more local importance. Paragraph 7.4.55 then seeks to justify the loss by talking about compensation. As the asset is irreplaceable no amount of compensation would be an adequate reflection of the loss.

#### **8. Land quality**

##### **8.5 Effects arising from operation**

8.5.4 This paragraph states that the potential for minor leakage of fluids from the trains exists, but that such leakages are expected to be 'very small and unlikely to result in significant contamination'. How can HS2 Ltd be sure about this and should not the precautionary principle apply here?

#### **9. Landscape and visual assessment**

##### **9.4 Temporary effects arising during construction**

9.4.7 and 9.4.11 These two paragraphs talk about overhead power lines and pylons. The first paragraph states that a large section of line and pylons will be 'removed'

resulting in an improvement to the Colne Valley, whilst the second paragraph is in conflict with this as it refers to the line and pylons being 'temporarily diverted'. The lines and pylons are either removed or diverted and it is not clear what is proposed.

## **12. Traffic and Transport**

### **12.4 Effects arising during construction**

Assessment of impacts and effects

12.4.14 This section details road closures with temporary diversions. One diversion would be 6.1km for about 6 months, another would be 1.6km for about 5½ years and a third would be 5.2km for 1½ years. However, though the longer diversion would result in a major adverse effect the other two would apparently only be moderate. If the shorter diversion has to be taken for a significant length of time (almost permanently) and the 5.2km diversion has to be taken for three times as long as the 6.1km diversion then the Board considers that this would result in major adverse effects for all of the diversions.

## **13. Water resources and flood risk assessment**

### **13.1 Introduction**

13.1.2 The fact that the River Colne is a chalk stream and a significant tributary of the River Thames should be recognised.

13.1.3 The Board understands that Affinity Water are concerned that the viaduct pilings and their foundations will cause a fundamental change in groundwater flow, leading to a rise in groundwater levels to the north of the viaduct which could increase flood risk over a wide area. New pathways for groundwater flow may take decades to establish themselves. Groundwater levels downstream of the viaduct are likely to lower which will impact on wetland quality in the lower River Colne (including SSSIs) and may possibly affect flows in the lower River Misbourne.

13.1.8 The Board considers that Thames Water should also be fully involved in the production of the proposed scheme as there is a significant amount of sewerage infrastructure that crosses the proposed route.

### **13.2 Scope, assumptions and limitations**

13.2.2 The Board is concerned that the spatial scope of the assessment has been limited to 1km from the centre line of the route for surface water and groundwater features. The proposed scheme is more than likely to influence groundwater, and therefore surface waters, within an area that is greater than 1km away from the route.

13.2.6 The ES states that the exact method of tunnelling has not been selected. How can HS2 Ltd/DfT (and anyone else for that matter) be confident about the likely implications for the water environment, including water resources?

### **13.3 Environmental baseline**

13.3.5 The Board considers that the impact on groundwater is likely to extend beyond 1km of the route thereby impacting on Affinity Water abstractions. This does not appear to have been assessed.

13.4.3 This section talks about realigning rivers. Realigning chalk streams away from their natural alignment will interrupt groundwater/surface water interaction. This may cause loss of flow in the rivers and possibly groundwater flooding and should therefore have been fully modelled and assessed.

13.4.4 Any mitigation of changed river channels must ensure that the quality of the realigned watercourse is improved over the current condition (particularly if this is less than good).

13.4.12 This section mentions channel improvement works. The Board is intrigued as to what 'channel improvement work' is proposed to reduce the flood risk of a narrowed channel. Over-widening the river upstream perhaps?

13.4.19 Apparently fluids will be reused or 'disposed of appropriately'. This displays a naïve confidence which the Board does not share.

13.4.32 This section deals with migration of turbid groundwater to surface water and changes in groundwater quality. Changes to groundwater flow pathways may take decades to establish and so contamination issues may arise long after construction has finished. HS2 Ltd/DfT would need to compensate water companies for any losses of supply should this occur and this should be addressed in the ES.

13.4.48 Temporary importation of water from CFA8 is mentioned and any impacts dismissed as the sources would operate within their abstraction licence limits. Despite this the Board is concerned that there could still be significant residual impacts on the water resources within the River Misbourne catchment.

This section also deals with discharge of water. Discharges are required to meet standards for turbidity too. Pumping turbid water into a chalk stream such as the River Colne is not acceptable.

The Board is not convinced about the assertions in the final bullet point of this section and wonders if HS2 are suggesting that Affinity Water's own water resource management strategy will help to mitigate against the effects of HS2. The Board understands that Affinity Water are still awaiting a decision from OFWAT on their latest water resource management plans. OFWAT may rule out the proposed demand reduction and leakage control strategy proposed.

13.4.52 Apparently no significant residual effects on surface water and groundwater have been identified. Changes to groundwater pathways may take decades to establish and therefore significant impacts on source productivity and groundwater quality may occur long after the route has been completed. These issues do not appear to have been adequately addressed.

13.4.53 This section recognises that tunnelling and other construction below the water table has the potential to impact on groundwater quality. It may also have a major impact on groundwater flow and aquifer levels, which could impact on surface water flows in the River Misbourne and possibly the River Alderbourne and River Chess and this should also have been addressed.

13.4.54 This section mentions that disturbance will occur to groundwater flow resulting from piling for viaduct piers and suggests that these are restricted to the period during construction works. The viaduct piers and their foundations will remain as obstructions to groundwater flow permanently and this has not been adequately assessed.

13.4.56 This section talks about a risk of fluvial flooding. However, the ES does not address this issue in any way and this should have been addressed.

## **Comments on Volume 2 – Community Forum Area Reports**

### **Environmental Statement – Volume 2 CFAR 8 - The Chalfonts and Amersham**

#### **1. The Chalfonts and Amersham**

##### **1.1 Overview of the Area**

###### Settlement, land use and topography

1. This section should refer to the Chiltern Cycleway.
2. This section refers to “A large public park is located on the Shardeloes Estate with a lake and Field Study Centre”. No such public park exists. The Field Studies Council Centre is over a mile away at Mop End. This is an alarming mistake and suggests the author is not familiar with the area. This same error appeared in the draft ES and was pointed out. It is disappointing that it has re- appeared. It is one of many examples of errors, inaccuracies and misleading statements.

###### Planning Context and Key Designations

1. This section should specifically refer to the Chilterns AONB Management Plan.

##### **1.1 Description of the Proposed Scheme**

1. The statement refers to road “improvements work”. In what sense will they be improvements? If they damage the road’s rural character and locally important features are lost such as roadside trees and hedges, then degradation would be a more appropriate description.
2. The “Environmental Guidelines for the Management of Highways in the Chilterns AONB” have been published jointly by the Conservation Board and local highway authorities. The Board expects HS2 Ltd to follow this guidance.
3. This section should include an acknowledgement of the urbanising effect on the countryside by construction of industrial infrastructure and associated “clutter”. This not only needs to be recognised but a clear commitment should be given to ensure every element of this infrastructure is both designed and screened to avoid damaging the character of the locality.
4. Similarly there needs to be recognition of the cumulative impact of this type of scattered development.
5. The statement refers to the lane to Upper Bottom House Farm being widened and improved. See above - in the context of its setting in the Chilterns AONB this would not be an improvement. Every effort must be made to conserve and enhance the character of these lanes.

##### **2.3 Construction of the Proposed Scheme**

1. Reference is made to returning land used during construction to “its pre-construction use wherever reasonably practicable”. This is a vague and unspecified phrase. For the avoidance of doubt the ES should clarify who makes this decision and the criteria used. In view of the scepticism which surrounds HS2 an assumption will be made,

unless dispelled, that if it is in HS2 Ltd.'s, or its sub contractor's, interest not to for whatever reason then it won't be returned to its previous use.

2. This section provides no reassurance to local people and visitors that they can expect respite from the immense disruption and inconvenience they will suffer. Working hours in the evening and at weekends must be curtailed. It is clear that contractors will rarely be obliged to stop work for there are so many caveats and loopholes that will allow them to work whenever it suits them.
3. Section 2.3.14 refers to the possibility of railheads linking constriction compounds to the existing railways network via railheads. There are no such links in this area so why mention them. It indicates that HS2 Ltd is using standardised text for what are supposed to be local community forum area reports.
4. The fences of the site compounds need to be designed and constructed to minimise their visual intrusion.
5. It is essential that light pollution is avoided during the construction and operational phases. There should be a presumption against lighting compounds at night.
6. It is wholly unrealistic to expect any significant use of public transport by construction workers. It is essential that adequate parking provision is made for them.
7. The ES needs to state what will be done with the water pumped out of the tunnels. Reassurance is sought that it will not be allowed to enter local water courses untreated.

### **Construction Waste and material resources**

1. Sections 2.3.49 and 2.3.54 state that over 4 million cubic metres of spoil will be generated but fail to state where this material will be deposited or the environmental impact of doing so.
2. According to Volume 5 Technical Appendices 'Waste and material resources assessment' (WM-001-000) it is possible that the spoil excavated from the tunnel will be dumped in the Chilterns. This is not acceptable. This should have been stated in the Report for the CFA instead of being buried in a technical appendix. It is not acceptable to dump spoil in the Chilterns AONB.
3. It is reassuring that there will be no major utility diversions. As no description is provided it is not known how a major diversion is defined. It implies there will be minor diversions however.
4. It is assumed that every precaution possible will be taken to avoid disturbing patients, staff and visitors to Amersham Hospital. A statement to this effect is expected in the ES.
5. The Conservation Board welcomes the proposal to provide appropriate landscaping. The statement that planting would reflect tree and shrub species native to the Chalfonts and Amersham landscape is bizarre and suggests an inexperienced author. In these circumstances the range of species which might be considered may need to be much wider, and may even include exotic evergreen species.

6. The permanent fencing must be kept out of sight and itself screened using tree planting. The entrance to the vent sites must be low key and in keeping with the rural setting. Signage must be kept to a minimum.
7. Section 2.4.7 refers to night-time maintenance involving noisy grinding and other activities. The ES does not state if this will be audible to people living nearby, and if it does, what measures will be taken to avoid disturbance.

## **2.5 Community Engagement**

1. The Community Forums were wholly ineffective and not even minor changes were introduced to the alignment or design as result.
2. 2.5.4 Concern was expressed about the impact of HGVs and other HS2 related vehicles on roads in the area. At no time however, was the it the community's preference to dump spoil in the Chilterns rather than remove it to a more suitable location. The Board can state this with certainty as it attended all Community Forum meetings in the Chilterns.

## **2.6 Route Section main alternatives**

1. It is clear than no significant alternatives were proposed or considered.
2. This section refers to workshops attended by specialists. This did not include anybody from the Chilterns Conservation Board or any local people.
3. Reference is made to achieving the right balance between cost and other considerations. How was this balance achieved? What criteria were used? Who made the final decisions? This is galling for those local people who attended the community forum meetings and whose views were almost wholly ignored by HS2 Ltd.
4. No explanation is given as to why the design standard for the depth of the tunnels beneath water courses was twice the diameter of the bore. The specification has to be in the context of the nature of the geology and the impacts which need to be avoided. No evidence is provided that HS2 has a full understanding of the complex geological conditions in the Misbourne Valley.
5. Application of the precautionary principle suggests the tunnel should be deeper still to reduce the risk of affecting watercourses. It would also reduce the potentially adverse impacts on the aquifer.
6. Retention of the established scrub at the Amersham vent is essential. This will require careful site management. Any damage to these trees should be made good by immediate planting.
7. Section 2.6.6 refers to pumping water from the tunnel via the vents to the surface. It does not state what then happens to it.

## **3. Agriculture, forestry and soils**

1. Section 3.2.3 The intention to restore land to its pre-existing quality is welcome. The fact that some of it will be planted with woodlands is not mentioned. Will those areas also be restored to pre-construction standards?

2. However, though the intention to restore land is welcome it is wholly unrealistic. Stripping and stock piling soil quickly results in a loss of its structural and biological qualities. To suggest there will be no substantive reduction in long term productive capability is both optimistic and misleading.

## **3.2 Environmental Baseline**

### **Topography and drainage**

1. This is offered as an observation if HS2 Ltd wishes to be considered a competent body. Readers of this ES look for evidence it is written by competent authors with experience and knowledge of the subject they are writing about. This section appears to have been written by a student: "The predominant feature, other than the Chiltern Hills, is the Misbourne Valley". To suggest they are different places is most odd and suggests a lack of familiarity with the area and basic geography.
2. Paragraph 3.4.3 states "subject to the adoption of good practice ...." land might not be degraded. This suggests the possibility that such best practice will not be adopted. It is assumed that the best practice will always be adopted and must not be qualified in this way. It should be a requirement placed on all contractors and the application of those best practices will be monitored and severe sanctions imposed if they are not. A statement to that effect is vital to ensure confidence in the construction standards.
3. 3.4.19 This paragraph does state explicitly that land will be lost. Will all the material excavated from the vent shafts be used within this community forum area? It is far in excess of what is required for the modest landscaping planned. There must be a surplus which is, therefore, being dumped.
4. 3.4.21 It is a facile argument that as long as the woodland cover in this area is in excess of the national average then loss of woodland is not regarded as significant. The extension of that argument is that it is acceptable to halve the woodland cover in the Chilterns from 20% to the national average of less than 10%!

## **4. Air Quality**

1. References to "where reasonably practicable" is no reassurance. Contractors must not have the option of causing any negative effects. If they do there needs to be rigorous monitoring with an effective enforcement of standards to ensure adherence.
2. Air quality near to Amersham hospital must not be affected. Penalties must be severe to ensure it is not adversely affected.
3. It is doubtful that impact of HS2 construction traffic on local roads will be negligible. This sounds complacent. It is highly likely that HGVs, for example, working at the Amersham hospital vent will cause considerable local congestion.

## **5. Community**

1. This section should include references to the Chilterns AONB Management Plan.
2. The survey of the use of Public Rights of Way was pointless. Surveying on a small number of days over a month or so provides no meaningful assessment of its use.

The important thing about a public right of way is not its popularity but the right to use it.

## **6. Cultural Heritage**

1. 6.2.4 LIDAR surveys are expensive but immensely valuable to help locate otherwise difficult to survey and identify features. It is extraordinary that full cover of this area was not achieved.
2. 6.4.4 The widening and inevitable urbanising restoration of Bottom House Farm Lane will affect the character of the countryside along its length and the setting of Lower Bottom Farm itself. This need not be so with careful design and adherence to the guidelines for managing roads prepared by the local highway authorities and Chilterns Conservation Board.

## **7. Ecology**

1. This section should include references to the Chilterns AONB Management Plan.
2. 7.2.2. The European Water Framework Directive is immensely important and of great relevance to the HS2 proposal. It is wholly unacceptable to fail to give the main findings of this compliance assessment in the Community Forum Area Report and to, instead, confine it to an Appendix. The reason for this is clear. A full compliance check has not been undertaken and neither have negotiations with Water companies and the Environment Agency on potential or likely impacts been completed. This Environmental Statement, therefore, fails this basic requirement. It is a further example of failure to comply with Section 85 of the Countryside and Rights of Way Act 2000.
3. 7.2.3. It would appear that HS2 Ltd does not have sufficient field data to undertake meaningful assessment of likely effects.
4. 7.3.9 All ancient woodland is of national value. It is not acceptable to attempt to relegate its importance to county/metropolitan value.
5. 7.3.12 Chalk Streams are globally rare habitat. To suggest the River Misbourne is only of regional value is an extraordinary and unacceptable attempt, again, to relegate the importance of another key characteristic of the nationally protected Chilterns AONB.
6. It is vital that HS2 understands that landscape features and habitats are viewed as part of an intricate mosaic which together make up a nationally and internationally important landscape.
7. 7.3.16 and 17. If a hedgerow complies with the requirements of the Hedgerow Regulations 1997 then it is of national importance, not just of local or parish importance. This is yet another example of wilful diminution of the importance of this landscape.
8. 7.3.20 Whilst Water Voles are currently not present on this section of the Misbourne, the impact of HS2 is likely to prevent their re-colonisation of the river for some time. This is an example of how the environmental baseline needs to be adjusted to consider what would have happened in the absence of HS2.

9. 7.4.4 The ES states there will be no likely significant effects for either the River Misbourne or Shardeloes Lake. The Conservation Board believes there is a high possibility that there will be significant effects especially during the construction phase. Reference is made in this section to "land has been identified for access to allow possible precautionary risk management measures to be taken in the unlikely event they will be required (as described in Section 13)". However they are not described in Section 13.
10. Monitoring ground water and surface water is only part of the necessary range of measures. The ES fails to state what action would be taken if the monitoring shows declines. Would tunnelling be halted or does HS2 regard any impact as acceptable?
11. The precautionary principle must apply and work should be halted if monitoring shows any decline which cannot be attributed to natural causes.
12. The draft ES suggested adverse effects would be temporary. This version implies there would be no adverse impacts. The reason for the more optimistic assessment is not given. It further undermines confidence in the rigour with which this assessment has been undertaken and presented. The ES needs to consider the possibility that they may be permanent in which case avoidance measures need to be introduced.
13. 7.4.6 Without site investigation there is no basis for this assertion. The geology of this area is complex and the impacts difficult, if not impossible, to assess - the precautionary principle has to apply in full measure.

## **9 Landscape and Visual Assessment**

1. 9.1.5 It would have been more honest if it had been stated that the selection of viewpoints had been discussed with the Conservation Board et al, but many of the points made to HS2 Ltd were ignored. The attempt to gain some sort of credibility by mentioning discussions with others is regrettable.
2. 9.2.2 This risible attempt to gain credibility for the approach adopted is lost by the excision of tall construction plant from the ZTV for the construction phase. The cranes will have a considerable impact.
3. 9.4.7 To emphasise the absurdity of this omission, Section 9.4.7 states:

The height of the construction plant and close proximity of construction activities to viewpoints, coupled with the absence of intervening screening (apart from the site hoardings) will result in significant visual effects during construction.
4. The following sections confirm the adverse impacts:

9.4.16 The construction of the Chalfont St Giles vent shaft headhouse and auto-transformer station including cranes and temporary material stockpiles on adjacent fields will introduce prominent new features within the rural landscape. Construction of the Little Missenden vent shaft in neighbouring Central Chilterns (CFA9) will also be perceptible from high ground to the east. The addition of prominent new features associated with construction works will bring about a noticeable change in landscape character within Misbourne Upper South LCA and therefore result in a medium magnitude of change.

9.4.17 The medium magnitude of change, assessed alongside the high sensitivity of the character area, will result in a moderate adverse effect.

5. This is one of many examples of repeated inconsistencies in the ES, which only serves to highlight the hurried production of this document which is evidently the work of multiple authors. The necessary editing to ensure it reads coherently without such contradictions has not been achieved satisfactorily.

### **Avoidance and mitigation measures**

1. 9.4.3 The reference to maximise retention of trees is welcome, but not the qualification of “where possible”. Who decides?
2. The fences need to be well designed as well as well maintained
3. All trees which are intended to be kept, should be. A tree for a tree is not an adequate solution for those lost. The sanction for trees killed in this way must be to plant many more trees (or the equivalent) to replace that lost. One sapling does not replace a mature tree.
4. It is notable that the draft ES made no mention of the cranes which will populate every construction site and become by far the most visible impact of the construction of HS2. They should have been described and care taken to ensure that the visibility assessment of each construction sites included the impact of these cranes which, it is assumed, may be 40 metres or so high.
5. It has to be assumed that as so little time elapsed between the draft ES and the final ES that no visual assessment of the impact of the cranes has been undertaken. This is not acceptable.
6. The potential impact of vent shafts is under-stated especially as nothing is said about the design of the buildings, which will never be fully screened. They will remain a blot on the landscape unless the design of the buildings is sensitive to the location. Reliance on earth bunds and tree planting would be insufficient. It is likely that the wider, more urban, roads leading to the vents will draw attention and urbanise the setting. This wider impact is harder to screen and it is, therefore, vital that the design of the vent building and its immediate surroundings are designed to resemble an agricultural complex without the worst features of modern farm buildings.

### **9.5.7 Permanent effects arising during operation**

1. This section, whilst acknowledging the impact of the vent shaft sites and structures, should have included some design principles to ensure the structures themselves are either screened from view or designed in such a way to minimise their intrusiveness.
2. There is no mention of the possibility of telecommunication masts being located at the vent sites.
3. 9.5.4. New highway infrastructure is nearly always urbanising; but there is scope to design such works to better integrate with the rural character of the area. How this can be achieved is detailed in the Environmental Guidelines for the Management of Highways in the Chilterns AONB, published by the local highway authorities and Chilterns Conservation Board.

4. 9.5.68 The benefits of early planting should be investigated and begun as soon as possible if HS2 is approved by Parliament.

## **10. Socio Economics**

1. This section should recognise the potentially significant impact of HS2 on the amenity and quality of life of local people and visitors - but it fails to do so. There is no mention of the Health Impact Assessment. It is known already that in some communities there is a widespread impact on health directly attributed to the stress created by HS2.
2. There is little recognition of the potential for jobs to be lost in the area. Several local businesses have already closed due to HS2. The negative impact of the congestion created by HS2 has not been acknowledged or calculated. Time saving is a primary justification for HS2 and yet the time lost by local people, workers and businesses along the route is not deemed to be of significance.
3. The vent site near Amersham Hospital will be a particular hotspot due to its proximity to the hospital and the junction of A413 and A404.
4. It is an extraordinary oversight that no mention is made in the CFA report of the impact on local businesses and communities of the traffic congestion. Any mention is relegated to supporting documents or appendices. It will be a matter of significance for all the impacts are negative and they will endure for several years. There will be inevitable impact on the roads which are likely to deteriorate in quality and require additional care and maintenance. Whilst this may be inevitable the impact needs to be acknowledged and a statement made that HS2 Ltd will meet the cost of those repairs.
5. It is noted there is virtually no content to this section and it has to be assumed that HS2 does not have the necessary information to assess the socio economic and health impacts.

## **11 Sound, Noise and Vibration**

### **Future Baseline**

1. 11.2.9 This section makes two unsound, possibly even false, assumptions. Firstly, that road traffic will grow. Recent data published by DfT shows that both the number of car journeys and the distance travelled is in decline.
2. Secondly, most traffic generated noise is from the tyre /noise interface as engine noise has been reduced dramatically. With low noise road surfacing it is reasonable to assume that the ambient noise level would decline not increase.

### **Avoidance and mitigation methods**

1. 11.3.6 It is assumed that the most effective and advanced techniques would be used. It is not reassuring to read that "ground-borne noise and vibration would be mitigated at source in so far as is reasonably practicable". This is code for uncertainty on the part of the engineers and a determination to minimise costs by the accountants. The Government claims this will be the finest railway in the world and this tunnel is to be constructed beneath a nationally protected landscape. It is not unreasonable to

expect the best noise and vibration mitigation possible and for that to be stated in the ES.

2. HS2 should aspire to the highest possible standards and not simply comply with minimum stands laid down by legislation which dates back as far as 1974 and 1990.

## **12 Traffic and transport**

1. 12.3.3 The surveys of the Public Rights of Way were extremely limited and at least two days were affected by poor weather. To extrapolate from this inadequate survey is meaningless. The key issue is not the popularity of the route, which has not been established in any event, but the right to use it.

### **12.4 Effects during construction.**

1. 12.4.5. The author of this report plainly has no idea what the traffic is like in this area in the morning and evening. To assume that most workers, by arriving before 8.00 a.m. and after 6.00 p.m., will avoid the rush hour traffic is naïve. The impact of HS2 traffic itself on extending the rush hours has been overlooked. This too is misguided.
2. 12.4.17 This section refers to major works (on utilities) but this is not mentioned anywhere else. Where and what are these major works and what impact will they have? However, this seems inconsistent with the statement earlier in this report that there would be no major diversions to utilities.
3. As there is no mention of the movement of spoil in this area it has to be assumed that none will be transported along roads in this community forum area including from sections of the line to the north and south.
4. If spoil from the tunnel portal to the south is to be moved either along local roads or the Chiltern Line this must be stated and the environmental impacts assessed.

## **13 Water resources and flood risk assessment**

1. History of low flows extends throughout the river, not just the middle reach. Also the perched section, which is vulnerable to particularly low flow, extends from Shardeloes Lake to Chalfont St. Peter not from Amersham to Chalfont St. Giles.
2. There have been water pollution incidents recorded by the EA in this section of the route. Leaks from the sewer balancing tanks adjacent to London Road waste recycling centre are a chronic problem. Leaks have been reported in 2000, 2001 and in Feb 2007.
3. As groundwater flows predominantly through fractures in the chalk it is also vulnerable to tunnelling construction which can interrupt flow and cause long term changes to catchment hydrology, with knock on effects on river flow and public water supply sources.
4. 13.2.6 To many it is surprising to read that, "The exact tunnelling method has not been selected." It is noted that a specific method has been assumed. However, if a different method is selected this section of the ES will need to be reviewed.

5. Reference is made to de-watering and drainage but there is no accompanying statement about what is done with this water or the environmental impacts of de-watering and drainage.
6. However, in section 13.4.9 reference is made to “transfer some discharge from de-watering by pipeline into the River Misbourne near each shaft”. There is no mention of controlling the possibility of this water becoming polluted, nor are the volumes involved or the environmental impact of introducing this water in this way at these locations assessed. All are essential aspects of an ES.
7. Section 3.4.17 confirms the possibility of contaminants being present.  
“Tunnelling and shaft construction will have the potential to impact on groundwater quality due to the introduction of bentonite and additives in circulating fluids for TBMs, piling and diaphragm walls, prior to completion with in situ concrete and cement grouts and their associated additives. With implementation of measures required by the CoCP, any potential contaminants will be controlled at source to ensure that the impact to the high value groundwater in the Chalk aquifer and, subsequently, any groundwater fed surface water bodies, will be reduced.” How?
8. How has HS2 determined that ground settlement would only have a moderate impact on surface flows in the River Misbourne? Ground settlement could lead to total loss of flow along the perched section of river (12.3km between Shardeloes Lake and Chalfont Park lake). It is also not true to say that any flow lost would re-enter the river through springs lower down the river, as groundwater flow in the lower valley does not follow the line of the river. If water were to re-enter the river further down, it would be no mitigation for loss of flow further upstream.
9. There is no mention of the impact of ground settlement on water supply and wastewater infrastructure. There are many supply and waste water pipes that the tunnelled route will cross beneath, including several trunk mains and a major sewer all of which will require strengthening to cope with subsidence.
10. 13.3.51 The report incorrectly states that the Environment Agency prediction of ecological status for 2027 is good potential – it is good status. It is imperative that HS2 does not affect realisation of this potential and that good status is achieved by 2027.
11. 13.4.4 A depth of only two tunnels width may not be sufficient to avoid associated subsidence and loss of flow to ground along the perched section of the Misbourne.
12. 13.32 The possibility of the closure of water abstraction sources is considered a possibility. In such an event the need to source drinking water from an alternative supply will have a knock on environmental impact. In view of the high level of abstraction in the area the marginal impacts on nearby sources may be significant.
13. The possibility of this is referred to in Section 13.4.49 but the impact of doing so has not been assessed - this is a requirement of an ES.
14. The possibility of this is reinforced by the statement in section 13.4.48. It is reasonable to conclude, therefore, that there is a realistic possibility of the groundwater being contaminated with significant impacts. These have not been assessed adequately.
15. Impacts on Affinity Water’s operations will be significant. It is likely that both Affinity Water’s public water abstractions (Amersham and Chalfont St. Giles) will need to be

shut during construction. It will be necessary for Affinity Water to secure water supplies from elsewhere which may have a negative impact on neighbouring catchments (if water is imported from pumping stations in adjacent river valleys) or may require new sources to be secured. There will also be a significant impact on water supply and waste water infrastructure.

16. If preferential lines of groundwater flow are interrupted or altered, it may take many years for new flow pathways to develop. This could have a long-term impact on public water supply and river flow.
17. How will monitoring of ground settlement and river flows reduce the risk of flow losses? What mitigation is planned to prevent or compensate for loss of flow?
18. HS2 Ltd should also monitor water quality and ecology. It is not correct to say that impacts on the River Misbourne and Shardeloes Lake are unlikely. They are highly likely. HS2 Ltd should ensure that mitigation is sufficient to ensure there is no reduction in flow or ecological quality of the River Misbourne or quality of groundwater as is required by the EU Water Framework Directive.
19. 13.4.52 This ES has been published despite there being no management strategy agreed with the Environment Agency and Water Company. It is not possible, therefore to identify all the environmental impacts.

## **Comments on Volume 2 – Community Forum Area Report**

### **Environmental Statement – Volume 2 CFAR 9 - Central Chilterns**

#### **2. Overview**

1. Vertical alignment – updated Plan and Profile maps have not been made available. The Hybrid Bill documentation does include Section drawings (e.g. Sections, Volume 5.1 Colne Valley to Burton Green) but it is virtually impossible to cross reference these, with any degree of accuracy, to the Plan and Profile maps issued at every previous stage. It is, therefore, very difficult to say whether the vertical alignment has changed since the draft ES. However, overbridges are higher (the farm accommodation bridge to Havenfield Wood is now 6.5m above ground level, previously it was about 2m). Such changes in infrastructure will increase landscape and visual impact.
2. Some overbridge approaches are planted to help habitat linkage – this is not adequate. The span of these overbridges is at least 22m (the width of the track bed) and the ES does not contain an analysis of the impact such a gap will have on habitat connectivity and the movement of different species. There are no 'green bridges' in this Community Forum area.
3. Overall, the proposals aim for a 'balancing' of excavated materials (2.3.81). Table 3 gives quantities of waste. 100% of excavated material and 90% of demolition and construction waste is to be re-used. Over 12m tonnes of re-usable material will be produced within CFAs 9 and 10. However, sections 10, 11 and 12 of Volume 5 (Waste and Materials Assessment) tells us that some suitable material will be taken northwards for earthworks outside the AONB while other material from the Waddesdon and Quainton area will be brought into the AONB. Where excavated material cannot be used beneficially, some 1,928,002 tonnes (Volume 3, section 14, table 21), it will be taken to the Hunts Green Farm Sustainable Placement Area (2.3.82) to avoid the effects of road transport. The *Draft ES Consultation Report* (one of the Volume 5 Supporting documents) suggests that these placement areas are placed where they have been requested (5.14.5 of the consultation report). The Sustainable Placement area at Hunt's Green Farm has NOT been requested by any of the CFA's within the AONB or any of their representatives and the Board understands that the land owner has not been consulted either.
4. None of the ES documentation gives details of amounts of material moved from or to the CFAs within the AONB. The Conservation Board is, therefore, unable to determine the amount of excavated material or demolition waste removed from or deposited within the AONB, the effects of movement of this material and, in the absence of detailed plans, the effects of the permanent earthworks.
5. New structures include a new roundabout with night lighting on a further realigned Chesham Rd.
6. New mitigation measures are described including new areas of grassland creation to mitigate the loss of Great Crested Newt habitat near the Chiltern Tunnel north portal and tree planting to mitigate the loss of ancient woodland habitat (2.2.10) – something that cannot be done.

### 3. Agriculture, Forestry and Soils

7. Forestry – The Conservation Board believes that the ES conclusion about sensitivity is totally erroneous. HS2 argue sensitivity should be low as the Chilterns have a higher than national average cover, therefore proportionally less is being removed. At the very least, resources should be compared against national targets for woodland cover. Effectively, the Chilterns are being penalised for being comparatively nearer these national targets than elsewhere in the UK.
8. Unfortunately, this assessment of sensitivity for forestry also extends to cover ancient woodland – table 5, CFA09/17, describes part of Sibley's Coppice which is ancient woodland.
9. Similarly, the assessment of sensitivity to change for agriculture (3.3.25) is, at the very least, confused. Larger holdings, where only a small proportion of the holding is lost, are deemed to have low sensitivity while small, less intensively used, units are also deemed to have low sensitivity. This remains the case even where the whole of such smaller units will be lost! An example of this confused thinking can be seen in Table 7 where Mulberry Park Hill (CFA 09/7) is described as having only negligible severance, negligible disruption and a moderate adverse effect (based on low sensitivity of the holding). It may only be 11ha but 100% is lost and the property demolished.
10. The report states that land will be returned to agriculture after 5 years of aftercare (3.4.7). In view of the amount of material movement (underlying chalk, subsoil and top soil) it is not clear whether this represents a sufficient period before returning land to full agricultural production.
11. Table 6 identifies the loss of agricultural land – both temporary and permanent (98ha within CFA 9 alone). The ES places too much emphasis on Agricultural Land Classification (particularly on Best and Most Versatile land – BMV with ALC of sub-grade 3a and above). Lower grade land can still play an important part for individual holdings and the agricultural enterprises they run (e.g. sheep grazing or equine use – which can be quite profitable). It can also have greater potential for biodiversity e.g. wildflower rich chalk grassland.
12. Loss of land is a very crude measure of the impact on agricultural holdings. However, using standard agricultural gross margins, the Conservation Board has calculated that the loss of income for agricultural holdings within the AONB, during the life of the scheme, based on the land loss alone, will be in the region of £25,000,000<sup>2</sup>. Such a significant loss would not be incurred if the route remained in a fully bored tunnel through the AONB.
13. Far more account needs to be taken of the fragmentation and severance effect between areas of a holding and disruption of specific agricultural enterprises (e.g. separation of sheep grazing areas and the main holding). Also, assessment is limited to land adjacent to the route and does not take account of land being rented by a holding (e.g. Missenden Abbey parkland is rented as grazing land by Middlegrove Farm). Such fragmentation and severance can have a devastating impact on profitability and viability.

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<sup>2</sup> Based on average yielding winter feed wheat gross margin for BMV, the average spring lambing flock gross margin for poorer land – 'Nix Farm Management Pocketbook 2014' – and compound interest of 3% over 60 years.

14. Table 7 identifies Construction effects. All disruptive effects are assessed as negligible. The Volume 5 technical appendix covering agriculture for this CFA suggests this assessment might have been limited to the effect of dust which, the ES states, will be controlled by CoCP mitigation measures. Such an assessment is a gross over simplification of the disruption that will be experienced by those working on farmland affected by the proposals.
15. 3.4.20 Table 8 shows the permanent land take including 98ha of farmland and 13.8ha of woodland. 3.4.21 states that BMV land is a receptor of moderate sensitivity in this study area, the interpretation is that because there is a lot of BMV land in the study area, the impact of a loss is moderate. However, nationally BMV land is a receptor of high sensitivity. Reassessed on this basis, the impact should be major adverse.
16. 3.4.24 sets out the loss of woodland as 13.8ha, assessed as insignificant, as there is a lot of forestry in the area. However, as already stated, this is an incorrect basis for assessment. In addition, many of the woods lost are ancient woodland, which are irreplaceable.
17. 3.2.25 Table 9 sets out an assessment of the permanent impact. The Conservation Board believes these assessments are under stated. For example, the effect on Hyde Farm is assessed as moderate adverse - not only is a large part of the holding taken but the remainder of the farm finishes up on the side of a 25m deep cutting with up to 36 trains per hour passing. A major adverse assessment would be more appropriate.
18. The report states that 7 holdings will experience moderate or moderate/major permanent adverse effect (3.4.26), 3 holdings will be lost (3.4.27).
19. Apart from the relatively restricted construction and operational impacts of up to 2 extra vent shafts, a fully bored tunnel throughout the AONB would remove all the negative impacts on agriculture, forestry and soils within the Central Chilterns CFA.

## **5. Community**

20. Our recommendations for strategic path alignment seem to have been ignored. Re-routed paths still run parallel to the route. There is permanent loss of at least one footpath (LMI/21 – 5.4.6). Completely closing this path will result in a substantial missing link and a lengthy diversion along Hyde Heath Road which has little or no space in the highway verge for pedestrians to walk safely.
21. During discussion with HS2 Ltd., the Chilterns Conservation Board and others proposed a number of principles for reducing impacts on users of the public rights of way system (including footpaths, bridleways, cycle routes, quiet lanes and open access areas). None of these principles are mentioned within the ES.
22. This represents another example of the poor level of consultation to date. The Chiltern Conservation Board's and others' experience of consultation has been various events where HS2 Ltd have presented various aspects of the proposals. Although views have been expressed at these meetings, at no time have participants experienced any level of dialogue where HS2 have accepted or acted upon comments. The Conservation Board is not aware of any changes to the HS2 proposals that have been made directly in response to requests or suggestions made by the Board.

23. Public Rights of Way are much more than simply a means of getting from A to B; they are rather a means for exercise and recreation in a tranquil and relaxed environment.
24. All of the PRoW in the vicinity of the route will be damaged to a greater or lesser degree by the urban clutter associated with the project – cuttings and embankments, security fences, access roads, artificial bunds and landscaping and, not least, noise. These are completely alien intrusions into what Parliament intended should be a protected landscape and environment.
25. Mantles Wood (5.3.6) is an open access area, walkers are not restricted to the two rights of way.
26. Section 5.4.9 considers the effect on Mantles Wood as ‘moderate adverse and significant’. The Conservation Board believes the impact on communities around Mantles Wood will be extremely severe.
27. Section 5.4.22 describes significant detours as ‘not extensive’ and a ‘minor adverse isolation effect’. The Conservation Board disputes this. For many people a detour of 400m is extensive (if going there and back this will add 800m to their journey). This will especially affect people with limited mobility, elderly users and children. Many people will be discouraged from walking, especially if the detour is unattractive.
28. Access to shops, pubs, restaurants, bike hire and services in Great Missenden and Little Missenden will be affected.
29. Visitor accommodation near the route will be affected, e.g. Chalk Dell Stays (self-catering cottage on working farm) and Nags Head Inn.
30. Tourism attractions will be affected, e.g. Roald Dahl Museum and the European Balloon Company in Great Missenden.
31. Promoted routes in the area will be affected – e.g. Great Missenden circular walk, Chilterns Cycleway, Walks in the Misbourne Valley and the South Bucks Way.
32. Many large-scale popular visitor events take place in this area (e.g. Great Missenden Food Festival, Little Missenden Music Festival). These will probably have to be relocated during the construction period.
33. Section 5.4 describes avoidance and mitigation measures. The Conservation Board is dismayed that both measures described in 5.4.1 suggest that soil translocation and tree planting can mitigate for the loss of ancient woodland in Sibley’s Coppice, Mantle’s Wood and Farthings Wood. This is clearly not the case.
34. 5.4.9 acknowledges that the effect on Mantle’s Wood is moderate adverse and significant. In addition, the footpath mentioned above will remain closed. The mitigation planting does not alleviate this impact.
35. Apart from the relatively restricted construction and operational impacts of up to 2 extra vent shafts, a fully bored tunnel throughout the AONB would remove all the negative community impacts within the Central Chilterns CFA.

## 6. Cultural Heritage

36. LiDAR promises to advance knowledge of the historic landscape but unfortunately data did not cover this area (6.2.4) and only 1, non-intrusive, field survey was carried out (6.2.5).
37. Section 6.3.4 lists designated assets and, although outside this CFA, includes Grim's Ditch. However, other assets are described as being of 'high value' – no value is given to Grim's Ditch.
38. Non-designated assets include 7 historically important hedgerows (6.3.6).
39. 6.3.20 states that there is little evidence of pre-historic routeways in this area. This is contrary to studies carried out as part of the 'Chilterns Historic Landscape Characterisation Project – Appendix 5: Towards a methodology for characterising the Roads and Routeways of the Chilterns, October 2009'.
40. Avoidance and mitigation measures include investigation and recording prior to modification or demolition (6.4.2). The Board recognises the importance of investigation and recording but these are not avoidance and mitigation measures.
41. 6.4.2 describes woodland planting that 'will compensate' for loss of 3 areas of woodland (Sibley's Coppice, Mantle's and Farthings Woods) and increase woodland extent. The section omits the fact that these are areas of ancient woodland so cannot be compensated for by such planting.
42. Over 9ha of ancient woodland will be lost (6.4.17 to 6.4.20).
43. Assessment of impact and effect is confused and unclear. Demolition is assessed as having a high adverse impact and moderate adverse effect (6.4.24) while disturbance of buried remains will 'cause a low adverse impact and a moderate adverse effect' (6.4.25) and removal of 7 historically important hedgerows will 'cause a medium adverse impact and a moderate adverse effect' (6.4.26).
44. Apart from the relatively restricted construction and operational impacts of up to 2 extra vent shafts, a fully bored tunnel throughout the AONB would remove all the negative cultural heritage impacts within the Central Chilterns CFA.

## 7. Ecology

45. HS2 admits limited data is available and suggests that a 'reasonable worst case' is therefore the basis of assessment (7.2.6). Elsewhere they describe using a precautionary approach (7.4.13 – dormice). However, the principal ecological issues are defined as loss of 3 parts of Ancient Woodland and 1 Pipistrelle maternity roost – all of which are recorded. It would, therefore, appear that a precautionary approach is not being followed through and reflected in the findings.

### Surveys

46. It is clear that access for surveys has been limited (Volume 5, Ecology technical appendix for Central Chilterns). 1.1.5 of this report states that land adjacent to Mantle's Wood was surveyed for bats but permission to survey the wood was not granted. Another example can be found in the Volume 5 ecology map book for this CFA. Page 91 shows the extent of the terrestrial invertebrate survey for Sibley's coppice – it does not even extend into the area that will be destroyed by the cut and

cover construction of the South Heath green tunnel.

47. The surveys that have been carried out have also been within limited time periods and it is doubtful that they will fully record the extent and value of habitat. However, it is clear that assessment of habitat relies primarily on survey work and does not take sufficient account of local records even where these are both current and comprehensive<sup>3</sup>. As a result, habitats are undervalued and species are under represented. This brings into question the validity of the use of the biodiversity offsetting metric (yet to be tested and verified) and the suggested compensation and mitigation measures.

### **Avoidance and mitigation**

48. The proposed scheme within this CFA lies within twin bored tunnel until it emerges into Mantle's Wood (ancient woodland). The first mitigation measure described for both the construction and operation phases is tunnelling (7.4.1, 7.5.1). The Conservation Board agrees that a fully bored tunnel, throughout the AONB, would be the best avoidance and mitigation measure for ecology and other all other aspects.

49. Other compensation measures include landscape and habitat tree planting. Although the report agrees that this tree planting cannot replace ancient woodland, much is made of the benefits that will accrue in reducing habitat fragmentation and for individual species such as bat foraging. 7.4.25 even identifies a beneficial significant effect (district/borough level) when the woodland matures (a minimum of 50 years).

50. Although mention is made of planting in advance where possible (9.4.73), there is no assessment of the impact on species communities in the period between habitat loss and fragmentation and the time any suitable replacement habitat takes to mature to a level where the requirements of individual species are met. The report merely states that adverse impacts will be reduced to no significant effect. An example quoted is bat foraging (7.4.29) yet disruption of foraging habitat for one season could be devastating on individual bat communities. The Conservation Board believes the assessment of impact is simplistic and flawed.

51. The assessment of operational noise is confused. Whilst admitting knowledge is limited, the report anticipates that there will not be any significant effects for bat populations (7.5.6). Although birds can habituate to loud noises, breeding success is reduced and the report does not provide compelling evidence that justifies the assessment that train noise will not have a significant effect (7.5.7).

52. The report clearly states that all breeding barn owls within 1.5km of route will be lost (7.5.8). Table 10 identifies the county/metropolitan significance of these birds. However, suggested mitigation is limited to exploring the possibility of siting nest boxes more than 1.5km away (7.5.12) without any reference to existing barn owl territories. There is even the suggestion that this is 'likely to increase numbers of barn owls'. Such statements are misleading and at best naïve. The report offers no measures to prevent train strike which, with the roaming, territorial nature of these birds, will remain an ongoing problem throughout the life of the scheme.

53. No mention is made of the risk of train strike to other species that use the same foraging habitat as barn owls, e.g. Pipistrelle and Brown Eared bats.

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<sup>3</sup> Report to Ecological Technical Group, 14<sup>th</sup> January 2014

### **Creation and establishment of mitigation, compensation and enhancement areas**

54. Section 12 of the CoCP suggests that maintenance of planting will occur during the construction period.
55. The Draft Environmental Memorandum, which forms part of the Hybrid Bill Environmental Minimum Requirements, is so vaguely written as to give no confidence that any planting area will be successfully established.

Statements describing maintenance include wording such as 'appropriate time' and 'sufficient period', and provide no clear guidance over maintenance requirements. Also, other paragraphs cast doubt that good management will be paramount, for example:

4.6.8 "*Where practicable* the nominated undertaker will reduce the long term maintenance cost for the railway operator whilst ensuring that the essential mitigation remains in place and effective".

56. All mitigation measures are proposals. Although the nominated undertaker will have powers of compulsory purchase and, therefore, the capability of carrying out landscaping and planting, interviews with farmers and landowners within this CFA indicate that they wish to see as much land returned to agriculture as possible and there is no appetite to accept habitat creation areas. The establishment and long term management of these areas therefore has to be questioned. The poor success of similar compensatory areas for existing schemes (not least HS1) does not represent an encouraging precedent.
57. Apart from the relatively restricted construction and operational impacts of up to 2 extra vent shafts, a fully bored tunnel throughout the AONB would remove most of the negative ecological impacts within the Central Chilterns CFA.

### **8. Land Quality**

58. Due to access restrictions, not all sites of contamination risk have been visited.

### **9. Landscape and Visual**

59. The Chilterns Conservation Board finds the Landscape and Visual Assessment inadequate.
60. The *Draft ES Consultation Report* (one of the Volume 5 Supporting documents) states that a different assessment approach and reporting has been used for the nationally designated AONB and the local CFAs within it (5.11.11 of this report). However, there is obvious disparity between the AONB (volume 3) and CFA (volume 2) assessments and Volume 5 LVIA section.
61. Key characteristics of the AONB should also form part of the assessment of the landscape of individual CFAs within the AONB. For example:
  - the significance of the River Misbourne as one of the main valleys through the Chilterns, and
  - distinctive landforms other than the escarpment.

62. There is no assessment against the NPPF and CRoW Act tests ‘conserve and enhance’. Each and every part of the AONB is important – it is irrelevant if other parts are unaffected.

### **LCAs**

63. The report fails to explain why the landscape has been divided into a set of new LCAs when Buckinghamshire County Council, Chiltern, South Bucks and Wycombe District Councils commissioned market experts, Land Use Consultants, to carry out a Landscape Character Assessment of this area as recently as 2011.

64. The LCAs described in the ES:

- Do not have the same boundaries as those accepted by the local authorities;
- Have simplistic, poor descriptions;
- Do not assess key characteristics, and
- Do not adequately examine impact on individual landscape character.

65. Landscape and visual impact has been assessed up to 500m from the route and, occasionally, up to 1km where there are long views. However, the Board believes that the assessment of impacts on LCAs and views across the valley are inadequate. The ZTV shows that the visual impact will extend well beyond 1km and, therefore, assessment of both LCAs and viewpoints should cover a wider extent.

### **ZTVs**

66. The *SMR Addendum, Annex G, Landscape and Visual Assessment* excludes cranes in the construction ZTV (1.1.3 of this document and 9.2.2 of the CFA report) and all overhead line equipment from the operational ZTV (4.1.4 and also 9.2.2 of the CFA report). While both these decisions are questionable, for anyone who has seen the significant visual impact of the HS1 overhead wires, their exclusion from the operational ZTV is clearly non-sensical.

67. Although the CFA 9 text does include descriptions of the earthworks, the ZTV maps appear to have been drawn before the earthworks ('sustainable placement area' and landscape fill) were designed. This leads to the assumption that the ZTV maps under represent the visual impact.

### **Assessment Matrices**

68. These are included in the Volume 5 appendix booklet and described in full in the CFA 9 booklet chapter 9. However, a clear assessment matrix should be available within each CFA booklet. The Conservation Board agrees with the ‘Major Adverse’ assessment of construction on three of the ES LCAs (Misbourne Upper North, Hyde Heath North and Lee and Buckland Common Farmland) but believes impacts on other LCAs are understated.

69. The Board disagrees with the assessment that there will be little or no residual construction effects (9.4.74) – see below.

70. The division between construction and operation for these assessments is false. The Operational phase should not be restricted to an assessment of the impact of train operation but should also include the remaining impact of the cuttings, embankments

and all other infrastructure the trains require to operate.

71. Many of the operational phase assessments are moderate adverse in year 1 but ALL are assessed as non-significant by year 15. There are a considerable number of cases where the assessment is questionable.

For example, the Hyde Heath North LCA is described as having a moderate adverse effect in year 1.

The effect on this and other LCAs is described as non-significant by year 15. It is doubtful that tree planting and other measures will have a significant effect, including noise reduction affecting the tranquillity assessment, by this time. The Board believes the year 15 assessments are understated.

72. Elsewhere, viewpoint assessments are assessed as non-significant after year 15 due to planting maturity. This is standard wording, repeated even where there is no evidence of planting, e.g. at Hyde Lane (9.5.40), and areas that will remain open, e.g. at the north portal of the South Heath Green Tunnel (9.5.79).

73. Even where planting exists, the benefits are exaggerated – there would be no or very little benefit in year 1 and the assumed growth rate for year 15 is far too high, 7-7.5m (9.5.6). Beech or oak might only reach 3-4m in this time, ash possibly 6m providing planting was in good soil conditions.

(See comments under the Ecology section above concerning 'Creation and establishment of mitigation, compensation and enhancement areas').

74. There is also no assessment of the loss of existing valued views caused by infrastructure or mitigation planting (i.e. those that are recognised as special qualities of the AONB such as long cross valley views).

75. Visual impact tables or matrices should be supplied within the CFA booklets.

76. Errors in assessment lead to many viewpoints ruled out as not significant.

77. The number and level of significant impacts is much higher than the LVIA suggests. This is due to:

- an insufficient number of viewpoints with none outside 1km corridor (all the likely adverse landscape impacts will not be covered by the existing viewpoints);
- too low a sensitivity being given to some receptors (e.g. many minor roads are important as scenic routes and therefore should not be recorded as 'low sensitivity');
- the benefits of mitigation being overstated;
- not all aspects of the proposal being assessed;
- too many aspects of the scheme are yet to be designed to undertake an accurate assessment;
- the assessors not demonstrating a proper understanding of the key characteristics and special qualities of the Chilterns, and
- the effects of sequential and combined views of different elements of the HS2 infrastructure and trains not being assessed.

## **Photomontages**

78. The 'Landscape and visual assessment, Technical note – Approach to verifiable photomontages' that forms part of Annex G of the SMR addendum, a volume 5 supporting document, describes how the photomontages can be used to see how the proposals might appear in the field (8.1.3 and 8.1.4).

This involves 40° sections enlarged to A3 size (image height being the full width) and held on a curved radius at 450mm from the eye. Such requirements are beyond the capabilities of the vast majority of residents, CFA representatives and organisations within the AONB and, as such, render the map book photomontages of minimal practical use.

79. Illustrated changes to existing elements are inaccurate, not all development and mitigation measures are shown and there is no indication of distance of the development from the viewpoint.

80. 9.5.42 mentions a summer view photomontage in the map book – there isn't one, it is a winter view.

81. It is not clear whether indirect effects, such as off site road widening and the visual impact of traffic, have been assessed.

82. Temporary effects should not include the removal of vegetation, road realignments, loss of tranquillity, loss of local features, earthworks, changes to infrastructure – these are all permanent.

## **Infrastructure Design**

83. Volume 1, the 'Introduction to the Environmental Statement and the Proposed Scheme' refers to a later 'detailed design' stage. Design of all infrastructure related to the proposed scheme, from re-routed roads to viaducts, is crucial to the landscape and visual impact within this CFA and the wider AONB.

84. The Chilterns Conservation Board requests that all visible infrastructure be designed to the highest standard to be in keeping with, and compliment, the local landscape. All designs should be assessed by an independent design panel.

85. Apart from the relatively restricted construction and operational impacts of up to 2 extra vent shafts, a fully bored tunnel throughout the AONB would remove most of the negative landscape and visual impacts within the Central Chilterns CFA.

## **10. Socio-Economics**

86. This chapter of the ES completely misses out the impacts on tourism and the loss of tourism earnings which will be significant, certainly during the construction period. Other businesses will also be affected as people avoid this area due to construction traffic, delays, road diversions etc. The Chilterns is an important tourist and visitor destination with many tourism and leisure businesses located in the area.

87. There are 55 million leisure visits to the Chilterns every year, making this one of the most popular protected landscapes in the world<sup>4</sup>. The Chilterns countryside is highly valued for the wide variety of recreational opportunities it offers, everything from

<sup>4</sup> Chilterns AONB Visitor Survey 2007

walking, cycling and horse-riding to gliding, canoeing and bird watching.

88. The economic impacts of visits to the countryside are substantial, with an estimated £471.6 million of expenditure associated with leisure visits to Chilterns and an estimated 11,673 FTE jobs sustained. However it is not just about the economic impacts. The Chilterns countryside offers numerous non-monetary benefits which are hard to quantify, yet have far-reaching impacts on peoples' lives. The countryside offers opportunities for fresh air and exercise, with benefits for physical and mental well-being. It provides opportunities for learning and discovery, volunteering and participation in events and activities. The vast majority of visits to the countryside are informal visits rather than organised ones, usually with friends and family.
89. It is the landscape and scenery that provides the backdrop for a flourishing tourism industry. There are over 500 tourism businesses in the Chilterns and a Chilterns Tourism Network with 160 members. There is a dedicated Chilterns Tourism website [www.visitchilterns.co.uk](http://www.visitchilterns.co.uk) and there are various projects aimed at growing the rural tourism economy.
90. A fully bored tunnel throughout the AONB would remove most of the negative socio-economic impacts within the Central Chilterns CFA.

## **11. Sound, noise and vibration**

91. The noise insulation trigger is 75dB (11.3.10) while the current baseline lies between 45 to 50dB (11.2). Noise levels therefore have to increase by 50% before the trigger level is reached.
92. 11.4.8 suggests that noise barriers are not required on viaducts?
93. Apart from the relatively restricted construction and operational impacts of up to 2 extra vent shafts, a fully bored tunnel throughout the AONB would remove most of the negative noise impacts within the Central Chilterns CFA.

## **12. Traffic and transport**

94. The report recognises as significant, traffic delays and congestion (12.4.13) and an increase in traffic-related severance, for walkers, as major adverse (12.4.15).
95. Travel mitigation during the construction phase is identified as the draft CoCP framework travel plan and workforce travel plan (Volume 5 appendix).
96. Apart from the relatively restricted construction and operational impacts of up to 2 extra vent shafts, a fully bored tunnel throughout the AONB would remove most of the negative traffic and transport related impacts within the Central Chilterns CFA.

## **13. Water resources and flood risk**

97. There is no specific mention of water ecology. The ecology chapter for this CFA restricts water related comments to great crested newts in ponds.
98. Key environmental issues (13.1.3) are restricted to public drinking water and potential flooding of the Little Missenden vent shaft and cuttings. The Conservation Board

believes this is a gross under representation of the potential environmental concerns raised by both the tunnelled and above ground section of the route.

99. 13.3.12 suggests peak ground water levels are above the tunnel up to the boundary between CFA 8 and 9, below thereafter (see also 13.4.8). This might indicate that extending the fully bored tunnel throughout the AONB may not represent an increased threat to the aquifer.
100. 13.4.10 – de-watering effluents will be discharged to soak-aways, (13.4.12) re-charge wells or by pipeline to the River Misbourne. Increased pollution is a real concern.
101. As with the draft ES, in the first instance mitigation is identified as monitoring – covered by the Code of Construction Practise during construction (13.4.16 on) - to be carried out by receptor owners during the operation phase (13.4.41). Monitoring is important but adequate measures to protect both the River Misbourne and the aquifer need to be in place.

### **Avoidance and mitigation**

102. Again, the bored tunnel is highlighted as the main mitigation factor for this CFA (13.4.4).
103. Elsewhere (13.4.7) road design is heralded as the means to manage flow and water quality. The DfT Design Manual for Roads and Bridges and CIRIA guidance is referred to. This raises concern over design being in keeping with the rural nature of this CFA. The Chilterns Conservation Board has produced its own guidance on roads which should be used within the designated landscape of the AONB<sup>5</sup>.
104. 13.4.20 confidently states that construction 'impacts will be minimised'. The Conservation Board is still to be convinced.
105. 13.4.30 suggests that temporary effects on groundwater will be minimised due to dilution in the aquifer. This is a worryingly glib statement.
106. 13.4.42 lists specific measures that might be used to protect the Public Water Supply (PWS) which include importing water and use of 'scavenger wells' to divert turbid water to watercourses. Have the costs and environmental impacts of these proposals been assessed?
107. Apart from the relatively restricted construction and operational impacts of up to 2 extra vent shafts, a fully bored tunnel throughout the AONB would remove most of the negative water resource and flood risk impacts of the current above ground section within the Central Chilterns CFA.

### **Cumulative or Interrelated Effects**

108. Apart from very limited acknowledgment of cumulative effects, mainly related to other planning proposals, there is insufficient acknowledgement of the interrelationship between the different environmental aspects of the proposed scheme.
109. Two recent national policy statements give guidance on acceptable procedure:

*Overarching National Policy Statement for Energy (EN-1) July 2011*

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<sup>5</sup> Environmental Guidelines for the Management of Highways in the Chilterns – March 2009

4.2.6 The IPC should consider how the accumulation of, and interrelationship between, effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place.

*Draft National Policy Statement for National Networks – Dept of Transport, December 2013:*

4.13 The Examining Authority should consider how significant cumulative effects and the interrelationship between effects might as a whole affect the environment, even though they may be acceptable when considered on an individual basis with mitigation measures in place.

110. Such an approach is vital if the true impact of the proposals upon the Chilterns AONB is to be adequately assessed.

## **Comments on Volume 2 – Community Forum Area Reports**

### **Environmental Statement – Volume 2 CFAR 10 - Dunsmore, Wendover and Halton**

#### **General issues**

##### **Overview of area and description of the Proposed Scheme (2)**

1. There is no reference to landscape in this overview, despite the fact that the majority of the CFA lies within the Chilterns AONB. Equally there is no acknowledgement of the special qualities for which the AONB is designated.

#### **Recreation, leisure and open space**

2. There is no assessment of impacts of the PS on the amenity value of open access land or other accessible green space – for example Baccombe Hill Local Nature Reserve.

#### **Planning and policy context**

3. This section (2.1.15) fails to list the key planning designations in the area, for example Grim's Ditch Scheduled Monument. It refers instead to the Environmental Baseline mapping. The mapping referred to contains significant omissions including for example, Scheduled Monuments at Baccombe Hill (DWH100).

##### **Description of the Proposed Scheme (2.2)**

4. There are some significant changes (from the draft ES) to the footprint of the PS in this CF Area and some notable additions to the associated infrastructure/ works which increase the adverse impacts of the scheme. These include:
  - Sustainable Placement Area at Hunt's Green Farm (38.5 ha /1.9 million tonnes of spoil) - no reference to this in draft ES;
  - Land drainage areas further from the line of route resulting in greater length of new ditches;
  - New or significantly extended material stockpiles e.g. east of Hartley Farm, around Small Dean Viaduct Compound;
  - Wendover Dean viaduct satellite compound - increased footprint of compound;
  - Wendover Green Tunnel (South Portal) Satellite Compound - no reference in draft ES, and
  - Wendover Green Tunnel portal buildings (north and south ) – increased size.
5. Quality of design will be important in determining the impact of the PS. There is no reference to design quality and no acknowledgement of the fact that in a landscape of national significance, design quality must be of the highest standard.

#### **Small Dean viaduct and adjacent earthworks (2.2.10)**

6. This section of the route includes an embankment approximately 700m long and up to 12m high, crossing above Rocky Lane. There is no evidence of the option of extending the Small Dean viaduct in place of this embankment being assessed

despite the statement in 5.9.1 (Vol1) that viaducts will generally be built where a crossing of more than 45m in length is needed, for example to cross existing roads.

### **Construction of the Proposed Scheme (2.3)**

#### **Overview of the construction process (2.3.6)**

7. The Code of Construction Practice sets out a large number of potential exceptions to core working hours. These are likely to cause significant disturbance to local communities and it is important that they are more clearly defined and subject to proper public consultation.

#### **Advance works**

8. The Board welcomes acknowledgement that advance mitigation works including habitat creation will be required prior to commencement of construction works. However, there would appear to be no proposals confirming the location of such works despite the fact it is assumed that mitigation planting will have matured within specified time periods.

#### **General overview of construction compounds**

9. The Board notes that there would now appear to be a significantly greater number of workers based at many of the construction compounds in this CFA and for longer periods compared to the figures originally given in the draft ES. For example the main construction site at Small Dean viaduct – approximately 90 workers per day compares to up to 10 per day in the draft ES; and up to 135 workers per day during peak periods compared to up to 30 in the draft ES. This is mirrored in other compounds. No explanation is given for this and no summary table provided. It is not clear whether the revised figures have been reflected in the assessment of impacts of vehicle movements.

#### **Construction waste and material resources**

10. This section estimates that over 5 million tonnes of waste will be generated in this CFA area, of which it is proposed that 1,000,000 m<sup>3</sup> (approximately 1.9m tonnes) will be dumped ('sustainably placed') on farmland and the north east end of Grim's Ditch at Hunt's Green Farm. There is no clear plan for where the remaining 3.1 million tonnes generated in this CFA will go.

#### **Utilities works**

11. The final ES provides even less detail than the draft in relation to utilities works, and it is difficult to establish whether or not impacts have been assessed. The draft ES (CFA report 10, 2.3.18) listed a large number of major items of utility infrastructure in close proximity to the Proposed Scheme, including high pressure gas mains, large diameter water mains, large diameter sewers, fibre optic/signal cabling and high and low voltage electricity lines. This detail is almost entirely omitted from the final CFA report 10.
12. In the draft ES a summary list was provided of 9 'main' proposed utility diversions. The final version provides even less detail of utility diversions, for example 2.3.46 states that there will be diversion of 4 utilities in the vicinity of the Rocky Lane underbridge/ Wendover auto-transformer station/ Small Dean Viaduct but does not state what they are.

13. Impacts of diversion of utilities and new utilities need to be assessed properly against each topic—including landscape, community, biodiversity, traffic and transport and water resources. The works that will be required are not even listed, let alone assessed.
14. In its response to the draft ES the Board requested that consideration be given to undergrounding all National Grid power lines affected by the Proposed Scheme. This has been rejected (Volume 5: Draft ES consultation report, 7.4.47) due to cost considerations and realignment of pylons is proposed. 2.6.25 considers 2 alternative options for realignment of the power lines.

### **Structures**

15. There is no description in the CFA report of structures and their design in this section of the route despite the fact that it passes through the AONB. The Board notes that references in the draft ES to 'blending structures back into the landscape' (e.g. 2.3.30 CFA 10 draft ES) have been abandoned.

It is clear that there is no specific consideration being given to appropriate design of structures within the AONB. This is unacceptable and arguably represents a failure to comply with the 'duty of regard' in Section 85 of the CROW Act 2000.

### **Community Forum Engagement (2.5)**

16. This section lists concerns raised at the Community Forum but fails to demonstrate, or even comment on, how any of the concerns have been addressed.

### **Route section main alternatives (2.6)**

#### **Extended Chilterns bored tunnel (2.6.3)**

17. Alternatives to extend the length of the Chilterns bored tunnel are briefly mentioned and dismissed in one paragraph (2.6.3). Slightly more detail is provided in CFA 9 regarding reasons for rejection of extending the fully bored tunnel through the AONB. Reasons given include the statement that the proposed scheme includes a 'package of measures to mitigate the impacts of the section of the scheme through the AONB'. This is misleading - there are many significant adverse impacts which cannot be mitigated, not least the landscape impact of the 2 viaducts within this CFA and loss of irreplaceable ancient woodland (Jones's Hill Wood). Such impacts should be listed and weighed against any disadvantages of the fully bored tunnel. This has not happened, and on this basis alone the ES is seriously flawed.

#### **Sustainable placement of surplus excavated material (2.6.4 – 2.6.7)**

18. The Board considers the assessment of options for disposal of spoil, including the dumping of 1 million cubic meters of spoil at Hunt's Green Farm, to be wholly inadequate. There is no consideration given to the fact that the impacts of lorry movements, whilst undesirable, would be temporary compared to the permanent impacts of dumping spoil on a nationally protected landscape.
19. Not only is spoil generated from within the AONB to be dumped here, but the CFA report fails to mention the proposal that spoil from as far away as Quainton may be imported and dumped in the AONB in the Wendover and Dunsmore CFA. (Volume 5

Waste and material resources assessment (WM-001-000) 11.2.5 – 11.2.6). This is wholly unacceptable.

20. The ES argues that the dumping of spoil at Hunt's Green Farm is preferable to transporting it out of the area due to the potential scale of adverse impacts associated with lorry movements (options A and C (2.6.6). Yet the calculations of number of lorry movements that would be generated if spoil were removed by road rather than 'sustainably placed' at Hunt's Green Farm appear significantly inflated. HS2 are claiming more than one lorry movement per minute, our calculations indicate nearer to **one every 2 minutes**<sup>6</sup>. Options A and C should be reappraised based on this more realistic figure.

In weighing alternatives A, B and C no account appears to have been taken of the fact that there will also be vehicle movements on the highway which will be associated with sustainable placement at Hunt's Green Farm (see table 5, 3.4.17 'use of the highway will be required during sustainable placement').

The Draft ES Consultation Report (5.14.5) suggests that these placement areas are placed where they have been requested. The Sustainable Placement area at Hunt's Green Farm has NOT been requested by any of the CFA's within the AONB or any of their representatives.

21. There appears to be a fundamental confusion within the ES's approach to assessment of landscape impacts, with adverse landscape impacts being ignored if views of those impacts that are considered 'relatively well concealed' from the public. This demonstrates a lack of understanding of the basic principles of assessing landscape impacts.

### **Agriculture, forestry and soils (Chapter 3)**

#### **Methodology**

22. The approach to assessing sensitivity of woodland and individual holdings to change appears fundamentally flawed and the Board disagrees with its soundness and therefore with conclusions reached.

3.3.23 for example argues that woodland is a resource of low sensitivity to change on the basis that there is lots of woodland in the wider area (undefined) although not close to the proposed scheme.

Elsewhere (7.3.8) it is implied that where woodlands are small and isolated this lessens the significance of adverse impacts.

Once again the reader is left with the impression of spurious and contradictory arguments being used to help HS2 Ltd arrive at the conclusions they want – as opposed to a professional and objective piece of work.

23. Another example of this is found in 3.3.25. There appears to be an inherent contradiction at the heart of this section whereby larger holdings are considered less sensitive, whilst smaller units are considered to have low sensitivity (a 'heads I win tails you lose mentality'.)

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<sup>6</sup> 1.928m tonnes, average lorry load 18t.

It would seem reasonable to expect that there would have been assessments of those farm businesses to be affected and likely impacts, but it is unclear that this was the case. These are people's livelihoods at stake - each unit should be assessed individually and objectively.

### **Effects arising during construction (3.4)**

24. Severance (3.4.6) – this section states that the scheme will 'seek to incorporate inaccessible severed land as part of environmental mitigation works'. How will this land be managed if it is inaccessible?
25. BMV land in this area is assessed as a receptor of low sensitivity based on it being a small proportion of BMV nationally. This appears to be the direct opposite of the approach taken to assessment of sensitivity in relation to other resources, for example woodland, where having lots of it is given as the reason for assessing it as having low sensitivity to change.

### **Temporary Effects During Construction**

26. Table 5 (3.4.17) Summary of temporary construction effects on holdings lists 18 holdings and lists disruptive effects for all 18 as being negligible. This includes Hunt's Green Farm where 1 million m<sup>3</sup> of spoil are to be dumped.

### **Permanent Effects**

27. Figures for land take do not appear to add up with over 170 ha unaccounted for:
  - (3.4.24) total permanent land requirement is given as 263.3ha
  - (3.4.24) identifies forestry land as 2.1ha
  - (3.4.22) identifies agricultural land as 90.3ha

This leaves over 170ha which is neither agricultural nor forestry.

Out of the total 263ha permanent land take, only the loss of the 90.3ha agricultural land is considered to be a significant adverse residual effect.

### **Effects arising during operation**

28. No significant residual effects on agriculture, forestry and soils were identified from operation. Permanent land losses are attributed to construction only and thus not properly taken into account in the assessment of impacts of the operation of the scheme.

### **Air quality (4)**

29. Section 4.2.3 states that assessment of impacts has used the methodology 'based on that produced by the Institute of Air Quality Management'. This falls short of confirming that the methodology has been followed. Recognised standards, and thresholds for assessment of significance, need to be followed and the Board does not have confidence that this is the case.

The Board notes that the 2012 IAQM guidance emphasises that if significance is to be assigned to impacts with mitigation, then the mitigation measures need to be an

'inherent part of the proposed development' and be enforceable (p25 IAQM 2012 guidance<sup>7</sup>).

The assessment in the ES assumes 'that the general measures detailed in ...the draft CoCP will be implemented'. The measures in the draft CoCP are subject to change and lacking in substance, with repeated references to measures being adopted 'where reasonably practicable'. The CoCP represents no guarantee of mitigation measures being adopted.

30. The only ecological receptor considered in the construction assessment is Bacombe Hill SSSI (4.3.9). Other ecological receptors including local wildlife sites and ancient woodland sites should be included. Impacts of dust on amenity value of PRoW do not appear to have been assessed.

#### **Effects arising during construction (4.4)**

31. There appear to be a number of significant omissions in the assessment of impacts and effects. These include:
  - No assessment of impacts of NOx on ecological receptors. (4.4.3)
  - 20 hectare material stockpile west of Wendover is not shown in the maps showing assessment of impacts of construction dust.
  - Hunt's Green Sustainable Placement area omitted from assessment of impacts of dust generation. This location is set to have just under 2 million tonnes of spoil dumped across an area of more than 38 hectares yet impacts of dust generated by earth movements in this vicinity do not appear to have been assessed. The site is adjacent to an ancient woodland.

#### **Community (5)**

32. It is clear from Volume 5 (Appendix CM-001-010 that the community assessment is very limited with only a small proportion of community assets in close proximity to the PS assessed. No consideration is given for example to impacts on:
  - the amenity value of green space/ wildlife sites for example Bacombe Warren;
  - Chilterns cycle route (severed);
  - Sustrans regional cycle route (severed);
  - Icknield way (severed), and
  - local shops and pubs.
33. Where impacts are assessed, the scope of the assessment is unacceptably narrow, for example, the Ridgeway National Trail is re-routed via a temporary highway behind the Ellesborough Road. The impact on the National Trail is assessed as only minor adverse, i.e. not significant, on the basis that it is re-routed. The assessment fails to take account of the quality of the experience, only the distance re-routed.

#### **Effects arising from construction (5.4)**

34. No further mitigation is proposed for any of the residual significant effects arising from construction beyond 'continuing to work with Wendover Cricket Club to assist it to

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<sup>7</sup> See: [http://www.iaqm.co.uk/wp-content/uploads/guidance/monitoring\\_construction\\_sites\\_2012.pdf](http://www.iaqm.co.uk/wp-content/uploads/guidance/monitoring_construction_sites_2012.pdf)

identify a solution to promote the continued operation of the club' (5.4.25). As no proposal has been made this cannot be considered to be mitigation .

## **Cultural heritage (6)**

### **Scope, assumptions and limitations (6.2)**

35. No account is taken of the impacts of the PS on public awareness and enjoyment of the area's cultural heritage.
36. Bacombe Barrow Scheduled Monument is omitted from the mapping of the Environmental Baseline. (CT-10-20).
37. The setting of all designated (and undesignated) heritage assets should be considered, not just those within the ZTV (6.2.2).
38. The Board welcomes the statement in 6.2.3 that the methodology for this topic includes consideration of the 'combined effects of a number of technical topic assessments'. This raises the question of why this is not applied for other topics.

## **Environmental Baseline (6.3)**

39. Section 6.3.36 describes the landscape of the Chilterns AONB as having been 'strongly influenced and affected by development in the 20<sup>th</sup> century'. The basis of this assertion is entirely unclear and contrary to the findings of studies such as the Chilterns Historic Landscape Characterisation<sup>8</sup>.

## **Effects arising during construction (6.4)**

### **Avoidance and mitigation measures**

40. Adverse impacts of mitigation work (bunding, noise barriers, mitigation planting etc.) on historic landscapes, heritage assets and their setting must be assessed. Section 6.4.2 refers to general landscape earthworks and planting reducing impacts on assets but does not appear to consider their potential adverse effects.
41. Loss of ancient woodland is irreversible and cannot be offset – that HS2 Ltd have still failed to grasp this is evidenced for example by 6.4.19 'New woodland planting will offset loss of ancient woodland to an extent'.
42. **Grim's Ditch** - in relation to the proposed destruction of a 150m length of Scheduled Monument and dumping of almost 2m tonnes of spoil immediately adjacent to it is proposed that there will be 'planting to highlight sympathetically the alignment of the monument at its north-eastern end' (6.4.18). This would seem a particularly bizarre proposal, along with the suggestion of creating a 'depression in the sustainable placement area to reflect the former line of the monument' – i.e. where it would have been had 2 million tonnes of spoil not been dumped on it.

## **Summary of likely significant residual impacts**

43. Incomplete listing (6.4.33) of likely significant residual impacts, with omissions including the following:

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<sup>8</sup> Chilterns Historic Landscape Characterisation Project, October 2009

- Destruction of Jones' Hill Wood Ancient Woodland;
- Adverse impacts on setting of 2 grade II listed buildings at Hunt's Green, and
- Adverse impacts on the character and setting of the Lee Conservation Area.

### **Effects arising from operation (6.5)**

44. The summary of likely residual significant effects (6.5.9) is incomplete and vague, stating that 'the setting of several historic settlements, buildings and landscape will be affected'. Whilst some assets that are likely to suffer significant residual effects are then specifically listed, others are not, with no explanation provided.
45. Permanent effects of construction e.g. demolition of buildings and destruction of ancient woodland should be re-iterated as residual significant effects of operation.
46. No consideration is given to the potential effects of vibration on heritage assets and insufficient weight is given to the impacts on historic landscapes.

### **Ecology (7)**

47. The ES must set out exactly how the PS will achieve net gains for biodiversity.
48. Major survey limitations are apparent – large areas of land were not surveyed, and many areas were not surveyed at the optimum time of year. Section 7.2.4 states that 'where data are limited a precautionary baseline has been built'. The term 'a precautionary approach' is used repeatedly, however this falls short of a clear commitment to adopting the Precautionary Principle as defined in European Guidance.

### **Description of existing environmental baseline (7.3)**

49. 7.3.2 - inadequate description of the existing environmental baseline omits reference to ancient woodland and a traditional orchard site.

#### **Woodland**

50. It is not acceptable to seek to minimise the significance of destruction of ancient woodland on the basis that the sites are 'small and isolated' (7.3.8).

#### **Hedgerows**

51. The baseline report (Vol 5 EC-001-002) reveals that less than half the hedgerows within the footprint of the proposed scheme in this section were surveyed, of those 40% were surveyed outside the optimal time of year, and the methodology was changed part way through with assessment of hedgerow connectivity being abandoned. The Precautionary Principle should be applied to the assessment where data is lacking or inadequate.
52. Whilst there are proposals to re-instate hedgerows post-construction in a number of locations, the issue of habitat connectivity across the line is not addressed.

#### **Great crested newts**

53. Table 8 lists 13 ponds within 250 m of the land required, of which only 4 would seem to have been surveyed, with Great Crested Newts found in 2 of those surveyed. The precautionary principle needs to be applied where survey data is lacking.

### **Effects arising during construction - avoidance and mitigation measures**

54. 7.4.1 lists a number of measures included as part of the design of the scheme purportedly to avoid and reduce impacts on features of ecological value. These include, for example, the fact that the scheme will 'only' directly destroy just over half of Jones Hill Wood - an ancient woodland site. Given that the remnants of this ancient woodland will be significantly adversely affected it is astonishing that the report claims not directly destroying the whole wood as an achievement.
55. As elsewhere, the assessment of impacts assumes that the measures in the draft CoCP are implemented in full (7.4.1), despite the fact that the CoCP is subject to change and lacking in substance, with repeated references to measures being adopted 'where reasonably practicable'. The CoCP represents no guarantee of mitigation measures being adopted.
56. It is proposed (7.4.30) that loss of ancient woodland can be compensated for through various means including translocation of woodland soil, coppice stools and dead wood from Jones Hill Wood – despite a lack of any published evidence for the effectiveness of such an approach. The report quotes two references, one being the Joint Nature Conservation Committee's '*A habitats translocation policy for Britain*' (2003) JNCC Peterborough. This report states:

*'The intrinsic conservation value of translocated habitats is not sustained after the disruptions caused by their removal, transport and placement on a new site' and 'Areas known to comprise ancient habitats should not be translocated'.*

#### **Summary of likely residual significant effects (construction)**

57. The Board is concerned that mitigation, compensation and enhancement proposals are mixed up together in this section – it is important to make clear what will be the likely residual significant effects before compensation measures are applied.
58. The impact of severance on hedgerows and other habitats is insufficiently taken account of. Consideration should be given to provision of 'green bridges' of sufficient width to allow continuity of habitat across the line.
59. The Precautionary Principle is not applied consistently. For example, even where it is known that bat roosts will be removed, this is considered unlikely to give rise to significant effects as the roosts in question are 'not likely to be maternal roosts' (7.4.17). No evidence is presented to substantiate this claim, and the Precautionary Principle should be applied.
60. This section claims a beneficial increase in the extent of semi-natural broadleaved woodland as a result, presumably of mitigation planting. It is entirely unacceptable to double count mitigation planting as also being a beneficial increase in habitat.

#### **Effects arising from operation**

61. The impact of noise on a number of species of bats and breeding birds is dismissed as unlikely to have a significant impact 'as the trains will pass quickly.' No account appears to have been taken of the frequency of trains.
62. No detail or evidence is presented to support the assertion that the risk of bat mortality due to collision with trains south of Wendover 'will be reduced to a level that is not significant by the avoidance and mitigation measures described previously'.

63. Barn owls are the only species assessed as likely to suffer residual significant effects. Impacts on many other species do not appear to be fully assessed.
64. The assessment of impact on barn owls nesting sites considers only those nesting sites within 1.5km of the route – this is inadequate. Specifically, the long-term impact of increased annual mortality of dispersing juvenile Barn Owls is not mentioned. The ES does not include any measures aimed at preventing owl-train collisions.
65. The idea that the provision of nest boxes over 1.5 km from the route can effectively mitigate the impact of HS2 on Barn Owls (“offset the adverse effect”) is ill-founded. The lack of any agreement with landowners regarding provision of nest boxes underlines the fact this proposal cannot be considered to provide any mitigation for adverse effects.

#### **Landscape and visual (9)**

66. The Chilterns Conservation Board finds the Landscape and Visual Assessment inadequate.

#### **Scope, assumptions and limitations (9.2)**

67. The zone of theoretical visibility must take account of all construction plant and overhead line equipment – these are currently excluded (9.2.2.) – this is not acceptable.

#### **Environmental Baseline (9.3)**

68. The Government and HS2 Ltd have a duty to have regard to the purposes of the designation of the AONB (Section 85 of the CRoW Act 2000). The landscape and visual impact assessment presented within the CFA fails to address the impacts on the character and special qualities of the AONB. Volume 3, to which the reader is directed, provides no more than a general overview. This is unacceptable, and it is arguable that the government and HS2 Ltd have failed in their Section 85 duty in this regard.
69. Discussion of the methodology with the Conservation Board (referred to in 9.1.6) should not be taken to imply that the approach was agreed or that any of the Board’s comments were taken into account.
70. The report fails to explain why the landscape has been divided into a new set of LCAs when Buckinghamshire County Council, Chiltern and Wycombe District Councils commissioned market experts Land Use Consultants to carry out a LCA of part of much of this area as recently as 2011.
71. The LCAs developed for the ES have different boundaries as those accepted by the Local Authorities – no explanation is provided for this. They are inadequate in a number of respects:
  - Simplistic, poor descriptions;
  - Do not assess key characteristics, and
  - Do not adequately examine impact on individual landscape character.
72. The methodology for Landscape and Visual Assessment is not consistent between CFAs – e.g. CFA10 LCA and visual receptors assessed within approximately 1km of the PS, compared to CFA 9 where assessment is only up to 500m from the route.

73. The Board would dispute the assertion that the Wendover Gap LCA as a whole has low tranquillity (9.3.6). This is a large LCA stretching from Baccombe Warren and The Hale in the north, to south of Jones Hill wood and Bowood Lane. Much of this LCA has good levels of tranquillity. Once again the impact of the existing road and rail network on tranquillity is seriously over-stated.

#### **Temporary effects arising during construction (9.4)**

74. The Board is concerned at attempts to down-play the effects of the PS through statements like 'as is commonplace with major infrastructure works, the scale of the construction activities means that works will be visible in many locations' (9.4.1).

75. It is important that a comprehensive assessment is carried out to determine the effects of **all** works and associated infrastructure on the landscape and visual receptors. The Board is concerned that there are many omissions including the construction of compounds, construction of Wendover green tunnel portal buildings, installation of auto-transformer stations etc. The assessment also appears to significantly under-estimate the duration of the works, taking account only of the period 2018 – 2021 yet works are scheduled from 2017 – 2026 (9.4.2).

#### **Avoidance and mitigation measures**

76. Trees should not be accidentally felled or die as a consequence of construction works and adequate measures must be put in place through the CoCP to ensure this does not happen. New planting does not compensate for felling of veteran or important trees, of which there are a good number in close proximity to the PS. Mapping has been provided to HS2 Ltd by the Conservation Board.

77. There needs to be a clear commitment to appropriate management of ecological mitigation areas and mitigation planting beyond the construction period.

#### **Assessment of temporary effects and impacts**

78. Assessment matrices - a clear assessment matrix should be available within each CFA report.

79. The Board considers that there are many inaccuracies and points of exaggeration in the assessment of temporary impacts and effects on LCAs and viewpoints. Examples include:

**Lee Undulating Slopes LCA** - The screening effects afforded by vegetation in the surrounding landscape e.g. 'the extensive Rushmoor Wood.' Rushmoor Wood is 2.1ha – this is hardly extensive.

**Wendover Gap LCA** – Impacts in this LCA are described as being 'in the context of a valley bottom already disrupted by transport development' – in reality most of this section of the route is neither in the valley bottom nor adjacent to existing transport infrastructure.

#### **Assessment of temporary impacts and effects (9.4.8 – 9.4.148)**

80. This section concludes that all 8 LCAs will suffer significant adverse effects (major or moderate effects). All 42 selected viewpoints will suffer significant adverse effects (major or moderate effects).

#### **Likely significant residual effects (9.4.15)**

81. The report fails to identify or list likely significant residual effects (9.4.15) despite concluding that all LCAs and viewpoints will be significantly adversely affected. No

additional mitigation is proposed other than consideration of suitable locations for early planting.

82. The significance of likely residual effects is down-played on the basis that they are 'temporary and reversible in nature lasting only for the duration of the construction works.' Given construction works will last a decade, this is an unacceptably complacent approach.
83. A fully bored tunnel in the Chilterns would avoid most of these impacts.

#### **Permanent effects arising during operation (9.5)**

84. All elements of the PS must be included in the assessment. The Board is concerned that there are omissions from the list of elements taken into account (9.5.1) for example cuttings and embankments, auto-transformer stations, new/ relocated utilities e.g. pylons, mitigation planting etc.

#### **Assessment of impacts and effects**

85. Insufficient detail is provided of the assessment of likely significant effects. The Board does not accept that the assessment of likely significant effects includes all relevant factors – for example neither the sustainable placement area nor the green tunnel portals are included.
86. No evidence or detail of assessment is provided to substantiate the claim that only 3 out of the 8 LCAs will be subject to significant effects. Obscuring of views and screening through earthworks and planting does not necessarily remove adverse impacts on landscape character.

#### **Landscape Assessment**

87. The table below summarises the descriptions provided of significant effects on LCAs during years 1, 15 and 60 of operation.

	Yr 1	Yr 15	Yr 60
Wendover Gap LCA	Moderate adverse	Moderate adverse – due to presence of Wendover Dean and Small Dean viaducts. Assumes farming activities will have become well established on land previously used for construction activities to the extent that this land will be indistinguishable from adjacent wider farmland.	Not significant due to maturity of planting.
Wendover Foothills (West) LCA	Moderate adverse	Moderate adverse due to continued presence of tunnel portal, PS in cutting, alterations to landform and changes to tranquillity.	Not significant due to maturity of planting.
Longwick Vale LCA	Moderate adverse	Not significant due to maturity of planting.	

88. The assessment repeatedly relies upon the maturity of planting to reduce significant adverse impacts to not significant by Year 15 or Year 60 of Operation. The Board considers this assessment as unrealistic on a number of counts including the assumed tree growth rate (far too high) and the extent to which the impact on the landscape of 18m high viaducts can be screened by tree planting.

### **Visual assessment**

89. The Board is of the view that the number and level of significant impacts is much higher than the assessment suggests, as a result of insufficient viewpoints being selected.

90. There is no assessment of loss of existing valued views - for example long cross-valley views, a particular feature of the AONB – are not adequately assessed. Impacts of mitigation planting on such views need to be included in the assessment and based on a proper understanding of the special qualities of the AONB. A good example is viewpoint 098-3-001 from the PRoW on Bowood Lane (shown in photomontage LV-01-045) where mitigation planting would block cross valley views characteristic of the AONB landscape. Far from acknowledging this as an adverse impact, 9.5.212 reports it as a 'moderate beneficial effect' due to a 'noticeable improvement in the existing views from users of the PRoW network along Bowood Lane ....as the proposed planting will introduce new features into the landscape...' The Board would strongly disagree with this conclusion.

91. Again, the assessment relies upon a number of unrealistic assumptions for example that mitigation planting will have matured by Year 15 of operation (e.g. Viewpoint 099.2.001); and that the Wendover Dean viaduct will have weathered by year 60 of operation (Viewpoint 098.3.003).

### **Summary of likely significant residual effects**

92. The Board does not accept the conclusion that significant residual landscape and visual effects are only likely at 8 specific view points within this CFA. This would appear to be a significant underestimation of the impacts on the landscape of the AONB. This is unacceptable and it is arguable that the Government and HS2 Ltd have failed in their Section 85 duty in this regard.

### **Socio-economics (10)**

93. This chapter needs to include a full assessment of the potential impacts of the PS on local businesses and the local economy. There is insufficient information provided in this section to allow the reader to understand how the conclusions about significant impacts have been reached.

### **Effects arising during construction (10.4)**

#### **Assessment of impacts and effects**

94. There is no reference in this section to the impacts of the PS on tourism and associated businesses. Such impacts are likely to be significant during the 10 year construction period. Many businesses will be affected as people avoid the area due to construction traffic, delays, road diversions etc. The Chilterns is an important tourist and visitor destination with many tourism and leisure businesses located in the area. Impacts are not restricted to amenities directly next to the rail corridor. Impacts are much more widely spread and will affect views, tranquillity, character of the area and ease of access – if it becomes a 'no-go' area because of road diversions, delays and the feeling of being in a construction site, then people will go elsewhere and business will be displaced.

95. The impact of traffic congestion on local businesses needs to be included in the assessment.

96. The Board does not accept the conclusion reached (10.4.15) that no residual significant socio-economic effects are likely to arise during construction of the PS as no evidence has been presented to support that assertion. It would seem highly

likely that many local businesses, including tourism related businesses and shops in Wendover and in the surrounding rural area will be significantly impacted over the 10 year construction period.

### **Traffic and transport (12)**

#### **Assessment of impacts and effects**

97. The assessment needs to include impacts arising from utilities works / diversions. It is not clear that this is the case, no detail of any such assessments are included in the CFA report although 12.4.17 asserts that 'no additional significant effects are expected due to utilities works'.
98. Adverse effects on users of PRoW are dismissed as minor adverse 12.4.20. Assessment of impact on users seems to be based on the length of re-routing. This completely misses the wider impacts on the visitor experience - the views, the tranquillity, the unspoilt beauty, the historic nature of many of the routes, connectivity to the wider network. This must be taken into account. There is also no mention of accessibility - the diversion needs to be at least as accessible as the original route.
99. Disruption to existing rail services is down-played (12.4.22) – no detail is provided regarding the extent and frequency of disruption hence it is not possible to come to a view regarding the accuracy of the conclusion that the effects on rail users in the area will not be significant.

#### **Likely significant residual effects**

100. It is clear that there will be significant traffic congestion and delays at a number of junctions in the area (12.4.31) over a period of many years, as well as significant disruption to pedestrians/ walkers and cyclists.
101. A fully bored tunnel through the Chilterns AONB would avoid the majority of these impacts.

### **Water resources and flood risk (13)**

102. It is stated (13.4.4) that drainage will 'discharge where reasonably practicable to SuDS balancing ponds prior to subsequent discharges to watercourses or, if necessary, to sewer'.
103. Implications of pollution of surface run off to ground water through the proposed balancing ponds are not assessed. Nor are the implications for the sewage treatment works, many of which are already at capacity.
104. It cannot be assumed that impact on public water supplies will be negligible just because no works will take place below the water table in SPZ1. Flow pathways are complex and unpredictable – so cannot assume long term impacts are negligible. Effects may not be realised until years after construction is completed.
105. Impacts on Thame's Waters operation need to be fully assessed. If productivity of sources if affected then it may be necessary to seek alternative supplies which would not be straightforward. The impacts of this would also need to be assessed.

## **Comments on Volume 2 – Community Forum Area Reports**

### **Environmental Statement – Volume 2, CFAR 11 Stoke Mandeville**

#### **2. Overview of the area and description of the Proposed Scheme**

##### **2.1 Overview of the area**

2.1.5 The Board welcomes the fact that the Chiltern Hills are considered a prominent feature in views to the south. It is a shame that the ES does not properly reflect the importance of the views and the impacts on the setting of the nationally protected Chilterns AONB.

Figure 2 – This shows the area context for the proposed scheme without including the nationally protected Chilterns AONB as a key feature.

2.1.17 No account has been taken of the location of this CFA predominantly within the setting of the Chilterns AONB. The AONB affords significant opportunities for recreation and leisure pursuits.

##### **2.2 Description of the Proposed Scheme**

2.2.4 Third bullet point on page 12 – This details an increase in height of noise fence barriers. The likely landscape impacts of such barriers would need to be fully assessed and it does not appear that this assessment has taken place thus far.

2.2.4 Fourth bullet point on page 12 – This details revisions to the mitigation earthworks and planting to provide visual screening for noise barriers. The likely landscape impacts of such changes would need to be fully assessed and it does not appear that this assessment has taken place thus far.

2.2.7 Second bullet point on page 13 – this describes the provision of a substation to provide support to the maintenance loop lighting. The likely landscape and tranquillity impacts of such a proposal would need to be fully assessed and it does not appear that this assessment has taken place thus far. The rest of the ES states that in all instances additional lighting will result in effects that are not considered to be significant. The Board questions this assessment, particularly in connection with lighting associated with the maintenance loops which will be clearly visible from a number of locations within the Chilterns AONB which have wide panoramas.

##### **2.3 Construction of the Proposed Scheme**

General comment This section is supposed to consider the key issues that arise in constructing the proposed scheme through this CFA. Though details are given about the compounds no information is given about the main structures to be provided. No consideration has been given to the likely significant impacts arising from the construction of the maintenance loops and the Nash Lee Lane overbridge which will be significant structures that will be clearly visible from within the Chilterns AONB.

2.3.27 This paragraph details the temporary diversion of a 400kV overhead power line. The opportunity should be taken as part of the scheme to place any diverted power lines underground.

## **2.6 Route section main alternatives**

Maintenance loop at Stoke Mandeville

General comment The Board remains to be convinced that the proposed site for the maintenance loop at Stoke Mandeville is appropriate as it is so close to the proposed infrastructure maintenance depot at Calvert. The limited likely journey times between the two sites would appear to render the site at Stoke Mandeville redundant.

## **4. Air quality**

### **4.4 Effects arising during construction**

General comment This section fails to deal with the impacts on air quality arising from the numerous vehicles that will have to follow significant diversions as a result of the Proposed Scheme as well as the congestion caused by the significant roadworks associated with diverted and closed roads. Similarly, no consideration is given to the impacts arising from the huge number of lorry movements on local roads.

4.4.7 The Board is not convinced that a thorough assessment has been undertaken in connection with the likely implications of construction traffic on the Chilterns Beechwoods SAC.

## **6. Cultural heritage**

### **6.4 Effects arising during construction**

Other mitigation measures

6.4.33 No mitigation measures appear to have been identified thus far. Most of the heritage impacts are described as being 'high adverse impact and a major adverse effect'. The cumulative impacts on the heritage assets in this part of the route are significant and not fully taken into account.

Summary of likely residual significant effects

6.4.34 to 6.4.36 A number of significant residual effects are described but nothing is said about how the effects will be mitigated or dealt with.

## **6.5 Effects arising from operation**

6.5.1 to 6.5.13 These paragraphs state that even with whatever limited mitigation is in place the presence of the scheme would mostly result in high adverse impacts and moderate or major adverse effects on the various heritage assets in this CFA. It could be argued that the same effects would be experienced along the rights of way locally too. However, no further mitigation measures have been identified. If the residual effects are significant further mitigation should be proposed and included in the proposed scheme.

## **7. Ecology**

### **7.2 Scope, assumptions and limitations**

7.2.3 This section states that access was not obtained to all land where surveys were proposed and a significant number of locations are listed. This clearly demonstrates that the Proposed Scheme is, at best, based on a very patchy baseline of data that has yet to be gathered. Such data cannot therefore have been assessed and such

assessment would have been expected in order to work out what the implications of the scheme would be for ecology.

7.2.4 The Board is not convinced that a thorough assessment has been undertaken in connection with the likely implications of construction traffic on the Chilterns Beechwoods SAC. The assessment that has been undertaken appears to rely on the CoCP to assert that no direct pollutants are anticipated from the construction site – yet CoCP is a draft and there is no guarantee that measures in it will be applied. The conclusions are that there is no need for further analysis or that a full Appropriate Assessment is required as there will apparently be no likely significant effects. At 20m from the A4010 road (i.e. within the SAC) the ES predicts a change in concentrations of NOx due to construction traffic of 1.8%, which exceeds the critical level beyond which it is considered that adverse effects on receptors may occur (1%). However, ‘this is a small increase, only just over the threshold which could be considered trivial. ...the change will be for less than 4 years and will be reversible.’ In addition, the ES states that ‘Somewhere between 20 and 50 m from the road the potential impact on the vegetation falls below the 1% level....which is the point below which there is no significant effect on vegetation.’

Tables 2 and 3 show that at 10m from the road there is a potentially significant impact on vegetation. The report argues that traffic pollution has already had an adverse effect on the SAC - this should not be used to portray further adverse effects as acceptable. The screening matrix predicts that overall NOx levels will fall by 2017 (without the scheme) compared to 2012 due to technological advances – have in combination effects of housing growth in the area been taken into account? The Board’s view is that a full Appropriate Assessment is required - the screening exercise has clearly shown potentially significant impacts on the vegetation of the SAC.

### **7.3 Environmental baseline**

7.3.3 This section mentions the presence of part of the Chiltern Beechwoods SAC (Ellesborough and Kimble Warrens SSSI). However, as previously stated the Board is not convinced that a thorough assessment has been undertaken in connection with the likely implications of construction traffic and the text seeks to significantly downplay the likely implications by implying that only a tiny fraction of the relevant site (‘a 50m long section of woodland’) may be subject to impacts. This is disingenuous at best.

Table 9 This table details the value of various ecological resources, but assigns values that are not recognised, for example ‘county/metropolitan’, ‘district/borough’ and ‘local/Parish’.

### **7.4 Effects arising during construction**

7.4.4 The Board is not convinced that a thorough assessment has been undertaken in connection with the likely implications of construction traffic on the Chilterns Beechwoods SAC.

## **10. Socio-economics**

### **10.1 Introduction**

10.1.2 This section fails to address the impacts on local people and visitors (or the reduction in visitors arising from the inconvenience caused by construction or impacts on the local environment during operation).

#### **10.4 Effects arising during construction**

10.4.9 This section presents too narrow a definition of businesses affected – those within land acquired for the construction of the Proposed Scheme. Many more businesses (as well as local people and visitors) would be affected by the scheme and in a much wider area than has been described. This would have been demonstrated as part of proper studies which should have been undertaken to determine the content of the ES.

10.4.14 No mitigation is proposed for the jobs that would be lost arising from implementation of the Proposed Scheme. In addition, no account has been taken of the likely impacts on the Bucks Goat Centre which is immediately adjacent to the scheme.

### **11. Sound, noise and vibration**

#### **11.2 Environmental baseline**

11.2.1 This section fails to consider the impacts on more rural areas and on public rights of way. These areas will generally be much quieter and therefore subject to greater negative impacts arising from construction and operation of the scheme.

#### **11.5 Effects arising during operation**

11.5.5 This section states that the scheme includes noise barriers, landscaped earthworks and low level barriers on viaducts. All of these will have landscape impacts which have not been assessed.

11.5.15 This section fails to deal adequately with the likely significant impacts of the scheme on users of public rights of way. Though the use of a right of way may be transitory, and the train sound may be intermittent, the noise and visual intrusion will still lead to significant detrimental impacts on users of the rights of way, and many of them would normally be there to appreciate tranquillity.

### **12. Traffic and transport**

#### **12.3 Environmental baseline**

12.3.3 This section claims that, based on very limited surveys, the majority of the rights of way are used by 'no more than 30 people per day'. The figure quoted may represent a snap shot in time but the ES cannot rely on this as an accurate assessment of the use of the rights of way, which may be significantly more. In any case, the level of use of the right of way is not material to the assessment because one user would be a very sensitive receptor and the impacts on them would therefore be significant.

#### **12.4 Effects arising during construction**

12.4.7 Construction activities would result in road closures. However, the impacts of the closures are not subject to any assessment. There will be impacts on vehicle miles

arising from diversions on a temporary or permanent basis, and there will also be impacts of congestions arising from traffic queues due to diversions or closures.

12.4.15 Construction activities would result in significant increases in HGV movements without any consideration being given to the impacts.

12.4.22 This section significantly underplays the impacts arising from the diversion of rights of way and no consideration is given to mitigation.

### **Map Book**

General The Chilterns AONB is a key environmental feature yet it is not identified as part of the Map Book.

General The layout of the map books is poor – the maps do not run concurrently from west to east (from left to right as the route is examined) and navigation through the maps is therefore difficult.

General The photomontages that have been included are poor and inaccurate.

General Electricity sub-stations – no detail is provided about what these facilities will look like, what the impacts are likely to be and what mitigation would be provided. Similarly, no detail is provided in connection with other buildings, fencing, access roads and lighting for example.

General No detail is provided about the bunds, planting areas and the numerous water storage areas that have appeared and they are not subject to assessment as part of the ES.

CT-06-040b No detail is given of the design and implications of the Stoke Grove Auto-transformer Station to the north of Nash Lee Lane. No assessment has been made of the significant amount of planting in the area around Nash Lee Lane and the footpath overbridge (ELL/20). No assessment has been made of the numerous balancing ponds in the area of the maintenance loop.

## **Comments on Volume 3 – Route Wide effects**

### **2. The Chilterns Area of Outstanding Natural Beauty**

1. In general the individual impacts have been identified but the assessment understates the impacts. The cumulative impact fails to recognise the significant, permanent and irreversible impacts. For example, once lost ancient woodland is lost forever. The Grim's Ditch Scheduled Monument will be partially destroyed. It cannot be re-created or compensated for.
2. Attempts to under-state impacts by comparing the loss as a percentage of the feature in the AONB is unacceptable. For example, it does not matter how much ancient woodland there is in the AONB, destroying 10 hectares of it is of national significance. This is a thinly disguised attempt by HS2 Ltd/DfT to minimise the impact. Losing one stone at Stonehenge might only a 1% loss, but it is significant in its own right and permanently damages the integrity of the whole. Using this principle all development would be acceptable, until few valued features remain.
3. Examples of this understated language are the many references to the “removal” of ancient woodland. It is not to be removed but destroyed.
4. If the cumulative impact of all the PS is only moderate it is hard to conceive what would constitute significant?
5. There is no reference to the design of structures or the effects of looking along the line. There is no reference to the hierarchy whereby avoidance is preferred to mitigation. Much of the mitigation has itself environmental impacts which are not assessed satisfactorily and, in some cases, not at all. There is no reference to the damaging impacts of the proposed mitigation; the urbanising visual intrusion of the noise fences, or the artificial appearance of linear noise bunds; the dumping of 12 million tonnes of spoil. The balancing ponds and swales, of which there are 29, are only mentioned once. These will be alien features in the Chilterns landscape.
6. In a document of this nature it is important that the highest standards of professionalism are applied based on facts and accepted methodology. This document is laced with language better suited to promotional literature. The effect is to undermine confidence in the analysis and conclusions.
7. Several impacts are deliberately overlooked and not assessed at all. There is only one mention of gantries, wirescapes and masts; and yet these will be highly intrusive features.
8. There is no mention at all of the impacts on the ecology of the AONB.

**Nowhere is there mention of the proposal to dump 12 million tonnes of spoil in the AONB. It renders the analysis of impact on the AONB wholly incomplete if such a large impact is deliberately excluded.**

#### **2.1 Introduction**

- 2.1.1 2<sup>nd</sup> bullet point. Conservation Boards do not ‘assume responsibility for AONBs.’ Nowhere does it say this in the legislation. This is a misunderstanding of the role of Conservation Boards.

There should have been a specific quote on the 'duty of regard' in Section 85 of the CROW Act 2000. This would have clarified the duty placed on the Government and HS2 Ltd to give regard to the purposes of designating the AONB. Given the significant, irreversible and damaging impact on the AONB it is arguable they have failed in this duty.

- 2.1.3 Selective quoting has taken place regarding NPPF paragraph 115. This should also have mentioned that AONBs have the highest status of protection in relation to landscape and scenic beauty.
- 2.1.3 Selective misquoting of paragraph 116 of the NPPF has again taken place. This paragraph states that permission should be refused for major developments unless there are exceptional circumstances and 'where it can be demonstrated they are in the public interest'. This paragraph of the NPPF then also lists three tests that should also be referenced.

## **2.2 Assessment of Scope**

- 2.2.3 It is stated that the study area was defined by the boundaries of the AONB. This should have been extended to include the setting of the AONB. The width of the corridor through the AONB assessed was also far too narrow.

It is incomprehensible that an assessment of impact of tall construction equipment, which may be in place for several years, was excluded. It is even more absurd not to include the overhead line equipment in the assessment of the operational phase. This equipment will be highly visible and permanent.

## **2.3 Landscape baseline**

- 2.3.2 The text fails to accurately describe the extent of the AONB (it is 833sq.kms) and simply says it is more than 800 sq. kms. This is sloppy and undermines confidence in the professionalism of the document.

### **Special Landscape Qualities**

- 2.3.8 As an example of poor research and lack of understanding of the Chilterns landscape it is stated that "However in many places, extensive tree planting on the slopes of the escarpment limits visibility". Apart from the Forestry Commission plantation at Wendover Woods, virtually all tree cover on the escarpment is natural, most being naturally regenerated scrub. A professional ecologist or forester would not have made this basic misinterpretation.
- 2.3.10 The reference to the presence of more ancient woodland in the south Oxfordshire part of the Chilterns AONB than the Misbourne Valley is wholly irrelevant. Ancient woodland will be destroyed by HS2. A high proportion of the woodland in Chiltern District is ancient woodland, but that is not mentioned. It is one of many unfortunate examples of HS2 Ltd/DfT trying to play down the impact of HS2 in the Chilterns AONB.
- 2.3.16 This paragraph states that the scheme lies within a wide valley interrupted by development and as a result is considered to have a relatively low level of tranquillity. Once again the positive attributes of the area are ignored or downplayed.

2.3.17 The reference to woodland as being 'geometric blocks' is a description of the Chilterns' landscape probably never used before and certainly not recognised by foresters or landscape professionals. It is an attempt to give a false impression of the woodland landscape in the Misbourne Valley. The field and woodland pattern is part of well recorded and ancient historic landscape.

### **Condition**

2.3.18 It is noted that the report states, "However, generally within the Misbourne Valley, the landscape is in a good state of repair and is, therefore, considered to be in a good condition."

### **Tranquillity**

2.3.19 For those acquainted with the concept, the importance of relative tranquillity is significant. The Misbourne Valley provides tranquillity for those seeking respite from the lack of tranquillity in London and surrounding major towns. That is one of the reasons why the Chilterns is so popular for countryside visits. There are opportunities to improve further the tranquillity of the valley by undergrounding overhead wires, using low noise road surfaces and re-directing over flying aircraft. All of these options are being actively pursued. However, High Speed 2 will render most of these aspirations pointless. The baseline needs to take into account what would happen if HS2 were not to happen. In this case, this has not been done.

### **Value**

2.3.21 It is reassuring that, despite the Chiltern Hills having been designated as a nationally protected Area of Outstanding Natural Beauty since 1965, HS2 Ltd/DfT are able to state "this landscape is of national value".

### **Sensitivity**

2.3.22 It is noted that the report acknowledges that "the sensitivity of the AONB to change is considered to be high". This is why so much care is taken to conserve and enhance its special character and qualities. HS2 is not, therefore, compatible with either the designation or the sensitivity to change.

### **Future Baseline**

2.3.27 This paragraph states "An additional committed development is located just beyond the northern boundary of the AONB in the vicinity of the proposed scheme, which comprises a dairy complex in the vicinity of the settlement of Buckland." This is yet another example of the unprofessional approach to compiling of these documents. Work on the so called Arla Dairy began over a year ago. The authors are clearly not familiar with the area. The tense used provides evidence that much of the ES was written some time ago and has neither been updated nor checked.

## 2.4 Description of the Proposed Scheme

2.4.2 It is disingenuous not to state that the tunnels referred to in this section are cut and cover tunnels which inevitably entail considerable environmental damage. There are yet more understatements and attempts to disguise impacts.

**There is no mention of the possibility of depositing 12 million tonnes of spoil on Hunts Green Farm and other parts of the Misbourne Valley.**

### Footnote 13

The excuse for dumping spoil in the Chilterns is to avoid having to transport the material elsewhere. The communities and organisations of the Chilterns did not ask for this. HS2 Ltd is deliberately conflating temporary and permanent impacts. The transport of spoil would cause some temporary adverse effects. The concern of local people was to prevent lorries from using minor local roads and roads through villages. They could be significantly mitigated by using the railway construction trace, temporary haul roads and A Roads thus avoiding impacts on local communities and rural lanes. There is no evidence that this was considered. To most observers this is simply a cost saving measure dressed up as environmental mitigation. It is wholly unacceptable to adopt this practice in a nationally protected landscape.

2.5.2 Preliminary Mitigation Works may well be a sensible suggestion if HS2 is given the go head. Unfortunately, as no detail at all is provided it is statement without substance.

2.5.3. The assessment that there will be “significant temporary effects” is noted.

### Avoidance and mitigation measures

2.5.7. The reassurance that, “to avoid or reduce landscape effects during construction include the retention and protection of existing trees and vegetation”, is undermined by the qualification “where reasonably practicable”. As experience suggests that most contractors do not take such precautions, usually without sanction this provides no reassurance. This, after all, from a Government body which is prepared to destroy ancient woodland on an unprecedented scale and irreversibly damage the landscape of a nationally protected Area of Outstanding Natural Beauty.

2.5.8 It is stated that a bored tunnel will avoid disturbance to existing vegetation and other landscape features. It is a shame that the immediate and obvious beneficial impacts of this measure have not been picked up by HS2 Ltd by proposing a fully bored tunnel through the whole AONB.

### Description of Impacts

2.5.11 It is noted that, for the first time, there is acknowledgment of the impacts on the setting of the AONB.

### Steep Chalk escarpment

2.5.12 It is wholly misleading to suggest that the backdrop of the construction activity will be “the extensively settled Aylesbury Vale”. Anybody familiar with the area and the

views being referred to, will know that Aylesbury and surrounding villages are not intrusive in the landscape. The construction activity will be intrusive.

It is also stated that “much of the setting of the steep chalk escarpment will remain largely unaffected” – as with Ancient Woodland, the ES is seeking to argue that a limited geographical extent means the impact is also limited.

### Woodlands

2.5.14 The woodlands will not be removed, they will be destroyed. It is an extraordinary attempt to underplay the loss of ancient woodland by stating it is only a small percentage of woodland or ancient woodland cover in the AONB. So what? is an appropriate retort If all developers used this principle there would soon be little ancient woodland left. It is all important, every hectare. Ancient woodland is of national importance. It cannot be trans-located or re-created. Once lost it is lost forever. That is why planning and forestry policy provides so much protection.

There is no assessment of the impacts of the proposed new planting, much of which is on currently productive farmland.

2.5.16 It is noted that the PS will result in “losses and severance of historic field patterns”. Many of these fields are bordered by protected ancient hedgerows – this has not been stated in this section as it should have been.

Again it seems the Grim's Ditch Scheduled Monument is to be removed. It will be destroyed.

It is noted that the sunken lanes at Leather Lane and Bowood Lane will be realigned, resulting in the removal of “additional historic features from the landscape”. This is another example whereby the destruction of part of an ancient feature will lead to the integrity of the whole being lost. These lanes may well be 3,000 years old and the alignment has not changed. (There is considerable evidence that the Chiltern road network pre-existed the arrival of the Romans by several centuries.) They have a history that cannot be recreated and are unique. By both horizontally and vertically realigning them their character and integrity is lost for ever. If the railway is in a tunnel or in deeper cuttings allowing bridges to be at grade these lanes need not be realigned.

2.5.19 It is ridiculous to suggest that the impact of something is restricted simply because of its limited geographical extent. To extend this analogy, destruction of Stonehenge would only be regarded as a local impact as it can't be seen from other parts of Wiltshire. These are irreplaceable unique elements of our cultural heritage which could be conserved if alternative designs were adopted.

### Network of PRoW and ancient routes

2.5.20 It is noted that the report states “These realignments will noticeably affect the recreational value of the AONB landscape in the immediate vicinity of the Proposed Scheme.” HS2 Ltd were advised to take a more holistic view of the PRoW network to avoid simply realigning routes immediately alongside the PS. They have ignored the advice from the Conservation Board and Highway Authorities, amongst others. A realigned network would have ensured that the experience of using the network could have been sustained instead of the negative impact resulting from the proposed realignments.

HS2 Ltd was requested to widen all PRoW bridges to provide a green corridor both for passage of wildlife and to make the walking experience more pleasant than it would otherwise be. It is regrettable that this suggestion has not been taken up.

2.5.21 The impact on the viability of chalk streams is not considered at all and impacts arising from tunnelling are not dealt with in this section.

#### Farmland

2.5.23 Although 400 hectares of productive farmland will be lost, this is dismissed as being of little significance as it is only a small percentage of farmland in the AONB. The continuing use of this illogical argument undermines much of the credibility of the assessment in the ES. If this same argument was employed for every major development (if the loss is only a small part of the whole it is acceptable) then there would soon be little left and there would be little reason to protect any asset or feature if there is always one left.

A more in depth analysis should have been undertaken to determine how any loss of farmland will affect farming in the valley. Some holdings will be severely affected by both the loss of land, as well as severance and temporary practical difficulties presented during the construction phase. The quality of farmland affected by dumping of spoil will be severely diminished and unlikely to be as good it was previously. There is a high likelihood that not all the land previously farmed will return to agriculture and some will not be viable farmland or the holding will no longer be viable. This will lead to alternative land uses thus diminishing the farmed character of most of the valley. This possibility has not been given any consideration.

#### **Assessment of effects during construction**

2.5.24 The Conservation Board does not accept the assessment that “Overall, the construction activity will substantially but temporarily alter the character and appearance of the landscape in the immediate vicinity of the Proposed Scheme to the north of the Chiltern tunnel.” The impacts will be permanent.

According to HS2 there will be a loss of 400 hectares of farmland; 15 hectares of woodland, of which 10.2 hectares is ancient; 12 million tonnes of spoil will potentially be dumped (not mentioned in this section of the ES); the destruction of 40,000 metres of hedgerow, much of which is ancient, and the destruction of a major part of the Grim’s Ditch Scheduled Monument. There will be several kilometres of deep cutting; two long viaducts; 9 new bridges, over 4 kms of new service roads and a realignment of the B485; the excavation of two, so called, green tunnels; and the demolition of several buildings. In addition there will be several miles of tall noise barriers. (The ES fails to give any details of these large intrusive new structures).

The construction of the railway will have significant, damaging and permanent and irreversible impacts on the AONB. To suggest otherwise, calls into question the competence and objectivity of those undertaking and writing the assessment.

2.5.26 The ES does not state how it is has assessed tranquillity. The CPRE maps are not an appropriate baseline for this exercise.

2.5.27 It is noted that the report states, “The changes in the immediate vicinity of the PS will be at considerable variance with the landscape character and special landscape qualities of the AONB resulting in substantial local impacts and a major adverse

effect locally during the peak construction phase". Given the nature and scale of those impacts they constitute permanent residual impacts.

2.5.28 This paragraph is illogical following the statements about the significant adverse impacts during construction, nearly all of which are also permanent and adverse.

"However, given that changes to the character and appearance of the landscape will be temporary and limited to the landscape in the vicinity of the Misbourne Valley, the magnitude of change to the AONB is considered to be medium. The medium magnitude of change, assessed alongside the high sensitivity of the AONB, will result in a moderate adverse effect on the AONB during construction."

A more accurate assessment would be significant adverse impacts.

## **Permanent effects arising during operation**

### **Avoidance and mitigation measures**

2.6.2 It is important to keep referring back to the hierarchy which places avoidance of adverse impacts above mitigation and compensation. There are virtually no examples given of where an impact has been identified which is then avoided. Measures concentrate almost wholly on mitigation and compensation. In a nationally protected landscape with many nationally important elements of heritage the precautionary principle of avoiding adverse impacts should be adhered to.

A long bored tunnel would avoid nearly all the adverse impacts identified as temporary or permanent.

It is particularly disingenuous to refer to the so called green tunnel as "allowing reinstatement of the landscape" when this involves destruction of ancient woodland at South Heath.

The proposed new planting does not compensate for loss of ancient woodland, nor does the proposed planting fit into traditional landscape patterns. This is particularly true of the large plantation proposed between the Mantles Wood tunnel portal and the A413. The fault is compounded as this will involve the loss of productive farmland.

The proposed tree planting to show the alignment of the destroyed section of Grim's Ditch seems particularly crass.

## **Description of Impacts**

2.6.3 This statement clearly sets out most of the major impacts which will adversely change the landscape over a considerable area. It will directly affect 300 hectares. However, the views from a much larger area will be adversely affected covering tens of square kilometres. The deliberate exclusion of tall construction equipment and overhead gantries and wire-scapes from the visual assessments further undermines the credibility of the assessment.

It is simply not credible to state that, following potential dumping of up to 12 million tonnes of spoil, "in many instances, earthworks will be ... indiscernible from the existing landscape."

2.6.4 This paragraph states that “These impacts will be limited to the Misbourne Valley, with much of the wider AONB largely unaffected.” This extraordinary statement implies that only development which adversely affects most of the AONB might be considered unacceptable or, if only a part of an AONB is affected the development should be deemed to be acceptable. If all development was permitted on this basis little of value would survive for long. The fact is that a large area within a nationally protected landscape will be significantly and permanently adversely affected.

#### Settlement and Historic Environment

2.6.14 It is noted that the ES states “In these areas there will also be a permanent alteration in the natural landform, with tunnel portals also visible in the landscape”. The tunnel portals were not, but should have been, listed in the list of impacts given in section 2.6.3.

The paragraph states that “In the vicinity of Wendover Dene and Kings Ash, the presence of the PS, including the passing of high speed trains, and overhead line equipment will also noticeably alter the setting of these settled areas”. It should have said “adversely” alter the setting.

With respect to Grim’s Ditch it is noted the ES states, “the proposed planting will not mitigate the impact on the historic character. The wider severance of hedgerows and the historic field pattern will also be apparent..”

It is noted that the ES states: “In addition, the loss of ancient woodland and the presence of the Proposed Scheme will partially alter the composition of the landscape in the vicinity of the Misbourne Valley and further erode the historic landscape.”

#### Network of PRoW and ancient routes

2.6.17 This section understates the impact on rights of way and the experience of using them. However, it is noted that this section states that “Visibility of the PS from many of the ancient routes will also occur, including from notable routes such as the Ridgeway National Trail and the Icknield Way Path.”

This will affect the recreational value of the AONB landscape in the immediate vicinity of these PRoWs. There is little doubt it will affect the experience of using PRoWs not immediately adjacent to the railway as well.

2.6.18 It is noted that the ES states that, “By year 15 of operation and beyond to year 60 of operation, the direct impact on the network of ancient routes will remain the same as in year one of operation”. However if the PRoW crossings were on green bridges, wide enough to accommodate tree and shrub planting, the experience would be diminished less, as would re-configuring the network to avoid re-directing PRoWs immediately adjacent to the railway.

#### Chalk Streams

2.6.19 It is noted that the ES states that “the setting and recreational value of the River Misbourne and adjacent PRoW will be affected”, though this is once again downplayed to only a “limited” extent.

2.6.21 It is noted that the ES states, “The local reductions in tranquillity in these areas will lead to substantial impacts on the character of this special quality. In the vicinity of the Chalfont St Giles vent shaft, the presence of a new structure will alter the perception in the valley”.

### Farmland

2.6.23 The possibility that some of the farmland should not be planted but retained as farmland is not considered. Ensuring continuing farm viability is a high priority otherwise the wider landscape will be adversely affected and an economic asset wasted. There is a high probability that not all of the farmland will be returned to agriculture as it will have been degraded or severed. There is also a probability that the viability of some farm holdings will be undermined and the farms will be broken up and the land put to other uses.

It is wholly untrue to say that after 15 years the appearance of the farmland will have taken on its pre HS2 appearance. Even by 2060 the newly planted hedgerows and trees will look nothing like the lost ancient hedgerows (with associated flora, fauna and earthworks) and mature hedgerow trees. As with ancient woodland the ancient hedgerows are likely to be several thousand years old and very possibly relicts of the post ice-age wildwood.

The Chilterns Historic Landscape Characterisation has shown that some parts of the Chilterns, not far from the proposed HS2 route, support bronze-age field systems. More recent work in the Bulbourne Valley by Professor Tom Williamson of the University of East Anglia reflects these findings. HS2 Ltd has not studied the hedges it proposes to grub out in any depth and, therefore, is unable to state with any certainty the quality and importance of these features.

The ES states that a LIDAR survey has been undertaken for this section of the route. This will have shown a plethora of earthworks not visible to the naked eye or identifiable on maps. This information should have been released as part of the evidence base for the ES.

It is a reasonable assumption that the LIDAR survey did show a large number of earthworks including ancient field systems. This would help ascertain whether those field boundaries and hedges which survive are part of that field system, in which case their antiquity and importance as part of our historic environment should be recorded, recognised and conserved according to the HS2 hierarchy of avoidance and mitigation

Nowhere in the ES is the landscape impact of the proposed 29 balancing ponds considered. These are numerous and alien new features in the landscape with their own arguably, adverse, landscape impacts. Many of these will involve loss of farmland and, no doubt, many will have urbanising features such as signs, fences, linings and concrete structures.

It is a requirement of an ES and EIA that they assess cumulative impact. No attempt has been made to do so by HS2 Ltd. Instead the impacts on individual elements of the landscape are considered in isolation. This is a major contributory factor to the failure to comply with Section 85 of the Countryside and Rights of Way Act 2000. The ES should have demonstrated that the overall effect on the qualities which make this an AONB have been given full regard.

### **Assessment of effects during operation**

2.6.25 “In the immediate vicinity of the proposed Scheme, they [impacts] will be at variance with the existing character and will discernibly alter the special landscape qualities, natural beauty, pockets of tranquillity, landscape character and setting of the AONB, resulting in a major adverse effect locally during year one of operation.”

It is noted that the adverse impacts are recognised. However, it is absurd to suggest that these significant impacts are confined only to year one of operation. The wording should be “...from Year 1”.

All the impacts will have a discernible and negative impact for many years and, arguably many of them are permanent. Large engineered structures, major re-forming of the natural topography and creation of wholly artificial water bodies are permanent.

The Conservation Board’s interpretation is confirmed by the wording in Section 2.6.26 which contradicts Section 2.6.25

“Whilst the mitigation earthworks and planting will serve to integrate the Proposed Scheme into the landscape, remaining impacts on the special landscape qualities and natural beauty of the landscape will be associated with highly visible structures including viaducts and the changes to the existing vegetation pattern.”

The Conservation Board fundamentally disagrees with the assertion that the proposed earthworks will integrate the proposed scheme into the landscape. Dumping of 12 million tonnes of spoil in an Area of Outstanding Natural Beauty compounds the adverse impact, the reverse of integration.

2.6.27 The ES further confirms the significant adverse impact during operation.

“The specific impacts on the special landscape qualities and landscape character of the AONB during operation will include: the presence of new infrastructure along the Proposed Scheme including viaducts, tunnel portals, road and pedestrian overbridges, noise fence barriers, fencing, high speed trains and overhead line equipment; affecting the character of the landscape in the vicinity of the Misbourne Valley and the setting of the chalk escarpment, flower rich downland and localised tranquil valleys; the noticeable absence of woodland including 10.2ha of ancient woodland as a result of vegetation removal during the construction phase, substantially altering the character of parts of the Misbourne Valley but only slightly altering the overall wooded character of the AONB. In year one, new planting will be immature and provide minimal mitigation for this loss. However, by year 15 and more noticeably by year 60, this planting will largely mitigate this loss of woodland character”.

It is unfortunate that HS2 Ltd/DfT continually attempt to play down the loss of irreplaceable ancient woodland by attempting to diminish its relative loss in relation to rest of the AONB. The loss of 10.2 hectares of ancient woodland is a significant loss on a national scale. It is disingenuous to suggest that the woodland character will have been replaced by year 60. Landscape is a more subtle and meaningful concept than just superficial appearance. The lost ancient woodland will never be replaced and even at year 60 the plantations will not be mature.

2.6.28 These sections undermine the credibility of the ES and competence of those commissioned to write it. Despite the scale and magnitude of the changes and the

intrusiveness of so many aspects of the Proposed Scheme it is not conceivable that the change can be assessed as “medium”.

“Whilst the presence of the Proposed Scheme will substantially alter the character of the landscape in the immediate vicinity of the Proposed Scheme, impacts on the special landscape qualities and natural beauty of the AONB have been avoided and reduced where practicable through the implementation of mitigation measures. However, direct and indirect impacts will remain”.

2.6.29 “Taking into account the partial alteration to the special landscape qualities in one of the valleys within the AONB and the permanent alterations to landscape character and natural beauty, **the magnitude of change is considered to be medium.**” The Board fundamentally disagrees with this assessment.

2.6.30 “The medium magnitude of change, assessed alongside the high sensitivity of the AONB, will result in a moderate adverse effect during year one of operation, which is considered to be significant.”

2.6.33 “Taking into account the above, the effects of the Proposed Scheme on the special landscape qualities, natural beauty and landscape character and setting of the wider AONB during year 60 of operation will reduce such that it is not considered to be significant.”

If this approach is adopted widely and individual development is accepted because it only affects a part of the AONB, all of the AONB would soon be permanently scarred and its special qualities permanently diminished. That is why the designation covers a wide area and policies to conserve its special qualities are universally applied. The negative impact on a significant part of the AONB affects all of it.

One consequence of allowing HS2 to damage the AONB is that it will be much harder to control damaging and inappropriate development in future as each proposal will be minor in scale compared to the allowed HS2. The cumulative impact will be large and negative.

If a development as big and intrusive as a high speed rail line in a nationally designated landscape is only assessed to be a medium change with moderate adverse impacts, what sort of development would be considered to have major adverse impacts? To suggest that by Year 60 no significant impact remains despite the loss of ancient woodland, ancient hedgerow, a Scheduled Monument, elements of the historic environment including sunken lanes and ancient Bronze-age field systems demonstrates a failure to appreciate the special qualities of the Chilterns AONB. It also fails to give any weight to the permanent intrusiveness of engineered features such as viaducts, embankments, fences, gantries and bridges.

**In the view of the Chilterns Conservation Board, the impact of HS2 on the special qualities of the AONB and the failure to design the railway to avoid identified impacts, represents a failure on the part of HS2 Ltd/DfT to comply with the duty in Section 85 of the Countryside and Rights of Way Act 2000.**

## **Comments on Volume 5 – Draft Environmental Minimum Requirements**

### **Draft General Principles**

General comment This document makes numerous cross-references to paragraphs that do not exist (e.g. 1.3, 1.5, 3.2, 3.4, 3.6 to 3.10).

### ***2 Definitions***

2.1.1 The EMR regards both the terms 'impact' and 'effect' as having the same meaning and only uses 'effects'. This does not apply to ES documentation.

4.1.1 Four Annexes are listed which the Board comments on here unless otherwise stated:

1. Code of Construction Practise (comments in a separate section)
2. Planning Memorandum
3. Heritage Memorandum
4. Environmental Memorandum

### **Annex 2: Draft Planning Memorandum**

#### ***2 Qualifying authorities***

2.1.2 This section would appear to indicate that the memorandum would only apply to those authorities that have chosen to sign it. The Board is curious as to what happens with any authorities that do not sign the memorandum.

#### ***3 Aim of the Memorandum***

3.1.3 This section refers to Schedule 16 of the Hybrid Bill (the Planning Conditions Schedule) which includes conditions 'requiring various matters to be subject to approval of the relevant planning authority' and the extent of these depends on whether or not the authority has elected to become a qualifying authority. What happens to those authorities that have not so elected? Are they completely excluded from the decision-making processes?

#### ***4 The Planning Forum***

4.1.1 Only qualifying authorities are allowed to join a Planning Forum. What happens to those authorities that have not elected to be qualifying authorities? Are they completely excluded from the decision-making processes?

4.1.4 Common design items will be considered by the Planning Forum. The Board is deeply concerned by this as there will be a presumption in favour of the approval of submitted designs for things like bridges, viaducts, acoustic barriers and retaining walls for example. This principle should not apply in the Chilterns AONB and its setting, where special measures should be put in place for dealing with design issues.

#### ***7 Expedited handling of requests for approval***

7.2.1 Qualifying authorities should not 'seek to impose any unreasonably stringent requirements on the requests for approval of any construction arrangement, plans or specifications' which might frustrate or delay the project or 'unreasonably add to its cost'. This particularly applies to design and environmental matters. The Board is appalled at what the implications are for this – cheap and quick remedies will be applied which would not be subject to proper assessment and which would more than likely lead to significant detrimental impacts on the natural beauty of the Chilterns AONB, contrary to the purpose of its designation and the legislation that applies.

### **Annex 3: Draft Heritage Memorandum**

#### *2 Aim of the Memorandum*

2.1.3 Would appear to indicate that the primary (possibly only) mitigation measure is investigation and recording. This would appear to be confirmed in paragraph 3.1.2 below.

#### *5 Mitigation: investigation and recording*

5.1.1 This section states that “full regard has been given to the need to avoid...heritage assets.” Evidence within the AONB, particularly the destruction of Grim’s Ditch, bring such statements into question.

5.2.1 and 5.2.2 Any landscape and visual mitigation affecting the setting of heritage assets, will be covered by the Environmental Memorandum.

#### *5.3 Sustainability*

5.3.1 and 5.3.2 To seek to justify the widespread destruction of heritage assets by arguing that the “heritage works will contribute to the HS2 Sustainability Policy” (5.3.1) and “mitigation works will advance our understanding of...the historic environment” (5.3.2) is stretching the art of positive spin.

#### *7 Disapplication of heritage legislation*

7.2.1, 7.2.3 and 7.3.1 Various paragraphs in Schedules 18 and 19 will seek to disapply various elements of current legislation. These include:

- Paragraph 1, Schedule 18 of the Bill disappplies controls under the Planning (Listed Buildings and Conservation Areas) Act 1990.
- Paragraph 2, Schedule 18.....Listed Buildings and Conservation Areas Act 1990.
- Paragraph 1, Schedule 19.....Ancient Monuments and archaeological Areas Act 1979.

All these changes would represent sweeping powers afforded to the nominated undertaker.

#### *8 Disapplication of human remains and burial monuments legislation*

8.1.2 “...the Bill will disapply the various legislative provisions to enable specified construction activities to be carried out.” Again this potentially represents the allocation of significant powers to the nominated undertaker.

### **Annex 4: Draft Environmental Memorandum**

The Draft Environmental Memorandum is so vaguely written that it gives no confidence that the nominated undertaker will “ensure that the design and construction of Phase One of HS2 is carried out with due regard for environmental considerations” (1.3.1).

#### *2 Aims*

The aims are caveated with diluting statements including: “where reasonably practical”, “to an appropriate level”, “where practicable and reasonable”, and “the nominated undertaker will take a responsible approach”.

Such statements continue throughout the document. For example, ‘as far as’ or ‘where reasonably practicable’ appears 16 times.

#### *4.6 Landscape and visual*

4.6.1 and 4.6.2 These sections describe HS2 Ltd’s commitment to a ‘high quality design’ ‘sensitive to the character of the local area’ and ‘appropriate to the local

landscape and ecological character along the route'. Unfortunately, proposals described within the ES CFA reports relevant to the Chilterns AONB, contradict this commitment – they are neither high quality nor sensitive to the local area and fall well short of requirements afforded to a nationally designated landscape.

4.6.3 to 4.6.7 These sections refer to measures to establish and maintain landscape and mitigation planting. Unfortunately, clauses include wording such as 'appropriate time' and 'sufficient period' and provide no clear guidance over maintenance requirements.

4.6.8 This section suggests reducing costs might override good management: "*Where practicable* the nominated undertaker will reduce the long term maintenance cost for the railway operator whilst ensuring that the essential mitigation remains in place and effective".

#### *4.8 Nature Conservation*

4.8.1 Describes a 'no net loss to bio-diversity' approach for land used temporarily. However, current Government policy is to achieve a net gain to biodiversity. Biodiversity loss and gain will be calculated by HS2 Ltd and Natural England. Independent scrutiny of the phase 1 proposals suggests that in many areas there will be a net loss to biodiversity.

#### *4.10 Water resources and flood risk*

4.10.1 The 'where reasonably practical' caveats are of particular concern within the Chilterns AONB where internationally important Chalk Stream habitat and aquifers providing the public water supply for much of London and adjacent counties might be affected.

#### *4.11 Agriculture and forestry land*

This section contains so many caveats as to provide no substantial guarantees to the future of either agricultural or forestry land. Indeed, 4.11.3 confirms that the nominated undertaker is 'not committed' to reinstate either woodland or forestry areas.

#### *4.12 Excavated material*

4.12.2 Sustainable placement of surplus material will be permitted in line with the 'Environmental Permitting Regulations (England and Wales) 2010'. Do these regulations override legislation to protect the nationally designated Chilterns AONB?

## **Comments on Volume 5 Technical Appendices – Draft Code of Construction Practice**

### **Summary**

1. In summary the Board believes that the CoCP will not be sufficiently robust for a scheme of this scale and potential impact. Insufficient information has been presented at this stage (particularly in connection with the Chilterns Area of Outstanding Natural Beauty [AONB]), loose terminology is used throughout, no reference is made to using the best practice and highest standards and no detail is given about what actions will be taken when breaches of the CoCP occur.
2. The Board requests that a revised CoCP should be prepared which: meets the test of being both necessary and sufficient; makes the ownership of the CoCP clear, and uses significantly fewer vague words and disclaimers. In addition, the role of the Nominated Undertaker should be clarified and the ongoing role of HS2 Ltd must be defined.

### **General comments**

3. A CoCP is usually owned by a legal entity, and used to instruct contractors working on their behalf. The chosen Principal Contractor (PC) must work towards the standards set out. In the case of this project, there will be a Nominated Undertaker rather than a PC. The intended hierarchy needs to be clarified and communicated. In this instance the final owner or arbiter of the CoCP is unclear.
4. The main thrust of the responsibility for delivering the requirements of the CoCP have been placed on the Nominated Undertaker and there is little or no reference to its enforcement role or the future role of HS2 Ltd, or that of the County and District Councils and the exercise of their statutory duties and obligations.
5. The relationship of HS2 Ltd with the Nominated Undertaker is not clear nor which organisation will regulate and control it.
6. The Board is concerned that loose terms such as 'as far as reasonably practicable', 'as soon as reasonably practicable' and 'appropriate' are frequently used in the draft CoCP and that these will lead to lower standards being applied, and random and vexatious application of the Code and decisions will be dictated by expediency and cost. This is not acceptable and should be addressed so that the best practice (via best practicable means) and highest standards are applied throughout the CoCP. Industry best practice and best practicable means can at least be measured against other similar projects in sensitive areas. Current industry best practice will have to be improved upon where HS2 transits the Chilterns AONB.
7. The CoCP does not, in its current state, provide certainty or lead to confidence that realistic inferences on the impact of construction can be drawn.
8. The Board would prefer to see throughout the document greater reference to 'agreement with' and 'approval by' Local Authorities and other consenting bodies, rather than just prior consultation and notification by HS2 Ltd or the Nominated Undertaker regardless of the powers conferred by the Hybrid Bill.
9. The proposed project is a long-term and complex one, which will take a minimum of 7.5 years in total to complete. It is assumed that the construction activity during this time will vary depending on the project's phase. The CoCP must take into account the length of the project. Local residents may possibly be living a significant part of

their lives with the impact of HS2 works. The precise duration of works in the Chilterns must be defined and communicated by HS2 Ltd.

10. The many monitoring sections contain no real details, particularly in connection with how problems or any breaches in the CoCP will be dealt with, what actions will be taken, and what remedies will be applied .
11. There are numerous references to documents being developed in the future, many of which have direct implications for the proper management of the project.
12. All staff employed for any aspect of work, whether this is construction, monitoring or enforcement of the CoCP should be appropriately qualified and suitably experienced and this should apply throughout the CoCP.
13. The Code as currently drafted, and the general requirements described in it, is applicable to the whole route from Euston to Curzon Street in Birmingham. The Board considers that the landscape and biodiversity of the Chilterns AONB are sufficiently different from the rest of the route as to require a Supplementary Code which is designed to address the specific requirements of the AONB. The Chilterns AONB is a national, not a local, resource. It is an area deemed to be of such outstanding natural beauty that it has a statutory designation for the purpose of conserving and enhancing the natural beauty of the area. The Supplementary Code must ensure that the greatest possible weight is given to minimising damage to the Chilterns AONB's land forms, ecosystems, biodiversity and natural beauty during construction and subsequently during remediation.
14. As part of the production of the Supplementary Code it will be necessary to ensure that appropriate information is scoped into the consideration of the likely effects. The Board's evidence base includes the following: the Chilterns AONB Management Plan 2008-2013 (incorporating Strategic Environmental Assessment); the Draft Chilterns AONB Management Plan 2014-2019; the Chilterns State of the Environment Report 2012; the Environmental Guidelines for the Management of Highways in the Chilterns 2009; The Making of the Chilterns Landscape 2010 and the Ancient Woodland Inventory for the Chilterns 2012.
15. The Government's evidence base includes, but is not limited to the following: The Natural Choice: Securing the value of nature (the Natural Environment White Paper 2011); the UK National Ecosystem Assessment (understanding nature's value to society, United Nations Environment Programme World Conservation Monitoring Centre, 2011) and The Environmental Valuation Reference Inventory (a web-based searchable storehouse of empirical studies on the economic value of environmental benefits and human health effects).
16. The Board considers that monies should be provided to local authorities and other statutory bodies to allow the employment of sufficiently qualified and experienced staff to ensure compliance with the CoCP at the local level.
17. The Board considers that the CoCP must be a legally binding document which holds HS2 Ltd accountable and responsible. It must provide the legal mechanisms for ensuring that the impacts of construction and subsequent remediation are avoided or mitigated.

**Comments are provided on a section by section basis.**

Please note that the following comments are based on the information contained in the Draft Code of Construction Practice. Though every attempt has been made we cannot guarantee that all issues have been addressed. The Board expects there to be future consultation and negotiation between itself and HS2 Ltd which may help to resolve any omissions from this response.

**1. Introduction**

*1.1 Background*

1.1.2 Local Environmental Management Plans (LEMPs) are still to be developed following consultation with the relevant stakeholders. The Board considers that firm commitments should be given in terms of when the LEMPs will actually be prepared and also considers that it should be consulted in connection with those LEMPs that are within the Chilterns AONB and its setting. 'Key/relevant stakeholders' should be specifically defined.

1.1.4 This section states that the CoCP will evolve and be refined, amended and expanded as necessary. The Board is concerned that what is being commented on now will almost certainly be out of date if the PS proceeds, and with changes almost certain there would have to be further rounds of consultation. This will add to and cause significant confusion. Any changes should be subject to further public consultation and agreement with relevant bodies, including local authorities and not just via the various HS2 Ltd forums as mentioned, as these have no credibility.

**2. Purpose of the Code of Construction Practice**

2.1.1 States that the CoCP shall be applied by the Nominated Undertaker and its contractors. No detail is given about these bodies and later sections of the CoCP also refer to the following types of contractor: lead; other; nominated undertaker's; third party; relevant; waste; asbestos removal and main. The CoCP should be applicable to all contractors and such sub-division is not considered to be necessary.

2.1.3 References to guidance documents are not intended to be exhaustive – this leads to significant concern as it is quite probable that if the list is not exhaustive then significant documents will have been missed.

Figure 1 This shows the production schedule for various documents. A number of key documents are to be prepared very late in the process and apparently without any input through public consultation. Of particular concern are the production of the Nominated Undertaker's and the Lead Contractors' Environmental Management Systems and the Contractors' Method Statements (mainly at the start of the construction period).

**3. Policy and environmental management principles**

*3.1 HS2 Sustainability policy*

3.1.1 This paragraph mentions the development and implementation of a Sustainability Policy which is referred to in Annex 2. This is not an appropriate policy for works of this magnitude and many features of the design already run counter to this. The surface route across the Chilterns AONB is an example of this.

*3.2 Environmental Minimum Requirements*

3.2.1 The CoCP will be annexed to the ES submitted to Parliament and will form a component of the HS2 Environmental Minimum Requirements (EMRs) which will set out the high level environmental and sustainability commitments that the Government

will enter into through the Hybrid Bill process. This paragraph also mentions that the EMRs will consist of a suite of framework documents. What are these, where is the detail and how will we be able to comment on them? The EMRs are likely to be very important documents which at present contain precious little in the way of detail.

3.2.3 The EMRs are likely to be formed of various documents (including the CoCP) a number of which have not yet been prepared. Some of the documents are to be agreed with local authorities and others, but should also be subject to wider public scrutiny.

#### *3.4 Environmental management system*

3.4.1 The Nominated Undertaker will develop an environmental management system (EMS) – this should already exist and if not should be prepared and then subject to full and proper public consultation.

3.4.2 The Nominated Undertaker will require each of its lead contractors to have a certified EMS – this does not appear to cover all contractors and the requirement should rest with the Secretary of State rather than the Nominated Undertaker.

### **4. Implementation**

#### *4.1 Enforcement*

4.1.1 The provisions of the CoCP will be imposed by the Nominated Undertaker on the lead contractors by means of works contracts. This requirement should apply to all contractors and any enforcement should be undertaken by the Secretary of State rather than the Nominated Undertaker.

4.1.3 This paragraph states that the general requirements listed in the rest of the CoCP will be supplemented by Local Environmental Management Plans for each local authority area. For the Chilterns AONB this means two different areas covering the route across the area. The Board considers that this should be one unified Local Environmental Management Plan.

#### *4.2 Local Environmental Management Plans*

4.2.2 Local Environmental Management Plans (LEMPs) will be developed after engagement with local communities, authorities and stakeholders. Though this is welcome the Board is concerned that, based on the experience of the previous Community Forums, such engagement will not produce any meaningful dialogue or changes to draft documents. Therefore, the results should be agreed by all parties and this is not mentioned.

#### *4.3 Site management*

4.3.1 Lead contractors will undertake monitoring – this should be undertaken by the Nominated Undertaker at least and should also involve local authorities or other independent appropriate expertise.

4.3.4 The Nominated Undertaker and its contractors will be responsible for identifying the training needs of their personnel. The Board expects all staff employed for any aspect of work, whether this is construction, monitoring or enforcement of the CoCP to be appropriately qualified and suitably experienced.

4.3.5 The Board considers that the Considerate Constructors Scheme is unenforceable in this instance.

#### *4.4 Contractors' method statements*

- 4.4.1 The Nominated Undertaker's contractors will set out the procedures to be followed for construction operations in method statements – this gives no confidence that the statements will be rigorous and are certainly not independent. They should be assessed by independent experts prior to agreement and adoption.
- 4.4.2 Contractors' method statements are dealt with in this paragraph. These will define any specific control measures. No detail has been provided at present. The Board wonders how they will be reviewed and updated and accepted by the Nominated Undertaker acting as both judge and jury.

#### *4.5 Supervision*

- 4.5.2 A contact person will be identified – however, this paragraph does not tell anyone how that person could then be contacted.

### **5. General requirements**

#### *5.1 Community relations*

- 5.1.1 The Nominated Undertaker and its contractors will produce and implement a stakeholder engagement framework and provide appropriately experienced community relations personnel to implement the framework. Though this is welcome we are again provided with no detail and no doubt a need to comment at short notice. In addition, HS2 Ltd 'will take reasonable steps to engage with the community'. The Board considers that this is hardly sufficient and it leaves the question of what the alternative unreasonable steps would be and who or which organisation decides on this and what are the tests for reasonableness. Once drafted any framework should still be subject to public scrutiny and agreement.
- 5.1.6 A construction operations website will be maintained – this should also be widely promoted along with a landline or freephone number for contact purposes.
- 5.1.10 A small claims procedure would be established by the Nominated Undertaker and modelled on previous examples – the best and most widely accepted models and examples should be used to define the procedure for such claims.
- 5.1.12, 5.1.13 and 5.1.19 The small claims procedure would cater for claims related to damage to property arising from the construction of HS2 up to £7,500 (which is not likely to be adequate for many claims in connection with property) and if a claimant considers an award is inadequate then they will be able to write to the Complaints Commissioner to request resolution and settlement. This is likely to be a complex and onerous procedure that will, no doubt, put many people off claiming.

#### *5.2 Working hours*

- 5.2.2 to 5.2.12 These paragraphs deal with working hours. The section starts (paragraph 5.2.2) by stating that core hours will be from 0800 to 1800 on weekdays (excluding bank holidays) and 0800 to 1300 on Saturdays. This seems to be acceptable. Unfortunately, the following 10 paragraphs then detail a series of get-out clauses which would allow a vast amount of wriggle room for contractors thus resulting in likely working patterns for most operations of 24 hours a day, 7 days a week for most weeks of the year. The Board is very concerned about the likely impacts on the tranquillity and enjoyment of the Chilterns AONB should this happen, and this concern is compounded when paragraph 5.2.8 also talks about taking advantage of daylight hours – during the summer months this could be up to 17 hours a day. Greater care is needed in connection with working hours and this section does not reflect the need to take full account of the likely impacts on the Chilterns AONB. The Board considers that, due to the very special nature of the Chilterns AONB, there should be no Saturday and Sunday working. A possible exception may be made for

repairs, though much more detail is required about what precisely these may entail. The Board considers that should be no 'additional working hours' in connection with works in the Chilterns AONB.

5.2.3 Guidance on variations to core working hours will be included in LEMPs following consultation with local authorities. This should also involve the agreement of the local authorities to any variations.

#### *5.3 Construction site layout and good housekeeping*

5.3.1 The sixth bullet point mentions the maintenance of wheel-washing facilities without the requirement that they are actually used.

#### *5.4 Site lighting*

5.4.2 This section fails to give reassurance that the detrimental impacts of on-site lighting will be properly dealt with as lighting management plans will be developed in the future as part of EMSs.

#### *5.5 Worksite security*

5.5.2 This paragraph mentions the use of high perimeter fencing. This should only be used if absolutely necessary, particularly in and within the setting of the Chilterns AONB, and should be so placed as to allow maintenance of the use of public rights of way without hindrance.

#### *5.6 Hoardings, fencing and screening*

5.6.3 Hoarding will be 2.4m and raised to 3.6m and possibly altered in form to enhance acoustic performance in specific locations (details will be in the LEMPs). The detail should be provided earlier and subject to public scrutiny involving various bodies including local authorities and the Board.

#### *5.7 Unexploded ordnance*

5.7.3 This section states that an emergency response procedure will be prepared to respond to the discovery of unexploded ordnance. It would be much more sensible to have such a procedure agreed and in place well in advance so that any discovery is dealt with in an appropriate and timely manner.

#### *5.12 Pollution incident control and emergency preparedness*

General comment This section details a series of measures that will be adopted to manage the risk of pollution incidents. The Board considers that as well as the Environment Agency and Natural England other environmental bodies should be directly involved in the development of the CoCP and the measures to be adopted.

### **6. Agriculture, Forestry and soils**

#### *6.1 Agriculture, forestry and soils management – general provisions*

6.1.1 This section identifies areas to be considered by the Nominated Undertaker. It is not clear that the impact on farming/forestry practises and operations will be assessed, some of which will be seasonal in nature, e.g. the movement of combines during harvest and the movement of stock.

6.1.2 Reinstatement of agricultural land (second bullet point) should be to its former condition and this should be explicitly addressed.

#### *6.2 Measures to reduce potential impacts on agricultural, forestry and soil resources*

6.2.2 Prior to works commencing surveys will be undertaken to record agricultural or forestry soils disturbed by the proposed scheme. Such surveys should already have been undertaken in order to feed into the ES.

## **7. Air quality**

### *7.2 Measures to reduce potential impacts on air quality*

7.2.3 Although loads will be covered on entering and leaving the site there is no requirement for loads to be covered whilst moved around the site, this should be changed. The impacts arising from any movements would be similar whether on or off site and this should be explicitly referred to here.

In addition, it should be noted that the Bacombe and Coombe Hill SSSI is about 25m from the proposed scheme and in very close proximity to a massive temporary material stockpile to the west of Wendover. Very great care will be needed to ensure the sensitive receptor is properly protected.

### *7.3 Monitoring*

7.3.1 Inspection and monitoring procedures will be implemented and local authorities will be consulted. Local authorities should also be required to agree to any measures that are the subject of consultation.

## **8. Cultural Heritage**

### *8.1 Cultural heritage management – general provisions*

8.1.1 and 8.1.2 The Nominated Undertaker will manage the impact of construction works on cultural heritage assets in accordance with accepted industry practice and guidance. No detail is provided about how the impacts will actually be managed and this should be detailed. Furthermore, though accepted industry practice may be applicable this cannot always be guaranteed and the best practice should be applied in all instances.

8.1.11 Heritage Agreements 'The hybrid bill will seek to disapply the various legislative provisions' which are to be replaced with locally agreed 'Heritage Deeds'. This may be standard procedure but progress with the proposals to date does not fill the Board with confidence. Sufficient weight and resources must be given to Local Planning Authorities, English Heritage and the 'other relevant parties' to ensure robust protection of heritage assets.

### *8.2 Measures in the event of unexpected discoveries of national significance*

8.2.1 It is generally accepted that only 10% of archaeological remains have been discovered (based in part on findings from HS1). The provisions as stated within the CoCP are therefore considered light and minimal at best.

## **9. Ecology**

### *9.1 Ecological management – general provisions*

9.1.2 The Board is disappointed that Ancient Woodland is not specifically mentioned – this is a national resource that will be significantly adversely affected as a result of the proposed scheme.

9.1.4 This section mentions ecological management measures which would include plans showing the 'locations of all known areas of nature conservation interest'. The precautionary approach indicates that where there is insufficient evidence (survey records etc.) to say otherwise, all areas should be regarded as having nature conservation interest. This is particularly pertinent as further survey work is proposed. Also, individual habitat or species management plans are mentioned. There is insufficient detail to assess measures addressing habitat disruption and fragmentation. Elsewhere the documentation describes measures to complete new highway crossings over the PS prior to closure of existing roads. We expect a similar approach to be taken to protect/replace wildlife corridors and habitat linkage – sufficient and established replacement corridors (green bridges or other means)

should be in place prior to the destruction of existing linkages. Furthermore, no detail is given about who will be consulted in connection with habitat or species management plans.

#### *9.2 Measures to reduce potential impacts on ecological resources*

9.2.4 Prior to and during construction there will be consultation with various bodies including local wildlife trusts. The Board accepts the fact that such a list cannot be exhaustive but to exclude the Conservation Board from such consultations when the PS passes through the Chilterns AONB is inexcusable.

#### *9.3 Monitoring*

9.3.1 A programme for undertaking ecological surveys prior to and during construction will be defined by the Nominated Undertaker. Such surveys should inform the baseline and then later verify the baseline and should already be in place and completed prior to re-survey should the proposal be approved. In addition, the Board considers that monitoring should be undertaken by independent experts and this should be undertaken after construction as well.

9.3.2 This section mentions undertaking monitoring of the consequences of construction works on ecological resources without giving any time periods.

### **10. Ground Settlement**

General Sensitive watercourses (e.g. River Misbourne) should also be covered in this section.

#### *10.2 Measures to reduce settlement*

10.2.1 A Settlement Policy has apparently been prepared. The Board has searched the HS2 website and not found this document. This is an unacceptable position and should be rectified. Full public consultation should be undertaken on any policy that has been produced.

### **11. Land quality**

#### *11.3 Monitoring*

11.3.2 Groundwater and surface water monitoring plans will be prepared as appropriate by the lead contractors as part of their EMS. Such plans should be prepared in consultation with, and subject to the agreement of, statutory undertakers, local authorities and other relevant bodies and this should be addressed in the CoCP.

### **12. Landscape and Visual**

General The Board considers that due to the national importance of the Chilterns AONB, a Supplementary Code should be prepared and agreed for the Chilterns AONB.

General This section has no reference to appropriate measures that should be taken within the Chilterns AONB.

#### *12.1 Landscape management – general provisions*

12.1.1 This section states that controls will include 'the sustainable management of landscape issues' – this sentence is meaningless and needs to be clearly stated in plain English. Any controls to be implemented should be subject to the involvement and agreement of local authorities and other appropriate bodies. This section should also require the adoption of the highest standards and the very best practice. Any maintenance of existing and new planting should be for the long term and this should be explicitly expressed. No detail is provided about how prevention of damage to the landscape and landscape features will be achieved.

This section should also include measures to prevent soil compaction (low ground pressure matting etc.), particularly in the vicinity of trees and other sensitive locations and habitats.

#### *12.2 Protection of trees*

12.2.1 All consultants should be appropriately qualified and suitably experienced.

12.2.5 This section mentions felling of trees that were not identified within the ES. The Board considers that all required felling should have been identified in the ES and that no further felling should be necessary. Any felling that takes place should be subject to mitigation and adequate replacement planting which should be subject to a full consultation and agreement with relevant bodies. All specialists should be appropriately qualified and suitably experienced.

12.2.6 Within a rural environment, we would not recommend using large mature or semi mature trees achieving a 'close resemblance' (size) of lost trees. Planting and stock - here and elsewhere, measures need to be taken to ensure an adequate supply of native trees, plants and seed. This relates to both origin and provenance (where material is grown on). Planting also needs to take into account current recommendations for species and structural diversity to increase robustness to climate change, pests and diseases.

#### *12.3 Measures to reduce potential impacts on landscape and visual features*

12.3.3 The Chilterns Conservation Board should be specifically included in the list of consultees for landscape and planting proposals, particularly in relation to the Chilterns AONB. Furthermore, such proposals should also be subject to agreement.

#### *12.4 Monitoring*

12.4.1 and 12.4.3 The maintenance of landscaping and planting and seeding works should be on a long term basis (post construction) and this should be explicitly referred to in the text.

### **13. Noise and vibration.**

General There is no reference to protecting wildlife from noise. Wildlife can suffer severe disruption from noise and vibration (e.g. bird nesting, bat foraging) and protective measures need to be taken.

#### *13.2 Measures to reduce potential noise and vibration impacts*

13.2.1 BPM includes measures that are 'reasonably practicable'. Such measures should be agreed at a local level (CF and Local Authority), be subject to independent assessment, challengeable and verifiable.

13.2.2 Noise and vibration mitigation must be provided (not 'considered' and 'may' be offered).

13.2.8 Noise assessments should also be subject to the agreement of the local authorities and this should be expressed in the text.

13.2.12 10 days out of 15 (66% of the time) would seem a very high level to trigger noise insulation and other measures.

13.2.14 The Nominated Undertaker should do better than to 'seek to agree' with the local authorities a noise and temporary re-housing policy. The text should refer to

consultation (with the local authorities and other bodies) and agreement of such a policy.

13.2.15 The Nominated Undertaker should not be the sole arbiter of applications for noise insulation or temporary re-housing, this decision should be taken with the full input of independent experts.

### 13.3 Monitoring

13.3.3 Proposals for noise monitoring will be set out in each LEMP – locations should be agreed with local authorities and relevant CFs.

## 14. Traffic and transport

General No details are given of likely traffic volumes and sources on which the CoCP can base its suggestions.

### 14.1 Traffic management – general provisions

14.1.2 This section mentions that construction workforce travel plans will be prepared. These should already be provided and subject to full consultation and agreement with the relevant local authorities and other bodies.

### 14.2 Measures to reduce potential transport impacts during construction

14.2.2 Generic measures should also be agreed by the appropriate authorities and this should be explicitly referred to. Such generic measures may include 'permitted access routes and accesses for construction traffic' (8<sup>th</sup> bullet point) – what are these and what does this involve?

14.2.3 Although routes for construction traffic may be subject to approval of the relevant planning authority, the text does not deal with volumes and type of traffic and the likely implications.

14.2.4 Traffic management plans should also be subject to highway authority agreement.

14.2.5 Site specific traffic management measures should also be subject to the agreement of highway authorities. Any repair and reinstatement of damaged verges (and other roadside features which should also be mentioned) should be to the condition prior to the start of the scheme's construction (14<sup>th</sup> bullet point).

14.2.6 Hardstandings at access and egress points should be cleaned at regular, as well as appropriate, intervals.

## 15. Waste and materials

### 15.1 Waste management – general provisions

15.1.1 The volume of spoil and subsequent likely number of lorry movements should be detailed and subject to public comment.

### 15.2 Measures to reduce potential impacts from waste

15.2.4 The Board considers that all excavated material should be handled and used in accordance with relevant and appropriate environmental permits and that no exemptions should apply.

15.2.5 Excavated material may be used for other projects – these should be specified and subject to full environmental assessments and detail should be provided about the likely level of material to be disposed of.

15.2.15 The storage of waste over any aquifers is not dealt with in this section and this should clearly be addressed.

## **16. Water resources and flood risk**

### *16.2 Measures to reduce potential impacts to water resources*

16.2.1 This section states that 'in so far as is reasonably practical' good working practices in the 'EA's pollution prevention guidelines will be adopted' – the Board does not consider that this is adequate or acceptable.

16.2.6 This section mentions the storage of oil below ground – why would this be necessary?

### *16.4 Monitoring*

16.4.1 Full consultation should take place on, and agreement be given for, surface water and groundwater monitoring plans.

16.4.2 Describes 'pre-construction monitoring' for water quality. The Board would expect liaison with local bodies to determine the suitability of monitoring locations.

16.4.4 This section mentions that appropriate actions will be taken where pollution risks are unacceptably high. Who will take action and what mitigation will be put in place?

## **Annex 1 Glossary of Terms**

BPM The PS is not due to open before 2026. The Board does not consider that it is acceptable to base 'Best Practical Means' on legislation from 1974 and 1990.

## **Annex 2 HS2 Ltd Sustainability Policy**

This one page statement does not detail an adequate sustainability policy (which is actually only 9 lines of text and 7 bullet points) and makes bland overarching statements that are pure spin.

## **Annex 3 Local Environmental Management Plan template**

General The LEMP template concerns the Board as it is very general and contains little in the way of detail.

General requirements Site lighting should be controlled and requirements for this should be included.

Landscape and visual Control measures should be identified to reduce impact during construction, but no details are given and no idea is given of what the impacts are likely to be.

## **Legal advice: HS2 – Environmental Statement – Noise Impact Assessment.**

### **Summary**

1. The assessment of the potential noise impacts within the ES needs to be conducted on a basis that is consistent with relevant national policy. There are a number of material aspects of the ES appraisal framework which are not consistent with national noise policy.
2. In particular:
  - a. The Lowest Observed Adverse Effect Level and the Significant Observed Adverse Effect Level have not been correctly identified;
  - b. The LOAEL and SOAEL levels utilised in the HS2 ES are too high, leading to material underestimation of the adverse noise impacts and the significant adverse noise impacts;
  - c. The impact upon those receptors falling within the range between LOAEL and SOAEL has not been assessed on an individual receptors basis as required by national policy;
  - d. The HS2 ES does not identify that the impact upon those receptors lying between LOAEL and SOAEL has been mitigated and minimised as required by national policy;
  - e. The uncertainties in identifying the effect levels, the assessment of impact and the analysis of mitigation to minimise adverse impacts have not been identified – this information is required by the EIA Directive and means that the Environmental Statement is not compliant with EU Law.
3. As a result, HS2 is contrary to national policy and to permit it to proceed would give rise to breach of the EIA Directive. To allow HS2 to proceed would be unlawful.

### **National Noise Policy**

4. National Noise Policy is set out in the Noise Policy Statement for England (NPSE).
5. The Noise Policy Statement identifies an approach based upon three effect levels:
  - a. The No Observed Effect Level - this is the level of noise exposure below which no effect at all on health or quality of life can be detected;
  - b. The Lowest Observed Adverse Effect Level - this is the level of noise exposure above which adverse effects on health and quality of life can be detected;
  - c. The Significant Observed Adverse Effect Level - This is the level of noise exposure above which significant adverse effects on health and quality of life occur.
6. The draft National Planning practice Guidance explains that:
  - a. The range below LOAEL equates to a level where:

“Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.”
  - b. The range between LOAEL and SOAEL equates to a level where:

“Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows for some of the time because of the noise. Potential for non-awakening sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.”

c. The range above SOAEL equates to a level where:

“The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.”

7. The LOAEL levels and SOAEL levels must be defined by reference to this policy approach. As set out below that is not the case in respect of the LOAEL and SOAEL thresholds adopted in the HS2 ES.
8. Where noise will be produced that lies between the LOAEL level and the SOAEL level the Noise Policy Statement explains that all reasonable steps should be taken to mitigate and minimise adverse effects whilst taking into account guiding principles of sustainable development.
9. Thus, the national policy approach is to avoid noise above the SOAEL level. However if this cannot be done, then the policy is that noise impacts should be mitigated by taking all reasonable steps and any residual impacts should be weighed in the planning balance.
10. This approach is also reflected in the draft National Planning Policy Guidance which contains a Table explaining the appropriate response at each tier of the noise assessment hierarchy:
  - a. at or below NOEL no action is required;
  - b. at or below LOAEL no action is required;
  - c. between LOAEL and SOAEL – noise impacts should be mitigated by taking all reasonable steps.
11. It follows that national policy requires the following approach to be adopted in determining whether to permit the HS2 and if so, the noise mitigation controls to which it should be subject:
  - a. Where HS2 will give rise to noise below the NOAEL level it will be acceptable in policy terms;
  - b. Where HS2 will give rise to noise levels between the NOAEL level and the SOAEL level all reasonable steps should be taken to mitigate and minimise noise levels;
  - c. Noise levels beyond the SOAEL level should be avoided.
12. This approach is also reflected in the draft “National Policy Statement for National Networks” which is to apply to nationally significant rail projects. It advises at paragraph 5.179

“The Secretary of State **should not grant development consent unless** satisfied that the proposals will meet the following aims:

- avoid significant adverse impacts on health and quality of life from noise as a result of the new development;
- mitigate and minimise other adverse impacts on health and quality of life from noise from the new development; and
- where possible, contribute to improvements to health and quality of life through the effective management and control of noise.” (emphasis added)

13. This policy approach also reflects that adopted in other NPS’s. Consequently, if HS2 were permitted on a basis other than through the application of this policy approach it would be treated on a basis that is inconsistent with the approach adopted in relation to other nationally significant rail and infrastructure projects. Such an inconsistent approach cannot be and has not been justified.
14. It follows that it is national policy that projects that do not avoid impacts above SOAEL are unacceptable and should not be permitted. Further, projects that have impacts between LOAEL and SOAEL are unacceptable and should not be permitted unless it is demonstrated that:
  - a. All the impacts between LOAEL and SOAEL have been identified; and
  - b. Those impacts have been mitigated and minimised.
15. Even on the basis of the SOAEL’s adopted in the HS2 ES (which are not accepted to be appropriate), HS2 is forecast to give rise to numerous and wide ranging impacts above SOAEL upon a wide range of receptors in a wide range of locations. It follows that consistent with national noise policy HS2 does not avoid significant adverse impacts on health and quality of life from noise. As such it is national policy that HS2 must be refused consent.
16. Further, in general terms (elaborated further below) the HS2 ES does not identify all of the impacts between LOAEL and SOAEL upon every relevant receptor; rather it employs an approach of examining impacts within this range on a “community impact” basis<sup>9</sup>. This is justified by reference to projects undertaken prior to the adoption of the NPSE. It is an approach which is now out of date and which does not reflect current national noise policy.
17. National policy as set out in NPSE does not allow for an assessment of impact on a community wide basis; rather it requires every individual receptor that is likely to receive an impact lying within LOAEL and SOAEL to be identified. This has not been done in the HS2 ES. As a result, by following the approach adopted in relation to projects that pre-date NPSE, HS2 has not identified the impacts as required by national policy. Consistent with that policy it must be refused.
18. Yet further, the HS2 does not demonstrate that the impacts upon those receptors lying within LOAEL and SOAEL have been mitigated and minimised. Policy requires an assessment of the benefits that would be obtained by mitigation for a receptor against the economic and social benefits being derived from the activity causing the noise. Because the approach adopted is one taken on a community wide basis rather than on the basis of individual receptors, the assessment of the cost effectiveness of

<sup>9</sup> HS2 ES Vol 5 Annex A p3 para 1.3.4.

mitigation is not compliant with national policy. Indeed, the HS2 ES explains in terms that the consideration of mitigation has been undertaken by reference to reducing and controlling exposure to noise for communities<sup>10</sup>. National policy does not provide for the assessment of mitigation on a community wide basis; rather it requires it on an individual receptor basis. As a result, HS2 does not comply with national policy in this respect and consistent with that policy must be refused.

### **The Definition of LOAEL and SOAEL**

19. It follows from the above that national policy requires that SOAEL and the LOAEL must be defined. Paragraph 2.22 of the Explanatory Note to NPSE states:

“It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times.”
20. Whilst the HS2 ES purports to identify LOAEL and SOAEL for a number of noise sources and potential receptors, the approach set out is flawed in a number of respects addressed below. The result is that the HS2 ES does not provide an assessment of the potential impacts of the construction and operation of HS2 which is compliant with national noise policy. As matters stand, the HS2 project is therefore contrary to national noise policy and must be refused.
21. It is crucial to note that the HS2 ES explains that the effect thresholds it has adopted are “based upon best practice and previous projects”<sup>11</sup>. They are not then necessarily based upon dose response research which identifies for a particular receptor in relation to a particular source of noise the lowest level of noise that will give rise to an adverse effect on health or quality of life or a significant effect upon health or quality of life.

### **Ground Borne Noise during Construction and Operation**

22. In relation to ground borne construction and operational noise, the HS2 ES has adopted 35 dB LA<sub>Smax</sub> as LOAEL and 45 dB LA<sub>Smax</sub> as SOAEL<sup>12</sup>. These are levels applicable at any time of day or night. The HS2 ES suggests that Table 28 of the SMR “defines the LOAEL and SOAEL for ground borne noise”. However, Table 28 merely sets out impact classification criterion and does not purport to define LOAEL or SOAEL. It follows that the basis for the selection of 35 dB LA<sub>Smax</sub> as constituting LOAEL for a ground borne noise source is not justified in either the HS2 ES or the Scoping and Methodology Report.
23. The WHO Night Noise Guidelines of Europe identify that 32 dB LA<sub>Smax</sub> is a level at which effects upon motility during sleep are observed. This is a threshold for noise induced motility to occur which is a sign of arousal. The WHO NNG explains that frequent “arousal and accompanying sleep fragmentation can affect mood and functioning next day and lead to a lower rating of the sleep quality. Therefore, motility

<sup>10</sup> HS2 ES Vol 5 Annex A p7 para 1.3.23

<sup>11</sup> HS2 ES Vol 5 Annex A p6 para 1.3.18.

<sup>12</sup> HS2 ES Vol 5 Annex A p10 Table 1

is relevant for adverse health effects”<sup>13</sup>. Further. The WHO NNG also recognise that noise events at 32 dBA and below will be audible within a property. This would suggest that adverse effects could be experienced within a property at a level of 32 dB LA<sub>max</sub>.

24. That would suggest that the LOAEL is lower than the 35 dB LA<sub>Smax</sub> adopted in the HS2 ES and that the level adopted in the HS2 ES is inappropriate. It would then follow that the entire appraisal of the impact of the HS2 project from ground borne noise sources is flawed because a LOAEL level has been adopted which is 3 dB too high. Thus the impact assessment does not and cannot have identified all of those subject to a level of noise above LOAEL but below SOAEL. It also follows that the impact assessment cannot have considered the need to mitigate and minimise noise caused to receptors which ought to have been considered as falling within this range but were not because a LOAEL level was adopted that is 3 dB too high.
25. The consequence is that the appraisal of the impact of construction ground borne noise (e.g. noise from TBMs or from the proposed underground railway) is flawed. It also the case that the appraisal of the impact of operation groundborne noise is flawed.
26. These errors give rise to conflict with national noise policy which requires the identification of LOAEL, the identification of those experiencing noise between LOAEL and SOAEL and the mitigation and minimisation of such impacts. As a result, to grant consent for HS2 would be in direct conflict with national noise policy.
27. It is similarly, the case that the 45 dB LA<sub>Smax</sub> level identified in the HS2 ES as SOAEL in relation to ground borne noise sources has not been justified in the HS2 ES or the SMR.
28. There is no dose response research relied upon in the HS2 ES that establishes that this is the level at which significant adverse observed effects occur. Indeed, the level of 45 dB LASmax is not identified in Table 5.1 of the WHO NNG in relation to any threshold; rather waking up in the night and/or too early in the morning is identified to occur at 42 dB LASmax. In other words, levels at 42 dB LASmax and above will wake people up. By adopting a level for SOAEL that is 3 dB higher than this, the HS2 ES fails to assess impact significance against SOAEL.
29. Again, the HS2 ES has adopted an effect level which is not justified and which appears to be 3dB too low. The consequence of this is that the appraisal of significant effects set out in the HS2 ES is flawed. The ES will not have identified receptors which will experience an impact above the SOAEL.
30. This gives rise to a conflict with national noise policy which requires the identification of SOAEL, the identification of those experiencing noise above SOAEL and the avoidance of impacts above SOAEL. As a result, to grant consent for HS2 would be in direct conflict with national noise policy.
31. In relation to ground borne noise associated with construction impacts, the HS2 ES adopts an approach relating to the duration fo impact that means that even where noise levels are above the level identified in the ES as SOAEL they are not considered to be significant if the noise level is experienced for a period of less than

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<sup>13</sup> WHO NNG page 99.

one month<sup>14</sup>. There is no basis in either research or policy for suggesting that those who experience construction related ground borne noise above a SOAEL level for a period of less than a month do not experience significant adverse impacts as defined in national policy. The consequence of this approach is the HS2 ES does not identify receptors as experiencing a likely significant adverse effect when in fact they are forecast to experience impacts that are above SOAEL. The HS2 ES is therefore flawed in this respect.

### **Ground Borne Vibration**

32. The HS2 ES identifies a LOAEL level in respect of ground borne vibration of 0.2 VDV m/s<sup>1.75</sup> and a SOAEL level of 0.8 VDV m/s<sup>1.75</sup> for the daytime. At night the HS2 ES identifies the LOAEL level in respect of ground borne vibration as 0.1 VDV m/s<sup>1.75</sup> and 0.4 VDV m/s<sup>1.75</sup>.
33. Again the HS2 ES indicates that the SMR defines these levels<sup>15</sup>. However, once again the SMR does not set out any justification for the adoption of these levels as LOAEL and SOAEL; rather it states that these levels "have been developed using the guidance in BS6472 and are consistent with those applied to other projects such as HS1 and Crossrail".
34. BS6742 at Table 1 does indeed refer to the VDV levels referred to above. However, it does not do so in the context of defining the lowest level at which an adverse effect would be experienced or the level at which a significant adverse effect would be experienced. Rather, the levels taken from BS6742 are levels identified by reference to the likelihood of adverse comment being made by person who experienced a given dose. In other words, the levels are drawn from research into whether people are likely to complain when they experience a given dose. This is far from being based upon research as to whether people will experience adverse effects from a given dose.
35. Further, the fact that these levels were utilised by projects assessed prior to the adoption of the NPSE does not mean that these levels are appropriate to adopt as LOAEL and SOAEL.
36. It follows that the both the LOAEL and SOAEL levels adopted in the HS2 ES in respect of ground borne vibration do not represent thresholds derived by reference to adverse effects that can be observed; rather they are levels that relate to likelihood of complaint. As a result the LOAEL and SOAEL levels adopted do not correspond with levels required by the NPSE to be adopted. It follows that the HS2 ES appraisal of ground borne vibration is entirely flawed. HS2 must therefore be considered to be contrary to policy and should be refused.

### **Ground Borne Noise and Non-Residential Receptors**

37. The HS2 ES identifies a series of criteria to be applied in respect of the assessment of adverse impacts upon non-residential receptors<sup>16</sup>. These are all described as representing a threshold of "adverse" effect. In other words, these levels are

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<sup>14</sup> HS2 ES Vol 5 p14 para 1.4.36.

<sup>15</sup> HS2 ES Vol 5 App A p10 paragraph 1.4.18

<sup>16</sup> HS2 ES Vol 5 p 16 Table 4

identified as the point at which adverse effects are experienced or LOAEL. It appears that no SOAEL level is identified in respect of non-residential receptors.

38. As a result, the HS2 ES does not follow the approach required by national policy as set out in NPSE in respect of identifying both LOAEL and SOAEL in respect of non-residential receptors. This means that it is not possible to identify whether any non-residential receptor experiences an effect above SOAEL. This means that the impact of HS2 in terms of ground borne noise upon non-residential receptors cannot be assessed in accordance with national policy. The HS2 ES is thus flawed in this respect also. The result in that HS2 is contrary to national policy and must be refused.
39. Further, no justification is provided for the adoption of the thresholds in the HS2 ES as being considered to be LOAEL for the particular receptors in relation to ground borne noise sources.
40. Indeed, some of the criteria appear to be anomalous. The 40 dB  $LA_{Smax}$  criterion for hospitals if exceed would give rise to an adverse effect i.e. it is said to represent LOAEL. This can be contrasted with the LOAEL adopted in the HS2 ES of 35 dB  $LA_{Smax}$  for residential properties. It thus appears to be suggested that receptors within a hospital are less sensitive to ground borne noise than residential receptors. However the WHO NNG states that “the following groups may be hypothesised to be more vulnerable to noise during sleep: old people, ill people, people with chronic insomnia, shift workers and people resting during the daytime, people with a tendency to depression, light sleepers, pregnant women, people with high anxiety and high stress levels.”<sup>17</sup>
41. This would suggest that a LOAEL for a hospital could be expected to be at a lower than that adopted generally for a residential receptor. In the HS2 ES however the reverse is true and without any explanation provided. It must follows that the level adopted as LOAEL for hospitals in respect of ground borne noise impacts cannot be and is not justified. This gives rise to a breach of national policy in that a group of receptors has not been appraised against LOAEL as required by that policy.

### **Airborne Noise - Construction**

42. In respect of airborne construction noise the HS2 ES identifies SOAEL for the daytime, evening and night time periods as 75 dB LAeq, 12 hr, 65 dB LAeq 1 hr and 55 dB LAeq 1hr during the night respectively. These are levels to be measured externally.
43. No justification is provided in the HS2 ES for the identification these levels as SOAEL. They appear to be drawn from BS5228 Annex E ABC method category C. However, the values set out in BS5228 Annex E are not values derived from any dose response study; rather the 75 level can be traced back to having origins in the Wilson Report as being a level at which a meeting could be held in a building with windows shut.

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<sup>17</sup> WHO NNG p100

44. In relation to the adoption of an evening 1 hour LAeq level of 65 dB as SOAEL, no dose response evidence is referred to in the HS2 ES to justify the use of this threshold.
45. Further, in relation to the adoption of a 1 hour LAeq level of 55 at night as SOAEL no dose response evidence is referred to in the HS2 ES to justify the use of this threshold. Indeed, it is instructive to have regard to the WHO NNG section 5.6 which explains that in relation to the range of 40 to 55 dB  $L_{night}$  (i.e. and LAeq measured over 8 hours of the night):

“adverse health effects are observed among the exposed population. Many people have to adapt their lives to cope with the noise at night. Vulnerable groups are more severely affected.”
46. This suggests that significant observed adverse effects will be experienced at levels of 40 dB at night and above. On this basis it would appear that the 55 dB adopted does not represent SOAEL but a much higher level. Indeed, the WHO NNG states at section 5.6 that at levels above 55 dB  $L_{night}$  :

“The situation is considered increasingly dangerous for public health. Adverse health effects occur frequently, a sizeable proportion of the population is highly annoyed and sleep-disturbed. There is evidence of the risk of cardiovascular disease increases.”
47. Thus the 55 dB level adopted in the HS2 ES is not SOAEL but rather a level much higher than SOAEL.
48. It follows that the HS2 ES appraises construction impacts from airbourne noise at night by reference to a threshold level that is above SOAEL. As a result, it fails to capture all of the likely significant impacts arising. The fact that that level has been used in assessments conducted in relation to other projects conducted prior to the adoption of the NPSE does not justify the selection of 55 dB as SOAEL now.
49. In addition to these matters, the HS2 ES does not identify LOAEL for any receptor in relation to airborne construction noise. This means that a critical threshold has not been defined and there has been no assessment of the adverse impacts of the project against such a threshold. The consequence is that there has been a fundamental failure to engage with the requirements of national policy as set out in the NPSE and indeed as emerging in the draft NPS.
50. It is not possible to identify from the ES the receptors that lie in the range between LOAEL and SOAEL in respect of airborne construction noise impacts. The impact upon these properties cannot therefore be taken into account by the decision maker. It is also not possible to have identified those properties in respect of which there is a policy requirement to mitigate and minimise the impacts. Nor can any judgement be reached as to whether this policy objective has been attained.
51. Once again, only where the airborne construction noise SOAEL is exceeded for a period exceeding one month does the HS2 ES record the impact upon a receptor as significant. There is no basis in either research or policy for suggesting that those who experience construction related airborne noise above a SOAEL level for a period of less than a month do not experience significant adverse impacts as defined in national policy. The consequence of this approach is the HS2 ES does not identify receptors as experiencing a likely significant adverse effect when in fact they are

forecast to experience impacts that are above SOAEL. The HS2 ES is therefore flawed in this respect.

52. The HS2 ES is thus fundamentally flawed in respect of its approach to airborne construction noise. HS2 is contrary to policy and cannot be permitted.

### **Airborne Noise - Operations**

53. In respect of operation airborne noise, the HS2 ES adopts as SOAEL levels of 65 dB LAeq 16 hour during the day and 55 dB LAeq 8 hour at night.

54. The day time SOAEL is said to be consistent with the daytime trigger level in the UK Noise Insulation (railways and Other Guided Systems) Regulations. The daytime SOAEL is measured as an external level.

55. The WHO Guidelines for Community noise identify that 50 dB LAeq 16 hour is a threshold of moderate annoyance for the daytime and evening for outdoor living areas and that 55 dB LAeq 16 hour is a threshold of serious annoyance for the daytime and evening for outdoor living areas. The threshold of 65 dB adopted as SOAEL is thus 10 dB above the level that the WHO Guidelines has identified as the threshold of serious annoyance. The level adopted in the HS2 ES is thus a level that is twice as loud as a level where serious annoyance would be caused.

56. Indeed the WHO Guidelines for Community Noise indicate that an internal level of 35 dB LAeq 16 hour for the daytime represents the threshold beyond which there is an adverse impact upon speech intelligibility within a dwelling and moderate annoyance caused. The WHO NNG identifies that in general a partially open window will provide 15 dB of noise attenuation to an external noise level. Thus, an SOAEL level of 65 would equate to 50 dB internally with a partially open window. Even with a window closed it is unlikely to offer significantly greater than 20 dB of noise attenuation i.e. the 65 dB level equates to 45 db internally. Those levels are 10 dB greater than the threshold identified by the WHO guidelines as appropriate i.e. a level of noise which is up to twice as loud as the WHO threshold is considered not to have a significant adverse effect on the approach adopted in the HS2 ES.

57. It is plain 65 dB is a level that is set without regard to the relevant dose response research and does not represent SOAEL; rather a lower level of 50 dB LAeq 16 hour for SOAEL from operational noise in the daytime should have been adopted.

58. This means that the HS2 ES does not assess the impact of operational noise from the operation of HS2 upon residential receptors during the daytime on a basis that is appropriate or consistent with national noise policy. The HS2 ES by adopting a level for SOAEL necessarily significantly under-estimates the likely significant impacts arising from operational airborne noise during the daytime.

59. In relation to the nighttime, the HS2 SOAEL level for operation noise is 55 dB LAeq 8 hour externally. This is identified as equating to the Interim Target defined by the WHO NNG.

60. The WHO NNG describes this interim target in the following terms:

“An interim target (IT) of An interim target (IT) of 55 dB  $L_{night, outside}$  is recommended in the situations where the achievement of NNG is not feasible in the short run for

various reasons. It should be emphasized that IT is not a health-based limit value by itself. Vulnerable groups cannot be protected at this level. Therefore, IT should be considered only as a feasibility-based intermediate target which can be temporarily considered by policy-makers for exceptional local situations.”<sup>18</sup>

61. Indeed, a threshold of 55 dB Lnight is described in the WHO NNG as a level where:  
“The situation is considered increasingly dangerous for public health. Adverse health effects occur frequently, a sizeable proportion of the population is highly annoyed and sleep-disturbed. There is evidence that the risk of cardiovascular disease increases.”<sup>19</sup>
62. The Interim Target is thus not a level that represents SOAEL. Rather the WHO NNG advises that between 40 and 55 dB Lnight,  
“Adverse health effects are observed among the exposed population. Many people have to adapt their lives to cope with the noise at night. Vulnerable groups are more severely affected.”<sup>20</sup>
63. Further the WHO NNG states that:  
“For the primary prevention of subclinical adverse health effects related to night noise in the population, it is recommended that the population should not be exposed to night noise levels greater than 40 dB of Lnight, outside during the part of the night when most people are in bed.”<sup>21</sup>
64. Again, the HS2 ES has adopted a value for SOAEL which is far above the level that actually represents the threshold of significant observe adverse effects as described in national policy.
65. This means that the HS2 ES does not assess the impact of operational noise from HS2 upon residential receptors during the night on a basis that is appropriate or consistent with national noise policy. The HS2 ES level for SOAEL at night necessarily significantly under-estimates the likely significant impacts arising from operational airborne noise during the night.
66. LOAEL in respect of daytime operational noise is identified in the HS2 ES as 50 db LAeq 16 hour. As set out above this is a level which the WHO Guidelines identify a representing the threshold of moderate annoyance, and impacts upon speech intelligibility within a dwelling. It is not a threshold below which there are no observed adverse effects, thus it cannot be LOAEL.
67. The HS2 ES is thus fundamentally flawed in respect of its approach to airborne operational noise. HS2 is contrary to policy and cannot be permitted.

### **Airborne Noise and Non-residential receptors**

68. The HS2 ES adopts a series of different assessment criteria in relation to airborne noise and non-residential receptors. The approach is similar to the approach adopted in relation to the thresholds for ground borne noise and no-residential receptors namely, that a LOAEL level is identified.

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<sup>18</sup> WHO NNG p109

<sup>19</sup> WHO NNG p108 table 5.4

<sup>20</sup> WHO NNG p 108 Table 5.4

<sup>21</sup> WHO NNG p109

69. It appears that no SOAEL level is identified in respect of non-residential receptors. As a result, the HS2 ES does not follow the approach required by national policy as set out in NPSE in respect of identifying both LOAEL and SOAEL in respect of non-residential receptors. This means that it is not possible to identify whether any non-residential receptor experiences an effect above SOAEL. This means that the impact of HS2 in terms of airborne noise upon non-residential receptors cannot be assessed in accordance with national policy. The HS2 ES is thus flawed in this respect also. The result in that HS2 is contrary to national policy and must be refused.
70. Further, no justification is provided for the adoption of the thresholds in the HS2 ES as being considered to be LOAEL for the particular receptors in relation to airborne noise.

### **Traffic Noise**

71. No LOAEL or SOAEL values are identified for use in assessing the impact of noise from traffic. Indeed, the impact methodology followed is one that simply examines the magnitude of change in terms of road traffic noise.
72. An approach to impact assessment that simply assesses the magnitude of change without reference to absolute levels and without reference to LOAEL and SOAEL is one that does not comply with national noise policy. This is because it does not enable a decision maker to identify whether properties would be affected by traffic noise above a SOAEL level, nor does it allow for the identification of properties adversely affected between the LOAEL and SOAEL levels or consideration of whether the impacts upon such properties have been mitigated and minimised in accordance with policy requirements.
73. A SOAEL level must be defined for road traffic noise. Properties that are already experiencing levels above SOAEL should not experience any increase in road traffic noise as a result of HS2: such impacts are to be avoided consistent with national policy.
74. A LOAEL level must also be defined for road traffic noise. Properties experiencing adverse impacts lying between LOAEL and SOAEL have to have those impacts mitigated and minimised consistent with national policy.
75. The failure to adopt this approach in relation to road traffic noise means that the HS2 ES appraisal of road traffic noise impacts is totally inadequate. The ES presents no impact assessment on a basis that could be considered to be remotely consistent with national policy.
76. The HS2 ES is thus fundamentally flawed in respect of its approach to road traffic noise. HS2 is contrary to policy and cannot be permitted.

### **Ground Borne Noise Assessment Methodology**

77. The assessment of ground borne noise has assumed that a temporary construction railway will be utilised. However, the use of such a railway gives rise to a number of impacts above SOAE and above LOAEL and SOAEL. It is therefore incumbents upon the HS2 project in accordance with national policy to consider how to avoid the

impacts above SOAEL and how to minimise the impacts between LOAEL and SOAEL.

78. No such consideration is presented in the ES consistent with the requirements of national policy. For example, there is no examination of whether alternatives to using a railbased railway (e.g. trucks on rubber tyres) might be used.
79. Although the HS2 ES refers to matters relating to uncertainty in the forecasting of ground borne noise and vibration, it present no data relating to a train travelling at the speeds that HS2 is proposed to operate at. Nor does it present any data that indicates to the reader how accurate the forecasts are likely to be. This is crucially important in respect of those receptors where forecasts are just below LOAEL and SOAEL levels as it may be that due to inaccuracy in the forecasting such receptors may experience adverse or significant adverse impacts.

### **Airborne Noise Assessment Methodology**

80. In relation to construction noise, it is to be noted that the impact assessment has been conducted using predicted calendar monthly average noise levels. The HS2 ES acknowledges that daily levels can be around 5dB higher than the monthly levels<sup>22</sup>.
81. It follows that given that SOAEL and LOAEL should be defined by impacts over a single day, night or evening (as appropriate), to assess impacts by reference average monthly levels will not identify either the number of receptors that will actual experience impacts above SOAEL levels or adverse effects between LOAEL and SOAEL. In other words, the methodology adopted seriously underpredicts the scale and nature of the impacts arising from construction. The methodology is thus inconsistent with the requirements of noise policy because it allows receptors to experience impacts above SOAEL whereas policy states that such impacts should be avoided. The methodology is thus wholly flawed.
82. Further, the impacts are only presented for the worst affected floor in buildings with multiple floors. This means that a particular occupier on a floor other than the worse affected floor cannot identify from the HS2 ES what the project predicts the impact upon his/her particular property is likely to be. Further, it means that in circumstances where in a building some floors may be affected above SOAEL but other between LOAEL and SOAEL, the reader o the ES is unable to identify the dividing line. This means that there will be properties between LOAEL and SOAEL that experience adverse effects that are not identified in the ES. Accordingly, it is not possible to determine whether the impacts upon such properties have been mitigated and minimise din accordance with national policy.
83. The precise specification of HS2 trains is unknown. Sensitivity testing has demonstrated that changes to the specification could lead to changes in predicted sound level of up to 3 dB<sup>23</sup>. It is wholly unclear from the HS2 ES whether the project has appraised the operational airborne noise impact on the basis of an assumption that trains may be up to 3dB noisier. If that has not been done then there has been a failure to appraise the project on a robust basis. The need to make allowance for

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<sup>22</sup> HS2 ES Vol 5 Annex C p5 para 2.1.11

<sup>23</sup> HS2 ES Vol 5 Annex D p24 para 1.3.5

such uncertainty is crucial in relation to properties lying within 3dB of either the LOAEL or SOAEL levels as these might be subject to adverse or significant adverse effects which the ES would not report if this matter is not taken into account.

### **The Approach to Mitigation**

84. National noise policy is clear that noise impacts above SOAEL are to be avoided and that development consent for nationally significant infrastructure projects should be refused if this aim is not achieved.
85. Where adverse impacts are experienced by receptors i.e. impacts between LOAEL and SOAEL, national policy requires these impacts to be mitigated and minimised on a basis that is consistent with the costs and benefits that the project would deliver.
86. In relation to construction related ground borne noise, no appraisal is presented that demonstrates that the forecasts adverse impacts have been minimised. For example, there is no appraisal that justifies the use of a construction railway as opposed to the use of trucks with rubber tyres on the basis of a cost/benefit analysis.
87. Similarly in relation to operation ground borne noise, there is no appraisal of whether such noise could be further minimised through the use of floating slab track on the basis of a cost/benefit analysis.
88. In relation to airborne noise impacts (both construction and operational) noise insulation for properties is only proposed where impacts above SOAEL are predicted to arise.
89. There is no material presented in the ES that examines whether it would be possible to extend noise insulation to those affected by airborne noise between the LOAEL and SOAEL levels. The only appraisal conducted has looked at the provision of noise barriers.
90. This means that properties predicted to experience noise just below SOAEL levels will not be provided with noise insulation whereas properties above will. The latter properties will then experience a reduction in noise to levels below that experienced by the properties just below the SOAEL. In other words the approach creates a "black hole" where properties will experience high levels of noise and materially adverse conditions without mitigation.
91. It follows that the HS2 ES does not present the information necessary to determine whether adverse effects have been minimised in a manner that is consistent with national policy.

### **Noise from Stationary Systems**

92. As with road traffic noise, the approach adopted to the assessment of noise impacts from stationary systems is based upon examination of the magnitude of change in noise levels. For the same reasons set out above in relation to the road traffic noise this approach does not comply with the requirements of noise policy because it is not based upon the identification of LOAEL and SOAEL levels.

### **Utility Diversions**

93. The precise nature of the utility diversion required has not yet been defined<sup>24</sup>. Where the HS2 project requires utilities to be diverted any noise impacts of those works fall to be assessed as part of the project itself because they form part of the project. It follows that the failure to assess the impacts of utility diversions is a failure to assess the likely significant impacts of the project. The HS2 ES is thus defective in that it fails to assess the likely significant impacts of the project in this respect.

### **CONCLUSION**

94. For the reason set out above, the appraisal of the noise impacts arising from HS2 set out in the HS2 ES is not compliant with national policy. Further, the defects within the ES are so numerous and of such consequence that it cannot be reasonably concluded that the ES is an ES within the requirements of the EIA Directive.

95. As a result it would be contrary to national policy and it would be unlawful to allow HS2 to proceed.

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<sup>24</sup> HS2 ES Vol 5 Annex C p 8 para 2.2.6