INVESTORS IN PEOPLE

CHILTERN DISTRICT COUNCIL

Cabinet

Tuesday, 11th February, 2014
At
4.30 pm

Council Chamber, King George V House, King George V Road, Amersham

Appendix to Item 13: HS2 Update
DRAFT Response to the Environmental Statement

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HS2 Phase 1 Environmental Statement

Consultation

27 February 2014

The Buckinghamshire Councils response;

Aylesbury Vale District Council
Buckinghamshire County Council
Chiltern District Council
South Buckinghamshire District Council
Wycombe District Council

1. EXECUTIVE SUMMARY

1.1 Objections and Concerns

1.1.1 The Buckinghamshire Councils remain opposed to the … However, the Councils set out to fairly and diligently review the information provided in the HS2 Phase One environmental statement (ES).

1.1.2 HS2 Ltd states that the ES includes the likely significant environmental impacts along the route and the measures to manage and reduce these impacts. The Buckinghamshire Councils rejects that this has been completed due to the number of errors, omissions and assertions.

1.1.3 Sum up concerns on HB mechanism

1.1.4 Sum up concerns on ES approach

1.1.5 Sum up some of headline issues with technical content

1.1.6 With regard to traffic and transport consideration, the scheme includes a number of major infrastructure schemes and will require a significant workforce, numerous construction depots, over-bridges, viaducts and associated highway works. The scheme will also require access to large areas of land for construction purposes and to stockpile materials.

1.1.7 There will be a significant impact on the operation of the highway network in Buckinghamshire and there will also be disruption to some public transport services, footways and cycle-ways. As there will not be any stations within Buckinghamshire, the benefits of the scheme to the local population will be limited, although there may be an improved level of service on local trains during the operational phase.

1.1.8 There are a number of items within the Transport Assessment that require clarification, including:

- Base traffic count data and accident data should be provided for the counts undertaken in Buckinghamshire;
- The derivation of the various TEMPRO growth dates should be clarified;
- Future year growth rates should incorporate the appeal sites in Buckinghamshire;
- The road safety review should consider any areas where fatalities have occurred in locations that will be impacted by the scheme and determine whether any mitigation measures are necessary;
- The calculations undertaken to determine daily and peak hour trip generation rates associated with the construction phase should be provided;
- Confirmation of whether the 2021 construction analysis is based on trip generation in 2021, or the peak trip generation associated with the construction phase;
- The Aylesbury and Wycombe VISUM models should be used to determine the impact of the proposals in this area, in particular the impact of the proposed Stoke Mandeville Bypass;

- The impact of the scheme during an off peak period should also be considered;
- Information should be provided on the likely number and nature of mass haul trips;
- Larger scale drawings should be provided of the entire proposed highway infrastructure. Road safety audits should be undertaken, along with the AutoTRACK analysis. All new highway junctions should be subject to capacity assessment;
- The method of calculating the impact of construction traffic from adjacent Community Forum Areas should be provided. In particular it is unclear why there would be no construction traffic from CFA7 in the CFA8 area;
- All junctions that are shown to be significantly affected by the proposals should be modelled using standard industry software and appropriate mitigation measures, which should be promoted, this includes undertaking proper and full manual classified turning counts where they are not currently available;
- The nature and extent of traffic management requirements for utilities works should be provided;
- Proposals for mitigating the loss of parking at Buckinghamshire Railway Centre should be provided.

1.1.9 On the basis of the above, we conclude that the Transport Assessment does not include sufficient detail to allow the impact of the scheme on Buckinghamshire's Transport Network to be properly considered and mitigated.

1.1.10 There has been insufficient time allowed for Buckinghamshire Councils to comprehensively consider such as extensive and complex ES in the timescale with the resources available.

1.1.11 It is our intention that petitions on behalf of Buckinghamshire councils will be deposited against the Bill, and that our response to the ES is without prejudice to anything that may be said in the petition, and that additional points relating to the ES may be raised in the petition and at other stages.

1.2 The Buckinghamshire Compensation and Mitigation Blueprint Version 2

1.2.1 As HS2 Ltd and the Select Committee will be aware, the Buckinghamshire Councils along with Parish Councils, community groups, businesses and wide variety of partners and endorsers dedicated time and resources to produce an extensive list of mitigation and compensation requirements that would address the significant environmental impacts.

1.2.2 The Blueprint Version 2 presents mitigation and compensation to address some of the impacts detailed in the draft environmental statement. However, given that the Buckinghamshire Councils reject the validity of the ES, there is most likely many significant impacts for which further mitigation and compensation needs to address.

1.2.3 However, for information, please find a copy of Blueprint Version 2 in appendix 1. Parliament must understand that this scheme is set to cause significant impacts over and beyond those included in the ES, the rationale for the scheme is questionable and the extend of mitigation and compensation required further undermines the viability of the scheme.

2. THE HYBRID BILL AND ENVIRONMENTAL STATEMENT MECHANISM

2.1 The Hybrid Bill mechanism

2.1.1 Should we challenge the HB process – add in section about why the NPPS should have been followed? Acknowledging the community concern about powers of the HB?

2.1.2 Buckinghamshire Councils would like to question the adequacy of the process introduced by new House of Commons Private Business Standing Order 224A. For instance, the SO requires the minister to publish comments made, and to send them to an 'independent assessor' (SO224A(5)). He must then produce a report and the report is required to summarise 'the issues raised by those comments' (SO 224A(6)(i)); however, the SO does not, for instance, require the assessor to reach any conclusion on those issues or to conduct any evaluation of the ES.

2.2 The Environmental Statement approach

2.2.1 The Directive requires that an ES should include information to enable the assessment of environmental effects of the development. As will be presented in our main response, Buckinghamshire councils do not believe alternatives have been properly considered. The Government has altered the objectives for HS2 throughout the last few years and many of the alternatives were ruled out because of matters related to speed or cost. HS2 has not been shown to be in the national interest compared to investment into regional transport needs, such as set out in the 51M alternative.

2.2.2 Buckinghamshire Councils do not believe that all the likely significant effects on the environment have been adequately described and the mitigation measures proposed have not been adequately described in the ES. In many instances, no mitigation is offered or what little mitigation is referenced, which is to the draft Code of Construction Practice, has no assurances that this will actually be secured. The term, 'reasonably practicable' has been used frequently throughout the documents but it is not clear who will judge what is 'reasonably practicable'.

2.2.3 Baseline information is unreliable, inadequate or inaccurate in key topic areas. For example, unreliable traffic baseline information has been used which fails to consider local modelling. This also means that related issues such as noise, air quality and congestion have not been considered.

2.2.4 For each community forum area there is a plethora of supporting technical documents, plus further route wide documents that are also relevant. Some residents in rural areas told us that download speeds were very slow making this almost impossible. It is also difficult to navigate around these documents on line and is slightly easier as hard copy, although even the hard copy information was difficult to navigate. Also, the costs of obtaining these documents are very high.

2.2.5 Plan and Profile maps and GIS layers were requested by Buckinghamshire Councils and others early on in the consultation as it was felt that these were necessary tools to inform their response. We were told they were likely to be available mid to late December. On 2nd January they had still not been received and our Parliamentary Agent wrote to Winckworth Sherwood, the Government's legal adviser, to request them. On 6 January we were informed via email from HS2 Ltd that the GIS layers would likely be uploaded onto the HS2 website on 17th January, exactly one week before the consultation was due to close. The GIS layers were finally made available on 24 January; ironically, the day that the consultation was due to end. Plan and Profile maps are still unavailable (31 January). Buckinghamshire Councils maintain that this environmental information should have been available to them in good time during the consultation.

2.2.6 Residents have turned to local authorities to help them interpret what the documents mean for them, placing further pressure on very limited resources.

2.2.7 ?

2.3 The Environmental Statement consultation

2.3.1 Local authorities' resources are extremely stretched in the current financial climate. The scale of this consultation process is unprecedented. In a letter from HS2 Ltd dated 2nd August we were told that if we required a hard copy of all the documentation it would occupy about 8 metres of shelf space. The technical appendices alone number 36,900 pages. The Christmas period intervened and in reality most staff took more than 3 days off at Christmas, yet only 3 days over the minimum 56 days were given.

2.3.2 Buckinghamshire County Council wrote to the Secretary of State for Transport on 20 September 2013 to request an extension to the consultation period. He wrote back on 14 October 2013 stating that, 'he did not feel this was a case where a longer period is required for consultees to provide an intelligent response, due to the extensive consultation that has taken place on the scheme to date'.

2.3.3 The information presented in the formal ES bears little resemblance to that which consultees were presented with back in 2011 or indeed the draft ES in May 2013, which numbered only 4,912 pages. On Crossrail, the ES was deposited on 22 February 2005 with a deadline for comments were set later on for 17 May 2005. The ES for Crossrail was very much shorter than the ES for HS2.

2.3.4 On 13 December, we were informed by HS2 Ltd that, 'a small number of pages were inadvertently omitted from some of the supporting information contained in the Technical Appendices (Volume 5) to the ES.' Patrick McLoughlin wrote to MPs informing them of the error on 16th December, he stated 'most corrections relate to just one page, but a slightly greater number were omitted from a number of the Cultural Heritage reports and the Land Quality reports', however a document attached to the updated memory sticks received by MPs on 2nd January clearly stated that 877 pages had been missing from earlier versions.

2.3.5 Despite HS2 Ltd admitting to the errors, by 2nd January, the replacement memory sticks had only been made available to the House of commons, not members of the public, with just three weeks before the consultation was due to close.

2.3.6 It was only when the House of Commons Standing Orders Committee met on 15 January that they decided to extend the deadline to 17 February due to missing documentation. A statement to that effect did not appear on the HS2 Ltd website until the House of Lords Standing Committee on 20 January, saying, 'we were happy to comply with the ruling of the Commons Select Committee that has already extended the consultation on the Environmental Statement. Ministers will now need to consider today's ruling before deciding on how to respond'. The House of Lords ruled that the extension to the consultation should be extended to 27 February. It was then 2 further days before the Gov website was changed to reflect that HS2 Ltd had accepted that they had extended the consultation until 27 February.

2.3.7 Maps misleading – see Hillingdon point – providing GIS info and profile maps would have allowed for a more accessible consultation and allowed maps to be properly visualised and circulated to others. Time was wasted having to understand the wider context of the maps and match parcels of land separated by different pages in the ES. The Council is highly disappointed in HS2 Ltd's decision not to assist the Local Authority and others in engaging with this consultation

2.3.8 The County of Buckinghamshire is split into 8 Community Forum Areas; this makes an analysis of the information problematic as it requires Councils to make sure that impacts on the boundaries of Community Forum Areas are carefully checked.

2.3.9 Include the point about library referencing – they should have used expertise of library service….?

3. STRATEGIC ALTERNATIVES AND OPTIONS

3.1 As part of the formal Environmental Statement (ES) HS2 Ltd should include, "an outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice taking into account the environmental effects". The usual way to meet this requirement is to establish clear objectives and outcomes that need to be achieved and then identify and consider a range of alternatives that might meet those objectives and outcomes. That is not the approach taken by HS2 Ltd. Firstly whilst the ES does set some objectives, these are different from those described in the draft ES. Hence no consistent criteria to measure the range of options against.

3.2 Secondly, rather than measure the range of options against the objectives and outcomes to see which is most and least effective, the options have been explicitly compared with the proposed scheme (often referred to as the preferred option – i.e. HS2). That is a little like identifying healthy eating as an objective, deciding apples are your preference and then dismissing other healthy food options simply because they are not apples.

3.3 The ES states that consideration was given to a conventional speed version of Phase One of HS2 (London to Birmingham). This seems logical, since a conventional speed version could have a different alignment, do less damage to the environment and improve connectivity by stopping in more places. However, HS2 Ltd state that this alternative was, “assumed to comply with the same specification as HS2 in all respects except speed, and that it would follow the same route and provide the same connections, stations and level of service”.

3.4 This suggests a conventional alternative that stops at four stations, using exactly the same alignment. It will clearly be inferior since no attempt has been made to maximise its potential and seems to be a thinly veiled attempt to justify the ‘preferred’ scheme.

3.5 Upgrading existing rail lines is very easily dismissed by the Government using advice from Network Rail about forecast demand and anticipated disruption. “Even if some options may offer good value for money, they fail to offer an effective long-term solution to crowding issues and therefore cannot be considered a viable alternative to new lines. There is a significant risk that an approach of this kind would simply create years of delay and disruption for passengers and freight services, and even after that only give rise to a railway that it is still overcrowded, delaying but not avoiding the need for new lines.”

3.6 There is no comparison with the ‘preferred scheme’ that requires:

- Significant remodelling of Euston station throughout the construction period, causing inevitable disruption to existing services to and from this station
- Remodelling to existing or building new stations in both Phases One and Two
- Diverting, realigning and crossing rail lines, motorways and major roads in both Phases One and Two

3.7 Such impacts are rarely mentioned but it is hoped that MPs will scrutinise all proposals and options carefully to enable fair and proper comparison.

3.8 If rail travel was the predominant mode for passenger travel in the UK and forecast to grow by more than 40% in 20 years, HS2 might be justifiable. Ironically though it is the road network that provides for 90% of all passenger travel, including 75% of long distance trips and demand for road travel is predicted to grow by 44% by 2031. This raises a natural question – why invest so heavily in a network that carries less than 10% of all passenger travel and no more than 25% of long distance trips? It appears that whilst the days of 'predict and provide' are long gone for this country's roads, they still hold strong in the rail industry. MPs might find it helpful to review the Alternative Infrastructure Investment Strategy published by 51m that sets out better ways to invest £50 billion across the country, including public transport, roads, and superfast broadband projects.

4. NON-TECHNICAL SUMMARY

Non-technical summary and glossary	
Section Number	*Comment*
	As reported by HS2 Ltd throughout the consultation period, the non-technical summary is a key document, since it is the starting point for many and could be for some the only document referred to. It is not unreasonable for an individual to expect to find (in summary) a description of the impacts of the proposed scheme, especially the total environmental impact. The Buckinghamshire Councils believe it singularly fails to achieve this, preferring instead to minimise and downplay the effects.
	The project is described in engineering terms and there appears to have been little effort made to mitigate environmental effects, primarily for cost reasons. Whilst significantly longer than the draft environmental statement, it still includes rhetoric, assertions and surprisingly there are still many omissions. The NTS might even be described as a propaganda document for the HS2 project.
2.1	Volume 1 of the draft ES (the nearest equivalent document) stated that, *"there is a compelling case for delivering a step-change in the capacity and performance of Britain's inter-city rail network to support economic growth over the coming decades",* but failed to provide evidence to support the statement, despite this being the key objective. The objectives set out in NTS 2.1 (expanded in other parts of the ES) are very different, *"sufficient capacity to meet long term demand, improve connectivity by delivering better journey times and improve resilience and reliability over the network."* This leaves the Councils to conclude that the draft ES was based on different objectives than those described in the formal ES. This is another example of the shifting goalposts that seem to apply to this project. MPs should consider whether they can have confidence in the robustness of earlier analysis when the objectives are subject to constant change.
	Alleged overcrowding on the West Coast Mainline is generally commuter traffic. No attempt has been made to consider improved signals, increased train paths or increased speeds on existing lines. The Councils do not understand how trains running at 225 mph can increase both resilience and reliability across the whole network.
	The NTS fails to explain why the Government has moved away from predict, manage and provide principles and reverted to 'predict and provide' for railways but not for roads. Buckinghamshire Councils are concerned that the Government's strong focus on HS2 has enabled them to avoid responding adequately to the challenges posed by Eddington and McNulty.
	One reason HS2 Ltd offers for rejecting conventional speed rail alternatives to Phase One (London to Birmingham) is alleged

	disruption to existing rail users. The disruption created by designing and building HS2 and imposed on communities is ignored. The Councils suggest that this approach is hypocritical and should be challenged by MPs.
	Environmental effects on and costs for communities on Phase One are not properly quantified or assessed in the NTS, nor are the environmental benefits of upgrades to existing lines measured. As a consequence the business case does not accurately reflect the true costs, benefits and impacts of HS2. Buckinghamshire Councils consider this a serious flaw.
	The NTS does all it can to report minimal impacts on communities and fails to address cumulative impacts that in a linear project are critical. This is reinforced by the fragmented structure of the formal Environmental Statement. As a result, the Councils do not believe that any reader will be able to get a comprehensive over-view of cumulative impacts on the environment.
7.9	The commitment that*, 'detailed design, materials and finishes will be subject to approval by the local planning authority under the provisions of the Bill'*, should be a commitment to more than just an approval process. The Planning Memorandum must ensure that Local Planning Authorities have some genuine influence and control over the design of structures, earthworks and mitigation. The statement at 4.1.4 of the Draft Planning Memorandum that*, 'unless there are exceptional circumstances there will be a presumption in favour of approval'* suggests that there will be no genuine dialogue over design.
	The Chilterns Conservation Board, who manage, preserve and enhance the AONB, estimate that 55km² (during construction) and 45km² (during operation) of the landscape will be altered by HS2, but the NTS states that only about 3km² of the landscape will be altered, apparently less than 0.5% of the AONB. The Councils believe that this demonstrates a complete lack of understanding about the importance of the Misbourne valley and ridges within the AONB. The NTS also fails to describe how the need might be met in other ways, for example the tunnel options proposed by local communities.
7.4	Section 7.4 of the NTS concerns itself with an overview of community effects and does acknowledge that a number of communities will be significantly affected by the construction. The Councils feels that the list is specifically designed to convince the reader that there are minimal impacts, whilst in actuality, the true effects on these communities is glossed over. More detailed analysis of the wider documents illustrates that for many lives will become intolerable during the construction and testing phases.
	Buckinghamshire Councils are concerned that the NTS suggests or implies that local effects are confined to just one community whereas the impacted area is much wider. It is not merely (for example) South Heath that will suffer effects but

	also Hyde Heath, Potter's Row, The Lee, Ballinger and Wendover etc. Construction impacts will spread all along the line, yet the NTS fails to explain this. It also makes extensive use of the word 'temporary', again seeking to minimise or underplay the effects of the scheme. In many areas road closures, diversions, and construction vehicles will become a way of life for up to six or seven years, hardly a temporary inconvenience.
7.12	Section 7.12 of the NTS focusses on Traffic and Transport and explains the benefits that HS2 will bring for inter-urban travellers. It also refers to the draft Code of Construction Practice that includes measures to reduce and manage traffic impacts during the construction period. It acknowledges that congestion will increase, journey times grow and that it will be necessary to close, realign or divert roads and public rights of way. The Councils are concerned that such an approach dismisses the major difficulties that the scheme creates on roads across Buckinghamshire. From the A412 in the south east to the A422 in the north west, there are roads that need to be realigned, diverted (or even closed) to facilitate HS2. Notwithstanding that, the more detailed CFA reports highlight those junctions – far too many to list – that will suffer major adverse impacts and increased congestion. In Aylesbury alone, two of the major radial routes to the town centre from the west will see congestion and queuing grow exponentially during the construction period.
7.10	The summary about socio-economic impacts in the NTS suggests that approximately 14,600 full time construction jobs and a further 5,460 jobs for suppliers will be created and that local economies will benefit from money workers will spend in local areas. As with many other parts of the NTS and the wider Environmental Statement it fails to emphasise the negatives, namely the 12,700 jobs that were to be created in projects that HS2 is now preventing and the many jobs that will be lost and businesses destroyed during the construction phase.
9.2	Section 9.2 seeks to both describe and minimise the impact of HS2 on the Chilterns AONB. Although it acknowledges that it is a designated landscape, it does not state that it is afforded the highest possible national designation - Category V - the same category awarded to National Parks and French Regional Nature Parks. It also fails to explain Government responsibilities established by both the CROW Act and the National Planning Policy Framework (NPPF). The NTS fails to comply with NPPF and explain the '*exceptional circumstances'* that justify development within such a designated area. The Councils are understandably concerned that throughout the consultation and engagement processes HS2 Ltd have consistently downplayed the AONB, implying that it is less important than other prized landscapes, with any incursion

	regrettable but insignificant.

5. ES INTRODUCTION AND BACKGROUND INFORMATION

Volume 1: Introduction to the Environmental Statement and the Proposed Scheme	
Section Number	*Comment*
Preface	The Buckinghamshire Councils note that the preface states that, 'the period of public consultation on the ES extends for 56 days (eight weeks) following the deposit of the hybrid Bill documents in Parliament.' This is an inadequate amount of time to respond to this document. In comparison the consultation for Crossrail ran for double that time (22nd February 2005- 10th June 2005). The period allowed for responding to the Environmental Statement has also included the Christmas and New Year Period.
P1 1.1.1	In the introduction it is stated that a spur may be provided for the route to access Heathrow Airport, "Provision has been made for extensions to the Phase One network at a later date for a future link to Heathrow Airport". The Councils of Buckinghamshire feel that this need to be in more detail and a full consultation should take place after the 2015 Airports commission report on the future of airports in the UK.
P13 1.6.3	The Councils note that the extent of land take is significant, for example in CFA9. Land owners should be told if their land is not required at the earliest opportunity. The Councils are also concerned that land may be identified that is not directly required for the project as presented.
P15 2.1.1	This paragraph considers the need for additional capacity on North/South railway lines*; 'further major upgrades to the existing*

	lines in these corridors would not be sufficient to meet the long-term capacity needs for passengers or freight.' Figures show that the ECML has not seen an increase in passenger numbers over the last 3 years. Neither will HS2 have capacity for freight.
P20 2.3.10	This paragraph states that, '*The Government also considers that high speed rail would have greater potential to attract travellers from air and road transport, creating opportunities to reduce carbon emissions.'* This is an assumption which is not backed up by figures. Road transport offers far more flexibility than a railway line which does not provide stops except in London and Birmingham.
P20 2.3.12	*'HS1, which has captured around 80% of the travel market between London and Paris through a combination of high speed and the convenience of a city-centre to city-centre service'*. This is a very different market compared to HS2. In order to get from London to Paris by car you have to cross the Chanel by ferry, which is time consuming. There are also no other rail alternatives than HS1 to get to the continent. Therefore this cannot be used to justify the case for HS2.
P25 3	Section 3 describes the consultation and engagement process that has been implemented by HS2 ltd. Buckinghamshire councils challenge the efficiency of arrangements that have offered a voice to HS2 Ltd to disseminate information, without achieving a meaningful dialogue; HS2 Ltd have failed to reflect local concerns about key issues and mitigation. The Councils would also question the benefits of the Planning and Environment Forums and ask why requests for a high level route-wide Forum (as for Crossrail) have been ignored.
P29 3.2.13	This paragraph outlines the engagement surrounding the Draft ES. It should be noted that the Buckinghamshire Councils found the draft ES to be severely lacking in information. It is also noted that the same amount of time (8 weeks) was given to the consultation on the draft ES as the actual ES (until the Government was forced to extend the deadline). Considering the difference in size of the two consultations this reinforces our opinion of the lack of time given for response on the ES.
P47 4.3.6	This paragraph sets out the planned service patterns for Phase One and Phase Two, describing a pattern of 11 trains per hour in each direction, rising to 14 and then 18 during peak hours with Phase Two operational. Buckinghamshire Councils regard this high frequency service pattern as almost impossible with the practical considerations of interaction with the classic rail network. There is no information on passenger numbers north of Birmingham or passenger dispersal figures, where HS2 trains will travel on the classic network to Leeds and Manchester. This information and impacts should have been included within the ES.
P51 4.3.7- 4.3.8	These paragraphs suggest that the track could enable train speeds of up to 400kph (248mph), with initial speeds of 360kph (225mph). The highest speeds will be achieved between the

	Chilterns tunnel and Birmingham interchange, through the rural parts of Phase 1. The Councils in Buckinghamshire are concerned that the railway is being designed for inappropriately high speeds that affect both the vertical and horizontal alignments of the proposed scheme. It appears that speed and journey times are no longer the key factor and therefore changes are possible.
P52 4.3.13	The section is presented on maintenance of operational infrastructure, however provides insufficient detail on the frequency of such maintenance. This is an area that will impact the Councils of Bucks, especially in Stoke Mandeville and Calvert. Discussion of 'condition criteria' again fails to provide any real consideration of the maintenance impacts to nearby residents. The use of diesel trains for servicing the line has not been assessed and the Councils are concerned these will significantly add to the impact, especially at night.
P55 5.1.1	The rail corridor will be continuously fenced, with the type of fencing used at each location dependent on the functional requirements and its context (e.g. whether urban or rural setting). It is not clear how rural or urban will be decided.
5.2.3	Slopes will generally be top-soiled and seeded, but in favourable geological conditions cuttings may be excavated at steeper gradients and allowed to weather naturally.
5.6.1	All tunnels will have portals at each entry/exit. Portals will take different forms, depending on ground conditions, local topography, train speeds and whether they need to accommodate a TBM during construction.
P62 5.7.1	The design and external appearance of head houses *'will be approved by relevant local authorities in order to fit in to the local surroundings'*. This should be in collaboration with local authorities at the earliest opportunity.
P62 5.7.2	Ventilation head houses should be lowered into the landscape to reduce visual intrusion.
P64 5.7.5	It is stated that "fans will be switched off under normal conditions, but will be activated in the event of an emergency and for periodic testing". Again, HS2 fails to define what 'periodic' means and these may give rise to noise disturbance.
P64 5.9	Whilst the types of materials used for construction of the viaducts are discussed, the design options are not. The Councils wish to be involved in the visual design appearance of viaduct structures.
P72 5.15.1	"This land will generally be returned to its previous use, where this is reasonably practicable and subject to landowner agreement". The Councils are concerned that this provides too much flexibility to HS2 and there is a risk of retaining land for other associated uses. This is not acceptable.
P73 5.16.1	The track design has not yet been decided or divulged. In this paragraph it outlines the two types of track that could be adopted. These are ballasted track which is on concrete sleepers or ballastless track which is on a continuous concrete structure known as slab track. It is stated in 5.16.2 that ballasted track requires more maintenance but is quieter than ballastless track.

	This indecision means that the Councils are not in a position to comment on the track as it does not have the information that they require. This is significant.
5.16.2	In general, ballasted track requires more frequent maintenance but generates less airborne noise than slab track. However, it is possible to treat slab track at selected locations so that its acoustic properties are equivalent to ballasted track. The Councils therefore expect HS2 to implement the best available technology to prevent groundbourne noise and vibration.
5.18.2	"This will require radio antennae to be mounted on short extension poles fixed to the OLE masts, approximately every 2km (1.3 miles). The antennae will typically be up to 10m above track level". The Councils request that these are not placed in locations close to any residential properties and are designed in such a way as to reduce visual impacts.
P79	The Councils are yet to see an example LEMP for HS2 and are concerned that these will not provide the added local mitigation that is described by HS2 throughout the whole suite of documentation.
P 80 6.3.16	In relation to community engagement during the construction period this paragraph says that, '*regular meetings will be held at community forum locations between the lead contractor, the nominated undertaker, local authorities and representatives of the local community to discuss construction issues and forthcoming programme of works'*. The Councils would like to know how frequent these meetings will be, and as soon as possible, when they will be held.
6.3.21	Guidance on-site specific variations to core hours and/or additional hours likely to be required will be included within the LEMP following consultation with the relevant local authority. This implies that the Councils will in reality have little or no actual control on hours of working. This is unacceptable. This should be reach agreement with the relevant local authority.
6.3.23	HS2 state that contractors will require a period of up to one hour before and up to one hour after core working hours including "deliveries, movement to place of work, unloading, maintenance". All of these activities may be considered potentially disturbing and the one hour additional time should only permit activities not likely to give rise to disruption.
P81 6.3.24	Tunnelling will be undertaken 24 hours a day, 7 days a week. It is the Councils view that mitigation for this should be representative of the huge disruption it will have to the public.
6.3.26	It is clear that HS2 are already expecting additional working hours outside of the defined core times, albeit with the consent of the LA. The Councils are concerned that this will be the expectation rather than the exception for additional working hours throughout the project.
6.3.3	The Councils expect that vehicle sharing points will be identified to reduce the number of single passenger occupancy trips to construction sites.
P83 6.3.40	*'Sites for sustainable placement have been selected on the basis of their suitability for the disposal of surplus excavated material'*.

	It is not clear from the ES how the suitability of a site has been assessed, nor how the spoil will be managed to minimise visual impact, silting/pollution from run-off and generation of dust.
P84 6.3.47	It is stated that "Construction noise and vibration will be controlled and managed in accordance with the draft CoCP". However there is only limited route wide information contained in the draft with little or no detail on specific mitigation measures. It is stated that "appropriate action will be taken" against contractors failing to abide by the draft CoCP however what defines appropriate action is not documented.
6.4.1	The Councils ask for confirmation that activities relating to advance works are also subject to the controls identified for main works.
6.4.11	The Councils also seek confirmation that activities relating to utility diversions are also subject to the controls identified for main works and a mechanism in place to ensure disturbance is kept as low as possible.
P91 6.7.2	Stripped topsoil is to be *'stored appropriately'*. Stripping storage and management of soils should be in accordance with the guidance in BS 3882 and DEFRA 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites'.
P111 6.21.1	*'Landscape mitigation such as planting will be established at the earliest reasonably practicable opportunity during construction.'* Wherever possible landscape mitigation should take place in advance of construction to ensure it is established as soon as possible to achieve some mitigation during the construction period and in the early years of operation.
P140 8.7	The Landscape and Visual Impact Assessment LVIA) methodology adopted by the consultants is not clear. The latest guidance on LVIA was published in 2013, known as GLVIA3 which supersedes GLVIA 2nd edition. Guidance from the Landscape Institute states that an assessment commenced with GLVIA2 should be completed using that edition. However the ES is inconsistent, referring in the SMR to the use of GLVIA 2nd edition with some reference to GLVIA 3rd edition (SMR 12.5.2)
P141 8.7.1	It would be better to have considered effects at year of opening plus 15, and plus 30 rather than plus 60. There are too many unknowns in relation to such a long timescale.
P143 8.7.8	*'Overhead line equipment (OLE) is excluded from the model on the basis that this rarely gives rise to significant effects if it is the only element visible.'* Buckinghamshire councils disagree. The overhead line equipment does have a visual impact the significance of which will depend on location and mitigation.
P143 8.7.10	Landscape character and visual receptors beyond 500m from the Proposed Scheme will be affected and should be considered. Viewpoints identified in Buckinghamshire Council's response to the Draft ES have not been included in the Landscape and Visual Impact assessment. In particular there are a few views down the track and oblique to its alignment, rather than perpendicular to it, that has been included.

P161 9.1.3	Not all of the permanent effects will reduce over time as planting establishes and matures because not all of it will be screened by planting. According to the ES, suggested mitigation *'has been informed by the consultation and engagement process.'* As stated earlier, the engagement process was not to the standard that the Councils expected. Therefore, where there is mitigation suggested in the ES, it does not address all the issues that the residents in Buckinghamshire have.
P177 10.1.2	This paragraph states that HS2 Ltd must include, *'An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice taking into account the environmental effects'.* In other circumstances this requirement is met by setting out the options and alternatives that were considered at the outset to meet the agreed objectives or to resolve a specific issue. This interpretation is not one shared by HS2 Ltd, since the main alternatives they consider are alternatives to High Speed 2 (the preferred option) not options that meet the agreed objectives. There is also some debate about whether the main reasons given to choose the preferred option and reject the alternatives are both justifiable and balanced.
P177 10.1.3	The alternatives considered by HS2 Ltd fall under four categories: Doing nothing, strategic alternatives (non-high speed rail), route-wide alternatives (to high speed rail), and local alternatives. Buckinghamshire Councils do not believe that these categories sufficiently cover the wide range of alternatives that could meet the Government's objectives and would encourage MPs to review 51m's Alternative Infrastructure Investment Strategy.
P177 10.1.4	HS2 Ltd state that alternatives were derived from considering the Government's long-term transport and economic objectives, the Treasury Green Book requirements and national sustainability / environmental objectives. The first and third are not cross-referenced or expanded upon meaning any independent assessment is impossible.
P178 10.1.5	This paragraph sets out the appraisal criteria underpinning the selection of specific options for comparison with the Proposed Scheme. These are not described in detail and therefore it is impossible to determine what weightings were used and how conclusions were reached. The Councils are concerned that this is an opaque process that cannot be independently considered.
P178 10.2.1	This paragraph states, *'The 'do nothing' scenario implies carrying out no further investment in transport infrastructure to meet the demand met by the Proposed Scheme'.* This reinforces the fact that any scenario or alternative is not being compared to strategic objectives but rather the proposed scheme (i.e. HS2). The Councils believes that such a comparison is unacceptable.
P178 10.2.3	This paragraph describes the Government's aims (established in 2012) all of which point directly to HS2 as a key plank of the

	absent transport strategy. It undermines the later consideration of proper alternatives by stating that, '*Measures to address intensifying and more extensive crowding, growing rail congestion and the consequent increasing challenge of running a reliable railway for passengers are vital…'* Whilst this clearly helps to reject the 'do nothing' alternative, the statement is entirely focussed on railways. It should be noted that Buckinghamshire Councils have never suggested 'do nothing' as an option, despite their opposition to the HS2 proposals.
P179 10.3.1	As an introductory paragraph to the consideration of strategic or route-wide alternatives the statement, '*Successive Governments have discounted domestic aviation or new motorways as viable options.'* This suggests that any consideration of planes or automobiles will be cursory at best. Buckinghamshire Councils feel that all alternatives should be properly assessed.
P182 10.3.13	HS2 Ltd report that consideration was given to a conventional speed version of Phase One (London to Birmingham). This would be welcome if the classic speed alternative had been devised to meet the same objectives as the HS2 proposal. Instead it was, '*assumed to comply with the same specification as HS2 in all respects except speed, and that it would follow the same route and provide the same connections, stations and level of service'.* This suggests a classic speed alternative stopping at only four stations, travelling on the same alignment. Such an alternative will obviously be inferior since there is no attempt to consider and maximise its potential. The Councils believe this is a further example of dishonesty from HS2 Ltd, seeking to justify the 'preferred' scheme.
P182 10.3.14	Bearing in mind the deliberate inferiority of the classic speed alternative it is not surprising that the Government concluded, *'the additional benefits generated by designing a new line to accommodate high speed services, compared to the only real long-term alternative of a new conventional speed line, would outweigh the additional costs'.* Indeed, one might surmise that there was no other conclusion that could be drawn.
P182 10.3.15-16	In these paragraphs HS2 Ltd consider and dismiss lower speeds in specific areas on the route to minimise environmental impacts. It concludes that their approach to mitigation is the best and little could be achieved by reducing the design speed. The Councils believe this completely overlooks the fact that a slight reduction in design speed would enable the entire route to be realigned thus avoiding sensitive areas altogether.
P183 10.3.17	The Councils are unsurprised that, '*the Government concluded that the new line should be high speed, not classic speed, that 400kph is the appropriate maximum design speed for the line, and that the route should not be realigned to a lower design speed.* This is the only conclusion that can be reached when the alternatives and options presented by HS2 Ltd are based on fundamentally flawed assumptions.

P182 10.3.18-20	Initial consideration of options for upgrading existing mainlines carried out by Atkins in 2010 only focussed on the Phase One route (London to Birmingham). Atkins developed five 'rail packages' set out in Paragraph 10.3.19. These are quickly dismissed in Paragraph 10.3.20, with little explanation for the reasons for their dismissal. Buckinghamshire Councils believe that more detail has to be provided about the reasons for the diminishing of the rail packages
P194 10.3.21-23	Work to progress the high speed rail proposals and expand the network to Manchester and Leeds required further consideration of alternatives described as Scenarios A, B and C. These were based on enhancements to all three mainlines (West Coast, East Coast and Midland). Paragraph 10.3.23 describes the option (the Optimised Alternative - OA) submitted by 51m and supported by Buckinghamshire Councils. It is unfortunate that this mixes aspects of the OA with judgements about its merits, rather than objectively describing the detail of the OA and then comparing this with the three scenarios.
P184 10.3.23	HS2 Ltd does acknowledge that compared with Rail Package 2 the 51m Optimised Alternative provides, '*more capacity enhancement on outer suburban services and less for long distance services'.* Such capacity improvements are critical to HS2's business case, but apparently are less important when achieved on a cheaper, less disruptive option. Buckinghamshire Councils are concerned that the OA has not been thoroughly assessed on an equal footing with all options that achieve the Government's objectives. MPs should note that the Government's objective is *not* to build a high speed railway line between London, Manchester and Leeds, but rather to increase capacity and improve connectivity.
P184 10.3.25	This paragraph highlights constraints upon capacity benefits of the OA, stating that, '*the distribution of any additional capacity would necessarily be uneven between destinations'.* It should be noted that many of the claims about capacity benefits achieved by HS2 rely upon enhancements to existing mainline services, using 'freed-up capacity'. This is not reflected in the business case which describes cutting subsidies for existing services. The paragraph also fails to consider significant disruption at Euston during construction.
P185 10.3.26	The Councils are concerned that the Government's conclusions about the upgrade options are skewed by Network Rail's advice about forecast demand and anticipated disruption. '*Even if some options may offer good value for money, they fail to offer an effective long-term solution to crowding issues and therefore cannot be considered a viable alternative to new lines. There is a significant risk that an approach of this kind would simply create years of delay and disruption for passengers and freight services, and even after that only give rise to a railway that it is still overcrowded, delaying but not avoiding the need for new lines.'* For carbon emissions the Government, *"weighed the advantage of lower emissions against the opportunities for a new high speed line to attract passengers from domestic aviation'.*

	This is based on a false assumption that high speed rail from London to Manchester and Leeds will lead to a reduction in domestic aviation, since there are currently very few flights between these destinations.
P188-189 10.4.16-24	Buckinghamshire Councils note the position set out in the paragraphs regarding direct access to Heathrow via a spur. This will inevitably impact upon Buckinghamshire County and South Bucks District Councils because of the provision already made within the HS2 proposals. '*The current position is that the Government has allowed for the future provision of spur junctions in the Proposed Scheme, but has suspended work on the Heathrow spur until 2015 pending the Airports Commission's report. No decisions will be taken until the public has been consulted on the proposals'.* The Councils expect to be involved in any and all engagement / consultation regarding the Heathrow spur.

6. VOLUME 3: ROUTE-WIDE EFFECTS

Volume 3 Route Wide Effects	
The Chilterns Area of Outstanding Natural Beauty	
Section Number	*Comment*
P5 2.1	This section and the introduction fail to recognise the particular importance of the Chilterns AONB arising from its proximity and accessibility to London and its growing economy and population. It is the only such area on the periphery of London which has London Underground tube stations within it. This elevates the Chilterns AONB to have an importance beyond its immediate value – it forms a key part of what makes the south-east of England special and provides a beautiful 'green lung' and area of tranquillity to complement the metropolis close to it. There is also a connection between the AONB and the statutory Green Belt around London, which extends across the AONB in the vicinity of the route, a factor that could have been recognised.
P5 2.1.1	Designation as an AONB under the National Parks and Access to the Countryside Act 1949 affords statutory protection to an area of high scenic quality in order to conserve and enhance the natural beauty of the landscape. The significance of this however appears to be totally lost, with substantial damage being proposed. There is only one AONB along the proposed Phase 1 and Buckinghamshire councils do not accept that impacts have been adequately mitigated.
P5 2.1.3	National planning policy regarding AONB is set out in paragraphs 115 and 116 of the National Planning Policy Framework (NPPF)3, which outlines that great weight should be given to

	conserving landscape and scenic beauty in AONB, with the conservation of wildlife and cultural heritage being important considerations. Again, the significance has been wholly ignored with the AONB receiving no greater protection than other areas along the line.
P6 2.2.1	Stakeholder engagement has generally considered to have been poor and a largely box ticking exercise. HS2 Ltd failed to provide necessary paperwork prior to meetings as requested and what was presented at meetings was often inadequate and conflicting. They were resistant to making presentations available in advance of meetings so that forum members could discuss issues with their organisations before forum meetings. At meetings, excessive time was felt to be wasted on administrative points. Minutes were often not accepted by the forum because they tended to reflect what HS2 Ltd thought ought to have been said, rather than a record of what was actually said. MPs found HS2 Ltd's refusal to record accurate and undisputed minutes inexplicable.
P11 2.3.16	Tranquil Valleys; the suggestion that "*for the most part, the proposed scheme lies within a wide valley setting interrupted by existing development"* considered to have a *"relatively low level of tranquillity"* fails to capture the tranquillity which characterises the section of the AONB where the route would not be in tunnel. It is not an accurate assessment. The description also implies that such areas (where they do exist) may provide some justification for further breaching of tranquillity whereas it is in those very areas that it is of even greater importance to maintain what tranquillity and rural beauty does exist. This is because exacerbating any inappropriate features undermines the coherence of the AONB which has been designated for conservation because of its coherence as an area of natural beauty.
P12 2.3.20	It is stated that *"the majority of areas in the immediate vicinity of the Proposed Scheme vary from low to medium tranquillity due to influences…".* In so far as the section of the proposed scheme which is above ground lies on the northern side of the AONB this statement does not accurately reflect the relationship of the Scheme to areas of tranquillity.
P13 2.3.21	The ES states, *'as the landscape of the AONB contains large blocks of ancient woodland, many areas of registered common land, RPG, National Trust properties and National Trails, and given the statutory national designation, this landscape is of national value'*. Why then is HS2 not treating it as such and giving more attention to the scope for developing elsewhere/ differently and finding ways to moderate the clear detrimental effect on a resource of national significance?
P13 2.3.22	The report acknowledges that the character of the AONB is of national value and the resulting sensitivity to change of the AONB is considered to be high. Buckinghamshire councils do

	not feel that proper justification has been received for HS2 Ltd's refusal to extend the Chiltern bored tunnel. HS2 Ltd say that the various extended tunnel proposals perform better on environmental grounds and are feasible in engineering terms but their main justification for not considering them further appears to be the financial cost. This is disputed and the full costs of such damaging impact within the nationally important AONB have not been properly documented. This is a fundamental criticism of the ES.
P14 2.4.2	The 'sustainable placement' area is justified (in the footnote) on the basis that it would avoid the environmental impacts of transportation elsewhere. However no comment here is made that the significant artificial changing of the terrain is inimical within an area which is designated of national importance because of its natural beauty.
P15 2.5.3	The report states, *'as is commonplace with major infrastructure works, the scale of the construction activities means that works will be visible in many locations and will have the potential to give rise to significant temporary effects* ***which cannot be mitigated practicably'.*** This is a further example of where HS2 is failing to protect the AONB, where actions must reflect its national value and HS2 should go beyond Best Available Technology Not Entailing Excessive Costs (BATNEEC). There are practicable mitigations; most critically an extended bored tunnel.
P16 2.5.10	The report states, *'notable changes will arise as a result of earthworks which will bring about changes to the local topography, including the area of sustainable placement'*. This indicates a lack of sensitivity towards a nationally protected landscape.
P17 2.5.14	The loss of 15ha of woodland from the AONB is underplayed in the report. The report does acknowledge that ancient woodland is irreplaceable and the loss of 32ha phase 1 route-wide, with 19 woodlands directly affected, is later described (8.1.19) as significant at national level. The Woodland Trust has identified 33 ancient woodlands that will be affected by the construction of the scheme.
P17 2.5.16	The impact on Grim's Ditch and other historic landscape features is recognised but not followed through in terms of the mitigation (full/ extended tunnel) that could be deployed.
P18 2.5.19	The assessment of impact on historic landscape features and properties as "limited" due to them not being "perceived over the wider AONB" fails to recognise that the perception of impact in relation to such features is more experienced at close quarters and such qualities form part of the Chilterns experience.
P 18 2.5.20	Planning for temporary and permanent realignment of PRoWs must be designed to minimise effects on the recreational value of the AONB landscape. There is little evidence of such deliberations being undertaken.
P19 2.5.25	The loss and severance of 400ha of agricultural land and of 40km of hedgerow is a key impact on the landscape of the

	AONB, as is the removal of areas of historic sunken laneways at Bowood Lane and Leather Lane and also of a section of Grim's Ditch scheduled monument.
P19 2.5.26	Construction of the proposed scheme will have a devastating effect on the tranquillity of the AONB however the report states, *'construction is not considered likely to give rise to a substantial effect on tranquillity'*. It is difficult to understand how this assertion was reached.
P21 2.6.3	The report states, *'the sustainable placement area will be indiscernible from the existing landscape'*. It is hard to imagine how 1,928,002 tonnes of tunnel spoil near Hunt's Green Farm, South Heath, which is 1.3km long, 450m wide and 5m high will be indiscernible as it will alter the landform. It is also contrary to the main objective of the AONB which is to conserve its natural beauty.
P21 2.6.3	There are approximately 13 balancing ponds and 33 land drainage areas shown on the maps. These are alien features in the Chilterns and have an environmental impact of their own which is not assessed. As they are not typical landscape features found in the Chilterns AONB they represent a significant adverse effect and HS2 Ltd should have considered options which avoid their creation.
P21 2.6.3	The description of impacts in the AONB is alarming; two new viaducts 18m and 12m high and 500m each in length; noise fence barriers which will create man-made linear features; permanent severance of land; overhead line equipment; new highway infrastructure including road bridges; noticeable loss of vegetation; new engineered landforms and of course, regular high speed trains.
P24 2.6.21	It is evident that there will be substantial impacts on the character of the AONB but this is not then followed through in terms of strategic mitigation i.e. an extended tunnel.
P26 2.6.28	The report acknowledges that the proposed scheme will substantially alter the character of the landscape in the immediate vicinity. Buckinghamshire councils do not agree that mitigation measures have reduced the impacts sufficiently on the special qualities and natural beauty of the AONB. The report acknowledges that direct and indirect impacts will remain and that those impacts are considered to be significant. Buckinghamshire councils supported the community requests to extend the bored tunnel further under the Chilterns, than the current planned portal at Mantel's Wood. HS2 Ltd dismissed this.
P27 2.6.33	The report asserts that during year 60 of operation, the scheme will reduce such that it is not considered to be significant. This of course remains to be seen. In view of the quality and sensitivity of the landscape and the presumption to conserve natural beauty within the AONB this conclusion is not robust and reflects the lip service being paid to the AONB.
Agriculture, forestry and soils	

P29 3.1.4	The report says, *'efforts have been made in selecting the route alignment to avoid the highest quality agricultural land, but this has not always been possible'*. The CFA reports reveal a significant loss of agricultural land through Buckinghamshire. A total of 745.7 hectares will be permanently lost, while 1412.7 hectares will be required during construction. Well over 100 farms and holdings will be impacted. The ES does not describe what effect these losses have on the individuals and area or on the viability of the holdings and properties affected. The historical use of the areas impacted for agriculture is removed with little regard for consequences and there is no mention of the need for agricultural production. The loss of Best and Most Versatile (BMV) land route-wide is considered in the ES to be significant. There is no mitigation described for the loss. Buckinghamshire councils are concerned that the acquisition of land does not follow statute and that agricultural land is being taken for biodiversity offsetting. Buckinghamshire councils are concerned about farmland lost through ecological mitigation and for the placement of excavated material. Sustainability is a combination of social, economic and environmental impacts and one would assume that an assessment of these would have been made. There is no information in the ES as to how these 'sustainable' locations were selected. Stability and responsibility for bunds on agricultural land is not apparent. Where holdings have been identified in the ES as experiencing significant permanent effects the mitigation suggested is 'the possible purchase of replacement land using compensation payments so that effects are no longer significant'. It is not known whether land is available adjacent to their land or in a location of their choice or even what compensation is likely to be available so this is not a practical mitigation. CFA 13 Buckinghamshire Councils question the decision to dispose of excavated material using 'sustainable placement' especially at Shepherds Furze Farm agricultural land and disagree with the ES statement which says this is a suitable location. It is not apparent how this has been assessed. The ES says that land will be restored to agricultural use on completion of works but it is not stated when this will be or which works. CFA12 map CT-05-051 shows well over 100 acres of agricultural land potentially required during construction and it is not clear why.
Air quality	
P31 4.1.1	The report states that, *'construction dust can be carried a few hundred metres from construction sites'*. However, methods

	presented in the CFA sections do not reflect this.
P31 4.1.3	The report states*, 'construction traffic and changes in the volume and location of traffic on the highway network will result in impacts further from the construction sites (up to a few tens of kilometres away)'*. HS2 has not adequately assessed such impacts and must do so. The statement of, *'consequently, there will be no significant air quality effects on a route-wide basis associated with construction of the Proposed Scheme'*, therefore cannot be made.
Community	
P67 6.1.1	Community impacts are dismissed as being 'of no more than local significance', when so many communities along the phase 1 route will be badly affected by the scheme both during the significant construction period and during operation.
P67 6.1.2	Construction worker impacts are also considered in the report to behave 'no significant effects associated with construction worker accommodation'. It is hard to believe this has been properly assessed.
Cultural heritage	
P69 7.1.3	The report acknowledges that a number of designated assets will be significantly affected through direct physical impact and there is no full mitigation of these impacts.
Ecology	
P74 8.1.19	Translocation of ancient woodland soil and seed bank is suggested as compensation for the loss of ancient woodland. Buckinghamshire councils do not consider this to be adequate compensation and remain unconvinced that translocation actually works. The Woodland Trust states that translocation should be considered as a salvage operation and that not enough is known about the success of such translocations.
P76 8.1.28	The report states that *'further details of habitat loss and gain will be provided within additional documentation to be produced (following submission of the hybrid Bill) in support of the no-net loss calculation described.'* Buckinghamshire councils remain to be convinced that this will be achieved. The use of the term 'reasonably practicable' is not reassuring.
P77 8.1.35	This paragraph aims to assess the risk of bat mortality due to collision with passing trains but does not do so convincingly and it does not conclude whether the impacts would be significant. 13 of England's 17 resident bat species have been recorded along the route, including Bechstein's, which is very rare; one of the UK's rarest bats and a Biodiversity Action Plan species. It would then be plausible to assume that bat mortality is a significant risk.
P78 8.1.40	Habitat severance is a concern as proposed planting will not be sufficiently mature to provide habitat linkages. Buckinghamshire councils are not convinced that crossing points will sufficiently mitigate effects on mortality of bats and welcome the proposal of a monitoring programme. The difference between mitigation and compensation should be addressed especially when referring to irreplaceable habitat. Decisions should always be based on sufficient robust survey data. Mitigation for bat crossings should

	be started as early as possible to allow habitat to establish. Provisions should be made to ensure mitigation is maintained for the long term. The construction phase should be subject to the same rigour particularly in relation to lighting.
P81 8.1.57	Buckinghamshire councils are concerned about the significant adverse effects on barn owls. HS2 Ltd must ensure liaison with landowners to ensure the residual effects are reduced.
P82 8.1.62	The report acknowledges adverse effects on badger but dismisses this due to the widespread nature of the species.
Land quality	
P87 9.1.6	The report states, *'the main potential contamination effects of the operation of the Proposed Scheme are the possibility for soil or groundwater impacts to occur as a result of the operation of the Infrastructure Maintenance Depot at Calvert'*. Buckinghamshire Councils would therefore expect environmental management systems to be put in place at this location and this to be reflected in the relevant LEMP.
Landscape and visual assessment	
P89 10.1.1	This topic is covered off in 2 very short paragraphs and it is considered that there are no significant route-wide effects on landscape and visual assessment. However, there is no clear articulation of how the design has evolved in response to the findings of the ES. A fundamental issue in the Landscape and Visual Impact Assessment (LVIA) methodology used is that there is a complete disconnect with design and mitigation. LVIA should be an iterative process where the findings of the landscape assessment should influence the design so there is a considered approach to mitigating landscape and the receptors. However design appears to be carried separately from the assessment which goes against recommended guidance. Information on design detail is absent (to be considered at a later stage) - much of what is included on design is of a generic nature - listed in chapter 12 of the CoCP - Landscape and Visual. There is also no detail concerning species types for each CFA as promised in the draft ES. This is vital to understand the mitigation and design and therefore assess any residual impact.
Socio-economics	
P98 11.6.7	Businesses which will be negatively affected by the scheme are addressed by stating that they can simply relocate. There is no proper understanding of employers' perspectives or any acknowledgement that they may be unwilling or unable to start again somewhere else. The large proportion of employees who may lose their jobs are addressed by the statement, '*will be able to re-enter the workforce relatively quickly given the size and strength of the relevant local labour marke*t'.
P98 11.6.10	The report chooses not to try to predict the numbers of jobs that

	are at risk of being lost route-wide because of the scheme but makes an assumption that approximately 1,010 jobs will be lost, with an additional knock on 380 jobs, route-wide.
P99 11.6.15	Of even greater concern is jobs affected by land required for construction of the scheme which involves a total relocation of approximately 8,430 jobs and is considered to be a major adverse effect.
Sound, noise and vibration	
P103 12.2.3	It cannot follow that assessing the potential effects within CFAs prevents them becoming significant on a route-wide basis. The report completely underplays noise and vibration issues as it dismisses their effects on a route-wide basis.
Traffic and transport	
P105-P116	The whole chapter plays down the collective impacts associated with the movement of excavated and fill materials and also of construction traffic from the numerous depots. Buckinghamshire councils are concerned that transport assessments rely on the use of TEMPRO data which fails to consider local transport model data. For example, Aylesbury Vale District growth figures. Buckinghamshire councils have particular concerns about the increased levels of congestion relating to the scheme in CFA 7 Colne Valley, CFA 11 Stoke Mandeville and Aylesbury and CFA 13 Calvert, Steeple Claydon, Twyford and Chetwode.
Waste and material resources	
P119 14.1.13	The waste hierarchy advocates disposal of waste as a last resort however 14.6.5 clearly states that, *'sustainable placement areas have been selected for the **disposal** of surplus excavated material'*. The sites were not included in the safeguarding areas and neither were they included in the draft ES. It is evident that the placement of excavated material has been a last minute and ill thought through proposal.
P120 14.1.17	The report states, *'this includes reuse of all topsoil and agricultural subsoil as close to the point of excavation as practicable'*. Whilst this is potentially the most sustainable solution it fails to consider the changes to the land profiles and re-contouring that will result.
P133 14.6.5	The report states, *'sustainable placement areas have been selected on the basis of their suitability for the disposal of surplus excavated material'*. Buckinghamshire councils would like to know how these sites were selected as we disagree that they are suitable.
P133 14.6.6	The sustainable placement areas are supposed to be 'detailed' in table21. What this table does not show is that the Calvert placement site is actually intended for Shepherds Furze Farm, an integral part of the Portway Farms dairy unit. Dumping 2,044,471 tonnes of tunnel borings from the Chilterns will make the ongoing viability of the dairy herd unsustainable. The land in question is essential agricultural land to the viability of the 400 strong dairy herd at Portway, to provide maize, straw and

	grazing. Partway Farm and Shepherds Furze Farm cannot operate in isolation. Land in the vicinity of South Heath Farm, which is in the AONB, has also been selected and it is not clear why or how this will change the land form.
Water resources and flood risk assessment	
P160 15.3.2	The report states, *'temporary adverse impacts on surface water resources as a result of construction methods or materials, silt, or mobilisation of contaminants, will be avoided or mitigated locally by adopting good practices including sustainable drainage systems (SuDS)'.* SUDS however *are not* appropriate for a control mechanism for pollution control.
P159 15.3.3	Buckinghamshire councils are concerned about the number of balancing ponds throughout the 8 CFAs in Buckinghamshire. The report states that these will be developed further through detailed design. SuDS techniques should be considered as an alternative to balancing ponds. Buckinghamshire councils would expect to be consulted on the design of any features. There are still no references in the ES to the Flood and Water Management Act 2010 and the role of the Lead Local Flood Authority responsibilities, which is not given the prominence it should have.
P160 15.3.4	The report says there are, *'not likely to be significant regional or route-wide temporary or permanent adverse effects on surface water resources as a result of the construction process'*. On consideration of CFAs, 7, 8, 9 this is not proven or apparent.
P161 15.4.7	Buckinghamshire councils are concerned that the scheme could give rise to a significant temporary adverse effect on water supplies, including public water supplies, which depend on the groundwater in the Chalk, within the Mid-Chilterns Chalk groundwater body affecting CFAs 6, 7, 8 and 9. The mitigation proposed for this is a monitoring programme agreed with the Environment Agency, in consultation with Affinity Water Ltd. Buckinghamshire councils do not consider this to be adequate mitigation on what is a likely significant effect on a regional scale during construction.
P163 15.5.9	Buckinghamshire councils are concerned about the high risk of deterioration in status or potential to Stoke Brook and Padbury Brook (The Twins) and the River Ouse which could lead to reducing flow rates and disruption of stream processes. We note that further refinement of the design of the diversions is still to be undertaken. We note that the status of the biological receptors for Stoke Brook is unknown in the ES and that a precautionary approach is being adopted.
P165 15.5.20	Buckinghamshire councils are extremely concerned that there remains a significant residual risk to the drinking water protected area element for the Mid-Chilterns Chalk.
P165 15.5.27	Buckinghamshire councils do not agree that, *'the reasons for these modifications or alterations are of overriding public interest and/or the benefits to the environment or society of achieving the objectives are outweighed by the benefits of the new modifications or alterations to (among other things) sustainable*

	development; and the beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option'. We believe that there are environmentally and economically better alternatives than HS2.
P166 15.5.28	Buckinghamshire councils do not agree with the conclusion that, *'there is overriding public interest in the construction of the scheme and the benefits of the scheme as a form of sustainable development outweigh the benefits of achieving the objectives in the River Basin Management Plan (RBMP) Article 4(1)'*. And, 15.5.29, *'for those reasons, even if the Proposed Scheme does result in the deterioration in status of a body of water, there will be no breach of the WFD'.* It is unacceptable to Buckinghamshire Councils for the promoter to cite this as justification. The ES makes the assumption that the scheme will only hinder the attainment of these objectives to a limited extent. That remains to be seen. The ES goes on to say, *'there are no better environmental options to the works described which are technically feasible and proportionate in cost'*. We believe that there are environmentally and economically better alternatives than HS2.
P167 15.6.5	This paragraph states, '*the development provides wider sustainability benefits to the community that outweigh flood risk - informed by the strategic Flood Risk Assessment (FRA) when one is available; and a site specific FRA must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce floor risk overall*.' Buckinghamshire councils do not agree that the scheme passes the Exception Test as defined in the National Planning Policy Framework (NPPF). We have grave concerns about the risk of flooding in Buckinghamshire.
P167 15.6.8	The scheme crosses 12km of zone 3 floodplain as classified by the Environment Agency, which means the flood risk from rivers in these areas is already classified as 'high'. The report says, '*it may be necessary for a number of construction sites to be located within areas at risk of flooding'*. It also states, '*during the construction stage, there may be the potential for offsite flood risk to temporarily increase as a result of obstructions to flood flow routes and/or through a loss of floodplain storage'*. Buckinghamshire councils are not reassured that there will not be increased incidents of flooding in the county.
P168 15.6.11	The report makes the assumption that, '*there are not likely to be significant regional or route-wide temporary or permanent adverse effects on flood risk as a result of the construction process or the operation and maintenance of the scheme.'*

	Buckinghamshire councils can find no justification for this assumption in any of the documents.
Phase 1 and Phase 2 combined impacts	
P169 16.1.1	Buckinghamshire councils are alarmed that 404 commercial/retail units are to be demolished and 8,430 jobs are to be displaced in Phase 1.

7. DRAFT CODE OF CONSTRUCTION PRACTISE

Volume 5, Draft Code of Construction Practice	
General comments	
Section Number	*Comment*
	The Councils are concerned that the Draft CoCP does not offer the definitive reassurance as to acceptable construction impact that the ES frequently suggests. It is merely an umbrella document that does not itself cover all the details of practice but allows for a further suite of EMRs, LEMPs, policies, method statements and a various Memorandum, all of which have yet to be developed or finalised, and acknowledges that there will be a need for undertakings and assurances to be established by the

	petitioning process.
	Use of the term 'reasonably practicable' has increased since the previous draft, despite concerns being raised over use of this term. As stated previously this term should be replaced with a clear commitment to industry best practice at the time of construction. If this term is to be used, details on who decides what is 'reasonably practicable' must be provided. This applies throughout the CoCP, and therefore use of this term has not been commented on throughout.
	Details of how the CoCP will evolve are required, including key dates and milestones. This is particularly important given that the CoCP remains in draft form. There must be an opportunity to consult on the final version.
	Further information is required on the LEMPs and how HS2 Ltd will establish these. Details such as the role communities will play in influencing their content and how disputes will be resolved; arbitration, including potential involvement by the Court, both criminal and civil- must be provided.
	The main thrust of the responsibility for delivering the requirements of the Code has been placed on the contractors. There is little reference to the County and District Councils and the exercise of their statutory duties and obligations. This means that enforcement of the Code's provisions is weak and it appears that there will be no one who has responsibility for ensuring that contractors adhere to it.
	Consideration should also be given to having annexes to the CoCP tailored to areas of particular sensitivity or complexity, e.g. the Chilterns AONB and the IMD area at Steeple Claydon. This principle can be found in BS 5228 Part 1 1997 when defining noise sensitive premises.
	The ODA CoCP comprehensively listed best practice and standards guidance in a series of Appendices and we think this CoCP will be improved by including them.
P3 2.1.1	It is implied that accountability between HS2 Ltd and its contractors is shared. It would be preferable that HS2 Ltd was ultimately responsible for the actions of its contractors.
P3 2.1.4	'*Ensuring that likely significant construction effects that are reported in the formal ES will either be avoided or mitigated*'. This should also include compensation.
Policy and environmental management principles	
Section Number	*Comment*
	HS2's Environmental Policy should be rooted in the Government's evidence base and policy as set out in (inter-alia) the Natural Environment White Paper, UK National Ecosystem Assessment and England Biodiversity Strategy. In particular we commend an ecosystem services approach
P 5 3.2.1	*"The EMRs will set out the high-level environmental and sustainability commitments that the Government will enter into through the hybrid bill process".* These commitments should extend beyond the construction period to ensure appropriate

	delivery of ecological mitigation and compensation measures in perpetuity.
P 6 3.4.1	Whilst it is reasonable only for principal contractors to be required to hold ISO 14001 accreditation, it should be made clear that all sub-contractors will be required to make themselves and their employees aware of the contents of the main contractors system and ensure that environmental objectives in that system are met. We do not believe this point has been adequately addressed in the draft CoCP.
P 7 3.4.2-2.4.6	The contractors' Environmental Management System (EMS) should be agreed with the LA and relevant stakeholders prior to construction.
P7 3.4.5	Information should be available regarding penalties for non-compliance with the EMS. The LA should have the power to ensure all requirements are met, and if not, stop work until the requirements are met.
Implementation	
Section Number	*Comment*
P 8 4.1	The ODA CoCP is specific about roles, responsibilities and enforcement. When and where will this be set out for HS2 is not clear. The enforcement mechanism does not give confidence as there appears to be no independent_regulation or enforcement procedure. Instead the document relies on self-regulation by the Nominated Undertaker (NU). The EMS should include independent scrutiny, and arbitration in the event of dispute.
P 8 4.1.4	A programme of audit and monitoring must be implemented to ensure compliance. Audit of the environmental mitigation set out in the CoCP must be undertaken by independent auditors on a regular basis which is discussed and agreed with stakeholders. Results must be fed back into the CoCP to provide continuous feedback to the CoCP and LEMPs over the duration of the project. The CoCP and LEMPs should be continuously informed by appropriate ecological survey over the duration of the project to take account of the temporal and spatial variations in ecological receptors. A schedule of when updated ecological survey information is required should be provided to, and agreed upon with the LA.
P 8 4.2	The geographical scope of LEMPs should be extended where relevant, e.g. where transport issues are likely to have implications beyond CFAs. If this is not possible, a section on cumulative impacts is required for each LEMP to cover wider impacts. There should also be opportunities to review and adjust layout and working methods if necessary, i.e. when problems arise during works. Working hours should reflect the localities and be adjusted if and when necessary (in liaison with LPAs and highway authorities).
P 9 4.4.2	Method statements should also set out construction site security standards and measures.

P 9 4.5.1	BCC agrees that sufficient suitably qualified and experienced personal must be appointed to supervise the main construction works. However this should be extended to all construction works, or more information should be provided on what is considered the 'main' construction works. The nominated undertaker should control the appointment of supervisors, and their reports should be made publicly available.
General requirements	
Section Number	*Comment*
P 11 5.1	BCC agrees that a stakeholder engagement framework is required. However further details of this are required before we can comment, such as how often this will occur, and what will be done with comments raised. This should be consulted on and agreed with Local Authorities. 'Reasonable steps' is vague and gives no confidence that there will be satisfactory community engagement. Engagement should include 'communities of interest' such as ramblers, heritage societies, PRoW user groups and wildlife groups. The community relations personnel should remain in this position post-construction to assist communities that have been adversely impacted by the line.
P 11 5.1.2	'Regular' needs defining and agreeing with Local Authorities
P 11 5.1.3	'The undertaker and its contractors will consider local employment….' There needs to be more commitment to ensuring that local people are employed, and where necessary given appropriate training.
P11 5.1.4-5.1.5	The NU's means of communication should be capable of interfacing with LA systems, as the Local Authorities are often the first point of contact for the public
P 12 5.1.8	We welcome the use of an independent complaints commissioner. However the threshold for when they are brought into the process is not stated. What resolutions / actions would be available to them?
P 13 5.2	Core working hours: 8-18 weekdays (excluding bank holidays), 8-13 weekends. Guidance on site specific variation will be included in the LEMP. Therefore we cannot respond on this until this information is available. One hour before and one hour after the core construction hours will be used for start-up and close-down, including unloading, maintenance and general preparation, but not operation of plant or machinery. Any activity which has noise impacts should not take place within these hours, and regular deliveries should not be scheduled for these hours. Tunnelling and directly associated activities will be carried out 24/7. Where reasonably practicable, material will be stockpiled for removal during normal working hours. 'Reasonably practicable' is not sufficient, and it should only be in extreme circumstances that movement of materials should take place

	outside core hours. Track laying activities and work requiring possession of major transport infrastructure may be undertaken during night time, weekend afternoons and bank holidays. There must be a commitment that any noisy activities occur during core working hours, and lighting is kept to a minimum, particularly in residential areas.
P14 5.2.9	Extending working hours should only apply to activities which do not have noise impacts.
P14 5.2.10	Any repairs or maintenance of construction equipment that result in noise impacts should take place during core hours, and not outside core hours. Maintenance should occur in enclosed workshops outside of core hours, so disturbance is kept to a minimum.
P14 5.2.12	'Abnormal loads' needs defining to prevent abuse of this point. Working hours must be strictly enforced, and the terms 'where reasonably practicable' or 'unless otherwise permitted' are not appropriate. Changes should only be made in extreme circumstances such as danger to life or property.
P 14-15 5.3.1	Public access would be desirable on some occasions e.g. to view or participate in archaeological work. Point 12. LA access to CCTV by trained LA officers should be arranged Point 16. Details of work on temporarily diverted PRoW should be specified.
P 18 5.9	It has been suggested the community businesses sell into primary construction sites, rather than workers swamping local community shops and facilities.
P 19 5.11	Clearance and re-instatement of sites on completion should be to the satisfaction of the LA.
P 19 5.12	If a pollution incident occurs the site must be cleared and restored back to its original state or better pre-pollution incident.
P 19 5.12.1	'Reported to the relevant parties'. The relevant parties need defining.
	Traffic Management Plans should be available for consultation.
Agriculture, forestry and soil	
Section Number	*Comment*
P 22 6.1.1	Controls should be implemented to mitigate all potential impacts, rather than just avoidable impacts
P 22 6.1.3	Further details regarding liaison with affected landowners, occupiers and agents is required. For example how often this will take place, and how this will be carried out, and what happens if agreements cannot be reached.
P 23 6.2	Consideration must be given to the reinstatement of soils so as to reverse the negative effects of soil compaction

P 23 6.2.2	Surveys should include recording hedgerow species/age, with a view to their reinstatement. Also type of agricultural land use should be recorded.
P 23 6.2.3	Scope for betterment or ecological enhancement should be explored.
P 24 6.3.1	Further details are required regarding monitoring, such as how frequently this will take place and in how much detail. Monitoring reports should be made available to the LA and relevant stakeholders. A plan is required in case mitigation highlights areas of concern.
Air quality	
Section Number	*Comment*
	In terms of implementing "good practice" reference should be made to the following guidance documents, or their contemporaneous equivalents, as a minimum: 1. Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance: Institute of Air Quality Management (IAQM), January 2012. 2. Air Quality Monitoring in the Vicinity of Demolition and Construction Sites: IAQM November 2012. 3. Up-dated Guidance on Construction Site Evaluation Guidelines and Mitigation Measures: GLA Supplementary Planning Guidance Document. 4. Best Practice Guidance: The Control of Dust and Emissions from Construction and Demolition: Mayor of London 2006.
	The CoCP makes no mention of site-specific dust assessment and the Councils require this to be a key element of the LEMPs. This is essential given the proximity of the route locally to hospitals, schools, residential homes and farm land. The National Planning Policy Framework makes it clear that a dust assessment study should be undertaken by a competent person/organisation with acknowledged experience of undertaking this type of work. The scope of a dust assessment study should be agreed with the contractor and local planning authority. Such studies should be used to: Establish baseline conditions of the existing dust climate around the site of the proposed operations; identify site activities that could lead to dust emission without mitigation; identify site parameters which may increase potential impacts from dust; recommend mitigation measures, including modification of site design; and make proposals to monitor and report dust emissions to ensure compliance with appropriate environmental standards and to enable an effective response to complaints.
	Further concerns: '*Erection of hoardings or other barriers along the site boundary*' will not mitigate to any significant degree, dust arising from earthworks and transportation of spoil.

	Dump trucks operating within the site boundary will not be sheeted Stockpiles are located near the site boundary in the Draft Environmental Statement. Spoil material stockpiles are too large to be adequately watered or sheeted Even haul roads surfaced with granular material will generate dust under heavy trafficking. Excavation and depositing of spoil in live working areas will not be on hard standing.
	In reality, significant emissions of dust are a natural consequence of major earthworks and the extent of emissions may be reduced by watering but never eliminated.
	Much of the underlying geology of the Vale and Chilterns is chalk and/or clay, both of which have the potential to generate significant air borne dust emissions during certain prevailing meteorological conditions.
	During the construction phase, sensitive receptors are likely to be adversely effected by dust without appropriate, proportionate and effective dust management regimes.
P 25 7.1.1	Buckinghamshire councils agree that dust and air pollution monitoring is required. Further details are required regarding where monitoring will take place, when, and how. A plan must be in place if dust and air pollution levels exceed the agreed levels.
P 25 7.2.2	Low sulphur diesel should be used all the times, not just 'where reasonably practicable'. Minimum specifications for vehicles should be specified to prevent older higher emitting vehicles from being used e.g. Euro standards.
P 26 7.2.3	Materials should be covered whilst on site unless being used, not just when entering and leaving the site.
P 26 7.2.3	All consents required including any abstraction licences must be obtained from the EA, and from the water companies for the use of water as a dust suppressant. Plans should be in place if a drought/flooding takes place.
P 27 7.2.4	A hotline should be in place so any concerns regarding the condition of haul roads can be reported by members of the public.
P 27 7.2.5	When demolishing buildings in residential areas, the buildings being demolished must be covered to reduce dust.
P 28 7.2.8	Will there be any concrete batching plants, if so where? It is not clear who will be responsible for environmental permitting. Mobile machinery such as Concrete Crushing and Screening plant shall be Permitted and Operated in accordance with the Environmental Permitting Regulations 2010.
P 28 7.2.8	Refers to crushing rock, for use as aggregate. Yet there are no references to imported minerals for construction anywhere else in ES.
P 29 7.3.1	At an early stage, an inventory and timetable of dust generating activities is required by Buckinghamshire councils. This must identify appropriate control measures and arrangements for dust

	monitoring with particular regard to the location of sensitive receptors.
P 29 7.3.1	In order to quantify the potential impact of dust emissions, a dust emission baseline should be established at relevant (sensitive receptor) locations along the route. These should include locations where human, ecological, and agricultural/horticultural receptors exist. This should include placing dust monitors at the perimeter of the site.
P 29 7.3.1	No trigger levels for dust emissions have been included in the COCP. In addition, though the '*relevant local authorities will be consulted regarding the monitoring procedures to be implemented*,' there is no allowance for the rigour of independent monitoring and enforcement required to safeguard the local community
	Accordingly, an appropriate dust monitoring program shall be funded and implemented by the developer prior to any ground construction/engineering works commencing. The methodology and sampling locations shall be agreed by the relevant LA. The results of dust monitoring should be reported to Buckinghamshire local planning authorities.
Cultural heritage	
Section Number	*Comment*
P 30 8.1.2	This is a very general statement. We recommend that it is re-written as an obligation by HS2 Ltd to ensure that its contractors manage all works in accordance with appropriate specified standards and guidelines for Institutes for Archaeologists, English Heritage etc.
P 30 8.1.3 & 8.1.4	**Confusion as to the scope for specialist provision for heritage assets** Buckinghamshire Councils note that Paragraph 8.1.3 makes reference to provision for cases identified in the ES or specified as an appropriate mitigation measure, whereas Paragraph 8.1.4 appears to refer to a generality of suitable route-wide measures and procedures. The wording does not clarify any rational for the distinction, and the Councils are confused as to whether there will in fact be genuine provision for special care that is not specifically stated as part of the ES. In this respect the Councils are extremely concerned that within its area there are no identified cases for built heritage mitigation in the ES, despite the evident impact of construction on the setting and viability of heritage assets and the acknowledgment of high adverse impact at e.g. Hyde Farm, Chapel Farm, Sheepcotts Cottage, 86 Kings Lane, Hammondshall Farmhouse, Woodlands Park and Cottage Farm. The Council therefore fears that no heritage provision will be offered or consulted upon, and that there will be no further opportunity to negotiate for the harm to be diminished by means of e.g. landscaping, noise fence barriers, insulation, re-housing and moth-balling. This will have adverse effect on the viability of the assets.

	Recommendation: The Councils strongly recommend that either: • The final CoCP clarifies its remit, with due allowance for general measures to mitigate harmful impact on all affected heritage assets, as made necessary by the scale of the impact, or: • The ES is more detailed with respect to measures at individual sites.
P 30 8.1.4	**Lack of surety as to appropriate repair of settlement damage** The Councils note that Paragraph 8.1.4 allows for the implementation of controls to avoid damage by settlement, and recording and monitoring of the results, and that provision is made for this in Schedule 2 of the Hybrid Bill and in Table 2 of Schedule 17. The Councils are however, concerned that the documents do not specify provision for making good any damage, and do not specify standards for implementing such works in a manner appropriate to the historic character of the asset. **Recommendation:** The Councils recommend that the CoCP should incorporate clauses allowing for the making good damage to heritage assets in a manner appropriate to their special interest and significance.
P 31 8.1.7	The WSIs will be expected to address explicit research agendas with provision for post-excavation analysis, publication (public and academic) and museum storage.
P 31 8.1.8	There is ambiguity as to the use of 'investigation' and 'mitigation' and deficiencies of an over archaeological interpretation. It would seem they are used in a purely archaeological context and not to all types of heritage asset. The councils consider that, while all assets deserve investigation as to potential and received impact, they also merit appropriate measures to minimise any harm and that investigation alone will be insufficient. **Recommendation**: Buckinghamshire Councils recommend that the wording is revisited to clarify the needs of different types of heritage asset and ensure appropriate response.
P 32 8.2.1	Reference to 'the relevant LA officer' is welcomed here but it is essential that the LA archaeologist is fully involved in the scheme in order for this engagement to be meaningful and practicable. Half the archaeological sites excavated during the construction of HS1 were unknown before work started. HS2 Ltd should pay for local authorities to employ dedicated archaeologists to maintain an effective watching brief.
P 32 8.3.2	The only monitoring appears to be 'self- regulation'. This is not

	sufficient. To meet best practice and professional standards for other development projects there should be a procedure for external monitoring (as appropriate) by LA archaeologists, buildings conservation officers and English Heritage. The significant costs of this work should be met by HS2 Ltd.
Ecology	
Section Number	*Comment*
P 34 9.1.1	Due to the poor quality and limited data in the ES, this should not state 'as identified in the ES.' Further surveys are required in order to identify all specific areas of ecological value.
P 34 9.1.3	As mentioned previously the term 'reasonably practicable' is unacceptable. In all cases preparatory work will be required prior to construction to ensure that mitigation is in place and effective prior to the destruction of habitats.
P 34 9.1.4.	There should be a commitment to induction/training on ecological receptors to the entire construction workforce with specialist inductions to be provided in works areas of particular sensitivity.
P 34 9.1.4:	'*Plans showing the locations of all known areas of nature conservation interest that may be affected due to construction including access routes'* should include 'no-go' areas which are not to be entered during construction or at particular times of year (e.g. sensitive bird nesting habitat, fragile ecosystems).
P 34 9.1.4	Plans of measures to facilitate animal movement during construction to reduce the impacts of fragmentation and severance should be provided.
P 36 9.2.6	European Protected Species Licensing. It should be clear whether there will be 'overarching' route window or site-wide licences granted by Natural England to minimise cost, disturbance to protected species etc, or whether they will be on a site by site basis. It should be clear whether there will be additional surveys undertaken prior to works commencement to inform such licence applications. If so there should be the capacity to provide amended/additional ecological mitigation/compensation in the event of changes to baseline data.
P 36 9.3.1	The programme for undertaking ecological surveys prior to and during construction must be made available for comment. The details regarding these surveys must also be available to comment upon. Discussions should be held between HS2 Ltd and ecologists from statutory bodies/Buckinghamshire councils to agree upon the frequency and detail of surveys.
P 36 9.3.1	A plan must be in place if the surveys carried out prior to construction demonstrate changes since the initial mitigation measures were suggested. If the ecological value of areas has increased, further mitigation must be put into place to account for this. This should be consulted on with the LA and the appropriate related stakeholders.
P 36 9.3	The CoCP should provide details of the measures that will be incorporated into an Environmental Management Plan (EMP) to include the following (Note: these may include some duplication with statements in the CoCP, but the EMP should have specific

	objectives and deliverables as outlined below): The identification of all known areas and features of nature conservation interest potentially affected, in particular, those areas to be retained. This should include site plans at an appropriate scale indicating protection zones, work area and access routes etc. Protection measures to prevent incursion into or damage of retained habitat areas, and steps to ensure that all site personnel are aware of the need to avoid damage. Protection measures, both temporary and permanent, to prevent disturbance or encroachment into adjoining areas of nature conservation interest whether by air, land or water. Procedures for the establishment, maintenance and auditing of ecological records. Procedures for the safeguarding and, where agreed, relocation of protected and notable species identified from appropriate ecological survey under formal licences where necessary, including details of the receptor sites and monitoring of relocations. Procedures to be adopted in the event of unanticipated discovery or disturbance of protected species or important habitats of high ecological value. Procedures to be adopted in the event of pollution control emergency on or near a designated nature conservation site. Procedures for the control of plants listed in Schedule 9 (and other invasive plants) of the Wildlife and Countryside Act 1981 or other relevant statutory provisions, to the satisfaction of Natural England and the Environment Agency. Methods for ecological watching briefs. Measures to re-use local ecological resources, including the collection of seeds (e.g. from wildflower meadows) and cutting from trees and shrubs to enable replacement/reinstatement with appropriate native stock of local provenance.
	The nominated undertaker should be responsible for implementing remedial actions where monitoring identifies the effectiveness of the management measures designed to control ecological effects have been insufficient for purpose.
	Monitoring must be applied wider, not only to statutory and non-statutory sites, but must include individual species where appropriate.
	Monitoring should continue for some years into the post-construction period until new habitats are firmly established.

	External consultees should be involved in validating this process.
	All construction work must be carried out in line with the forthcoming British Standard 420202 Biodiversity – Code of Practice for Planning and Development
	Methods to reduce the impacts of construction depend on what is found during the ecological surveys. The poor quality data from the ecological surveys limits its use.
Ground Settlement	
Section Number	*Comment*
P38 10.1.1	Important information on surveys and monitoring which were included in the draft CoCP has been removed from this section. Therefore there is no information regarding monitoring, and we are therefore unable to respond on this. It is not clear why this information has been removed.
P38 10.2.1	The process by which ground settlement is monitored should link to a free telephone number for residents. It should also state what action would be taken if settlement did occur.
Land quality	
Section Number	*Comment*
P 39 11.2.4	The methodology for such an assessment requires early consideration, including maximum contaminant standards and sampling frequency per volume of material. The methodology should be consulted on and agreed with the Local LA.
P 39 11.2.4	The results of any testing of soils for re-use, or test results of imported soils should be submitted to the LA responsible for enforcing the contaminated land regime.
P 40 11.2.7	The following wording should be added, 'and approved by the relevant LA and/or the environment agency'.
	Early identification of private water supplies/boreholes should be obtained from Local Authorities.
Landscape and visual	
Section Number	*Comment*
P 44 12.1.1	Bullet 6. It is not clear how far in advance of vegetation removal planting schemes will be initiated/ completed where compensatory habitat is to be created. The further in advance this can be undertaken, the more potential impacts of the overall scheme will be reduced.
P 44 12.1.1	Bullet 8. It is not clear how long inspections, maintenance and management of existing and new planting be the responsibility of HS2 Ltd and/or the nominated undertaker. It is not clear what mechanisms will be put in place for maintenance and management of new habitat.
P 45 12.2.6	Where trees intended to be retained are felled or die as a consequence of construction works, they should be replaced in an appropriate ratio. e.g. the accidental felling of one mature oak tree should not be replaced with one oak sapling, as this will not provide any kind of 'like-for-like' replacement from an ecological perspective. Any accidental habitat damage or loss should be

	compensated for according to a biodiversity offsetting metric to ensure net ecological enhancement.
P 45 12.2.6	There should be some statement regarding the position with respect to Ash Dieback disease and the potential for planting of this species. It is not expected that a commitment be made to the planting of this species, but if within the lifetime of the project some disease resistant Ash trees are identified that may be suitable for use, then this should be considered as an option. A commitment to monitoring the situation as it develops and taking appropriate action in liaison with appropriate statutory and non-statutory agencies
P 46 12.3.3	Relevant local authorities should be able to consult on all aspects, including the location of compounds.
P 47 12.4.1	It is not clear who will undertake the responsibility to monitor, manage and replace following construction, to ensure landscaping is delivered appropriately as it matures.
	HS2 crosses different areas of landscape character; each area is sufficiently different to require a more tailored approach to landscape design. There should be some design strategy to address the specific requirements of the each landscape, e.g. at its broadest scale the Chilterns and the Vale of Aylesbury. Landscaping should reflect the diversity of landscape and not be a mechanistic process of replanting trees and vegetation or the reinstatement of agricultural land. Besides consideration for amenity and agriculture, thought should also be given to enhancement and restoration of other land forms along the route.
	The major earthworks and construction of large structures cannot in reality be disguised by anything other than the natural topography of the land – except where unsightly spoil heaps are located between the worksites and public areas.
	The *'use of well-maintained hoardings or fencing'* will not hide the excavators, dump trucks, bulldozers, cranes and other miscellaneous items of major construction plant.
	Appropriate measures to reduce landscape, visual and other environmental impacts associated with temporary site offices and compounds are so vague as to be meaningless. The only way to remove compounds from the public view is to locate them in an area screened by topography or woodland.
Noise	
Section Number	*Comment*
P 49 13.1.1	We would look for a commitment beyond BPM which implies that best available techniques not limited by cost will be employed; not necessarily the most effective techniques which HS2 may argue are not economic.
P 49 13.2	Noise insulation and temporary re-housing. This does not seem to consider business or farm premises.
P 49 13.2.2	BPM can be a low standard; it is ultimately something that is decided by the Court.
P 49 13.2.3	It is unclear whether takes precedence BS 5228 or the CoCP. It

	is unclear what happens if standards such as BS 5228 are reviewed during the project.
P 50 13.2.5	Section 61 deadlines are a legal requirement the twenty eight days is mandatory. BS 5228-1 Figure A.1 describes this in detail. If applications are not received on time LAs may use Section 60 to control noisy works.
P 50	It is unclear what areas section 61s will cover. If the zones cover two LA administrative areas two S61 applications may be needed.
	There is no provision in the CoCP for failure to reach an agreement with the LA. Nor does the CoCP define actions to be taken if the agreed S61 levels are breached. Furthermore it does not include independent monitoring, control and enforcement, to safeguard the local community.
P 50 13.2.6	It is of great concern to Buckinghamshire councils that detailed construction programmes may not be available in good time, as this will make it harder for local authorities to plan for monitoring air quality, noise and traffic effects.
P 52 13.2.15	Where there is a dispute between the nominated undertaker and an applicant for noise insulation/temporary housing an independent arbitration panel should be set up to resolve the dispute.
P 52 13.2.15	It needs to be made explicit what will happen in circumstances where a dwelling exceeds the trigger level for noise insulation but not that for temporary re-housing and it is not physically possible to provide insulation (e.g. property structure, or protected listed building) or not economically viable to provide such insulation.
P 52 13.2.15	Where unplanned, emergency night time work is required, which will result in noise levels likely to cause sleep disturbance to local residents (level to be agreed) they should be offered overnight accommodation, e.g. in a local hotel.
P 52 13.2.15	*'The nominated undertaker will consider at its discretion…'*. This should not be at its discretion; it should be in all cases.
P 54 13.2.23	Scoping vibration assessments should be provided to the relevant LA for review.
	In reality, noise emissions will be significant and unavoidable and the only way to reduce the impact on the community is to rigidly apply limits to working hours for all activities near receptors.
	It is expected that the noise and vibration monitoring and mitigation take the impacts of construction traffic along construction routes into account.
Traffic and transport	
Section Number	*Comment*
P 55 13.3	Monitoring and enforcement will require dedicated LA resources which should be paid for. NUs must allow adequate time for pre-application discussions and to secure consents (allowing the full 28 days). At all costs avoiding late applications and placing pressure on LAs to speed up the formal consideration process to ensure the programme is maintained, which otherwise places

	unnecessary and unreasonable resource pressures on LA's. NUs should be encouraged to approach LAs at an early pre-application stage to allow reasonable discussion and negotiation and enable refinement. NUs should avoid presenting designs at an advanced stage to LAs; thus little/ no room nor time and general reluctance to make amendments and key issues have already been decided. NU's and LA's maintaining a good working relationship. NU's to advise LA's of their forthcoming programme and anticipated timing of forthcoming applications to enable LA's to anticipate forthcoming work and provide a smoother service. LA's acting within reason to respond to contractors' reasonable time scales and programme commitments, where the NU has acted in a reasonable manner and has unavoidable time pressures. Complex Plans and Specification schemes should have Planning Delivery Agreements.
	Linkage between air quality and the significant increase in levels of traffic is not clearly stated.
P 57 14.1.1	*'Public access will be maintained where practicable'*. This seems rather simplistic and makes no guarantees that access can be achieved across the HS2 corridor by sustainable transport uses. Clarity is required here on what constitutes a practicable judgment and the role of the Local Highway Authority in this.
P 57 14.1.2	Vehicle sharing by the workforce has historically not been achieved to any significant scale. This should be incentivised.
P 57 14.2.2	More information is needed in local Traffic Management Plans on monitoring requirements. For PRoW, further details are required on: Generic details such as path width, surface type, structures needed for stock control (such as gates) and accessibility provisions for the less able (see BS 5709: 2006; Disability Discrimination Act, 1995; and Buckinghamshire Rights of Way Improvement Plan 2008-18, chapter 6); The reinstatement and possible improvement of those public rights of way affected during construction, with a condition survey prior to and post-construction; What maintenance will be carried out on temporarily diverted PRoW, such as a summer mowing programme, signposting and surfacing where necessary.
P 58 14.2.3	It is welcomed that routes of construction traffic will be subject to approval of the relevant planning authority. However, the stage/point in the design and construction traffic at which these routes will be agreed is not made clear in this document or in any of the other parts of the Environmental Statement. Buckinghamshire Councils expect that timeframes for such agreement should be set out more clearly. It is also unclear what

	will happen if no agreement can be reached on a particular route. Suggestions for dedicated haul/construction roads to be constructed to mitigate the impact on rural roads and villages have already been suggested and rejected. Abnormal loads movements would be dealt with via normal notification requirements i.e. 2 days notification of movement and indemnities for all loads moved. Low or weak bridges (or environmental weight restrictions) would need consideration in due course.
	The Councils expect that there should be some indication in the CoCP or within a more localised Traffic Management Plan, of the specifics of what highway maintenance will be carried out.
P 58 14.2.4	Traffic Management Plans must be consulted on *and agreed* with the relevant local authorities.
P 58 14.2.5	Bullet 1: 'Phasing of the works' should be discussed at the earliest opportunity with the Councils and in particular the Highway Authority. Bullet 11: Abnormal loads would need to be notified as per the statutory procedure. New bullet: Check no conflicts with height or weight restrictions on the routes suggested
P 58 14.2.5	Bullet 5: The site specific traffic management measures include, *'A list of roads which may be used by construction traffic in the vicinity of the site'.* The scope of this needs to be extended to include all roads leading to the nearest major highway (A road or higher). Beyond this point vehicles should be limited to using major highways up to the closest access point to the place of final delivery.
P 58 14.2.5	Bullet 13, 14, 20: Section 50 of the Highways Act requires pre-start surveys on all vulnerable roads.
P 58 14.2.5	Bullet 15: HS2 contractors will need to ensure that their negotiations with landowners include provision for lorry holding areas.
	Add additional bullet point pursuant to the Traffic Management Act 2004 and the New Roads and Street Works Act – "Co-ordination of utility companies/diversions"
P 58 14.2.5	Bullet 20: add '*including towpaths'*
P 58 14.2.5	Bullet 21: Buckinghamshire welcomes the use of GPS tracking to manage traffic movement. However, the Councils expect that where possible GPS or at the very least a clear map of appropriate construction routes be provided to *all* construction vehicles. The Councils expect that a lorry driver training programme be implemented along with a Communications Plan that sets out how information on the routes and appropriate behaviour will be disseminated to construction traffic.
P 58 14.2.5	Other site-specific measures should be included (if not covered elsewhere): Recording the highway condition at access points; Recording the condition of relevant parts of the highway prior to

	the commencement and after the completion of HS2's works, in consultation with the highway authorities. The highway authorities will be notified of surveys and may send a representative if they wish. Any remedial works required as a result of HS2's works will be undertaken to the reasonable satisfaction of the relevant highway authority. Large vehicle controls, including penalty measures.
P59 14.2.5 Bullet 5	The CoCP states construction routes should, *'avoid large goods vehicles operating adjacent to schools during drop off and pick-up periods'.* The CFAs however have qualified this with, *'where reasonably practicable'*. It is not difficult to avoid schools at peak periods and the CoCP should take precedence.
P 59 14.2.6	A hotline should be in place for residents to report any highway issues associated with construction traffic, such as the condition of roads. Information on the calls received and how these have been addressed should be provided to the LA.
P 60 14.2.7	Needs to include drain runs, catchpits and soakaways in the vicinity.
P 60 14.3	The Buckinghamshire Councils expect that the monitoring plans by the Nominated Undertaker should include a survey of the condition of roads used as construction routes prior to their being trafficked by construction vehicles. These routes are to be monitored by the nominated undertaker throughout the construction period and following completion, to be restored to a state agreed with the local planning and highway authorities. Use of Automated Number Plate Recognition (ANPR) to monitor unregulated access by any construction-related vehicles (including workers' cars) to sensitive locations should be considered.
	The Councils expect that the local planning and highway authorities will have input into the monitoring plans and that they will not proceed without the approval of these authorities.
Waste and Materials	
Section Number	*Comment*
	HS2 Ltd needs to complete a detailed mass haul model. Without this, mitigations cannot be accurately specified. It is also a key input to areas of increasing concern to the Councils in the Transport Assessment.
	The document needs to acknowledge that relevant planning permissions will need to be in place for the disposal of waste material off-site at suitably proximate locations. It cannot be assumed that these will be forthcoming or that the hours of opening will facilitate night- time or weekend disposal.
	There should be a commitment to transporting waste by sustainable means where possible, e.g. through the use of existing rail routes.
P 61 15.1.1	There does not appear to be any mention of minerals availability or sources of supply. The document does not appear to give consideration to minimising the amount of primary aggregates required. It does refer to working towards a "cut and fill balance in relation to excavation and tunnelling arising" in paragraph

	15.1.1 in order to reduce waste arising, but does not give detail on how the use of natural resources would be reduced i.e. the sourcing and use of secondary aggregates, where possible, to reduce the need for primary aggregate in line with the principles of sustainable resource management.
P 64 15.3.3	This register should be supplied to the relevant officer within the LA for monitoring purposes.
	The document does not provide details with regards to where additional primary aggregate would be sourced - i.e. local sources.
	No mention is made of the potential sterilisation of mineral resources and what measures would be taken to ensure that mineral resources are not sterilised through the construction of the line.
	There is no mention of sustainable placement in the CoCP. Given that this approach will have significant negative impacts on the landscape, measures and standards must be in place to ensure impacts are reduced as much as possible.
Water resources and flood risk	
Section Number	*Comment*
	There is an assumption flood risk should be managed as practicable as possible. However, we expect such a large national scheme to be providing betterment where appropriate for any temporary works and ultimately the permanent designs.
	Prior written consent will be required from the Lead Local Flood Authority (LLFA) for any works affecting flow within an Ordinary Watercourse under Section 23 of the Land Drainage Act 1991. This includes any culverting. There is an assumption within the CoCP that the principle of culverting is acceptable. We will only accept the use of culverting for any necessary access, both temporary and permanent. We would expect a hierarchy approach to be undertaken first opting for an open span bridge, then a box culvert if this is not possible to ensure the capacity of the channel is maintained and to allow mammals to pass through. Culverts have adverse impacts on watercourses by increasing flood risk, removing natural banks and bed and the interaction with ground water.
	Surface water should be managed sustainably for both the temporary works and permanent design, discharging to ground where possible, if not to the nearest watercourse in line with best practice taking all necessary measures to ensure run-off rates and volumes are not increased for all rainfall events up to and including the 1 in 100 year event including climate change in line with the NPPF.
	A range of sustainable drainage measures should be provided using a hierarchy approach by first using above ground storage measures and above ground conveyance measures. We will not accept the use of existing water bodies for the management of surface water due to the requirement that these features need to be engineered correctly and should be offline from any existing water body, to avoid pollution of existing water bodies and

	changes in morphology.
	The LLFA (Buckinghamshire County Council) is expected to become the SUDS approval body from 2014. It is therefore important that any proposals are discussed early and include any planning proposals to ensure both the Planning Applications and SUDS approval are assessed in tandem to avoid any delays.
	The CoCP should cover each section of the railway line and the LEMPs for each of these areas should ensure they are site specific, taking into account the local hydrology, geology, ground water levels, existing watercourses, overland flow routes and floodplain. We would expect this to include the same information that would be expected within an FRA to support a planning application. Within this it should identify where consents will be required and the relevant authority and a schedule of works including a timescale.
	As these works will be undertaken over a long period of time, the CoCP should be reviewed on, at least, an annual basis to ensure any updates in flood data, legislation and policies are taken into account.
	All relevant evidence bases should be part of the baseline investigations for each of the areas of construction including the Districts SFRA's, the LLFA's Local Flood Risk Management Strategy, County Strategic Flood Risk Assessment, Preliminary Flood Risk Assessment and Surface Water Management Plans. Evidence should also be used from the River Basin Management Plans associated with the EU Water Framework Directive and Catchment Management plans for both the Thames Region and Anglian Region.
	It is important each area is assessed in detail before identifying in principle to any temporary and permanent design measures. The baseline data should inform how these are designed and what the appropriate measures are for that area. Flood Risk has many interactions with risk to life and property, where floodplains are cut off this can have an impact on the local biodiversity such as wetlands. Where surface water is not managed sustainably this could affect the quality of the local drainage which has a negative impact on ecology, biodiversity and amenity of watercourses. These interactions should be considered when assessing options to manage flood risk.
P 65 16.1.2	Not all ordinary watercourses are shown on OS maps, they may be an unmarked ditch line but they are critical for local drainage.
P 65 16.2.1	The LLFA should give approval for any works likely to affect any surface water and/or groundwater.
P 67 16.2.4	The LLFA should be consulted for any works near or affecting ordinary watercourses.
P 67 16.2.5	Any outfall should discharge at a limited rate set by the EA/LLFA or at greenfield runoff rate.
P 69 16.3.4	If materials are stocked in the floodplain (flood zone 3) compensation must be provided elsewhere nearby.
P 70 16.4.1	More detail is required here on the means of monitoring,

	enforcement and compliance.
P 70 16.4.2	Details of the baseline data would be required such as geographical location so the RMAs can compare to their expected results.
P 70 16.4.3	Monitoring should be required on any outfalls to ensure that they are discharging at the agreed rate and no more, to make sure flood risk is not increased downstream.
P 70 16.4.3	It is not sufficient that contractors are self-monitoring alone. An independent means of audit should be established, and information should be provided to the relevant LA.
P 70 16.4.4	Action should be taken if outfalls are found to be discharging at higher than agreed rates
P 70 16.4.4	It is not clear what sanctions or penalties will apply to breaches of the CoCP.
Annex 2: Sustainability Policy	
Section Number	*Comment*
	The policy states it supports the Government goals; *'support British engineering, create job opportunities and develop skills in the UK'*. There is no detail about the extent skills that will be developed, how and at what level they will be developed.
	The policy states it will, *'engage in dialogue…with local communities'*. To date this has been unsatisfactory. There should be more commitment to listening to communities and ensuring their comments and view are genuinely considered.
Annex 3: LEMP template	
Section Number	*Comment*
	The template appears very basic. We would expect to see reference to plans within the template which clearly illustrate ecological receptors, ecological fencing, mitigation and compensation areas etc. as well as making reference to legal requirements (e.g. details of EPS licence method statements that must be adhered to), generic guidance on ecological best practice working methods, supervision etc. A section on cumulative impacts is also required to take account of the combined effects from adjoining LEMP areas. We are unclear as to when the exemplar LEMP developed with Camden will be available.

8. SUSTAINABILITY STATEMENT

[Insert when complete]

9. AIR QUALITY

General Comments	
	Given the scale of proposed construction in Buckinghamshire, the Councils are significantly concerned that the true air quality impacts have not been adequately assessed both from direct and indirect sources. The Councils questions the adequacy of using only DMRB, the lack of any actual monitoring data and also the validity of the inputs used which are not presented in the Final ES.
	In terms of monitoring, HS2 would appear to have not undertaken any air quality monitoring and have not utilised existing District monitoring data to consider localised hotspots or existing failures of air quality standards.
	The impact through road closures, rat running and diversion of localised traffic again is not adequately assessed or mitigated against. There is also the absence of considering the impacts to cyclists and equestrian road users.
	HS2 fails to identify the existing value and therefore subsequent impact from the loss of existing trees and vegetation and their related benefit to maintaining and improving existing levels of local air quality.
	Cumulative traffic impacts for Buckinghamshire are not adequately considered. In addition, preparatory and utility works do not appear to have been considered as part of the assessments and these again will be significant.
	The Councils also feel that the need for dust mitigation has been underplayed and individual properties have not been fairly assessed.
	As part of mitigation, the Councils ask HS2 to commit to using bio screening/ green walls to reduce particulate levels around

	construction zones and the additional planting of species that specifically remove air pollutants from ground level.
	The Councils seek a commitment from HS2 to fund or undertake additional comprehensive monitoring in relation to nitrogen dioxide and particulates before any preparatory works commence, during construction and also post construction.
	The Councils also consider it appropriate that HS2 contribute towards Air Quality Action Planning across Buckinghamshire and in particular funding actions that reduce the impact of transport related pollution.
Volume 2 CFA7 Colne Valley	
Section Number	Comment
4.2.2	In terms of the 'study area', the assessment does not consider where traffic will be displaced as a result of construction activity. This is a major emission, as it will impact upon a number of locations that will be used for rat running.
4.2.3	The methodology proposed by HS2 for construction dust emissions has a major flaw in that single properties very close to construction sites cannot experience a significant effect using the methodology. HS2 state that in cases where fewer than 10 properties are within 20m of the construction activity mitigation will be by virtue of the draft CoCP. This is unacceptable. The CoCP is designed to deal with general construction and individual assessments for single properties must also be undertaken.
4.2.4	Whilst vehicle emissions from exhaust and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls. This is not necessarily the case as has been found with the Euro standard improvements that were overestimated and have not been seen in reality. Therefore the current year should be used for baseline in assessments to provide the "worst case for the assessment".
4.3.1	The South Bucks District Council undertakes continuous monitoring in the area adjacent to the M25. This data should be used to inform the modelling.
4.3.2	Estimations using 1km background DEFRA maps do not provide sufficient resolution to make decisions. You state that average background concentrations are within relevant air quality standards. Again this is not the case as this misses localised hotspots mainly associated with transport. This is demonstrated clearly by the latest DEFRA air quality consultation where national mapping has been overlaid on local data sources and misses a significant number of exceedences.
4.3.3	This is not the case. These monitored areas experience higher levels of air pollution and although not directly on the line will experience additional HGV traffic and displaced local traffic as to increase air pollutant levels in these areas. The Councils are disappointed with this narrow view taken by HS2.
4.3.4	The Councils do not agree that areas of already high levels of

	pollution will not be affected by construction activities or traffic
4.3.6	Mid Colne Valley SSSI is crossed by the route and as stated is sensitive to dust deposition and nitrogen deposition. What will be done to mitigate this?
4.3.10	Predicting 2017 NO2 and PM10 levels to be lower than 2012 baseline is risky and not acceptable and may be seen by HS2 as trying to hide the true impact. They also do not reflect real driving emissions. There remains a real danger that Euro 6 emissions standards will repeat the deficiencies of Euro 5 in reflecting real world emissions.
4.4.1	"Emissions will be controlled and managed during construction through the route wide implementation of the CoCP where appropriate". It does not clarify where this is or is not appropriate. The LEMP process is also stated as offering a solution on a local basis; however these have not been developed or presented. Who will determine the acceptability of a LEMP and therefore what community protection measures are required?
4.46	"The assessment of impacts on all receptors close to the haul route, impacts on all receptors arising from dust emissions has been concluded that they will be negligible in magnitude and that effect will not be significant". The Councils argue that insufficient data has been presented to make this conclusion. Having considered Volume 5: Appendix AQ-001-007, we remain of this view.
4.48	"This assessment found that there will be substantial adverse impacts along Swakeleys Road, between Harvil Road and the A40, at a number of receptors assessed for NO2 (for more information see Volume 5, Appendix AQ-001-007). It identified that there will be negligible impacts at a number of receptors for PM10 and PM2.5. The moderate impacts are significant effects". However HS2 then caveat this statement with whilst moderate impacts are significant effects for receptors, they are of limited spatial extent and population exposure.
4.49	"The assessment has also found that increases in NOx concentrations in the Mid Colne Valley SSSI within 100m from the road would give rise to potentially significant effects." This again is then concluded by "This is not likely to be a significant effect on the integrity of the SSI". Whilst the effects may indeed only be experienced on a small part of the SSI this is nevertheless unacceptable. The definition or meaning of 'integrity' is not explained and sounds as though as the SSI is large, detrimentally impacting a small section of it is not important or relevant.
4.4.15	The Formal ES states that properties on Swakeleys Road are expected to experience temporary substantial adverse impacts in relation to NO2 during construction and this will be significant. However no specific mitigation has been identified or proposed. This is not acceptable.
Volume 2 CFA8 The Chalfont's and Amersham	
Section Number	Comment

4.2.2	In terms of the 'study area', the assessment does not consider where traffic will be displaced as a result of construction activity. This is a major emission, as it will impact upon a number of locations that will be used for rat running.
4.2.3	The methodology proposed by HS2 for construction dust emissions has a major flaw in that single properties very close to construction sites CANNOT experience a significant effect using the methodology. HS2 state that in cases where fewer than 10 properties are within 20m of the construction activity mitigation will be by virtue of the draft CoCP. This is unacceptable. The CoCP is designed to deal with general construction and individual assessments for single properties must also be undertaken.
4.2.4	Whilst vehicle emissions from exhaust and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls. This is not necessarily the case as has been found with the Euro standard improvements that were overestimated and have not been seen in reality. Therefore the current year should be used for baseline in assessments to provide the "worst case for the assessment".
4.3.1	The Chiltern District Council undertakes continuous monitoring in the area. However this data has been omitted from the Final ES. It states that "elevated concentrations occur only in busy urban areas and close to major roads". However, the District does not have what may be described as busy urban areas. It does have small towns and villages, so this is misleading.
4.3.2	Estimations using 1km background DEFRA maps do not provide sufficient resolution to make decisions. You state that average background concentrations are within relevant air quality standards. Again this is not the case as this misses localised hotspots mainly associated with transport. This is demonstrated clearly by the latest DEFRA air quality consultation where national mapping has been overlaid on local data sources and misses a significant number of exceedences.
4.3.3	Reference is made to monitoring undertaken by Chiltern District Council and this is subsequently dismissed. However, many monitored areas already experience high levels of air pollution and although not directly on the line would be negatively impacted by additional HGV traffic and displaced local traffic. Whilst many locations are 'roadside', they each have nearby receptors whereby a distance NOX reduction calculation can be done. To not consider the results which are over a significant number of years is not acceptable. These results will also highlight areas not shown on the DEFRA background maps and those that would not be expected to fail based on traffic modelling.
4.3.4	Many locations are just under the threshold for an AQMA designation. For example, Gore Hill in Old Amersham WILL BE

	AFFECTED by HS2 construction traffic and is likely to tip over designation threshold. The Councils do not agree that areas of already high levels of pollution will not be affected by construction activities or traffic
4.3.6	HS2 identify notable receptors for construction activity such as Field Cottages, Turners Wood Farm, Ashwell's Farm, Upper Bottom House Farm, Lower Bottom House Farm, Amersham Hospital and Bircham Cottage. However, based on the criteria exemption indicated in 4.2.3 they cannot experience a significant effect. This is not acceptable to the Councils.
4.3.10	Predicting 2017 NO2 and PM10 levels to be lower than 2012 baseline is risky and not acceptable and may be seen by HS2 as trying to hide the true impact. They also do not reflect real driving emissions. There remains a real danger that Euro 6 emissions standards will repeat the deficiencies of Euro 5 in reflecting real world emissions.
4.4.1	"*Emissions will be controlled and managed during construction through the route wide implementation of the CoCP <u>where appropriate</u>".* It does not clarify where this is or is not appropriate. The LEMP process is also stated as offering a solution on a local basis; however these have not been developed or presented. Who will determine the acceptability of a LEMP and therefore what community protection measures are required?
4.4.3	"*There are no ecological receptors sensitive to dust and nitrogen deposition within the study area".* Buckinghamshire Councils would like to see evidence to support this statement.
4.4.5	The Councils remain concerned over the potential impact to both the Chiltern Crematorium and Amersham Hospital in relation to the vent shaft construction and materials stockpiling.
4.2.2	In terms of the 'study area', the assessment does not consider where traffic will be displaced as a result of construction activity. This is a major emission, as it will impact upon a number of locations that will be used for rat running.
4.2.3	The methodology proposed by HS2 for construction dust emissions has a major flaw in that single properties very close to construction sites cannot experience a significant effect using the methodology. HS2 state that in cases where fewer than 10 properties are within 20m of the construction activity mitigation will be by virtue of the draft CoCP. This is unacceptable. The CoCP is designed to deal with general construction and individual assessments for single properties must also be undertaken.
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4.4.1	"Emissions will be controlled and managed during construction through the route wide implementation of the CoCP <u>where appropriate</u>". It does not clarify where this is or is not appropriate.

	The LEMP process is also stated as offering a solution on a local basis; however these have not been developed or presented. Who will determine the acceptability of a LEMP and therefore what community protection measures are required?
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Volume 2 CFA9 Central Chilterns	
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4.3.2	Estimations using 1km background DEFRA maps do not provide sufficient resolution to make decisions. You state that average background concentrations are within relevant air quality standards. Again this is not the case as this misses localised hotspots mainly associated with transport. This is demonstrated clearly by the latest DEFRA air quality consultation where national mapping has been overlaid on local data sources and misses a significant number of exceedences.
4.3.3	Reference is made to monitoring undertaken by Chiltern District Council and this is subsequently dismissed. However, many monitored areas already experience high levels of air pollution and although not directly on the line would be negatively impacted by additional HGV traffic and displaced local traffic. Whilst many locations are roadside, they each have nearby receptors whereby a distance NOX reduction calculation can be done. To not consider the results which are over a significant number of years is not acceptable. These results will also highlight areas not shown on the DEFRA background maps and those that would not be expected to fail based on traffic modelling.
4.3.4	Many locations are just under the threshold for an AQMA designation. HS2 construction traffic and is likely to tip over designation threshold. The Councils do not agree that areas of already high levels of pollution will not be affected by construction activities or traffic
4.3.6	HS2 identify notable receptors for construction activity such as Pipers Wood Cottages, Park View Cottages, Mantle's Farm, Chapel Farm, Sheepcotts Cottage, Mantle's Green Cottage, Orchard Cottage, Frith Hill Farm, Cudsdens Court, Brambles, King's Pond Cottage and 59 King's Lane. However, based on the criteria exemption indicated in 4.2.3 they cannot experience a significant effect. This is not acceptable to the Councils.
4.3.10	Predicting 2017 NO2 and PM10 levels to be lower than 2012 baseline is risky and not acceptable and may be seen by HS2

	as trying to hide the true impact. They also do not reflect real driving emissions. There remains a real danger that Euro 6 emissions standards will repeat the deficiencies of Euro 5 in reflecting real world emissions.
4.4.1	"Emissions will be controlled and managed during construction through the route wide implementation of the CoCP where appropriate". It does not clarify where this is or is not appropriate. The LEMP process is also stated as offering a solution on a local basis; however these have not been developed or presented. Who will determine the acceptability of a LEMP and therefore what community protection measures are required?
4.4.3	"There are no ecological receptors sensitive to dust and nitrogen deposition within the study area". The Council is a little confused by this statement and would wish to see evidence to support this statement.
Volume 2 CFA10 Dunsmore, Wendover and Halton	
4.2.2	In terms of the 'study area', the assessment does not consider where traffic will be displaced as a result of construction activity. This is a major emission, as it will impact upon a number of locations that will be used for rat running.
4.2.3	The methodology proposed by HS2 for construction dust emissions has a major flaw in that single properties very close to construction sites CANNOT experience a significant effect using the methodology. HS2 state that in cases where fewer than 10 properties are within 20m of the construction activity mitigation will be by virtue of the draft CoCP. This is unacceptable. The CoCP is designed to deal with general construction and individual assessments for single properties must also be undertaken.
4.2.4	Whilst vehicle emissions from exhaust and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls. This is not necessarily the case as has been found with the Euro standard improvements that were overestimated and have not been seen in reality. Therefore the current year should be used for baseline in assessments to provide the "worst case for the assessment".
4.3.2	Estimations using 1km background DEFRA maps do not provide sufficient resolution to make decisions. You state that average background concentrations are within relevant air quality standards. Again this is not the case as this misses localised hotspots mainly associated with transport. This is demonstrated clearly by the latest DEFRA air quality consultation where national mapping has been overlaid on local data sources and misses a significant number of exceedences.
4.3.3	Reference is made to monitoring undertaken by Aylesbury Vale and Wycombe District Councils and then partially dismissed. However, many monitored areas already experience high levels of air pollution and although not directly

	on the line would be negatively impacted by additional HGV traffic and displaced local traffic. Whilst many locations are roadside, they each have nearby receptors whereby a distance NOX reduction calculation can be done. To not consider the results which are over a significant number of years is not acceptable. These results will also highlight areas not shown on the DEFRA background maps and those that would not be expected to fail based on traffic modelling.
4.3.4	This CFA states that Chiltern District Council does not conduct any routine diffusion tube monitoring. This is incorrect. Relevant monitoring locations to consider for displaced traffic in CFA10 are Prestwood and Great Missenden NOX diffusion sites.
4.3.5	Many locations are just under the threshold for an AQMA designation. HS2 construction traffic and is likely to tip over designation threshold. The Councils do not agree that areas which already have high levels of pollution will not be affected by construction activities or traffic.
4.3.6	The Final ES identifies 3 AQMAs designated by AVDC. This is correct and rightly linked to impacts of proposed construction traffic.
4.3.8	Residential properties on Ellesborough Road, Bacombe Lane, Nash Lee Lane, Nash Lee Road, Hartley Farm, The Laurels and the SSSI at Bacombe Hill. Once again, it is likely that the overarching policy set out in 4.2.3 will mean that these locations will not qualify as being significant, regardless of how bad the impact.
4.3.13	Predicting 2017 NO2 and PM10 levels to be lower than 2012 baseline is risky and not acceptable and may be seen by HS2 as trying to hide the true impact. They also do not reflect real driving emissions. There remains a real danger that Euro 6 emissions standards will repeat the deficiencies of Euro 5 in reflecting real world emissions.
4.4.1	"Emissions will be controlled and managed during construction through the route wide implementation of the CoCP <u>where appropriate</u>". It does not clarify where this is or is not appropriate. The LEMP process is also stated as offering a solution on a local basis; however these have not been developed or presented. Who will determine the acceptability of a LEMP and therefore what community protection measures are required?
4.4.6	LEMPs have not yet been produced or indeed presented and therefore reliance on them to confirm that "there will be negligible in magnitude and that the effect will not be significant" is not appropriate.
4.5.5	Three roads will require realignment and therefore meet the criteria for a more detailed assessment outlined in the SMR (Appendix CT-001-000/1). These roads are Rocky Lane, Ellesborough Road and the B4009 Nash Lee Road. The assessment concluded that "there would be an imperceptible

	decrease in concentrations for the most affected receptors. Therefore, no significant effect associated with the Proposed Scheme is predicted". Whilst that may be correct, during their construction, local traffic will be diverted causing further issues in the wider vicinity.
Volume 2 CFA11 Stoke Mandeville and Aylesbury	
4.2.2	In terms of the 'study area', the assessment does not consider where traffic will be displaced as a result of construction activity. This is a major emission, as it will impact upon a number of locations that will be used for rat running.
4.2.3	The methodology proposed by HS2 for construction dust emissions has a major flaw in that single properties very close to construction sites cannot experience a significant effect using the methodology. HS2 state that in cases where fewer than 10 properties are within 20m of the construction activity mitigation will be by virtue of the draft CoCP. This is unacceptable. The CoCP is designed to deal with general construction and individual assessments for single properties must also be undertaken.
4.2.4	Whilst vehicle emissions from exhaust and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls. This is not necessarily the case as has been found with the Euro standard improvements that were overestimated and have not been seen in reality. Therefore the current year should be used for baseline in assessments to provide the "worst case for the assessment".
4.3.1	Aylesbury Vale DC undertakes continuous monitoring in the area. Their data should therefore be used to inform the modelling.
4.3.2	Estimations using 1km background DEFRA maps do not provide sufficient resolution to make decisions. You state that average background concentrations are within relevant air quality standards. Again this is not the case as this misses localised hotspots mainly associated with transport. This is demonstrated clearly by the latest DEFRA air quality consultation where national mapping has been overlaid on local data sources and misses a significant number of exceedences.
4.3.3	Whilst monitoring locations may be away from the proposed scheme they remain very relevant. Although not directly on the line, they will experience additional HGV traffic and displaced local traffic as to increase air pollutant levels in these areas. The Councils are disappointed with this narrow view taken by HS2.
4.3.4	The Councils do not agree that the other 2 AQMAs are not relevant because they are not on a direct freight route. Displaced traffic will impact negatively on these 2 AQMAs and should be subject to proper assessment.
4.3.5	HS2 have again failed to define what the study area is and why it has been chosen and therefore this statement is

	meaningless.
4.3.6	Residential properties on Old Risborough Road, Whitethorn Farmhouse, Park Villa, Putlowes, Fleet Marston Cottages, Long Acre and properties on Meadoway should be afforded specific dust mitigation and should feature as part of the LEMP.
4.3.7	Construction traffic using the A41 Bicester Road and A418 Oxford Road through Aylesbury will impact upon three receptors ;Oaks/Hartwell Cottages, Hatters End and Hall End. Again, these should be afforded specific dust mitigation and should feature as part of the LEMP.
4.3.8	HS2 identify an impact to ecology at Chilterns Beechwoods Special Area of Conservation (SAC) has been identified as an ecological receptor that could be affected by the emissions from construction traffic using the A41010. Further details are required as to how impacts will be reduced and mitigated.
4.3.10	Predicting 2017 NO2 and PM10 levels to be lower than 2012 baseline is risky and not acceptable and may be seen by HS2 as trying to hide the true impact. They also do not reflect real driving emissions. There remains a real danger that Euro 6 emissions standards will repeat the deficiencies of Euro 5 in reflecting real world emissions.
4.4.1	"Emissions will be controlled and managed during construction through the route wide implementation of the CoCP <u>where appropriate</u>". It does not clarify where this is or is not appropriate. The LEMP process is also stated as offering a solution on a local basis; however these have not been developed or presented. Who will determine the acceptability of a LEMP and therefore what community protection measures are required?
4.4.5	HS2 identify the potential for dust emissions in the Aylesbury vale area and then state "given the implementation of mitigation measures... no significant effects are predicted". These mitigation measures are not provided and Volume 5: Appendix AQ-001-011 contains very little justification for this sweeping statement.
4.4.6	*"This is a temporary significant effect".* Construction is expected to take a number of years and therefore should not be described as temporary.
4.4.7	The HRA screening report Volume 5: Appendix EC-010-002 states "It should be noted that even with the Proposed Scheme the NOx concentrations will be less in 2017 than they were in 2012". Again, this is highly unlikely and should not be presented as fact. Current data from 2013 and 2014 already does not support this
4.4.11	*"Some locations in Aylesbury along the A41 Bicester Road were identified where there will be significant residual effects from road traffic emissions".* The Councils therefore would expect HS2 to input into the Councils Air Quality Action Plan to reduce these impacts.
4.5.3	Whilst there may be some justification in considering

	committed development as part of the assessment, this should be caveated with a lower economic recovery scenario whereby not all development goes forward to completion.
4.5.5	For properties selected as worst case such as The Oaks/Hartwell Cottage, Hatters End and Hall End, HS2 predict "a large decrease in concentrations of NO2 and PM10". The Councils are unsure how this statement can be true and question the validity of the assumptions. If it is based on DMRB predictions using background data and relying on vehicles improving, then this is highly unlikely.
Volume CFA 12 Waddesdon and Quainton	
4.2.2	In terms of the 'study area', the assessment does not consider where traffic will be displaced as a result of construction activity. This is a major emission, as it will impact upon a number of locations that will be used for rat running.
4.2.3	The methodology proposed by HS2 for construction dust emissions has a major flaw in that single properties very close to construction sites cannot experience a significant effect using the methodology. HS2 state that in cases where fewer than 10 properties are within 20m of the construction activity mitigation will be by virtue of the draft CoCP. This is unacceptable. The CoCP is designed to deal with general construction and individual assessments for single properties must also be undertaken.
4.2.4	Whilst vehicle emissions from exhaust and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls. This is not necessarily the case as has been found with the Euro standard improvements that were overestimated and have not been seen in reality. Therefore the current year should be used for baseline in assessments to provide the "worst case for the assessment".
4.3.1	Aylesbury Vale DC undertakes continuous monitoring in the area. Their data should therefore be used to inform the modelling.
4.3.2	Estimations using 1km background DEFRA maps do not provide sufficient resolution to make decisions. You state that average background concentrations are within relevant air quality standards. Again this is not the case as this misses localised hotspots mainly associated with transport. This is demonstrated clearly by the latest DEFRA air quality consultation where national mapping has been overlaid on local data sources and misses a significant number of exceedences.
4.3.3	Whilst monitoring locations may be away from the proposed scheme they remain very relevant. Although not directly on the line, they will experience additional HGV traffic and displaced local traffic as to increase air pollutant levels in these areas. The Councils are disappointed with this narrow view taken by HS2.
4.3.4	Whilst there is currently not an AQMA, there are elevated

	levels of pollutants. The Councils are concerned that displaced traffic will impact negatively on this CFA and should be subject to a proper robust assessment.
4.3.6	Residential properties at Wayside Farm, Crossroads Farm, Upper South Farm, and Woodlands Farm will be close to sites of construction activity should be afforded specific dust mitigation measures. Sheephouse Wood SSSI is sensitive to potential dust deposition and has been considered in relation to the haul route, however it is not clear what actions are being proposed to mitigate against such damage. HS2 identify receptors near roads where traffic flows will change as a result of construction activity include The Georgian Dolls House, Pear Tree Cottage, Winding Brook and Perry Hill Cottage. Receptors near roads subject to realignment include 145 Station Road, Wayside Farm and Woodlands Farm Cottages. These must be afforded specific dust mitigation and should feature as part of the LEMP.
4.3.8	Predicting 2017 NO2 and PM10 levels to be lower than 2012 baseline is risky and not acceptable and may be seen by HS2 as trying to hide the true impact. They also do not reflect real driving emissions. There remains a real danger that Euro 6 emissions standards will repeat the deficiencies of Euro 5 in reflecting real world emissions.
4.4.1	"Emissions will be controlled and managed during construction through the route wide implementation of the CoCP <u>where appropriate</u>". It does not clarify where this is or is not appropriate. The LEMP process is also stated as offering a solution on a local basis; however these have not been developed or presented. Who will determine the acceptability of a LEMP and therefore what community protection measures are required?
4.4.5	Dust-generating activities would comprise the construction of cuttings and embankments and a number of bridges. Activities with the potential to generate dust at these sites are likely to include the demolition of buildings, earthworks required for the preparation of ground, bulk excavation, processing and stockpiling of fill materials, construction of structural embankments, landscaping, the construction and use of construction compounds, construction of permanent replacement road infrastructure and bridges and the movement of vehicles off site onto local roads with a possible associated transfer of dust and mud. The use of haul routes within sites also has the potential to generate dust. It is felt by the Councils that the combination of such works has not been adequately assessed. In addition, the nature of the geology has proven in the past to release significant volumes of chalk dust.
4.4.6	HS2 identify *that "there is a slight temporary adverse effect of residential receptors and at the nature conservation sites".* Construction is expected to take a number of years and therefore should not be described as temporary.
4.4.8	*"Temporary impacts at nearby properties have been assessed as slight adverse at worst, which will not have significant*

	effects on receptors. This is because the background concentrations of NO2 and PM10 are low relative to thresholds defined in air quality standards". The Councils are disappointed that HS2 considers that if an area has relatively good air quality that it allows a reduction in quality to occur without recompense.
4.4.9	HS2 identify a potentially significant effect for parts of the Ham Home-cum-Hamgreen Woods SSSI located adjacent to the A41 Bicester Road, west of Blackgrove Road, for total NOx and nitrogen deposition. However, further details appear absent from the report such as actually what mitigation will be utilised.
4.5.3	Whilst there may be some justification in considering committed development as part of the assessment, this should be caveated with a lower economic recovery scenario whereby not all development goes forward to completion.
4.5.5	Worst case receptors (Blackgrove Road, Edgcott Road also known as Shipton Lee Road and Station Road) are predicted to experience negligible or small decreases in concentrations of NO2 and PM10 and the effect will not, therefore be significant. The Councils are unsure how this statement can be true and question the validity of the assumptions. If it is based on DMRB predictions using background data and relying on vehicles improving, then this is highly unlikely.
Volume 2 CFA 13 Calvert, Steeple Claydon, Twyford and Chetwode	
4.2.2	In terms of the 'study area', the assessment does not consider where traffic will be displaced as a result of construction activity. This is a major emission, as it will impact upon a number of locations that will be used for rat running.
4.2.3	The methodology proposed by HS2 for construction dust emissions has a major flaw in that single properties very close to construction sites cannot experience a significant effect using the methodology. HS2 state that in cases where fewer than 10 properties are within 20m of the construction activity mitigation will be by virtue of the draft CoCP. This is unacceptable. The CoCP is designed to deal with general construction and individual assessments for single properties must also be undertaken.
4.2.4	Whilst vehicle emissions from exhaust and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls. This is not necessarily the case as has been found with the Euro standard improvements that were overestimated and have not been seen in reality. Therefore the current year should be used for baseline in assessments to provide the "worst case for the assessment".
4.3.1	Aylesbury Vale DC undertakes continuous monitoring in the area. Their data should therefore be used to inform the modelling.
4.3.2	Estimations using 1km background DEFRA maps do not provide sufficient resolution to make decisions. You state that

	average background concentrations are within relevant air quality standards. Again this is not the case as this misses localised hotspots mainly associated with transport. This is demonstrated clearly by the latest DEFRA air quality consultation where national mapping has been overlaid on local data sources and misses a significant number of exceedences.
4.3.3	Whilst monitoring locations may be away from the proposed scheme they remain very relevant. Although not directly on the line, they will experience additional HGV traffic and displaced local traffic as to increase air pollutant levels in these areas. The Councils are disappointed with this narrow view taken by HS2.
4.3.4	The Councils consider that HS2 have not made an adequate assessment of displaced traffic and therefore do not agree with this statement.
4.3.5	"Notable receptors near roads where traffic flows will change are Perry Hill Cottages, Cheshire Cottages, 8 School Hill, 60 West Street, The Bungalow and Gawcott Fields". These should be afforded specific dust mitigation and should feature as part of the LEMP.
4.3.10	Predicting 2017 NO2 and PM10 levels to be lower than 2012 baseline is risky and not acceptable and may be seen by HS2 as trying to hide the true impact. They also do not reflect real driving emissions. There remains a real danger that Euro 6 emissions standards will repeat the deficiencies of Euro 5 in reflecting real world emissions.
4.4.1	*"Emissions will be controlled and managed during construction through the route wide implementation of the CoCP <u>where appropriate</u>".* It does not clarify where this is or is not appropriate. The LEMP process is also stated as offering a solution on a local basis; however these have not been developed or presented. Who will determine the acceptability of a LEMP and therefore what community protection measures are required?
4.4.5	Within the Calvert, Steeple Claydon, Twyford and Chetwode area, dust-generating activities will comprise the establishment of cuttings and embankments, earthworks associated with sustainable placement and the establishment of the IMD. Activities with the potential to generate dust at these sites include the demolition of buildings, earthworks required for the preparation of the ground, bulk excavation, processing and stockpiling of fill materials, construction of structural embankments, landscaping, the construction and use of construction sites, construction of permanent replacement road infrastructure and bridges and the movement of vehicles onto local roads, with the possible transfer of dust and mud as well as the use of the haul route to remove excavated material. It is felt by the Councils that the combination of such works has not been adequately assessed. In addition, the nature of the geology has proven in the past to release significant volumes of chalk dust.

4.5.3	Whilst there may be some justification in considering committed development as part of the assessment, this should be caveated with a lower economic recovery scenario whereby not all development goes forward to completion.
4.5.5	HS2 state that; *"No roads are predicted to have sufficiently large changes in traffic flows to meet the criteria set out in the SMR for more detailed assessment. These include activities related to the operation of the IMD. The impact from the re-alignment of Addison Road has been assessed. No significant effects associated with the Proposed Scheme are predicted".* Again, The Councils fundamentally do not agree with this statement and question the methodology used to make such an assertion.
Additional Note for Calvert:	The proposed relocation of the waste train and service road with gantry so that it will be situated directly opposite Calvert village will cause increased odour, noise and dust problems. HS2 may not have been aware that the waste train is unloaded in the early morning before the HS2 trains would be running. Lorries will have to run through the village and minor roads back to the waste site. A further point is because the proposed service road and gantry would be outside the Environment Agency permit the operation would be subject to nuisance enforcement action.
Additional Note:	The dust potential from the soil dump has been underplayed by HS2 and should be more robustly considered.
Volume 2 CFA 14 Newton Purcell to Brackley	
4.2.2	In terms of the 'study area', the assessment does not consider where traffic will be displaced as a result of construction activity. This is a major emission, as it will impact upon a number of locations that will be used for rat running.
4.2.3	The methodology proposed by HS2 for construction dust emissions has a major flaw in that single properties very close to construction sites CANNOT experience a significant effect using the methodology. HS2 state that in cases where fewer than 10 properties are within 20m of the construction activity mitigation will be by virtue of the draft CoCP. This is unacceptable. The CoCP is designed to deal with general construction and individual assessments for single properties must also be undertaken.
4.2.4	Whilst vehicle emissions from exhaust and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls. This is not necessarily the case as has been found with the Euro standard improvements that were overestimated and have not been seen in reality. Therefore the current year should be used for baseline in assessments to provide the "worst case for the assessment".
4.3.1	*"Generally rural nature of this part of Northamptonshire"*. This CFA also includes parts of Buckinghamshire and Oxfordshire.

4.3.2	Estimations using 1km background DEFRA maps do not provide sufficient resolution to make decisions. You state that average background concentrations are within relevant air quality standards. Again this is not the case as this misses localised hotspots mainly associated with transport. This is demonstrated clearly by the latest DEFRA air quality consultation where national mapping has been overlaid on local data sources and misses a significant number of exceedences.
4.3.3	Whilst monitoring locations may be away from the proposed scheme they remain very relevant. Although not directly on the line, they will experience additional HGV traffic and displaced local traffic as to increase air pollutant levels in these areas. The Councils are disappointed with this narrow view taken by HS2.
4.3.4	The absence of an AQMA, whilst an indication that limits may not be currently exceeded, should not be used as the basis for whether mitigation action is required or not.
4.3.5	*"AQMAs have been declared for by South Northamptonshire Council, Cherwell District Council and Aylesbury Vale District Council, however, none of these are considered likely to be affected".* The Councils do not consider that the wider impacts on transport have been adequately assessed to make such a statement.
4.3.6	Notable receptors that will be close to construction activity include residential properties on: Tibbetts Farm: Sundale; Turweston Glebe and Hall Farm. In addition, Oaks Farm will be within 50m of a haul route should be afforded specific dust mitigation and should feature as part of the LEMP.
4.3.10	Predicting 2017 NO2 and PM10 levels to be lower than 2012 baseline is risky and not acceptable and may be seen by HS2 as trying to hide the true impact. They also do not reflect real driving emissions. There remains a real danger that Euro 6 emissions standards will repeat the deficiencies of Euro 5 in reflecting real world emissions.
4.4.1	*"Emissions will be controlled and managed during construction through the route wide implementation of the CoCP <u>where appropriate</u>".* It does not clarify where this is or is not appropriate. The LEMP process is also stated as offering a solution on a local basis; however these have not been developed or presented. Who will determine the acceptability of a LEMP and therefore what community protection measures are required?
4.4.5	In the Newton Purcell to Brackley area, *"potentially dust generating activities will occur at demolition and construction sites at, and around, the route".* Again, the Councils feel that whilst the issue is identified it is quick to dismiss without discussion of mitigation measures.
4.4.6	*"Given the mitigation contained within the draft CoCP, applied through a LEMP that will cover the area around Oaks Farm, the assessment of impacts arising from dust emissions have concluded that they will be negligible in magnitude and that the*

	effect on all receptors will not be significant". Unfortunately the CoCP remains in draft form and is a general route wide guide. It does not present local consideration of impacts and the LEMP has not been published to allow comments to be made.
4.4.8	*"Given the low background concentrations and the small increases in concentrations, the assessment concluded that there will be no significant effects on any receptors".* The background concentrations cited do not reflect 'real world' air pollution levels and therefore should not be relied upon to decide on the likelihood of significance.
4.5.3	Whilst there may be some justification in considering committed development as part of the assessment, this should be caveated with a lower economic recovery scenario whereby not all development goes forward to completion.
4.5.5	*"Three roads meet the criteria for further assessment, as a consequence of realignment. An assessment of air quality impacts for the most affected receptors on these roads concluded that they would be negligible, with concentrations decreasing for Station Cottages and Manor Farm. Therefore, no significant effect associated with the Proposed Scheme is predicted".* Again, The Councils fundamentally do not agree with this statement and question the methodology used to make such an assertion.
Volume 5: Air Quality Data appendix (AQ-001-007)	
Technical Appendices CFA 7 Colne Valley	
Section Number	*Comment*
3.1.2	HS2 acknowledge that *"The Colne Valley area lies immediately to the north of the AQMA boundary".* However the impacts of wider activities upon it have not been robustly considered.
3.1.3	*"The South Bucks AQMA lies more than 1km from the route although proposed construction compounds extend to the AQMA boundary"*. Actions should therefore be documented as to how HS2 aim to mitigate and minimise impacts from the construction compounds.
4.1.1 Table1	"Principal Justifications" such as fewer than 10 receptors within 50m of the haul route clearly demonstrate that HS2 is 'sifting' risk based on the need for a minimum number of receptors. This is not acceptable. Each receptor should be fairly assessed and clearly defined plans for mitigation put in place.
5.1.1	DMRB remains a fairly crude screening tool and should not be relied upon for assessing road related emissions in isolation. This is clearly evidenced from District air quality monitoring and modelling, where thresholds are exceeded and in DMRB are not.
Volume 5: Air Quality Data appendix (AQ-001-008)	
Technical Appendices Chalfont's & Amersham	
Section Number	*Comment*
P 2 2.1.1	The Policy Framework should have regard to both the Chiltern DC Air Quality Action Plan and the adopted Bucks and Milton

	Keynes Regional Air Quality Strategy.
P 3 3.1.1	Whilst the designated AQMA does "lie more than 4km from the route", wider traffic impacts will be experienced as a result of route shift to avoid congestion and also rat running. The Council is therefore disappointed that these wider impacts have not been adequately assessed or considered.
P 3 3.1.4	*"There are no monitoring sites within the area that are relevant to this assessment".* Again this is incorrect. Chiltern District Council passively monitor at over 26 sites in the Chiltern District. To ignore this and rely on lower resolution national background mapping is simply unacceptable. Chiltern background measurements from real monitoring over a number of years clearly demonstrate that the real background levels are higher than HS2 is stating.
P 3 3.1.6	Major roads include do include the A413, A355 and the B442. However there are others that are of equal concern with regard to transport derived pollution impacts.
P 5 4	*"Fewer than 10 receptors, "*appears to be a frequently quoted way for HS2 to reduce its impact figures and the Council disagrees with this method of screening.
P 6 4	In the route wide documentation it is clearly acknowledged that construction dust will travel up to 200m from a site. This is not considered in this assessment matrix as only 20m has been used. For demolition it is stated that, *"Construction material with low potential for dust release"*. Again, this is just not reflective of the local circumstances.
P 8 4	HS2 then go on to conclude that additional mitigation is NOT required for any of the vent shaft sites. The Councils feel that these have not been adequately assessed and additional mitigation will be required.
P 9 5.1.3	*"In this study area the DMRB screening method was considered to be a suitable tool for the assessment".* For air quality, DMRB is a crude tool for general assessments and is reliant on accurate base traffic data. The Councils consider that the traffic inputs into the model are not reflective of the local circumstances and that detailed modelling using ADMS urban are essential to consider impacts of traffic and impacts on the wider road networks. In addition, the base assumptions and model inputs are not presented. It is therefore not possible to consider or check the air quality assessments.
5.2.2	It is unclear why an assessment of *"Bircham Cottage (M25 J16 to J17 (north of clockwise slip roads))"* has been used as the receptor assessed. Indeed this is not even shown on the Map AQ-01-008 (Volume 5, Air Quality Map Book), as the text indicates. Whilst this may experience high volume of traffic from the motorway the distance from road to receptor is not provided and misses actual local receptors that may be affected. Receptors assessed should be on roads that will experience stop starting, lower speed roads and those already identified by the Councils as having existing high levels of

	NOX.
5.2.3	The Councils monitor background concentrations and do not agree that the DEFRA maps provide a robust method of base lining the current or future air quality. In addition, the year used to derive the data is not provided in the table 4.
5.2.4	The DMRB model does not provide enough detail to undertake future modelling of air quality and should not be relied upon for this purpose.
5.2.5	"The overall magnitude of impact of the Proposed Scheme is negligible at worst for NO2 and PM10 during construction. Pollutant concentrations will remain well within air quality standards with and without the Proposed Scheme". The Councils disagree with this as existing monitoring already indicates that a number of locations that will be impacted by HS2 are close to failing air quality limit values. The assessment has not considered the impacts on existing localised hotspots and therefore remains unrepresentative of the true picture.
Volume 5: Air Quality Data appendix (AQ-001-009)	
Technical Appendices Central Chilterns	
Section Number	*Comment*
P 2 2.1.1	The Policy Framework should have regard to both the Chiltern DC Air Quality Action Plan and the adopted Bucks and Milton Keynes Regional Air Quality Strategy.
P 3 3.1.1	Whilst the designated AQMA *does "lie more than 4km from the route",* wider traffic impacts will be experienced as a result of route shift to avoid congestion and also rat running. The Councils are therefore disappointed that these wider impacts have not been adequately assessed or considered.
P 3 3.1.4	*"There are no monitoring sites within the area that are relevant to this assessment".* Again this is incorrect. The District Council passively monitor at over 26 sites in the Chiltern District. To ignore this and rely on lower resolution national background mapping is simply unacceptable. Chiltern background measurements from real monitoring over a number of years clearly demonstrate that the real background levels are higher than HS2 is stating.
P 6 4	*"Fewer than 10 receptors",* appears to be a frequent way for HS2 to reduce its impact figures and the Council disagrees with this method of screening.
P 6 4	In the route wide documentation it is clearly acknowledged that construction dust will travel up to 200m from a site. This is not considered in this assessment matrix as only 20m has been used. For demolition it is stated that *"Construction material with low potential for dust release"*. Again, this is just not reflective of the local circumstances.
P 9 5.1.3	*"In this study area the DMRB screening method was considered to be a suitable tool for the assessment".* For air quality, DMRB is a crude tool for general assessments and is reliant on accurate base traffic data. The Councils consider that the traffic inputs into the model are not reflective of the

	local circumstances and that detailed modelling using ADMS urban are essential to consider impacts of traffic and impacts on the wider road networks. In addition, the base assumptions and model inputs are not presented. It is therefore not possible to consider or check the air quality assessments.
5.2.3	The Councils monitor background concentrations and do not agree that the DEFRA maps provide a robust method of base lining the current or future air quality for this project. In addition, the year and inputs used to derive the data is not provided in the table 4.
5.2.4	The DMRB model does not provide enough detail to undertake future modelling of air quality and should not be relied upon for this purpose.
5.2.5	*"The overall magnitude of impact of the Proposed Scheme is negligible at worst for NO2 and PM10 during construction. Pollutant concentrations will remain well within air quality standards with and without the Proposed Scheme".* The Councils disagree with this as existing monitoring already indicates that a number of locations that will be impacted by HS2 are close to failing air quality limit values. The assessment has not considered the impacts on existing localised hotspots and therefore remains unrepresentative of the true picture.
Volume 5: Air Quality Data appendix (AQ-001-010)	
Technical Appendices - Dunsmore, Wendover and Halton	
Section Number	*Comment*
P 2 2.1.1	The Policy Framework should have regard to both the Aylesbury Vale DC Air Quality Action Plan and the adopted Bucks and Milton Keynes Regional Air Quality Strategy.
P 3 3.1.2	Wider traffic impacts will be experienced as a result of route shift to avoid congestion and also rat running. The Council is therefore disappointed that these wider impacts have not been adequately assessed or considered.
P 3 3.1.7	*"There are no monitoring sites within the area that are relevant to this assessment".* Again this is incorrect. The District Council passively monitor at over 26 sites in the Chiltern District. To ignore this and rely on lower resolution national background mapping is simply unacceptable.
P 4 3.1.9	Major roads include do include the A413 and the B4009. However there are others that are of equal concern with regard to transport derived pollution impacts.
P 6 4	*"Fewer than 10 receptors",* appears to be a frequent way for HS2 to reduce its impact figures and the Council disagrees with this method of screening.
P 6 4	In the route wide documentation it is clearly acknowledged that construction dust will travel up to 200m from a site. This is not considered in this assessment matrix as only 20m has been used. For demolition it is stated that *"Construction material with low potential for dust release"*. Again, this is just not reflective

	of the local circumstances.
P 11 5.1.2	*"In this study area the DMRB screening method was considered to be a suitable tool for the assessment".* For air quality, DMRB is a crude tool for general assessments and is reliant on accurate base traffic data. The Councils consider that the traffic inputs into the model are not reflective of the local circumstances and that detailed modelling using ADMS urban are essential to consider impacts of traffic and impacts on the wider road networks. In addition, the base assumptions and model inputs are not presented. It is therefore not possible to consider or check the air quality assessments.
5.2.3	The Councils monitor background concentrations and do not agree that the DEFRA maps provide a robust method of base lining the current or future air quality for this project. In addition, the year and inputs used to derive the data is not provided in the table 4.
5.2.5	*"The overall magnitude of impact of the Proposed Scheme is negligible at worst for NO2 and PM10 during construction. Pollutant concentrations will remain well within air quality standards with and without the Proposed Scheme".* The Councils disagree with this as existing monitoring already indicates that a number of locations that will be impacted by HS2 are close to failing air quality limit values. The assessment has not considered the impacts on existing localised hotspots and therefore remains unrepresentative of the true picture.
Volume 5: Air Quality Data appendix (AQ-001-011)	
Technical Appendices - Stoke Mandeville and Aylesbury	
Section Number	*Comment*
P 2 2.1.1	The Policy Framework should have regard to the Aylesbury Vale DC Air Quality Action Plan, Wycombe DC Air Quality Action Plan and the adopted Bucks and Milton Keynes Regional Air Quality Strategy.
P 3 3.1.1	Wider traffic impacts will be experienced as a result of route shift to avoid congestion and also rat running. The Council is therefore disappointed that these wider impacts have not been fully assessed or considered.
3.1.7	Data provided by AVDC clearly demonstrate exceedences of the nitrogen dioxide annual mean objectives. The 2012 data and 2013 data are now available and must be used to inform modelling.
P 7 4	*"Fewer than 10 receptors" appear* to be a frequent way for HS2 to reduce its impact figures and the Council disagrees with this method of screening.
P 7 4	In the route wide documentation it is clearly acknowledged that construction dust will travel up to 200m from a site. This is not considered in this assessment matrix as only 20m has been used. For demolition it is stated that *"Construction material with low potential for dust release".* Again, this is just not reflective of the local circumstances.

P 9 5.1.3	The base assumptions and model inputs are not presented. It is therefore not possible to consider or check the air quality assessments.
5.2.2	*"The traffic data provided for Aylesbury did not adequately cover roads close to monitoring locations that would allow meaningful verification to be undertaken. Therefore the model was not verified."* HS2 should therefore undertake their own monitoring to validate statements that are then presented as fact. Alternative model verification should be presented.
5.3.5	The Councils monitor background concentrations and do not agree that the DEFRA maps provide a robust method of base lining the current or future air quality. In addition, the year used to derive the data is not provided in the table 4.
5.3.9	"Following a further more detailed assessment using ADMS-Roads, the overall magnitude of impact of the Proposed Scheme was found to be moderate adverse for NO2 at a number of receptors along the A41 in Aylesbury and slight adverse or negligible at other locations. Pollutant concentrations are predicted to remain within air quality standards during construction with and without the Proposed Scheme". The Councils consider that justification and acceptability of increases in air pollution should not be made by referring to air quality standards.
Volume 5: Air Quality Data appendix (AQ-001-012)	
Technical Appendices - Waddesdon and Quainton	
Section Number	*Comment*
P 2 2.1.1	The Policy Framework should have regard to the Aylesbury Vale DC Air Quality Action Plan and the adopted Bucks and Milton Keynes Regional Air Quality Strategy.
P 3 3.1.2	The Councils question why the report refers only to the 2010 progress report and not the 2011 or 2012 report.
P 4 3.1.7	Major roads do include the A41.However there are others that are of equal concern with regard to transport derived pollution impacts.
P 6 4	*"Fewer than 10 receptors*", appears to be a frequent way for HS2 to reduce its impact figures and the Council disagrees with this method of screening.
P 6 4	In the route wide documentation it is clearly acknowledged that construction dust will travel up to 200m from a site. This is not considered in this assessment matrix as only 20m has been used. For demolition it is stated that *"Construction material with low potential for dust release".* Again, this is just not reflective of the local circumstances.
P 10 5.1.3	The base assumptions and model inputs are not presented. It is therefore not possible to consider or check the air quality assessments.
5.2.2	*"There were no monitoring sites nearby that allowed model verification. Therefore the model was not verified".* HS2 should

	therefore undertake their own monitoring to validate statements that are then presented as fact. Alternative model verification should be presented.
P 20 5.4.3 and 5.4.4	The Councils consider that justification and acceptability of increases in air pollution should not be made by referring to air quality standards. Any increase in local air pollution will be detrimental to health and should be avoided or mitigated, regardless of whether it is below the designation threshold.
Volume 5: Air Quality Data appendix (AQ-001-013)	
Technical Appendices - Calvert, Steeple Claydon, Twyford and Chetwode	
Section Number	*Comment*
P 2 2.1.1	The Policy Framework should have regard to both the Aylesbury Vale Air Quality Action Plan and the adopted Bucks and Milton Keynes Regional Air Quality Strategy.
P 3 3.1.6	*"There are no monitoring sites within the area that are relevant to this assessment".* Again this is incorrect. Aylesbury Vale District Council passively monitor at a number of sites across the District. To ignore this and rely on lower resolution national background mapping is simply unacceptable.
P 3 3.1.8	Major roads do include the A421. However there are others that are of equal concern with regard to transport derived pollution impacts.
P 5 4	*"Fewer than 10 receptors*", appears to be a frequent way for HS2 to reduce its impact figures and the Council disagrees with this method of screening.
P 6 4	In the route wide documentation it is clearly acknowledged that construction dust will travel up to 200m from a site. This is not considered in this assessment matrix as only 20m has been used. For demolition it is stated that *"Construction material with low potential for dust release".* Again, this is just not reflective of the local circumstances.
P 8 4	HS2 then go on to conclude that additional mitigation is not required for any of the vent shaft sites. The Councils feel that these have not been adequately assessed and additional mitigation will be required.
P 9 5.1.3	"In this study area the DMRB screening method was considered to be a suitable tool for the assessment". For air quality, DMRB is a crude tool for general assessments and is reliant on accurate base traffic data. The Councils consider that the traffic inputs into the model are not reflective of the local circumstances and that detailed modelling using ADMS urban are essential to consider impacts of traffic and impacts on the wider road networks. In addition, the base assumptions and model inputs are not presented. It is therefore not possible to consider or check the air quality assessments.
5.2.3	The Councils monitor background concentrations and do not agree that the DEFRA maps provide a robust method of base lining the current or future air quality. In addition, the year used

	to derive the data is not provided in the table.
5.2.4	The DMRB model does not provide enough detail to undertake future modelling of air quality and should not be relied upon for this purpose.
5.2.5	"The overall magnitude of impact of the Proposed Scheme is negligible at worst for NO2 and PM10 during construction. Pollutant concentrations will remain well within air quality standards with and without the Proposed Scheme". The Councils disagree with this as existing monitoring already indicates that a number of locations that will be impacted by HS2 are close to failing air quality limit values. The assessment has not considered the impacts on existing localised hotspots and therefore remains unrepresentative of the true picture.
5.2.7	"In certain circumstances a qualitative assessment has been undertaken". However the distance to receptor calculations are absent from the report and therefore impossible to check their accuracy or assumptions made.
Volume 5: Air Quality Data appendix (AQ-001-014)	
Technical Appendices - Newton Purcell to Brackley	
Section Number	*Comment*
P 2 2.1.4	The Policy Framework should have regard to both the Aylesbury Vale District Council Air Quality Action Plan and the adopted Bucks and Milton Keynes Regional Air Quality Strategy.
P 3 3.1.1	Whilst the designated AQMA may lie outside of the 'study area', wider traffic impacts will be experienced as a result of route shift to avoid congestion and also rat running. The Council is therefore disappointed that these wider impacts have not been adequately assessed or considered.
P 3 3.1.4	"Although all three local authorities carry out monitoring within their districts, no monitoring is currently carried out in close proximity to the route or in the areas identified as being a potential area of concern". Again, this is incorrect. The District Councils passively monitor at a number of relevant sites. To ignore this and rely on lower resolution national background mapping is simply unacceptable.
P 5 4	"Fewer than 10 receptors "appear to be an often used way for HS2 to reduce its impact figures and the Council disagrees with this method of screening.
P 6 4	In the route wide documentation it is clearly acknowledged that construction dust will travel up to 200m from a site. This is not considered in this assessment matrix as only 20m has been used. For demolition it is stated that "Construction material with low potential for dust release". Again, this is just not reflective of the local circumstances.
P 9 4	HS2 then go on to conclude that additional mitigation is NOT required for any of the sites. The Councils feel that these have not been adequately assessed and additional mitigation will be required.
P 10 5.1.2	"In this study area the DMRB screening method was

	considered to be a suitable tool for the assessment". For air quality, DMRB is a crude tool for general assessments and is reliant on accurate base traffic data. The Councils consider that the traffic inputs into the model are not reflective of the local circumstances and that detailed modelling using ADMS urban are essential to consider impacts of traffic and impacts on the wider road networks. In addition, the base assumptions and model inputs are not presented. It is therefore not possible to consider or check the air quality assessments.
5.2.3	The Councils monitor background concentrations and do not agree that the DEFRA maps provide a robust method of base lining the current or future air quality. In addition, the year used to derive the data is not provided in the table 4.
5.2.4	The DMRB model does not provide enough detail to undertake future modelling of air quality and should not be relied upon for this purpose.
P 17 5.3.5 and 5.3.6	The Councils consider that justification and acceptability of increases in air pollution should not be made by referring to air quality standards. Any increase in local air pollution will be detrimental to health and should be avoided or mitigated, regardless of whether it is below the designation threshold.

10. COMMUNITY

Volume 5: Community (Including Public Rights of Way and green infrastructure)	
Section Number	*Comment*
General community comments	Buckinghamshire councils are concerned about the effects on community of this huge infrastructure project. We are generally disappointed with the inadequacy of the assessment of these impacts. The assessment relies solely on the draft Code of Construction Practice (CoCP) to reduce the significant effects however, the CoCP is a very generic document. This means that there are no assurances of solutions that will protect residents and communities in the future. Buckinghamshire councils are not clear when the Local Environmental Management Plans (LEMPS) will be agreed and in place.
Community infrastructure	The ES assesses the effects on the scheme on community infrastructure but does not assess the effects on the people who make up all the affected communities along the route.
Green infrastructure (GI)	There is no consideration, assessment or analysis of the strategic GI network for Buckinghamshire at any point in the ES. Whilst there is no statutory requirement to include GI in the ES, the NPPF requires positive planning for the creation, protection, enhancement and management of Green Infrastructure Networks. It also requires Green Infrastructure to be strategically planned and based upon sound evidence. Therefore it is felt that there is a clear deficiency in the Environmental Statement as there is no clear assessment of where strategic opportunities/priorities for GI enhancement and creation lie in relation to mitigation at any point along the route based on sound evidence.

	None of our comments on the draft ES have been assessed and incorporated. All references to GI policies (which were previously inconsistent) have now been removed from the ES. (e.g. ALGG in CFA7). Despite stating that GI Strategies/Plans will be taken account of in the methodology, there is no evidence that this has taken place, nor specific reference to the Buckinghamshire GI Strategy 2009, Green Infrastructure Delivery Plan 2013, Aylesbury Vale GI Strategy 2011 or associated GI evidence base published for Wycombe anywhere in the ES. These are all publically accessible documents and/or highlighted in our Blueprint for HS2 in Feb 2013 and response to the draft ES in July 2013. These documents form the technical evidence to support green infrastructure provision in Bucks. There is dismissal of the majority of community and amenity impacts as only of local or no significance; the GI network in Buckinghamshire incorporates large scale strategic GI serving wider communities. Buckinghamshire's strategic GI network will be damaged/altered by the development of a major rail infrastructure project (HS2). This impact needs to be assessed and addressed as per the requirements of the NPPF or there will be a negative impact on communities and the environment. The Buckinghamshire GI Delivery Plan August 2013 (plus other Bucks GI strategies) was formally published in September 2013 and can be found at: http://www.buckscc.gov.uk/bcc/strategic_planning/green_infrastructure.page It is unclear whether the impacts of HS2 on health and wellbeing of communities, in relation to loss of green space and environment has been properly assessed in ES. There is a reference acknowledging there is a link between health and access to quality environments/greenspace in the Health Impact Assessment chapter 6. Mitigation and offsetting measures are outlined in thematic isolation in the ES (opposed to taking a multi-functional/GI or ecosystem services approach) may not be satisfactory nor fully realise benefits of mitigation from any HS2 construction/operation. HS2 Ltd has noted that consultees requested this approach in the draft ES consultation but it appears not to have done anything about it. GI is mentioned in climate change, landscape and biodiversity but there is no integrated approach to GI at any point in the ES. Given the resources available to HS2Ltd and the Government's wish to see impacts on communities minimised and cost effective solutions implemented, an integrated approach would be extremely beneficial.
General PRoW	The aim throughout the ES consultation process has been to ensure the public amenity of the strategic rights of way network is protected

comments	and, where possible, improved. Maintaining a fully integrated rights of way network is essential to maintain opportunities for the public to safely enjoy the countryside for recreation and health; and for non-vehicular journeys between communities and local services. The majority of rights of way crossings have been provided across the line to maintain the connectivity of the strategic network and this is welcomed. However, what appears to be missing are a large number of cost-neutral improvements to user's onward journeys that would significantly mitigate the impact on local communities. In addition, there are a number of general principles that appear to be absent from the ES and these are summarised.
General omissions from PRoW sections	Routes temporarily diverted during the construction process should have a minimum recorded width according to the path's status. Similarly, the final routes post-construction should have minimum legal widths. We would suggest at least 4m for a bridleway and restricted byway, and at least 3m for a footpath. Structures required as part of permanent diversions, such as pedestrian and kissing gates for stock control, should be of British Standard design (BS 5709: 2006). Many rights of way are missing from the map books. Assuming HS2 Ltd has the full highway authority rights of way electronic GIS data set, all areas of the plans should be populated to provide a strategic overview of the wider links and effects. The principle of pedestrian footway construction on HS2 bridges, used as part of diverted rights of way, was thought to be one of the main principles of mitigation agreed by HS2 with the Buckinghamshire Local Access Forum during pre-environmental statement discussions. This would significantly improve pedestrian safety walking along/alongside carriageways, especially for diversions introducing greater distances of road walking.
CFA 7	Buckinghamshire councils' main concern in this area is Hillingdon Outdoor Activity Centre (HOAC) and effects on the Colne Valley itself. HOAC is a significant community facility used by residents of South Buckinghamshire. HOAC would not be able to close temporarily for a matter of years and then re-open and this is not mentioned in the ES. HOAC has made this clear to HS2 Ltd. Nothing is included in the ES which assesses the permanent loss of the facility and we know from HOAC that no alternative site has been identified despite discussions with HS2 Ltd. There should be compensation for HOAC, which is a charity, and also for the community. The construction of the viaduct across the Colne Valley will completely alter its amenity value and this is not described in the ES. Noise and landscape issues are not included in the community section.

Vol. 2 Map Book, CFA/7, Plan CT-06-022/L1 construction phase (box F7 to G9 and D10 to D8) and vol. 5 Technical Appendices, Transport Assessment Part 6, p.7-45, Table 7-19	There is a much longer than expected temporary diversion of Bridleway DEN/2, off Shire Lane, around the edge of Juniper Wood and Nockhill Wood, for a period of >5 years. A much shorter alternative, to run around the south side of the construction site boundary, would be significantly preferable for pedestrians.
Green infrastructure opportunities	Significant cumulative impact on the Colne Valley Park GI and amenity is not properly considered. Policy ALGG Area 10 SPG has been removed and there is no mention of Hertfordshire or Buckinghamshire's GI strategies. No detailed assessment of impact on GI assets and opportunities exist in this priority area. There is no consideration of multiple community effects and mitigation measures are inadequate given the scale of impact on the Park and its amenity. There is a bias on HOAC as the only amenity in this CFA which warrants any attention from HS2, although we acknowledge the significant effect on this facility. Colne Valley Regional Park is identified as a strategic location for existing green infrastructure and a priority for creation of GI opportunities. There are significant benefits and opportunities in taking a multi-functional approach to environmental mitigation here. The ES does not consider fully impacts of overall loss of amenity to Park users, given the huge impacts of two tunnel portals, including significant land take during construction, transport and storage of spoil and construction of a viaduct; this provides an overwhelming case of an integrated package of compensation for this area. We need an integrated plan for mitigation in the Colne Valley Park and Buckinghamshire Councils will work in Partnership with Groundwork and the Colne Valley Community Interest Company to provide a mechanism with key stakeholders for producing a vision/plan for this area. The draft ES referred to preparation of a vision for this area but this has disappeared from the ES.
CFA 8	There are a number of equestrian facilities in this area. The manege operated by Chalfont Valley Equestrian will be unable to continue to operate in its current form and the viability of Chalfont Equestrian is at risk. Other facilities in the area are not directly comparable. No mitigation is offered other than to work with HS2 Ltd to try to find a solution.

Vol. 2 Map Book, CFA/8, CT-06-026-R1 proposed scheme (box E4/F4) and vol. 5 Technical Appendices, Transport Assessment Part 6, Table 7-34, p.7-73	Public Footpath CSG/30 and AMS/16, crossing Bottom House Farm Lane, are not shown on the map book plans. It is assumed these two paths will be diverted or closed during the road widening and should therefore be included. Additionally, they are missing from Table 7-34 of the Transport Assessment (Part 6).
Green infrastructure	There is no mention of Buckinghamshire's GI Strategies and no specific comments in relation to GI, except in relation to Colne Valley Park as above.
CFA 9 Vol. 2 map book, CFA/9, CT-06-31 and CT-06-32 (proposed scheme) and vol. 5 Technical Appendices, Transport Assessment Part 6, Table 7-54, p.7-109. See Map CT-	Mantel's Wood is a significant community environmental asset and is a Local Wildlife Site (LWS). Approximately 31% of it will be permanently lost, severing the north and south of the woodland. There are currently 2 PRoW used by local people for walking activities. One of the PRoWs will be temporarily re-routed for up to a year during construction and the other will be stopped up, reducing public access to the Wood. Great Missenden Parish Council indicates this is a valued community resource however no mitigation is identified in the ES. There is a significant omission - LMI/21 – a connection is required in a north westerly direction from Mantle's Wood to the footpath network connecting Hyde Lane. 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 conveniently or safely. Agreement was reached in principle during pre-ES discussions to provide a connection either on the north or south sides of the line. The northern option (box J4 to H6 - green line on Appendix 1) would provide a route along an existing track in Mantle's Wood and connect to new vehicular tracks at GMI/23. The southern option could run alongside HS2 (box I7 to F7 – pink line on Appendix 1), enabling Footpath 21 through Farthing's Wood to remain open. At least one option could be provided at relatively low cost. There is a significant omission - agreement was reached in principle during pre-ES discussions to provide a link over the South Heath Green Tunnel Head (box D4 to D2 – pink line on Appendix 2). There was also an agreement to create a path onto Frith Hill sharing the vehicular access track to the South Heath Mid-Point Auto-transformer Station (box E4 to F2 – green line on Appendix 2). The tracks largely already exist and the connections to the existing rights of way network are very short on both north and south sides of HS2.

06-033; item reference: vol. 5 Technical Appendices, Transport Assessment Part 6, p.7-110, Table 7-54. Vol. 2 map book, CFA/9, CT-06-32; and vol. 5 Technical Appendices, Transport Assessment Part 6, Table 7-54, p.7-110 Vol. 2 map book, CFA/9, CT-06-34a (box H10 to F10); and vol. 5 Technical Appendices, Transport Assessment Part 6, Table 7-54, p.7-110 Green infrastructure	The permanent diversion of GMI/33/4 on the south side of the line from Chesham Road (B485) to Hyde Lane, along the vehicular access track, is welcome. However, the route needs to be upgraded to bridleway to legally accommodate horses and cycles (box B7 to E7 – see blue line on Appendix 1). Agreement was reached in principle during pre-ES discussions to provide this cost-neutral improvement. There is an error; footpath GMI/12/1 has been omitted from Table 7-54 in Vol. 5 Technical Appendices, Transport Assessment Part 6, p.7-110. The tabular succession should be Frith Hill, GMI/13, GMI/12, GMI/2. There is an omission; agreement was reached in principle during pre-ES discussions to provide a link adjoining the eastern or western boundary of Havenfield Wood to negate the need to construct a new track along the south side of HS2 and to provide a more direct and attractive route for walkers (green or pink lines on Appendix 3). There is no mention of Buckinghamshire's GI strategies.
CFA 10 Vol. 2 map book, CFA/10, CT-06-35 and CT-05-35 (box B4 to B3); and Table 7-73, p.7-148.	The loss of Ellesborough Road Cricket ground and pavilion will have a significant major adverse impact on Wendover communities. No mitigation or compensation is identified within the ES. There is a possible mistake; footpath WEN/37, on the north side of HS2, is shown running along Bowood Lane, whereas it should run along the southern field-side of the boundary hedge. This is the current route on the ground and should not be changed. It does not appear in Table 7-73, p. 7-148, but a certain length will need to be stopped-up. In addition, the path will be temporarily diverted or closed, but does not appear to be mentioned in Table 7-72, p.7-143 of Vol. 5 Technical Appendices, Transport Assessment. Investigations were being made to provide a footway within the bridge design, but this is not mentioned.

Vol. 2 map book, CFA/10, CT-05-37 and CT-06-37 (D7 to C6).	There is a significant omission; no segregated route for vulnerable users (walkers, cyclists and horse riders) is provided along Small Dean Lane to avoid construction traffic. This forms a connection along the Icknield Way promoted route from Dunsmore to Wendover (Bridleway Wendover 57). Agreement was reached in principle during pre-ES discussions to provide this link and avoid conflict with large volumes of heavy construction traffic. This can also be utilised post-construction There is an error; bridleway WEN/57 is marked as a footpath in the map book. This should be checked to ensure the mistake has not been replicated in the Bill.
Vol. 2 map book, CFA/10, Map CT-06-38 construction phase and proposed scheme (box H4).	SIGNIFICANT OMISSION - agreement was reached in principle during pre-environment statement discussions to provide a footway alongside Nash Lee Road (B4008) to link ELL/25 with Nash Lee Lane. Item reference: Vol. 2 map book, CFA/10, Map CT-06-39 proposed scheme (box B7 to C6). There is an error; footpath ELL/20 has been omitted off the bottom of Table 7-73.
Vol. 5 Technical Appendices, Transport Assessment, p.7-148. Vol. 2 map book, CFA/10, Map CT-06-40a proposed scheme (box A5 to E4).	There is a significant omission; agreement was reached in principle during pre-ES discussions, and inspected at a site meeting with HS2, to provide a new public footpath link along the north side of the HS2 maintenance loop, to connect Footpath SMA/5 at St. Mary's Church with the ELL/20 over bridge (box A5 to E4 - green line on Appendix 4). This would avoid the closure of a long section of Footpath 5, which should remain open to the HS2 boundary even if the additional link is not possible.
Green infrastructure	There is no mention of Buckinghamshire's GI Strategies or consideration of multiple community effects and mitigation measures.
CFA 11	This area will have one of the largest main construction worker accommodation sites located on the A41 Bicester Road, which will be in use for an estimated 7 years. The ES concludes that there will be no significant effects associated with construction worker accommodation, which seems unlikely.

Vol. 5 Technical Appendices, Transport Assessment Table 7-92, p7-186. Plan reference: Vol. 2 map book, CFA/11, CT-06-042 construction phase and proposed scheme (H4 to F2). Plan reference: Vol. 2 map book, CFA/11, CT-06-042 proposed scheme (H9 to G7).	The loss of the property 30 Lower Road is significant to the owner. This is a very specific property which would be difficult for the owner to replace. His property was only very recently identified as needed because the property is within the footprint of a new roundabout. Buckinghamshire councils consider that the roundabout design could be changed so that this property would then not need to be acquired. Significant isolation effects on Stoke Mandeville residents living in Whitethorn Close and Old Risborough Road will occur with no mitigation or compensation suggested in the ES. Aylesbury Park Golf Club is an important community resource which will lose 25% of their land during construction. Approximately 10 of the holes of the full 18-hole course will be directly affected by the Scheme. The 9-hole course would not be able to continue as a stand-alone facility. The worst case scenario is that the golf club will cease operating. This is considered in the ES as a major adverse effect therefore significant. The ES does not consider any mitigation other than the possible reconfiguration of the golf course. There is an omission; footpath SMA/17/3 has been omitted from the map book plans. The path branches off the property Hall End and runs towards the Princes Risborough to Aylesbury branch line and Booker Park School, Aylesbury. This will need diverting across the A4010 Stoke Mandeville bypass and has been omitted. There is an omission; no segregated route for vulnerable walkers is provided alongside the A4010 Stoke Mandeville bypass between Footpath SMA/11 and it's re-connection at Stoke Brook.
Green infrastructure opportunities	Aylesbury Linear Park, incorporating Hartwell House; the land around Aylesbury is identified as a priority strategic location for provision of a linear park and network of connected green

	infrastructure. The viability of the Aylesbury Linear Park will be compromised south and west of Aylesbury by HS2 construction and operation, isolating this land and communities from surrounding countryside. There will be a notable impact on the health and wellbeing of communities (visual and noise impacts, as well as isolation confounded by existing GI deficit in Aylesbury in this area) in the south and west of the town. It should be noted that some of the most affected wards to the south of Aylesbury are identified as the most deprived in the Index of Multiple Deprivation and there is a body of evidence to justify the impacts of adverse environmental conditions on physical and mental health. HS2 Ltd state they will provide provision of land within the Proposed Scheme to enable additional landscape integration, recreational open space and potential ecological benefits to be provided in the form of potential green infrastructure between the Proposed Scheme and Aylesbury. The NPPF requires Green Infrastructure to be strategically planned and based upon sound evidence. There is limited information on the proposed scheme, no information on post construction management/maintenance or mechanisms to achieve it. If it is proposed that this becomes part of the Linear Park for the town, an integrated approach/plan is required focusing on appropriate restoration and management in perpetuity. Buckinghamshire Councils would work with the National Trust to deliver a Linear Park in this vicinity. There is no mention of Buckinghamshire's GI Strategies. The loss of land at Hartwell House and Aylesbury Golf Club is not recognised as a loss of GI in an area of existing GI deficit i.e. HS2 will make it worse. Mitigation/offsetting are essential (in PAA2 Priority Action Area) Buckinghamshire GI Strategy. The impact on Aylesbury Linear Park priority GI scheme (ref AV GI Strategy/county GI strategy/GI Delivery Plan) is not considered at all nor taken as potential opportunity for mitigation. There is huge potential to mitigate against the impacts of HS2, given the significant land take, land isolation and effects on communities during and after construction. However it is unclear why there is such a large land take to the south of Aylesbury during construction and what after use will be. Consideration of multiple community GI effects and mitigation measures not considered in the ES.
CFA 12	The Buckinghamshire Railway Centre had between 28,000 and 42,000 visitors in recent years and hosts school visits from a large catchment. The loss of 40% of the overflow car park means the centre may be temporarily restricted in their ability to hold special events, which is significant. The impact on St Leonard's Church in Grendon Underwood from significant increases in HGVs accessing the compound and

	associated noise effects is a concern for the councils. Edgcott Village Hall is also similarly significantly affected. No real mitigation is offered in the ES. GENERAL PRINCIPLE FOR CFA 12 to CFA 13 – there are on-going discussions between the highway authority rights of way team and Network Rail regarding the East West Rail project. Their stated aim is to remove all at-grade rights of way crossings by diversion to the nearest crossing point, or by utilising existing/new bridges and underpasses. However, they have stated they wish to avoid constructing crossings that would later require demolition to make-way for the HS2 project. It should be noted therefore, the network of rights of way may look different when HS2 come to divert the routes and the legal implications for the environmental statement and accompanying bill should be investigated.
Item reference: Vol. 2 map book, CFA/12, CT-06-047b proposed scheme (box F7 to D7).	There is a significant omission; crucial to providing a direct walking and cycling route between Aylesbury and Waddesdon, is the creation of a new bridleway north-west of the Bridleway FMA/1 Accommodation Bridge on the south side of HS2, connecting along an existing footpath to the new track to Cranwell Farm which could link to the A41 along a new bridleway. It was thought that agreement had been reached in principle, during pre-draft ES discussions, to make this improvement and only a relatively short new upgrade would create this significant sustainable transport link (see pink line on Appendix 5).
Vol. 2 map book, CFA/12, CT-06-051 proposed scheme	There is a significant omission; it was thought that agreement had been reached in principle during pre-draft environmental statement discussions to provide a connecting footpath for QUA/26 so that it runs along the proposed new track on the eastern boundary of the Quainton Auto-transformer Feeder Station. There is an existing access track from the Edgcott Road so no additional construction is required and the new path would provide a strategic link in the rights of way network connecting with Finemere Wood along Footpath QUA/35A/1 (box D6 to C4 see pink line on Appendix 6).
Green infrastructure	There is no mention of Buckinghamshire's GI Strategies. Loss or degradation of any GI will be in an area of existing GI deficit i.e. HS2 will make it worse. Mitigation/offsetting are essential (In PAA2). The impact on Bernwood Forest priority GI scheme (ref AV GI Strategy/Buckinghamshire GI strategy) is a concern for Buckinghamshire Councils. There should be consideration of multiple community GI effects and mitigation measures not considered in ES.
CFA 13	The Infrastructure Maintenance Depot (IMD) covers a huge footprint in this area and yet it is not mentioned in this section as having any effect on communities. The IMD is a major concern to the communities in this area. Great Moor Sailing Club will experience significant increases in

	HGVs along Perry Hill and associated noise effects. The loss of part of Shepherd's Furze Farm is a concern as it is an integral part of the Portway Farms dairy unit which would become unsustainable with the current plans for the Scheme. The farm stands to lose 45 acres, as well as the residential property and 100 acres at Portway. A further 150 acres at Shepherd's Furze has been identified as being required for 'sustainable placement'. The ES makes no mention of generations of farmers in an area (it is hoped this farm would pass to the 6th generation). Having identified significant visual and noise adverse effects on The Church of the Assumption of the Blessed Virgin Mary in Twyford, no mitigation measures have been identified.
Vol. 2 map book, CFA/13, Plan CT-06-055-R1 (box E1).	A replacement floodplain storage area is proposed on the northern side of the IMD to be constructed across Footpath SCL/8 (see pink line on Appendix 7). During periods of high rainfall this will become impassable unless a raised walkway is constructed and there will be reduced amenity.
Vol. 5 Technical Appendices, Transport Assessment, p.7-286, table 7-140.	Suggested improvement; footpath SCL/7 and SCL/9 should follow a much shorter desire line around the existing field boundaries to then link with SCL/8 next to Rosehill Farm. This will negate the need to create the footpath on the south side of and alongside the East West Rail corridor, thus reducing the extra walking distance, currently proposed to be 1km. A similar reduced length of footpath inherited by the landowner can be achieved (see green lines on Appendix 7) -
Vol. 2 map book, CFA/13, Plan CT-06-055-R1 (box J1 to G5).	Suggested improvement; footpath TWY/18 off Perry Hill should follow a desire-line to West Street. There needs to be a footway constructed over the bridge to separate vulnerable users from vehicular traffic, but this isn't described in vol. 5 Technical Appendices, Transport Assessment
Vol. 2 map book, CFA/13, see plan CT-06-056 (box E4/E5)	Suggested improvement; it would make a significant improvement to the network if Footpath PBI/5 was extended in a northerly direction, on the south side of the line and along the old track-bed of the former Great Central Main line, to link with the Restricted Byway accommodation over-bridge.
Vol. 2 map book, CFA/13, CT-06-057 (box E8 to D8)	Suggested improvement; footpath PBI/5 and PBI/6, on the north side of the line, could be consolidated into one path following the line of PBI/5. It seems highly likely PBI/6 will never be used post construction as the more direct alternative is more convenient. This would also be desirable from a landowner's perspective. Suggested improvement; footpath CHW/18 should be diverted out of the Manthorn Farm buildings and onto the existing track leading up the bridge to the former Great Central Main line. This would be shorter for pedestrians and bring greater security for the owner of

Vol. 2 map book, CFA/13, plan CT-06-057 (box D4 to E7; and D4 to G7)	Manthorn Farm. There needs to be a footway constructed over the School End Road bridge to separate vulnerable users from vehicular traffic, as a significantly greater distance of road walking is being introduced.
Vol. 2 map book, CFA/13, plan CT-06-059 (box G8)	
Vol. 2 map book, CFA/13, plan CT-06-059 (box D8 to C7).	
Green infrastructure opportunities	Bernwood Forest ; assessment and analysis (based on ANGSt) highlights the northern area (Quainton & Waddesdon and Calvert/Steeple Claydon/Twyford/Chetwode) areas of Buckinghamshire have an existing deficit of accessible green infrastructure of regional, county and local significance. This area is culturally, ecologically and historically significant due to its past as a former Royal Hunting Forest (acknowledged in cultural heritage and landscape sections of the ES). The existing green space deficit will be exacerbated by the loss of amenity in this area and land take by HS2. This area known as Bernwood is clearly identified in Buckinghamshire Councils GI plans as a strategic priority for green infrastructure creation in north Bucks presenting significant opportunities in this locality to mitigate against the impacts of HS2. It is unclear why HS2 Ltd has singled out Aylesbury as the only place where potential GI could be provided. The Colne Valley and Bernwood Forest are also of strategic importance for GI provision. There is no mention of Buckinghamshire's GI Strategies. Loss or degradation of any GI will be in an area of existing GI deficit – i.e.HS2 will make it worse. Given the significant land take and effects on rural communities during and after construction, mitigation/offsetting for GI is essential.

	Falls in PAA (Priority Action Area) 1 (Buckinghamshire GI Strategy 2009) – Impact on Bernwood Forest priority GI scheme (ref AV GI Strategy/Buckinghamshire GI strategy), which provides potential focus to mitigate against community impacts of HS2. Consideration of multiple community GI effects and mitigation measures are not considered in ES.
CFA 14	Approximately 40% of Turweston playing fields will be required temporarily during construction for up to 2 years. 18% of the land will be required permanently. There are no alternative playing field facilities in Turweston. There is no mention of Buckinghamshire's GI Strategies. Permanent loss of playing fields and significant adverse effect on quality of the green space following construction is concerning. This is identified as community GI but no detail on alternative provision and whether this is adequate. It falls in PAA1 (Buckinghamshire Green Infrastructure Strategy 2009); loss or degradation of any GI will be in an area of existing GI deficit (strategic level – based on ANGSt assessment). Mitigation/offsetting are essential. Consideration of multiple community GI effects and mitigation measures not considered in ES. Ballabeg stables in Turweston will be permanently lost.

11. CULTURAL HERITAGE

General concerns/comments	
Section	*Comments*
	Use and representation of Historic Environment information There are many inconsistencies in the use and depiction of Historic Environment Record information supplied by Buckinghamshire County Council and its relationship to new survey work. We are concerned that the historic environment information included in the ES documentation is not currently suitable for devising appropriate mitigation.
	Further archaeological investigations required We are concerned about the commitment to, and timing of, further archaeological investigations to inform the appropriate mitigation that is currently missing from the ES. We remain concerned that the scheme is treating further investigations as 'mitigation' work during construction phases.
	Proposed ecological and landscaping mitigation impacts There are instances where proposed ecological and landscaping mitigation impacts on archaeological sites where the construction effects appear less damaging. Ecological and landscaping mitigation needs to be reconsidered in the light of existing historic environment information, that from further investigations and design those from future surveys. This requires greater effective pan-specialist liaison than apparent in the ES.
	Deposition and duration of archaeological archive The ES does not contain any detail on which approved repositories are able to accept and curate the artefacts and documentation resulting from existing or further historic environment investigations. This needs to be stated within any WSI's and prior to the commencement of further field investigations.
	Community engagement We would like to see commitment from the outset for continuing provision of information about heritage investigations and efforts should be made to arrange public access to archaeological investigations as they take place. A coherent strategy and commitment to both popular (as well as academic publication) of investigation results should form part of a Government commitment to sustainable community engagement.
Environmental	Much improved from the Draft ES. However it is clear that

Statement – Volume 5 – All Cultural Heritage Technical Appendices A4 & A3 books Cultural Heritage Volumes and Map Book (Country South ES 3.5.1.4.2)	further archaeological investigations are required in order to decide on appropriate mitigation, the detail of which is not defined in the ES. **Historic Environment Data issues** Historic Environment Record (HER) data and mapping has been aggregated to create the 'Non-designated heritage asset' points and polygons shown in the Cultural Heritage map books. These are not always the same areas as the supplied HER shapefiles. For example CFA 10 – site DWH157 Pleistocene faunal remains found in the former gravel pit south of Wendover (HER ref 0751600000) is shown in the mapping using the Archaeological Notification Area polygon rather than the HER monument polygon: so the heritage asset as mapped by HS2 Ltd shows the potential extent of remaining undisturbed Pleistocene deposits *outside* the former quarry rather than the *actual* location and extent of the quarry. **Missing HER data** There are many examples of missing /inaccurately located HER data. An example, in CFA 11 – sites SMA030 and SMA031 at Standalls Farm to the west of Stoke Mandeville. There is no reference in the gazetteer to the site of a medieval and post-medieval windmill (HER ref 0432801000, MBC11465) and whilst mention is made of the potential for buried archaeological features to be found, there is no reference to the known metal-detecting finds of Roman coins and a figurine (HER refs MBC31619, MBC31570 and MBC31571). The reference to surviving ridge and furrow earthworks 'to the west and north of the farm' is misleading as both the HER surviving ridge and furrow shapefiles and aerial photos show ridge and furrow earthworks all around the farmstead. **Gazetteers of Heritage Assets - inconsistent cross-referencing to the HER** This makes it extremely difficult to assess the extent of genuinely new discoveries or new information. For instance: In some cases the HER reference (Bucks CC I.D) number is used; in some cases the HER number quoted is incomplete; in some cases only the HER database count number is used; in some cases both numbers are used and in some cases there is no cross reference to the HER at all, even where there is an equivalent HER database entry. Not all the new HER data supplied in the second data supply to HS2 (June 2013) has been systematically included.

For example the presence of war memorials, which are of particular importance to local communities and will be the focus of national and international attention during the centenary of the First World War, have been omitted from the gazetteers. An example is the World War I memorial lectern in Fleet Marston church (HER ref 0747000000) which is not included in the gazetteer entry for SMA085.

An example of inconsistent use of new HER data is the discovery of Late Bronze Age and Iron Age boundary ditches and settlement activity in the grounds of Wendover House School (HER ref 0768300000): whilst this is included in the gazetteer entry for DWH117 (CFA 11), it is not mentioned at all in the text narrative or detailed discussion in the CFA 11 cultural heritage baseline report volume.

An example where a key bibliographic source has not been included is Michael Farley's excavation report on The Prebendal site in Aylesbury published in September 2012 as 'Iron Age Ritual: a Hillfort and Evidence for a Minster at Aylesbury, Buckinghamshire', and which includes a discussion of the Iron Age hillfort and settlements in and around Aylesbury as well as a discussion of the middle and late Saxon minster and town at Aylesbury.

Buckinghamshire Archaeological Notification Areas

Despite appearing in the key in the CFA map books as 'Local Planning Authority Areas of Archaeological Importance or Priority', the Buckinghamshire Archaeological Notification Areas have not been included in the mapping. Not only is this omission misleading but it would have been extremely helpful in focussing attention and prioritising fieldwork. It is not apparent why these areas been omitted.

Other missing HER datasets supplied to HS2 but not included in the cultural heritage mapping and/or the gazetteer:

- Surviving ridge and furrow
- Historic routeways
- Historic Landscape Characterisation
- Archaeological investigations (events)

Conservation Area data

It is not clear if the mapping of Conservation Areas has been updated: for example there is no mention of the recently (21st May 2013) designated Stone Conservation Area (HER ref DBC8135) under SMA051 in the CFA 11 text volume or in the gazetteer, nor is it shown in any of the mapping. The mapping

	showing the Conservation Area at Bishopstone (HER ref DBC8022) is using the old boundary, not the current boundary revised on 23rd October 2012. It has not been possible to check if the Conservation Areas boundaries for Hartwell (HER ref DBC8043, revised 23rd October 2012) or Sedrup (HER ref DBC8063, also revised 23rd October 2012) are correct as they are masked by other layers in the mapping. **Consultation of Buckinghamshire County Council aerial photographic collection** Despite regular requests, there has been a failure to access the HER's large collection of oblique and vertical aerial photographs, many of which are not duplicated in the national collections, which have been used to inform the cultural heritage documents. In particular, we have useful low-level oblique photography showing the detail and extent of archaeological sites such as cropmarks, soil marks and earthworks over a period of time from the mid-1950s onwards, as well as complete county coverage of vertical photographs at regular intervals from the 1960s onwards. This should be flagged up as a major gap in the HS2 documentation. **Archaeological Fieldwork carried out in support of the ES** There has been some duplication of archaeological fieldwork due to lack of prior consultation with ourselves. We have not seen the site selection tables HS2 used to decide on survey areas. (Mentioned in ES 3.5.0.15.2. Scope and Methodology Report- Addendum, Annex C {CT-0001-000/2}). All field surveys carried out are based on BCC HER and English Heritage's National Heritage List for England (designated heritage assets) data obtained from 2012 i.e. site surveys began early 2013, before the June 2013 new BCC HER data download supplied to HS2. It is not apparent if the Buckinghamshire HER data was used in selecting areas for fieldwork. Duplication has clearly occurred, for example at Fleet Marston, with geophysical survey and fieldwalking occurring in areas previously fieldwalked by the former County Museum Archaeological Group in 1973, 1975 and 1986; in areas where geophysical survey and evaluation trial trenching has already been carried out by Pre-Construct Geophysics and Pre-Construct Archaeology in 2009; and in areas where ongoing geophysical survey by the Princes Risborough Countryside Group has been underway.
ES 3.5.0.17 Draft Code of Construction (CT-	Whilst we welcome that additional documentation is to be developed in consultation with EH and the local authorities, we are concerned over the proposed timetable for the production of the currently outstanding extra documentation cited in the

003-000) 8. Cultural Heritage	ES (Draft Code of Construction Practice {CoCP}): • 'Archaeological Generic Project Wide Written Scheme of Investigation' {WSI} (& in Draft Heritage Memorandum). This generic WSI document should be developed much earlier than proposed in the CoCP (ES 3.5.0.17, Figure 1, pg. 4 & sec 8.1.8, pg. 31) • 'Location /Archaeological Site Specific WSI's' – these need to be informed by further archaeological assessment and investigations so they can form part of the Local Environment Management Plans. The CoCP (ES 3.5.0.17, Figure 1, pg. 4) timetables Location / Archaeological Specific WSI production at the construction stage. At the latest, these should be developed at the end of the detailed design Stage (ibid). • sec 8.1.3, bullet five, pg. 30 – It is not clear what is meant by 'purposive investigation. All archaeological investigations have a purpose. We are concerned that the apparently stronger commitment to further archaeological investigations within the Draft Heritage Memorandum (HM) is not reflected in the wording of the CoCP (forming part of the Environmental Minimum Requirements consultation within the ES). Section 2, para 2.1.1 - The CoCP should provide for the most effective planning and provide mechanisms to engage with the local community and their representatives throughout the construction period. This is not demonstrated in relation to Cultural Heritage (Section 8).
Draft Environmental Minimum Requirements ESA 4.4 Annex 3: Draft Heritage Memorandum	Regarding archaeological remains and potential archaeological sites, the Draft Heritage Memorandum is far more transparent and productive in outlining the approach and stated commitment to further programme of heritage investigation works. This is welcome. However the Initial Draft HM document (September 2013) upon which the Heritage Sub-Group was invited to comment, contained the recognition that results of historic environment work, '*will contribute to knowledge and provide opportunities for engagement with communities'* has been removed. Of prime concern is the long term care of artefacts and associated archive from historic environment investigations within Buckinghamshire which we are keen to see resolved at an early stage and resolved prior to investigations. Regarding the recording, analysis and understanding of important historic buildings, the Heritage Memorandum is

	unfortunately lacking in detail (see notes below regarding historic buildings recording).
ES 3.5.0.15.2 Scope and Methodology Report- Addendum (CT-0001-000/2) Annex C	We have not seen the site selection tables HS2 Ltd used to decide on survey areas, which would have been useful comment on prior to survey.
Some examples (not exhaustive) of specific CFA Cultural Heritage comments	
Volume 2 CFA 9	There are still large areas /gaps in the landscape that have not been subject to any survey work. An initial look at CFA9 mapping of non-designated heritage assets against the HER shows some that some HER sites are missing. Also some assets are shown 50m away from location shown on HER (this *may* be due to dropping ArcView shapefiles into MapInfo or CAD mapping).
Volume 2 CFA 10	Unfounded/ Unjustifiable planting - The scheme proposes removal of 150m of Grim's Ditch scheduled monument (DWH 008). New landscape mitigation linear planting (construction map no. CT-06-035 in ES 3.2.2.10) is proposed to reflect a currently non-proven existence or alignment of Grim's Ditch (in evidence to date CH-004-10.01 in *ES 3.5.2.10.7*). Despite this, the Route Wide effects mentions (pg. 21, sec 2.6.2 in ES 3.3.0), '*sensitive earthworks design to replicate the alignment of Grim's Ditch scheduled monument, establishing a link to the historic landscape and integrating the Proposed Scheme into the landscape'*.
Volume 2 CFA 11 Volume 2 CFA 12	The majority of land within the scheme's proposed areas of construction take have currently only been investigated by LiDAR (i.e. the new proposed Stoke Mandeville Bypass area, CFA 11). We emphasise the importance of further archaeological investigations well in advance of the commencement of the enabling and construction stages of the scheme and remain concerned that much archaeological investigation throughout the scheme will be dealt with by 'Watching Brief' monitoring and recording during construction works. Land around Aylesbury is an example of particular proven archaeological interest for remains relating to settlement evidence and activity associated with the Iron Age and Roman periods, whose density and research potential demands more than 'Watching Brief' monitoring. Significant impact area south of Quainton and West of Waddesdon; notably Doddershall Deserted Medieval Village (DMV). A good example of where further survey (LiDAR survey) has revealed the DMV extent is greater than previously recorded. (Survey Map no. CH-004-12.05 in ES

	3.5.2.12.7 & Cultural Heritage map no. CH -01-039 in ES 3.5.1.4.2). The area loss of the DMV is greater than previously anticipated. This is compounded by proposed landscaping impact on heritage assets otherwise not affected by construction i.e. WAD 063 earthworks south of the route will be impacted by landscaping plans which propose grassland habitat creation and, land drainage and balancing pond on the DMV (CT-06-051 in ES 3.2.2.12). Also proposed woodland habitat creation planting could impact on the site of a water mill (WAD 083) on Cultural Heritage map no. CH -01-039 in ES 3.5.1.4.2 & CFA Map book CT-05-052 in ES 3.2.2.12). Proposed mitigation landscaping needs to be considered in the light of existing findings and design those from future surveys.
Historic built environment general route-wide comments	
Vibration and the Impact on Heritage Assets:	Many historic buildings have very shallow foundations, and are correspondingly sensitive to small amounts of vibration disturbance. It is clear from the ES, that the vibration impacts of trains travelling along the tracks are expected to be minimal, due to the design of the train and the tracks. The potential impact of vibrations from the trains is therefore unlikely to be widespread. However, far more concerning, is the impact of lorries, trucks, heavy machinery and earth moving equipment during construction. There are bound to be vibration impacts associated with construction and earth moving which will be felt much more widely than the areas identified in the ES. The ES seems not to make reference to these potential impacts, and without a comprehensive plan of all the transport routes which will be used by all lorries, it is impossible to identify those assets which might be effective. Buckinghamshire Councils would expect to see, at the very least, a note in the CoCP to the effect that heavy vehicles will not be transported along roads which lie adjacent to historic buildings, or where historic buildings about the highway edge. The CoCP also should make allowances for the monitoring of building movement in any areas where it is not possible to avoid the movement of heavy vehicles close to historic buildings – both before and during the movements – in order that any impact may be directly measured.
Noise impacts	The plans contained within the ES provide an indication of the

sufficient to trigger insulation measures	number and location of buildings which are expected to be so badly affected that noise mitigation is required in the form of increased insulation. These include 3 heritage assets: 1. Lower Greatmoor Farm, LB, Finemere 2. Woodlands Farm, undesignated, Finemere 3. Mill House Farm, undesignated, Stoke Mandeville However, the ES does not contain any details of the proposed mitigation or insulation methods, and does not acknowledge the different methods which will be required for heritage assets, than may be employed on more modern housing. The ES also makes no reference to levels of recording which will be undertaken, prior to the irreversible installation of insulation. One might look to the heritage memorandum to set out minimum standards in relation to noise insulation – such as ensuring that any installation in listed buildings is reversible, breathable, and will not harm the historic or architectural interest of the heritage asset. However, the Heritage Memorandum is silent on this issue. No recognition is made in any of the ES documents of the complexity and difficulty associated with insulating a listed building. We wish to raise concerns about the nature and feasibility of such measures; as such installations can cause substantial harm to heritage assets. In addition, sensitive noise insulation, suitable for a listed building, often cost much more than those for a standard modern building. Regarding the undesignated assets, the minimum standards contained within the heritage memorandum, might reasonably have been expected to include provision for historic building recording, at Level 3 of the English Heritage “Understanding your historic building” recording levels. Recording any elements of the building that will be removed or covered up prior to the works going ahead would be minimum good practice, as the insulation installation may hide some of the significance of these buildings. The ES documents are silent on all these counts, and therefore do not adequately demonstrate how noise impacts are to be mitigated.
Noise impacts insufficient to trigger insulation measures	The ES also notes a large number of buildings which are likely to be affected by noise during construction and operation, but which will not be subject to special noise insulation measures. These figures are based on a series of noise surveys, but individual listed buildings have not been visited for baseline noise surveys. 12 heritage assets are assessed as likely to experience noise rises of more than 10dB (Major adverse) • The Hermitage, LB, Chetwode

	• Sunflower Farmhouse, LB, Chetwode • Twyford Mill, LB, Twyford • Upper South Farm, LB Quainton • Stoke House, LB, Stoke Mandeville • Smalldean Farm, 4 LBs, Wendover • Upper Wendover Dean Farmhouse, LB, Wendover • Wendover Dean Farm, 3 LBs, Wendover • Rosehill Farm, undesignated, Chetwode • Railway Cottage, undesignated, Doddershall • Park Villa, undesignated, Hartwell • Cottages, undesignated, Wendover There are also a large number of assets which will be affected by lower rises in noise as a result of construction or operation noise. No mention is made in any of the documents regarding detailed noise monitoring which should be carried out at heritage assets which are most likely to be affected. Given that the noise data used in the ES is based on a number of assumptions, it might be reasonable to expect the ES to include minimum and maximum “acceptable levels” for change in noise. In order to judge these, it would be necessary to undertake detailed noise surveys on the sites of all buildings which might be adversely affected. As a minimum all listed buildings which may experience sufficient increases in noise as to require mitigation, should be the subject of a background noise survey now, and monitoring during construction and operational phases, so that any buildings which turn out to be more affected than is currently expected may be insulated. In all cases, the ES fails to recognise the difficulties that those living in historic buildings will have in mitigating against noise compared to their more modern neighbours. The ES does not recognise the differences between these building types, and therefore the different impacts that the HS2 proposals are likely to have on these residents. The mid and low-level impacts are deemed not to require special measures, presumably because the expectation is that the owners will be able to mitigate sufficiently. However, in many cases a historic building will not be as easily adaptable as a modern one, so these residents will be less well able to adapt their buildings to mitigate. The ES is silent as to how these buildings are expected to mitigate for noise increases. In these cases, it is likely that the owners will wish to mitigate the effects of noise increases somehow. AVDC will need to come up with a process and agreed set of principles for dealing with such requests.

Affected Heritage Assets	The use of a blunt boundary based on distance from the proposed works to define those assets which are to be affected in not ideal. The ES and Heritage Gazetteer consequently fails to take into account any heritage assets which are further away, but which will be impacted by noise, light and other detrimental impacts during construction and operation.
Visual impacts on Heritage Assets	The ES, Heritage Memorandum and other documents are effectively silent on the subject of the impact of HS2 on the setting of Heritage Assets. The Heritage Memorandum, which contains a section headed "The Setting of Heritage Assets" states that "mitigating the impact of the HS2 works on the setting of heritage assets is addressed in the Environmental Memorandum" and "the environmental memorandum sets out the approach to landscape and visual mitigation which takes account of the historic environment". However, the Environmental Memorandum makes no mention at all of the setting of heritage assets. Planting and embankments will be needed to minimise the visibility of fences within the setting of Listed Buildings, so as to reduce the harm caused to the significance and interest of the buildings. These are the LBs noted in the ES as being most affected: 1. LBs in Turweston, on north and east sides – views of viaduct 2. LBs in Barton Hartshorn – views west will include cutting and barriers/landscaping 3. LBs in Chetwode – views west will include cutting and barriers/landscaping 4. LBs in Twyford – views to east will be mostly screened by embankment, but there is a gap crossing the river 5. Doddershall House – views to east will be masked by embankments 6. Haydon Mill – the historic association of the mill to the avenue at Hartwell will be completely severed. This will detrimentally affect the significance of the LB 7. LBs in Wendover, particularly from the Southern end – to the west will be affected by barriers/landscaping 8. Wendover Dean Farm and Upper Wendover Dean Farm – views to the east will be affected by barriers or landscaping choices In all cases, every effort should be made to minimise visual impact through use of planting rather than barriers in isolation. The ES makes reference in many places to the visual screening of HS2 through "Landscaping and/or Fence

	Barriers" (most notably on the various maps and plans). There is some detail about what form the "Landscaping" might take, or where the fence barriers will be used, in the CFA documents, but little analysis of the visual impact of these provisions on the setting of heritage assets, and insufficient photomontage or indicative drawings showing important views of, from and to heritage assets to allow full assessment of the impacts. The difference in impact between landscape planting and hard fence barriers will be considerable, especially in a rural district such as Aylesbury Vale. At the very least the heritage memorandum should have stated within it as a minimum requirement that views to, from, and of designated heritage assets will not be compromised by fence barriers and that landscape planting is recognised to have a lesser impact on views and the setting of heritage assets than fence barriers.
Heritage Gazetteer and Baseline data survey Plan CH-01-039 Plan CH-01-032 Plan CH-01-036	The ES fails to meet the requirements of section 3, by virtue of a number of errors made in the factual contents of the maps, plans and documents prepared by HS2. These are: 1. The process of identification of heritage assets affected by the scheme 2. The accurate identification of designated heritage assets on maps and plans 3. The omission of an undesignated heritage asset from the Heritage Baseline Survey *Identification of Affected Heritage Assets* The use of a blunt boundary based on distance from the proposed works to define those assets which are to be affected in not ideal. The ES and Heritage Gazetteer consequently fails to take into account any heritage assets which are further away, but which will be impacted by noise, light and other detrimental impacts during construction and operation. *Designated Heritage Assets missing from maps and plans:* Plan CH-01-039: does not recognise Grange Farmhouse and its two associated structures as Grade II Listed Buildings CH-01-032 Old Mill House, Wendover, is inaccurately shown on Hogtrough Lane when it should be shown as Number 2 Hale Road. CH-01-036 does not recognise St Mary's Church, Fleet Marston as a Grade II* Listed Building *Undesignated Heritage Asset missing from Heritage Baseline survey:* Also, the Heritage Baseline Survey, and consequently all the other maps, plans a documents in the ES, failed to recognise an unlisted 19th Tin Tabernacle in Calvert (adjacent to the Old

	Station House) which, although not of list-able quality and in a state of disrepair, is an important historic building and is likely to require demolition if HS2 goes ahead.
Recording of Heritage Assets CFA reports, section 6 Section 8 of the CoCP 8.1.3	There are references within the ES and associated documents to archaeological and historic buildings survey and recording. There is a considerable difference between an archaeological record of a building and historic buildings analysis. In all cases below where we discuss historic buildings recording, it is a full historic buildings analysis – to be undertaken by a historic building conservation specialist not simply an archaeologist (a member of the IHBC) – that we wish to request. *Demolition* A number of heritage assets are proposed for demolition as a result of the HS2 scheme. As a minimum, we would expect to see a commitment that any asset which is to be demolished fully recorded prior to demolition, and an indication of the level of recording to be undertaken. In the case of the LBs there might also be a benefit in repositioning the building elsewhere. Affected assets are: 1. Old Stable Cottage, undesignated, Chetwode 2. Rosehill Cottage, undesignated, Chetwode 3. Shepherd's Furze Farmhouse, LB, Calvert 4. The Station House, undesignated, Calvert 5. The Tin Tabernacle, undesignated, Calvert 6. Railway Bridges and structures associated with historic railway, undesignated, Finemere, Quainton and elsewhere 7. Woodlands Farm outbuilding, undesignated, Finemere 8. The Lodge, undesignated, Quainton 9. Glebe House, LB, Hartwell 10. Wall at Hartwell House, curtilage LB, Hartwell 11. 30-40 Ellesborough Road, undesignated, WendoverRoad Barn Farm, undesignated, Wendover The ES and associated papers provide very little detail regarding the level of recording and analysis which will be undertaken for these assets. The CFA reports (section 6) state that: "the Code of Construction Practice sets out the provision that will be adopted to control effects on cultural heritage assets. The provisions include the following - A programme of historic building investigation and recording to be undertaken prior to modification or demolition of assets" (there is then a reference to the draft Code of Construction Practice, Section 8). The section of the CoCP in question then states in paragraph 8.1.3 that:

	"General cultural heritage management measures will include: • provision to contractors of locations and descriptions of all known cultural heritage assets within and adjacent to, construction works, including restrictions to construction methods to protect cultural heritage assets, where these have been identified in the ES; • a programme detailing the implementation of cultural heritage survey works prior to and during construction, addressing the measures set out in the ES; • HS2 Ltd will ensure that the cultural heritage mitigation works (as set out in the ES) are properly programmed by its principal contractor; • all archaeological historic building and historic landscape intervention, recording, analysis, dissemination and archiving will be undertaken by a suitably qualified and demonstrably experienced organisation; and • English Heritage and the local authority (and National Trust as appropriate) will be consulted as appropriate through all stages of the implementation of the programme of cultural heritage works. "
Heritage assets 8.1.4	The CoCP then goes on to state, in paragraph 8.1.4 that heritage assets will be subject to: **"**Suitable measures, to be developed in consultation with English Heritage and the local authorities, will include… procedures for the recording, dismantling and re-erection of any buildings of cultural heritage interest"
Written scheme of investigation 8.1.8	And that, in paragraph 8.1.8-8.1.10, in relation to a written scheme of investigation: "A range of cultural heritage mitigation options will be outlined in the ES. A project-wide generic written scheme of investigation (WSI) will be prepared in advance of site preparation and construction, in consultation with English Heritage and the local authority. This document will detail the generic principles, standards, methods and techniques to be employed on the project for cultural heritage works." "A Site Specific Written Scheme of Investigation will be developed for each area or site specific cultural heritage works. These documents will be developed in consultation with English Heritage and the local authorities." "All cultural heritage works will be undertaken in accordance with the generic and site specific WSIs." The ES does not adequately address the level or type of recording that will be undertaken, or the details of which buildings will be dismantled and rebuilt elsewhere. There appears to be no generic WSI included within it, and the documents that do make reference to Historic Building

	recording simply state that these details will be decided later. When the matter was previously raised with HS2 we were assured that detail would be in the ES, so it is disappointing that it is still not present. Specific provisions are also missing from the Heritage Memorandum, which states that: "The CoCP (section 8) sets out the provisions that will be adopted to control effects on heritage assets… the CoCP also clarifies that, where required, a programme of archaeological and built heritage investigation and recording will be undertaken prior to and/or during enabling and construction works affecting the assets" *Alteration or relocation* The ES discusses the area at Hartwell House, but with little detailed information relating to the options considered for this delicate and sensitive site. The HS2 Bill recognises a number of designated heritage assets which are to be altered or extended for heritage or monitoring purposes: 1. Whaddon Hill Farmhouse, Grade II, Hartwell 2. Park Lodge, Grade II, Hartwell 3. Obelisk south of Hartwell House, Grade II, Hartwell 4. Entrance Arch and gates adjoining Park Lodge, Grade II, Hartwell 5. Pair of Statues south of Hartwell House, Grade II, Hartwell 6. The Hermitage, Grade II, Chetwode 7. Sunflower Farmhouse, Grade II, Chetwode 8. Rosehill Farmhouse, Grade II, Steeple Claydon 9. Outbuildings to west of Rosehill Farmhouse, Grade II, Steeple Claydon Of these, number 2 to 5 are located within the Grade II*Hartwell Historic Park and Garden. No detail is given regarding the nature of the required alterations. All of these structures, particularly the 4 located within the HPG which form part of the designed landscape, should be fully recorded prior to alteration. The Hartwell Garden structures should also be recorded within the context of their designed and intended landscape, prior to removal and re-siting elsewhere within the gardens. No mention is made of any process for this to be undertaken in any of the ES documents. Failure to provide any details regarding the treatment of these structures in details amounts to failure to meet the requirements of ES regulations. *Agreed levels of recording for affected heritage assets* At no point in any of the documents is reference made to the agreed levels of historic building recording laid out in the English Heritage publication "Understanding Historic

	Buildings". This document lays out 4 industry agreed levels of recording for Historic Buildings. At the very least, I would have expected to see a commitment to providing Level 4 recording for Listed Buildings, and Level 3 recording for undesignated assets: **Level 4 provides a comprehensive analytical record** and is appropriate for buildings of special importance. Whereas Level 3 analysis and interpretation will clarify the building's history in so far as it may be deduced from the structure itself, the record at Level 4 will draw on the full range of available resources and discuss the building's significance in terms of architectural, social, regional or economic history. The range of drawings may also be greater than at other levels. A Level 4 record will typically consist of: *drawings photography written account* **Level 3 is an analytical record,** and will comprise an introductory description followed by a systematic account of the building's origins, development and use. The record will include an account of the evidence on which the analysis has been based, allowing the validity of the record to be re-examined in detail. It will also include all drawn and photographic records that may be required to illustrate the building's appearance and structure and to support an historical analysis. The information contained in the record will for the most part have been obtained through an examination of the building itself. If documentary sources are used they are likely to be those which are most readily accessible, such as historic Ordnance Survey maps, trade directories and other published sources. The record will not normally discuss the building's broader stylistic or historical context and importance at any length. It may, however, form part of a wider survey – thematic or regional, for example – of a group of buildings, in which additional source material contributes to an overall historical and architectural synthesis. A Level 3 record may also be appropriate when the fabric of a building is under threat but time or resources are insufficient for detailed documentary research, or where the scope for such research is limited. A Level 3 record will typically consist of: *drawings photography written account* *From the English Heritage document Understanding Historic Places* Failure of the ES to address the precise nature of recording and the proposals for dismantling and rebuilding of assets and where these might apply is a major oversight in heritage terms and effectively renders the document wholly inadequate with regards its requirements to describe the manner by which

	significant adverse impacts will be offset during development. We would not consider any other application for demolition of assets without this information, and it is therefore reasonable to expect the inclusion of this information within the ES and the Heritage Memorandum that outlines the minimum environmental requirements
Tin Tabernacle, Calvert	Near Calvert there is a small corrugated metal Tabernacle (between the bus shelter and the Old Station House). It appears that this building will be demolished but it is not referenced at all in the ES. This is the oldest building in Calvert and provided for the brick workers as their Methodist Chapel. It is made from corrugated iron, wooden clad on the inside and was provided in kit form. The building is well hidden from the roadside and very dilapidated, internally it is boarded with tongue and groove to the walls and ceiling and there is evidence of a raised platform. None of the windows survive, and the entrance porch has almost collapsed. Double timber doors have been inserted to the gable end. It is considered that the building is not of list-able quality, but should be noted in the heritage baseline survey and fully recorded prior to any demolition. We understand the local community would like to see it relocated perhaps to the recreation ground.
Hartwell House, Hartwell	The ES discusses the area at Hartwell House but with little detailed information relating to the options considered for this delicate and sensitive site. The ES proposes to cut through the railway line through the sensitive Historic Park and Garden. The National Trust has previously put forward the case for alternative proposals for the area forming the context of historic house and gardens/ landscape of Hartwell House and the edge of Aylesbury, consisting of cut and cover or similar to mask the railway line. The reason for HS2 not following this alternative appears to be related to land take required for construction. However, no other alternative options have been considered. For example, there may be other options such as the use of piling and diaphragm walls reducing the need for a wide section to be cut through.
Volume 2 CFA 8 P69 6.4.4	Temporary effect on Grade II listed buildings at Lower Bottom Farm arising from provision of an access road to the Chalfont St Giles vent shaft and Satellite Compound. This paragraph states that Bottom House Farm Lane will be permanently widened. The impact on the setting will be temporarily "medium adverse" with "moderate adverse effect", with increase in noise from the construction and from construction traffic, and there will be no permanent effect as the report considers that the permanent widening will not noticeably alter the character of the Farm and its granary on the south side of

2.3.34	the lane. In fact it would be impossible to widen the lane without permanent effect. Vol 5 CH-002-008 CHA031 refers to the group value of the various farm buildings and to their setting in a relatively quiet medieval/post medieval landscape on either side of a medieval hollow way. The hollow way is very narrow, with the granary and the end of a converted barn range tight on either side. The widening would permanently alter the close-knit character of the group, and entail re-location of the granary further from the farm. Vol 5 CH-003-008 CHA031 does not acknowledge this but states unrealistically that the Granary will be safe-guarded and not impacted by the Proposed Scheme. The temporary impact on the setting is also underestimated and unclear. Paragraph 2.3.34 of the CFA Report indicates that the access road will be in use during 2 major phases of activity, one of 2 years and 6 months, and another of 2 years. The first period will entail removal of material excavated from the vent shaft. This disruption will impact on the use of the farmhouse and the converted barn range as dwellings. The same paragraph also refers confusingly to construction of an access road adjacent to the lane to run on the south (far) side of the granary, as suggested by the much wider land take shown on map CT-05-026-R1. Map CT-06-026-R1 shows this new road as removed and made good with hedgerow habitat appropriately recreated on the south side, but some scar on the field behind the granary will be inevitable given the upwards slope. The Councils are concerned that: • clearer information is needed as to exactly what works are intended as part of the Proposed Scheme and as to how damage to the setting is to be made good • clearer information is needed as to how the Granary is to be safeguarded; • following construction works the lane should be restored to a pre-identified minimum width compatible with minimal future use for emergency and maintenance access to the vent shaft • the narrow width of the lane is acknowledged as of value to the significance of the listed buildings, with any alteration subject to consultation with the Local Planning Authority as with a Heritage Deed or similar obligation.
P 69-70 6.4.4-7	The Councils are concerned that the ES makes no mention of the possible dangers to heritage assets deriving from the works to tunnel directly below them. Assets affected include the conservation area at Chalfont St Giles, the Grade II listed buildings at The Stone Cottage, Grade II* registered Shardeloes Park, and the Grade II listed walls and structures

	of the former kitchen garden at Shardeloes. The tunnel will allow for the railway line to be based about 26-27 metres below these assets, but allowance must be made for the 9.6 metre depth of the bore, and a possible upward variation of 3 metres as outlined in Section 1 (2) of Schedule 1 of the Bill. The Councils note that the Draft ES acknowledged potential issues in particular with the stability of the walls of the kitchen garden and are concerned that these are no longer acknowledged or addressed in the current document. The reference in Vol 5 CH-003-008 CHA067 simply states that, while the structures lie within the 10mm settlement contour, there will be no effect on the fabric, and no effect on the value of the assets. Without explanation to support this assertion the previous concerns remain unaddressed. The Councils are aware that the kitchen garden structures are particularly susceptible to damage given that the walls are free-standing, unsupported by associated structures, and based only on historic foundations that are likely to be of minimal depth. The Councils note that the Bill (Schedule 2, Part 1, Section 2) allows for the possibility of works to support or strengthen buildings within the relevant distance of the works, and that but that there is no reference that such works must be undertaken, or that they should necessarily be undertaken to a manner consistent with the historic character of any listed fabric. It also notes that the walls of the kitchen garden are not included in Table 2 of Schedule 17 as heritage assets authorised to be altered or extended for heritage or monitoring purposes, and is concerned that the threat to this asset has been over-looked or ignored. The Councils are further concerned that the impact of tunnel construction on the feed to the lake at Shardeloes, a key feature of the registered 18th century landscape park, is not fully assessed or explained, and that any adverse effect on the size and appearance of the lake due to diminished water supply would be highly detrimental to the significance of the park and the setting of the Grade I listed mansion at Shardeloes.
Volume 2 CFA 9	**Adverse impact of the Little Missenden Vent Shaft on the setting of Grade II listed buildings at Shardeloes Kitchen Garden and Kennel Farm** The Councils note that the report makes no mention of the impact of the Little Missenden Vent Shaft and Transformer Station on views of Grade II listed Shardeloes Kitchen Garden (within adjacent CFA8) as seen along the A413, and on views of the Grade II listed barn and dovecote at Kennel Farm as seen from the public footpath to the south and west of the Misbourne.

	The relevance of these viewpoints is acknowledged by maps LV-03-032b and LV-04-032b and by the photomontages LV-01-188 and LV-01-230. While paragraph 2.2.8 of the report suggests that the mitigation measures allow for banking and planting to the north, west, and south of the new buildings, Map CT-06-030b show banking and planting to the east instead of the west, and suggests retention of existing tree screening along the west side seen from the viewpoints. The vent shaft building will be 41m by 27m by 4m high and the transformer station will be 45m by 25m by 5m high. Both will therefore be large. Given that construction is likely to damage the planting, the Councils are concerned that the Proposed Scheme should specify retention of this existing screening as shown in the photomontages, along with measures to ensure that any planting destroyed or damaged by the construction process should be made good with like species to ensure that the screening is consolidated rather than diminished. The Councils also suggest that a discreet colour finish and suitable materials for the wooded setting should be specified for the new buildings to minimise prominence in winter.
6.4.4	**Adverse impact of construction on the structure, setting and viability of Grade II listed building at 86 King's Lane** Whilst the Councils see the benefits in the decision to provide a green tunnel with retained cut at South Heath and notes that it avoids the demolition of the Grade II listed building at 86 King's Lane (CC048), the Councils remains concerned. The cut will be extremely close to the listed building, with potential for damage arising from the open surface construction works, major disruption and noise disturbance during the 3 years 6 month construction period. The land-take will also leave the building land-locked within a tiny parcel of retained grounds, on a truncated lane that will become a dead-end. These factors, together with the proximity to the satellite compound off the Chesham Road and the upheaval resulting from the diversion of the King's Lane/Chesham Road junction and the stockpiling of excavated material, will be of major detriment to the stability, setting and viability of the listed building during the construction period. The report acknowledges major adverse effect in paragraph 6.4.4 but does not identify any further need for mitigation. The Councils recognise that the adverse impact could be avoided by constructing the line as a through bored tunnel. If this is not to be approved, the Councils recommend that further mitigation measures should include: • Monitoring of the structural stability • Provision of protection from construction plant • Provision of sound insulation should this be needed to

	allow continued residence and maintenance of the building during the construction period • Allowance for purchase of the property, mothballing, refurbishment and re-sale should the building become vacant for more than one year. The Councils advocate these measures out of concern that the listed building will otherwise become uninhabitable and will deteriorate during vacancy, with impact on its future viability as a dwelling. The Councils note that the lack of identified direct mitigation here avoids any requirement for a Heritage Deed or other future consultation with the Local Planning Authority, and requests that the issues be formally identified so as to allow for appropriate procedures.
	Harm to the setting and viability of heritage assets at Hyde End The Councils are extremely concerned about the temporary and permanent effect of the construction works and the operation of the railway on the setting and viability of heritage assets at Hyde End. These assets include the Grade II listed buildings at Sheepcotts Cottage (CC045) and Hyde Farm (CC036), and the non-designated asset at Chapel Farmhouse (CC042). The Councils consider that the assessments provided in Volume 5 CH-002-009 underrate the value of these buildings, failing to acknowledge the high level of importance of the 16th century hall-house structure at Hyde Farmhouse, or the genuine 17th century core of Chapel Farmhouse. The assessment of value as moderate in the case of the Grade II buildings, and as low in the case of Chapel Farmhouse is therefore misleading and falsely warps the scale of effect when the average is calculated, as seems to be the pattern. It is noted that the temporary effect on these buildings is rated as “major adverse” for the listed buildings and only “moderate adverse” for Chapel Farmhouse while the operation impacts are medium adverse and minor adverse respectively. The latter cannot possibly reflect the devastation of the setting resulting from the cutting, the two new overbridges, and the noise of both construction and operation. The Councils consider that the setting of these buildings is at present profoundly rural, quiet and isolated. The buildings form part of a very small hamlet strung out along a very narrow single-track country lane, well away from the main roads, and surrounded by fields used for agriculture and grazing. Chapel Farm and Hyde Farm enjoy a particularly attractive landscape setting at the head of a small valley, with

	the land dipping away between them. This setting contributes to their aesthetic appeal and to their attractiveness and viability. The railway line will slice through the dip in a cutting, with engineering works, railway, overhead line equipment, fencing and sound mitigation measures all visible from above, and with two overbridges adding complexity to the view. The Councils consider that the setting of the assets will be visibly overwhelmed by the new structures and damaged by the levels of constructional and operational noise. The Councils note that HS2 has not chosen to provide photo-montage illustration of the landscape impact for this setting, but that this is assessed in the comments for Viewpoint 087-2-002 in Section 9 of the Report. The Councils consider that the
9.4.37	assessment of the construction impact in paragraph 9.4.37 as "medium" is grossly under-called given the acknowledged construction of the cutting, the demolition of properties in Hyde Lane, the removal of field boundary vegetation, the excavation and storage of excavated material, the cutting of the footpaths, the direct impact on the curtilages of Chapel Farm and Sheepcotts Cottage, the severing of Hyde Lane, and the prominence of the crane. The Councils would dispute that views would be "filtered", and that 3 metre-high stockpiles of excavated material would offer sightly screens to conceal the construction process.
9.4.38 9.5.37-40	The Councils agree that the effect is acknowledged as "major adverse" in 9.4.38. With regard to operational impact the Report acknowledges in 9.5.37-40 that there will be major adverse effect in Year 1 and beyond, but considers that this will have been addressed by planting by Year 15. The Council queries how this could possibly be the case given that no planting is proposed along the south west side of the line towards Chapel Farm and Hyde Farm other than for the embankment to the second over bridge. Operational noise for these heritage assets is noted on map SV-05-016, with all properties lying within the 50 to 65 dB area. The change in impact of airborne noise on Sheepcotts Cottage and Chapel Farm is assessed as major (>10dB), and as moderate (5dB to 10 dB) for the buildings at Hyde Farm. The major and moderate assessments are achieved only by means of introducing insulation measures for Sheepcotts Cottage, and by a combination of unspecified engineering works and fence barriers. A 3m fence barrier is shown directly alongside the railway line within the bottom of the cutting. With regard to the noise impact, the Councils are concerned that: • The appearance, so far unspecified, of the mitigation measures will add to the adverse visual impact on the setting of the heritage assets

	• The measures to provide adequate sound insulation for Sheepcotts Cottage will harm its simple traditional appearance (particularly as the upper storey of this small cottage is mostly in the roof) • The level of noise will blight and deter residential occupation of the heritage assets by anyone with the funding or willingness to provide maintenance in appropriate specialist manner, thereby depriving these buildings of their viability in the long term. • The level of noise impact will also threaten the equestrian use of Hyde Farm as providing the livelihood that supports the listed buildings there, depriving the barn and stable ranges of their current functions and future viability. In the latter respect the Councils note that the listed buildings at Hyde Farm depend on equestrian use of the associated land, with the listed barn and outbuildings used mostly for stabling. The impact of the railway on this livelihood is assessed in Section 3 of the CFA Report, with entries in Tables 5, 7 and 9. Hyde Farm is considered in the Report to have low sensitivity to the proposed changes, paragraph 3.3.25 explaining that "smaller (less intensively used) units, such as pony paddocks associated with residential properties, have low sensitivity". The Councils regard this explanation as remarkable and wholly inappropriate given the scale and business nature of the equestrian enterprise at Hyde Farm, and the sensitivity of horses to noise. The Councils also consider that compensation for land-take may be helpful to the current owner but will not further the future viability and use of the listed buildings. **Recommendations** Given the above concerns, the Councils strongly recommend that the Chiltern Tunnel should be extended to run below the hamlet at Hyde End, thereby avoiding the harmful impact on the significance, setting and viability of the heritage assets (as well as unwanted harm to the landscape and the AONB), and the costs of mitigation, overbridges and compensation. If this is not to be approved, the Councils recommend that: • HS2 Ltd should clarify the proposals for mitigation and commit to discussion with local stakeholders, including the Local Planning Authority; with option for arbitration should stakeholders consider the solutions inadequate. In this respect the Councils note that the mitigation will not be subject to any formal intervention or Heritage Deed except with regard to Sheepcotts Cottage. • HS2 Ltd should formally acknowledge the potential need to fund the relocation of the heritage assets and any associated structures that contribute to their

	upkeep onto equivalent land within the near locality but away from immediate adverse impact, so as to ensure their on-going viability. • HS2 Ltd should formally acknowledge the potential need, as a measure of last resort, to fund the relocation of the heritage assets to the Chiltern Open Air Museum, with allowance for their future maintenance.
6.4.11	**Harm to heritage assets at Bury Farm, Potter Row** The Councils are concerned about harm to the Grade II listed farmhouse, converted barns and granary at Bury Farm (CC070) and its setting as part of a medieval site with remnants of the former moat and field systems, adjacent to the ancient woodland at Jenkins Wood. This harm will arise from the construction impact and will persist in the form of the altered landscape to the south west, with a large new drainage pond seen in close association, and in the form of nuisance from the noise of operation. Paragraph 6.4.11 notes the disruption due to the character and setting of Bury Farm and assesses it as having moderate adverse effect. The Councils consider that this is an understatement given that Bury Farm is only 200 metres from the line and that its close environment and will be subject to the excavation of the cutting, the construction of the north portal to the South Heath Green Tunnel, the associated Satellite Compound, the works to mound spoil above the portal, and the excavation of a large drainage pond, as well as the use of Potter Row as a construction route. The Councils are concerned that the changes de-grade the landscape setting of the medieval settlement, and that no mitigation is specifically identified for the disruption of the construction process. The Councils note that the buildings lie just outside the 50-65 dB zone and that the change in levels of operational airborne sound impact on the dwellings within the farmhouse and former farm buildings is assessed as “minor adverse” (Map SV-05-017), allowing for the mitigation of the cutting and a 3 metre-high sound fence alongside the line. The Councils query the basis for this assessment in point, especially as the trains will be exiting and entering the tunnel portal, *and* is concerned that the change in noise level in this otherwise peaceful rural environment will be detrimental to the viability of the buildings in their current use as dwellings. The Councils consider that the harm could be avoided by continuing the line in a bored tunnel through the Chiltern section, thereby also avoiding harm on a cumulative basis. Should this strategy not be adopted, the Councils recommend that:

	• HS2 Ltd commits to providing further detail of the cross section of the cutting and the heights of the associated portal and Auto-transformer Station, and to discussion with local stakeholders as to the effective and appropriate means of mitigating the visual impact • HS2 Ltd commits to works to naturalise the appearance of the drainage pond and banking as part of the associated landscape • HS2 Ltd commits to discussion with local stakeholders as to the means of providing sound mitigation and its appearance as part of the landscape.
	Harm to heritage assets at Hammondshall Farm, Potter Row The Councils are concerned regarding the harm to the setting and viability of the Grade II listed early 17th century farmhouse at Hammondshall Farm (CC094).
6.4.5 & 6.4.30 6.4.31 6.4.35 6.5.2 9.5.93	Paragraphs 6.4.5 and 6.4.30 of the Report acknowledge major adverse effect in terms of the construction impact and moderate adverse effect on the setting. Paragraph 6.4.31 states that there will be no permanent cumulative effects but likely residual significant effects are acknowledged in 6.4.35. While 6.5.2 acknowledges that the effects on the setting will endure and become permanent, they are not accorded significant status. These assessments are echoed in the Landscape section (Chapter 9 of the Report) with regard to Viewpoint 094.4.003, with clarification in 9.5.93 that a high magnitude of change is tempered to moderate adverse effect by the supposed low sensitivity of the receptor. The Councils consider that the assessment again understates the significance of the farmhouse as a mere Grade II listed building, and the historic interest of Leather Lane as a historic sunken feature. The supposed low degree of sensitivity is inappropriate. The Councils also consider that the assessments understate the scale of effect, the detriment to the setting and the threat to the viability of the farmhouse as a residence with some dependence on 4 hectares of associated grazing land. With regard to the setting, the Councils note that the farmhouse will be less than 250 metres from the line. It will be affected by construction of the cutting and the stockpiling of excavated material on its own land, and by the works to re-route the historic sunken way at Leather Lane, less than 200 metres away along the north west boundary of the farm. The works to the lane will include removal of a considerable length of the mature tree screen along the boundary, and the provision of an elevated and prominent over bridge to carry the lane over the railway. In order to facilitate the construction there will be a satellite construction compound situated on the immediate far side of Leather Lane, with heavy construction traffic to be routed along Potter Row a

	similar distance to the north east. Permanent effects include the loss of the mature tree screening, the loss to the setting of the distinctive character of the historic lane (which will be elevated on embankments instead of sunken), and the retention of excavated spoil as a planted bank. The report is not specific to the height of the bank or the relevant cross section of the line and bank in relation to the listed house and its land, and therefore does not clarify whether the bank will be at all effective in screening the railway, which at this point will be set only in a shallow cutting. The councils are very concerned that the very high 7-9 metre noise fence barrier, shown on Map SV-05-017 as located at the edge of the cutting, would appear extremely detrimental to the setting of the listed building, as well as to the landscape character in general. With regard to the threat to the viability of the listed building as a dwelling, the Councils note that the impact of operational noise on the listed farmhouse is assessed as within the 50-65 dB railway noise zone, with a 5–10 dB change assessed as "moderate adverse" (Map SV-05-017). The assessment assumes a 7-9 metre-high noise fence barrier. No sound insulation for the listed building is proposed. The Councils query the basis for the noise assessment in point and is concerned that the change in noise level in this otherwise peaceful rural environment will deter long-term use of the dwelling by anyone willing to fund the specialist maintenance of the listed building, and will therefore threaten its viability. The Councils also consider that the operational noise of the line and the planted banking will impact on the use of the associated land for grazing and disputes that the impact will be negligible (as assessed in Table 9 of Section 3 of the Report), given the small size of the holding. The loss of the grazing facility will clearly detract from the attractiveness of the listed building as a rural residence, again with impact on the viability. The Councils strongly recommend that the harm should be avoided by continuing the line in a bored tunnel through the Chiltern section, thereby also avoiding harm on a cumulative basis. Should this strategy not be adopted, the Councils recommend that: • HS2 Ltd commits to providing further detail of the cross section of the cutting complete with details of the overhead equipment, the sound fence, the banking, planting and the overbridge with its approach embankments, and to discussion with local stakeholders, including the Local Planning Authority, as to the effective and most appropriate means of mitigating the highly adverse visual impact, including landscaping and other design detail. As

	above, the Councils note that these works would not be subject to a Heritage Deed or any formal negotiation with the Local Planning Authority. • HS2 Ltd commits to re-instatement of an appropriate local species tree screen along Leather Lane • HS2 Ltd commits to monitoring the operational noise impact on the listed building and to providing sound insulation in a manner appropriate to its historic character, subject to Heritage Deed. The need for insulation should be subject to arbitration and should reflect the importance of the maintaining the viability of the listed building given the expected costs of its specialist maintenance.
	Harm to heritage assets along Potter Row arising from noise of construction and operation and from construction traffic The Councils are concerned that heritage assets along Potter Row will suffer from the construction and operation of the railway and from the use of Potter Row as a route to be used by construction traffic. The assets include the Grade II listed buildings at Bury Farm (CC070) and Hammondshall Farmhouse (CC094) (discussed elsewhere), and non-designated assets at Sunnyside and Lambs Cottage (CC106), The Firs and Coach House (CC103), Park Farm (CC078) and the semi-detached cottage pair at Chiltern Cottage (CC110) and Beeway(CC102). These non-designated assets are assessed in the Baseline Report to Volume 5 CFA9 (CH-001-009) but and in the impact tables in CH-003-00 .....(detail assessments) The Councils wish to highlight that Potter Row is a narrow country road totally inappropriate for major construction traffic, especially for the cranes referred to throughout the rest of the report, and that several of the assets are set right on the road where they will suffer from the vibration of heavy equipment passing extremely close. The Assessment acknowledges that the foundations of Chiltern Cottage and Beeway will be either non-existent or minimal, but does not acknowledge the major likelihood of structural damage.
Volume 2 CFA10	
6.4.8 and 6.4.4	**Harm to the setting of Hunts Green Farm** Hunts Green Farm (DWH007) comprises a Grade II listed farmhouse and barns in a wholly rural, tranquil setting, and is set about 500 m to the east of the line. Buckinghamshire Councils are concerned that the construction works will impact severely on the setting and viability of the listed buildings as a working farmstead. The Report acknowledges that the setting will be temporarily affected by “sustainable placement” within 100 metres of the

	assets; construction works or 3 years and 3 months; disruption to the rural agricultural setting; proximity of the Leather Lane overbridge satellite compound only 350 metres away for a period of 1 year and 3 months; and changes to the local sound environment. The section on Grims Ditch also notes that a farm track running from the farmstead to the Ditch will be used for access by construction traffic. However, these impacts are dismissed as only medium/moderate. No permanent effect is noted. The Councils contend that these assessments understate the scale of impact and effect on the setting of the assets, and completely ignore the impact on their viability arising from the construction access and the use of so much of the land for spoil heaps and sustainable placement. Section 3 of the Report clarifies that 47.8 hectares of the 100 hectare land holding will be taken up by construction of the Proposed Scheme (3.4.17 Table 5). While 33.5 hectares will be returned to agricultural use, and financial compensation will be made available to the current owners, the ES acknowledges (3.4.29) that that there is no guarantee that the money will be re-invested in the farm. The Councils points out those working historic farmsteads are now rare in the District and that regard for the protection of such rare buildings is proposed as part of its emerging Heritage Strategy. It is therefore concerned that the project puts the future use of the heritage assets in their original working capacity in some jeopardy. While the Councils are aware that some banking will be beneficial in screening sight and sound of the railway from the heritage assets, it is concerned that sustainable placement of excavated soil in a mound of up to 5 metres (2.6.7) in height, over 4 fields, will remodel the natural Chiltern landscape setting of the assets more considerably than the Report implies, as well as concealing more of Grims Ditch. The Councils do not agree that the effect will be negligible. The Councils point out that continuation of a bored tunnel through the whole of the Chilterns would avoid the harm caused and the need for compensation. If this option is not considered feasible, the Councils recommend that HS2 Ltd should investigate and put into effect means of ensuring that an appropriate portion of any financial compensation is re-invested in the agricultural use of the land and/or the related historic buildings.

12. ECOLOGY

Volume 1: Introduction to the Environmental Statement and the Proposed Scheme	
Section	*Comment*

Number	
1.3.5 1.3.6	The nominated undertaker may deviate from the Plans and Sections that accompany the hybrid Bill "laterally to any extent within the limits of deviation for that work shown, on the Parliamentary Plans". Given the powers provided by the hybrid Bill to deviate within the statutory limits of deviation, Volume 5: CT-005-000 includes a description of any differences to the likely significant effects that will arise and any further mitigation that will be provided, if the scheme were to be built within these limits, but not as shown on map series CT-06. HS2 have conducted no assessment of likely significant effects predicted in relation to ecology, from for example needing to raise or lower the vertical alignment. Altering the vertical alignment may alter effectiveness of crossing points for bats (e.g. by forcing bats to fly higher over route to gain safe passage). This could lead to bats (including Bechstein's) not using mitigation structures as crossing points as effectively as predicted and being at increased risk of mortality with consequences for the maintenance of favourable conservation status (FCS)
5.1.1	The document states that, *'the railway infrastructure will have an overall width of approximately 19m from fence line to fence line when at grade….The rail corridor will be continuously fenced, with the type of fencing used at each location dependent on the functional requirements and its context'*. HS2 state that the rail corridor will be continuously fenced along the route. This has significant implications for the movement of wildlife species across the scheme including species of conservation concern (such as Barn Owl, bats, Brown Hare etc.) and species which are commonly killed in road traffic accidents (RTA) (such as Badger, Fox and Deer). The proposals do not a) provide sufficient habitat connectivity to allow species of conservation concern (including legally protected species) to cross the proposed scheme without risk of killing or injury; b) provide no assurance that species of wildlife commonly involved in RTA will not be channelled towards roads at 'pinch-points' resulting in increased risk of RTA and potential loss if human life; and c) no mechanism to avoid such RTAs with potential loss of human life and fauna.
6.4.7	Habitat creation and species/habitat translocation, *'Where translocation or relocation of protected species is required, this process may take up to two years prior to construction'.* The assertion that HS2 Ltd can create new habitat and translocate species to that habitat successfully in 'up to two years' is flawed and not supported by scientific evidence. Habitats generally take several years to mature sufficiently to provide all the life requirements (food, shelter, hibernation) to support translocated species, and the translocation process itself may take longer than one year. Where habitat creation and species/habitat translocations are required, more time (on a site by site basis) must be allocated to ensure target habitats are delivered and species/habitat translocations are completed with no net loss of biodiversity. E.g. Adder and Grass Snake habitat creation in CFA 11. HS2 must provide details of

	monitoring of habitat creation and population translocation with appropriate remedial actions if targets are not achieved.
7.1.9	The document states that, '*The ES has taken account of relevant policies, guidelines, legislation and industry accepted practice in assessing impacts for each environmental topic (e.g. in defining thresholds of significance), as well as the experience and professional judgement of specialists'*. We consider that the Thresholds for Significance in some instances are inappropriately set and that where 'no significant adverse effects' are predicted following mitigation or compensation, this assertion is often speculative and without support of scientific evidence (e.g. the proposed suite of bat mitigation measures in CFA12/13). Industry best accepted practice for bat surveys in relation to a major infrastructure project have not been followed. The Bat Conservation Trust (BCT) Bat Surveys - Good Practice Guidelines 2nd Edition 2012 state "In developing mitigation for major infrastructure projects, there is a particular need to consider constraints on mitigation or compensation and the opportunities for enhancement at the earliest opportunity", "Ideally one to three years baseline data should be available to design robust mitigation for bats" and "The 'no net loss' objective can only be achieved in major developments that affect bats through appropriate mitigation, which can only be designed based on sufficient high-quality survey information". By failing to consider the bat assemblage from the outset (including route selection) and consequently only having just over one year's baseline data, the proposed mitigation is poorly informed, inappropriate and considered insufficient to maintain the Favourable Conservation Status of these bat populations.
8.5.12	The document states that, *'The operator will ensure provision of on-going management of all mitigation and compensatory habitat creation, either directly or through suitable legal and financial agreements with third parties; and the operator will commit to monitoring of both habitats and species in order to ensure that predictions of effects are accurate and that mitigation/compensation is successful'.* We would like to see more assurance that the mechanisms for ensuring delivery of on-going management of all mitigation and compensatory habitat creation and monitoring of both habitats and species in order to ensure that target habitat conditions are achieved and that species mitigation measures are successful, are funded and delivered in perpetuity (or as appropriate).
	The document states that, 'mitigation provided by crossing points and measures to address effects of habitat severance will help to mitigate potential effects of mortality arising from collisions with trains during the operation of the Proposed Scheme. Green bridges, underpasses, hop-overs, and viaducts will provide safe crossing points at discrete locations where the route of the Proposed Scheme crosses key bat foraging and commuting routes. Adjacent to Sheephouse Wood in Buckinghamshire, where there is considered to be a particularly high risk of collision of Bechstein's bat with passing trains, a structure forming a physical barrier to bats, will be provided. At other locations along the route, where a high risk of mortality has

	been identified, fencing and planting will be used to force bats to fly over the route of the Proposed Scheme above the height of passing trains and associated catenary. Existing vegetation close to the route of the Proposed Scheme will be removed at high risk locations; and parallel alternative flight lines (comprising new planted vegetation) will be provided to promote the use of an alternate route at a safe distance from the route'. HS2 repeatedly state the precautionary principle has been implemented. If HS2 are truly applying the precautionary principle, then the use of bat mitigation measures such as vegetation removal to deter bats from flying near trains and the use of small raised crossing points (overbrigdes) for bats (both of which measures are not supported by sound scientific evidence) should not be implemented and extended bat mitigation structures to prevent bats from being at risk of collision should be used instead. It is stated that vegetation management (removal) will be undertaken of habitats within 20m of the proposed scheme (in some places), but no details are provided of the predicted zone of influence of turbulence effects that could put bats at risk of mortality.
9.1.2	Mitigation Hierarchy, *'We will strive to limit the negative impacts through design, mitigation and by challenging industry standards and we will look for environmental enhancements and benefits'.* Furthermore, the Environmental Minimum Requirements (EMR) (see Section 1.4) will impose a general requirement on the nominated undertake to use reasonable endeavours to adopt measures to reduce the adverse environmental effects reported in the ES, provided that this does not add unreasonable cost or delay to the construction and operation of the Proposed Scheme. We would disagree with this statement from HS2. We consider minimal design considerations have been used to reduce ecological impacts (e.g. viaducts have only been considered to avoid hydrological/flooding issues and not as ecological mitigation to maintain connectivity), or the Sheephouse Wood Bat mitigation structure (of which no design has been put forward - just basic concepts). This also includes the whole route selection process that could have been better selected to avoid ecologically sensitive areas such as the Bernwood Forest. In addition, limiting the required measures of the nominated undertaker to those that do not add unreasonable cost or delay may be at odds with the commitment to no net loss. What is or is not unreasonable should be better defined.
9.5.7	The document states, *'Individual effects considered to be significant at the local/parish level or below are as a general rule only reported in Volume 2: CFA reports in relation to designated sites and European protected species. Potential cumulative and in-combination effects of multiple local/parish level effects are considered within Volume 3: Route-wide effects'*. We are concerned that local/parish effects are not being adequately considered within the proposals. Whilst such individual effects may in such instances not be significant, on a project such as this, there would be a cumulative impact route-wide of local/parish level effects, which have

	not been mitigated or compensated adequately.
9.8.6	The document states, *'The Proposed Scheme will seek to achieve a no net loss in biodiversity at a route-wide level as far as reasonably practicable. Habitat losses and gains will be measured using a modified version of the Defra biodiversity offsetting metric, which has been developed in consultation with Defra and Natural England'*. The Proposed Scheme repeatedly refers to delivering no-net loss to biodiversity 'where practicable' or 'where reasonable to do so'. This implies that no net loss may not be deliverable in some instances and is not consistent with compliance with the principles of the Lawton Report or the NPPF as stated, especially with respect to protecting and enhancing the environment and improving biodiversity.
9.8.7	HS2 Ltd refers to their biodiversity offsetting calculation that seeks *"to promote mitigation provision that adheres to the Lawton report principles of 'bigger, better, more joined up' and that will increase robustness to the effects of climate change through promoting movement of species through the landscape".* We have concerns that insufficient habitat connectivity will be maintained across the route to justify that habitats will be 'more joined up' or that habitats will 'promote the movement of species through the landscape'. Green crossing points for wildlife must be significantly increased in size and number to justify the statements made and be specifically designed for wildlife, rather than multi-functional. HS2 should also clarify whether compensatory provision adjustment as a result of changes to design may lead to an increase or decrease in provision.
9.8.7	*'The proposed methodology to be used for the offsetting calculation is included as part of the SMR Addendum. Relevant parties will be provided with additional documentation to show the conclusions of the calculation'.* It is understood that HS2 will only be providing details of their proposed biodiversity calculations in spring 2014. This does not allow time for consultees to assess whether the proposals are likely to deliver no net loss of biodiversity or whether they are in keeping with the principles of the Lawton Report (as stated by HS2).
Volume 2, CFA 7, Colne Valley	
Section Number	*Comment*
5.3.4	As access was not gained to some sites during the optimum survey period it was necessary to triple the number of tubes used within the areas of suitable habitat. This deviation to the survey methodology was endorsed by a recognised dormouse authority; however a reference to the authority is not disclosed. HS2 should provide reference to the authority and on what basis this methodology was accepted.
7.4.1	The avoidance of impact founded in the design of the viaduct that results in a diversion of flow between two viaduct piers is overstated. This design option was one of six including that of a larger structure, which though rejected for its visual impacts may have had less permanent impacts upon the ecology of the river, thus, a comparison

	to selected impacts of alternative designs is misleading.
7.4.5	The refuge area in Broadwater Lake is referenced as a mitigation measure. The refuge area has been built reflective of recreational activities on the lake. A greater degree of mitigation is required to ensure additional disturbance created by HS2 is independently mitigated for.
7.4.5	The document states Broadwater Lake is of sufficient size to retain the bird assemblage if one location is subject to disturbance and, for most species, this particular location is not critical to their use of the lake'. This suggests that for some species this particular location is critical. HS2 should detail the specific impacts.
7.4.36	11 species of bat…Three known common and soprano pipistrelle roosts are being lost with no mitigation being proposed due to the abundance of roosting opportunities within the surrounding woodland and farmland. LAW – does this need finishing off?
7.4.41 7.4.46	The proposal will cause the permanent loss of 2ha of standing water, a total of 1.25ha of swamp vegetation from various locations, at least three ponds and loss of bankside vegetation from the River Colne. It is difficult to see how these losses are being adequately mitigated for by proposals that only seek to enhance (not create) habitat within Broadwater, Harefield Moor and Harefield No. 2 lakes. HS2 should provide greater detail/clarification and seek to create new wetland habitat as well as enhance that currently present in order to ensure no net loss, and preferably net gain, in biodiversity.
7.4.42 7.4.44	These paragraphs do not commit HS2 to providing any mitigation measures; they only outline some mitigation possibilities. HS2 should commit to these measures or omit them from the statement.
7.4.43	Unless these measures incorporate an element of design to provide additional for ecological value beyond their flood compensation/landscape screen compensation it is misleading to include these measures as ecological mitigation.
7.4.45	HS2 acknowledge the long-term temporary effects of the loss of breeding bird habitat. Consequently, HS2 should ensure that mitigation/compensation measures are being created at the earliest opportunity to enable establishment and reduce the time lag between equal function of habitat being lost and created.
7.4.55 7.4.60	Translocation of ancient woodland and associated invertebrate fauna. See general and route-wide issues.
7.4.58	With regards to GCN mitigation, specific detail outlining the terrestrial habitat provision, pond creation (number, size, location etc.) and/or hibernation opportunities is required.
7.5.5	A single vantage point survey (VPS) between Broadwater and Troy lakes, conducted over the absolute minimum period of time recommended by Natural England (36 hours) does not constitute a reasonable assessment respective of the national value of the bird assemblage within the region. Nonetheless, the viaduct which will vary between 11m to 15m above ground/water level will be within the height identified as being most frequently used by the birds identified during the VPS. Therefore, HS2 should undertake further survey and assessment, or provide more adequate mitigation/compensation measures.
General	A large proportion of the mitigation measures are being enveloped

	within fewer habitat parcels than the number being lost. Whilst the creation of larger habitat parcels is welcomed, this does not comply with the Lawton principles which state 'more, bigger, better and joined-up' habitats. Fewer, larger habitat parcels being developed to mitigate for impacts to a range of habitats and species is not likely to result in robust and resilient ecological communities. See route-wide issues.
Responses to the draft ES which have still not been fully addressed (CFA 7)	
7.3.28 (7.4 in draft)	Original assessment of eel and bullhead appears to underestimate their value. Surveys found low populations of each and give them a local/parish value. Possibly undervalued by virtue of being uncommon, despite their IUCN threatened status.
7.4.4, 7.4.5 (7.5.18 in draft)	Original comment refers to quantification of the potential effects of disturbance on wintering and breeding bird populations. Affects are qualified and suggested to be minimal due to availability of habitat in the wider environs and main breeding lakes being outside of the construction area. However, the use of pre-existing a refuge area, allocated in respect of recreational activities on the lake cannot be considered mitigation for HS2.
7.4.37 (7.5.20 in draft)	Original comment refers to the fragmentation of woodland in the Mid Colne Valley SSSI. Previously HS2 suggested planting to reverse this effect on bat communities, and there would be a temporary 10 year impact. 10 years may be long enough to reduce populations to an unsustainable level. In the formal ES this statement is now removed and the surrounding habitats are proposed to offer alternative foraging and movement corridors during the temporary period. Without survey or monitoring effort of the surrounding woodlands, the viability of this statement cannot be ascertained and does not guarantee a Favourable Conservation Status
7.5.5 (7.3.4 in draft)	Original comment referred to the need for a Collision Risk Assessment for birds should be undertaken. A Vantage Point Survey was undertaken for a period of 36 hours in area of proposed viaduct and a table of flight heights is presented (Table 166, ES-002-002). Small but not significant risk of collision identified. According to Ecology Technical note – Ecological field survey methods and standards, 14.5.6 the Natural England guidance specifies 36 hours as the minimum survey period, given the scale of the proposed development it is highly questionable whether this is a sufficient survey scope.
Volume 2, CFA 8, The Chalfont's and Amersham	
Section Number	*Comment*
7.4.6 13.4.16	The Misbourne has been identified by HS2 as supporting otter, water vole (desk study records) and bullhead amongst other species. However, despite its importance as a habitat of principal importance and 'the potential for ground settlement and loss of flow from the river to the chalk aquifer due to possible fractures in the chalk' the potential impact to ecology has been deemed insignificant. Comprehensive monitoring of Misbourne river flows and levels within Shardeloes lake should be undertaken and conservative trigger levels should be required, which if surpassed will require immediate

	further investigation and mitigation as appropriate. Monitoring of aquatic macro invertebrates and water quality should be incorporated as indicators of chronic or acute water pollution.
Responses to the draft ES which have still not been fully addressed (CFA 8)	
7.3.20, 7.4.6 (7.3.4 in draft)	Original assessment of eel and bullhead appears to underestimate their value. Found in good numbers, assessed at county/metropolitan levels but not referred to further as impact avoided due to tunnel. The monitoring programme scope and duration will be developed in consultation with the EA and Affinity Water. Such a programme and appropriate measures will ensure no adverse significant effects occur (13.4.21) Monitoring does not appear to include any ecological component, as above.
NA (7.3.3 in draft)	The draft ES stated that HS2 Ltd were yet to receive information on bats and badgers from the local groups (Bucks Badger Group and South Bucks Bat Group) and was considered to be a gap in their coverage to be filled before the formal ES. However, the formal ES does not mention the Bucks Badger Group and, whilst not acknowledging the South Bucks Bat Group in EC-003-002, does reference them in ES 3.2.1.8. Overall, this suggests that all available data was not considered and in conflict with ES 3.5.0.15.1, 9.3.5, which suggests that local bat and badger groups will be consulted. Furthermore this conflicts with IEEM EIA guidelines on use of resolute and up to date data.
Volume 2, CFA 9, Central Chilterns	
Section Number	*Comment*
7.3.13	The statement appears to be contradictory. The habitat is on one hand considered to be one of principal importance due to supporting GCN, but of local/parish value as it is in a eutrophic state. The value of the pond therefore seems to be underestimated.
7.4.31	States 'If GCN are recorded in any ponds that were not surveyed due to access restrictions, they will be moved to one of two ecological compensation areas near Jenkin's Wood (2.1ha and 1.2ha), which, if required will comprise of lowland meadow and scrub with ponds'. HS2 should be more ambitious in their approach to mitigation. In this CFA, one of the ponds located within the land required for construction was found to support GCN. As GCN has been found mitigation measures should already account for the loss of suitable GCN habitat. Therefore, in the remaining ponds it appears that GCN are assumed absent and are not mitigated for unless recorded during construction and despite a lack of appropriate survey. This is a poor application of the precautionary approach and clearly makes no attempt at net-gain in biodiversity. HS2 should refer to ES 3.5.0.15.2 2.3.4.
7.4.31	Translocation of ancient woodland and associated invertebrate fauna. See general, route-wide issues.
7.5.12	Mitigation of significant impacts to barn owl populations. See general, route-wide issues
7.3.16 Table 10	Reptiles: Only one P/A survey was undertaken in CFA 9 and paragraph 3.4.9 (ES 3.5.2.7-15.2) acknowledges that the survey results are unlikely to be representative of the CFA 9 area. HS2

	cannot therefore make the statement here that 'Given the absence of data from surveys, it is likely that any populations would be small and are unlikely to be of county importance' until sufficient survey effort has been made. Furthermore, map EC-07-017 displays a large area (grey), which is scoped in for survey as suitable habitat, but where no further survey was undertaken. This may have been due to access constraints, but this is not detailed. HS2 should refer to ES 3.5.0.15.2 2.3.4.
Responses to the draft ES which have still not been fully addressed (CFA 9)	
NA (7.5.2 in draft)	Original comment referred to compensation of ancient woodland at Mantle's Wood and Sibley's Coppice at 2:1 (loss: gain) as inadequate. There now appears to be a slight improvement to ~4:1 if planting of landscaping is included; specific wooded areas now ~3:3.1. Until offsetting calculations are published it will not be possible to judge adequacy as compensatory habitats may not all be placed within the CFA which incurred the loss.
7.4.8 (7.5.10)	Original comment states that: The permanent loss of bat roosts and adverse effects on bats are stated to be significant. However apart from suggesting that new planting (which will allegedly be established after 20 years) may give alternative foraging locations, no other mitigation is offered. It appears that there will be one replacement roost and then mitigation is reliant on planted woodland (little accounting for temporary loss) (7.4.27). HS2 state that 'replacement roosting habitat will be provided as necessary' (7.4.28), this is very unambitious and not precautionary. Further mitigation measures similarly rely on planting (7.4.29)
Volume 2, CFA 10, Dunsmore, Wendover and Halton	
Section Number	*Comment*
2.2.14 last bullet point	Ecological mitigation in form of wetland and grassland habitats is proposed. It is unclear how type and level of mitigation was calculated and what impacts these habitats intend to mitigate. Mitigation questionable.
7.3.6	ES recognises orchard as Traditional orchard but highlights poor condition. ES considers orchard to be only of district/borough value but there is no reasoning or justification why. Traditional Orchard is BAP priority habitat and should therefore be given greater importance. Little or no compensation is provided.
7.4.6	As an uncommon habitat, the extent of the ancient woodland at Jones' Hill is important to its conservation status. Construction of the South Heath cutting will remove approximately 1ha (57%) of this woodland. Loss and fragmentation of this extent will result in a permanent adverse effect on the conservation status of this woodland that will be significant at district/borough level. HS2 state, '*These ancient woodlands represent an irreplaceable resource*'. It is not clear how 'irreplaceable' habitats such as Ancient Woodland will be adequately compensated. Without the details of HS2s proposed biodiversity offsetting calculations, it is difficult to determine if the compensatory measures proposed are sufficient to deliver no

	net loss. HS2 must provide clear details of which woodland replacement areas correspond to which losses to clearly illustrate no net loss.
7.4.7	ES recognises that the loss of hedgerows (some of which are species rich) will result in habitat fragmentation and a permanent adverse effect on the conservation status of hedgerows but there seems to be inadequate mitigation, which might result in a net loss in biodiversity.
table 8, 7.4.11, 7.4.36, 7.4.41, 7.5.8, 7.5.12	ES recognises the permanent impact on barn owl populations in the location of Wendover tunnel portal North. Table 8 (p107) highlights that three barn owl territories SW of Wendover are recorded west of Wendover, which might be affected. In para 7.4.36 a replacement barn owl box is proposed to mitigate against the loss of a barn owl nest. Whilst the provision of additional roosting opportunities is welcomed we do not agree that this will adequately mitigate the impact on barn owls. The loss and severance foraging habitat is considered more severe and is not adequately mitigated since the ES does not offer mitigation for habitat loss, which is more important. A residual impact is recognised (paras 7.4.41, 7.5.8 – 7.5.12).
7.4.16	Potential adverse effect on bat population and species assemblages recognised during construction but insufficient mitigation.
7.4.18- 7.4.20	The loss of habitat and the impact on the foraging behaviour and movement of bats during construction is recognised as having a potential impact. We question the assessment. Ecological survey efforts have been limited and the movement of bat species has not been properly established. We considers there to be insufficient baseline data to assess the effect on bats caused by severance of existing commuting routes, lighting, noise and train strike in this section.
7.4.28, 7.5.2- 7.5.6	We question the appropriateness of compensation with two grassland and scrub areas north and south of Nash Lee orchard. Whilst any natural areas are welcomed it is unclear what the areas are meant to compensate for and how the decision on type and size of habitat has been informed. It is our view that these will not adequately address the impact of fragmentation and severance. Mitigation and compensation should include substantial new hedge and tree planting and ensure the appropriate management of existing and new habitats, including the traditional orchard.
7.4.31	The document states, *'After the translocation of ancient woodland soils the ecological compensation area east of Jones' Hill Wood will be planted with approximately 5ha of lowland mixed deciduous woodland (a habitat of principal importance). The new woodland will include rides and glades to help maintain the identity of the adjacent retained woodland. While not fully replicating the ancient woodland that will be lost, the large increase in woodland extent will maintain the conservation status of woodland in the area, and when mature (approximately 50 years) it will result in a separate beneficial effect*

	that is significant at the district/borough level'. We are concerned that HS2 consider 5ha an appropriate amount of woodland habitat replacement for the loss of 1ha of 'irreplaceable' ancient woodland habitat that will take 50 years to mature. For Ancient Woodland this long habitat maturation time would effectively lead to 50 years of 'net loss to biodiversity' in which ancient woodland habitats and the species dependent on them will inevitably decline in conservation status. Only after 50 years would the habitats be considered of functional maturity. This is not compatible with the concept of no net loss.
7.4.32	Proposed hedgerow creation is welcomed but considered insufficient to mitigate habitat loss and fragmentation. We would like to see more hedge and tree planting on the western embankment, and support for appropriate management of hedgerows in the wider area.
7.5.1, 7.5.6	We welcome the provision of the Wendover green tunnel and recognise the benefits in allowing species safe passage across the scheme. However, we are unconvinced that the creation of planted embankments will be successful in reducing the risk of collision of bats with passing trains. There is little evidence to support the effectiveness of such mitigating measures.
	We believe that the ES gives insufficient consideration to the duration of temporary effects (some lasting up to seven years) considering that a long temporary effect can have profound adverse impacts on species populations, which might not be able to survive years of disruption. The impact of temporary impacts might be considerable greater than stated.
Volume 2, CFA 11, Stoke Mandeville and Aylesbury	
Section Number	*Comment*
2.3.28	We are concerned about the substantial diversion and culverting of the Stoke Brook and its potential impact on ecology, hydrology and landscape. The use of a low viaduct instead of an embankment would be preferable
7.4.3, 7.4.8	HS2 recognises permanent adverse effect on North Lee BNS (para 7.4.3) but contradicts itself in para 7.4.8 where it states that significant effects on the conservation status will be avoided. Impact on BNS requires appropriate mitigation, which is not apparent from the map book plans CT-06-041 and CT-06-041-L1.
7.4.10	We are concerned about the impact the scheme might have on the bat populations near the SM bypass (and south of the HS2 line) since little survey effort has been undertaken south of the line despite high numbers of bats being found north of the line.
Volume 2, CFA 12, Waddesdon and Quainton	
Section Number	*Comment*
7.5.14	Significance of effects, *'Following the implementation of the*

	measures proposed it is anticipated that any adverse effects on bats as consequence of the operation of the Proposed Scheme will be reduced to the local/parish level or below. There will be no significant effect on the conservation status of the species concerned'. HS2 must define what levels of impact are defined as 'significant' for each bat species concerned. Different species will be at differing risk of impact according to population status, habitat preferences and flight behaviour etc. It is stated that, '*There will be no significant effect on the conservation status of the species concerned'*. In order to know what is or is not significant, population estimates of the bat species concerned (within the zone of influence) should be made. HS2 state (Vol 3 8.1.35) *'The point at which these impacts would result in a significant adverse effect on the bat population concerned would differ depending on a number of factors....*'.These 'points' should be determined.
7.5.7	'*The green overbridges, underpasses and associated planting provide crossing points to channel bats to the existing key crossing points at the Adam's underbridge, Grendon Junction, Benfields overbridge and the Costello underbridge, that have been demonstrated by radio tracking surveys to link roosts and foraging areas. In addition, the potential crossing of bats near Doddershall House will be addressed by the provision of an underbridge of appropriate size to be used by a range of bat species, and the planting to be provided on the Edgcott Road overbridge and Bridleway QUA/28A as described in Section 7.4. This will reduce the risk of killing and injury, but will not fully mitigate these effects in the operational phase of the Proposed Scheme. Bats may continue to commute along vegetation close to the Aylesbury Link railway line, resulting in increased risk of collision. In addition bats were recorded crossing the route of the Proposed Scheme along the western boundary of Sheephouse Wood. This includes Bechstein's as well as Brandt's and Daubenton's bats'.* We have concerns over the assertion by HS2 that the proposed mitigation measures will be successful as bats use of mitigation structures such as overbridges and features to force bats to fly up and over the proposed route (and associated catenary) is not supported by scientific study. Whilst HS2 make reference to potential collision risks, little reference is made to potential turbulence effects which are likely to have a much wider zone of influence. Even if bats adopted the mitigation structures as crossing points, they are considered to be too small to prevent bats from being at risk of turbulence effects. In addition, it is considered the number of sufficiently large, dedicated wildlife crossing points is insufficient to allow bats continued safe access to roosting and foraging areas.
7.4.50	The proposed planting will not be sufficiently mature to provide habitat linkages immediately. As such fragmentation of habitats used by Bechstein's bats and other species will still arise in the years following construction. In order to reduce the time for establishment, replacement habitats will be created where reasonably practicable prior to construction of the Proposed Scheme. In accordance with the

	principles of ecological mitigation provided in Volume 5 Appendix CT-001-000/2, this will include measures to ensure that the temporary habitat severance that could fragment habitat for bats is addressed during construction. These include the retention of habitat corridors for as long as possible and the use of movable screens to provide connectivity between vegetation used by commuting bats. HS2 acknowledge that habitat fragmentation effects for Bechsteins and other bat species will still arise in the years following construction. Bat mortality rates are most likely compounded by the ineffectiveness of the proposed mitigation at this stage leading to significant adverse effects on the FCS.
7.4.22	The assemblage of bats associated with the woodland habitats in the northern part of this area will be affected by the loss of approximately 5km of vegetation along the Aylesbury Link railway line between the Edgcott Road and School Hill in CFA 13. It will also involve removal or modification of features known to provide bat flight lines over the Proposed Scheme at Grendon Junction and Benfields overbridge in this area, and at the School Hill overbridge in CFA 13. These habitats are important in maintaining the numbers and diversity of bats associated with woodland habitats in this area, for which favourable conservation status depends on the connectivity between roosting and foraging areas. The HS2 proposals are unlikely to sufficiently maintain connectivity for bats for the short or long-term. 'Temporary' effects of the proposed works are likely to last for a number of years until proposed mitigation has matured, but HS2 have not acknowledged that a construction period of several years could have 'temporary effects' with permanent adverse implications on FCS (e.g. decreased breeding success over this period from which the species concerned do not recover to baseline levels). This adds weight to the justification for an extended bat mitigation structure.
2.6.66	'Option G will provide the certainty of physical separation required at this stage of the project, as well as avoiding the additional land take and associated effects that would arise from Option E. Therefore, Option G has been adopted in the Proposed Scheme'. We disagree that Option G will provide the certainty of physical separation required over a sufficient area. We would like to see an extended bat mitigation structure constructed between Calvert and the Edgcott Road. This structure should be designed to integrate with the surrounding landscape as far as possible through the use of a green roof and walls (where lateral profiling is restricted) and through the planting of adjacent hedgerows/scrub/lines of trees to compensate for the loss of existing flight lines and where bats will not be at risk of collision and do not have to expend increased energy expenditure to the detriment of their FCS.
7.4.56	'*HS2 Ltd will continue to monitor the Bechstein's population in this area of the route during the period up to construction, and if it is demonstrated that any of the above measures are not required to maintain conservation status of local populations, then the mitigation*

	provision may be reduced accordingly'. HS2 state that Bechsteins (but not other bat species) will be monitored during the period up to construction. Clarification must be provided as to whether this will include additional radio-tracking data or amended survey techniques to provide more robust data. HS2 must also commit to ongoing monitoring during the operational phase of HS2 to assess whether the proposed mitigation has been effective. This should include automated bat survey of the proposed route (where it overlies existing flight lines of the Aylesbury Link Railway) to assess the effectiveness of vegetation removal from the point of vegetation removal through to operational phases. HS2 must commit to increasing mitigation provision accordingly (as well as reducing it) to maintain the FCS of Bechsteins bats.
7.3.28 table 9	The habitats along Akeman Street should be classified as of National significance based on previous survey data collected and ongoing discussions with Natural England about the designation of this feature as a SSSI. This would be an appropriate example of where the Precautionary Principle should be applied (but has not been).
7.4.30	Construction of the Proposed Scheme will affect black hairstreak butterflies at Grendon Junction, and at Calvert Jubilee LWS (see CFA 13 report). Factors important to maintaining conservation status of this species include the extent and connectivity of habitat. Especially important is mature blackthorn (which is the larval food plant) in warm sheltered locations, which facilitates egg laying and the development of larvae. A colony of black hairstreak is present associated with hedgerows and scrub within the land required for the construction of the Proposed Scheme at Grendon Junction. The extent of this colony that will remain following the construction of the Greatmoor EfW facility access road is uncertain but any remaining habitat will be lost due to the construction of Bridleway QUA/36 Accommodation Green Overbridge and Grendon Underwood Embankment. Black hairstreak do not generally move great distances and have a limited ability to colonise new areas of habitat. As such, habitat removal at Grendon Junction could permanently sever those black hairstreak colonies located to the east and west of the land required for the construction of the Proposed Scheme at Finemere Wood and along the Muxwell Brook. Such severance could reduce genetic exchange between numerous colonies of black hairstreak that are present in these large woods. However, in the context of the approximately 40 colonies present in this area, the loss of a single colony and partial removal of further colonies in CFA 13 will have a limited effect on the conservation status of black hairstreak. Equally the genetic exchange between the colonies present within larger woodlands (Finemere Wood, Sheephouse Wood, Grendon and Doddershall Woods, Hewin's Wood, Hamgreen Wood, and Romer and Greatsea Woods) will reduce adverse effects on conservation status caused by habitat severance and fragmentation. The effects of habitat loss and fragmentation on the conservation status of black hairstreak in this area will be significant at the district/borough level.

	We consider that inadequate habitat connectivity for Black Hairstreak butterfly has been provided to mitigate habitat loss and severance created by HS2. With up to 18 trains per hour travelling each way (during peak hours) levels of disturbance and potential mortality rates could significantly affect Black Hairstreak Populations. The use of an extended mitigation structure for bats would also reduce potential impacts on Black Hairstreak to acceptable levels, through reduced habitat fragmentation and mortality.
2.1.2	We consider that cumulative effects on ecological receptors of the proposed scheme (in construction and operation), included all associated infrastructure works (such as new road creation or diversions, the proposed East West Rail and the Calvert Strategic Waste Site Allocation) have not been fully considered within the ES. This must be addressed.
7.4.3	The Proposed Scheme will cross Grendon and Doddershall Meadows LWS on the Doddershall embankment, immediately west of the Aylesbury Link railway line that already crosses the site. To the west, additional land is required for a landscape earthwork that will be parallel to the Proposed Scheme. In the eastern part of the site (which is understood to contain the most diverse grassland habitat) there will be a balancing pond and small area of flood compensation, both required for the nearby Quainton auto-transformer feeder station. We believe that the mitigation hierarchy is not being applied to Grendon and Doddershall Meadows LWS. HS2 engineers at a bi-lateral with Bucks CC indicated that the location of this balancing pond could probably be altered to avoid impacts on the LWS. HS2 should commit to avoiding impacts on the LWS and relocate the balancing pond elsewhere (e.g. to the west of the proposed scheme where the habitats of the LWS do not meet the criteria for Habitats of Principal Importance.
Volume 2, CFA 11 and 12, Stoke Mandeville and Aylesbury; Waddesdon and Quainton	
Section Number	*Comment*
7.4.20 and 7.4.31	'*The conservation status of great crested newts depends on the presence of ponds with ample aquatic vegetation and suitable terrestrial habitats including woodland, scrub and grassland; and on the continuity of terrestrial habitats to provide links between breeding ponds. Based on survey data and desk-top study records the Proposed Scheme will affect up to four metapopulations of great crested newt and single ponds that provide breeding habitat for great crested newts'*. No ecological mitigation ponds are proposed within the map books - only balancing ponds and attenuation/infiltration ponds. The plans and text should clearly state how many ponds will be lost and how many ecological mitigation ponds will be created. Biodiversity Offsetting should be used to indicate suitable numbers of ponds to

	be created in compensation and measures must be proposed detailing how habitat connectivity across the proposed scheme will be maintained allowing individuals of species such as Great Crested Newts to move between metapopulations, thus maintaining the Favourable Conservation Status of European Protected Species.
Route wide	
Section Number	*Comment*
7.4.36, 7.5.14, 7.5.63 and 8.1.58	We would like to see more details of how Barn Owl foraging habitat will be compensated. HS2 state it is appropriate to just provide Barn Owl boxes outside the Proposed Scheme in agreement with local landowners. However lack of suitable nest sites is not the only limiting factor affecting the conservation status of this species. The Barn Owl and Raptor Group (BORG) supported by AVDC have erected over 300 Barn Owl nest boxes in Aylesbury Vale in recent years. Critical factors affecting survival in Aylesbury Vale also include the availability of suitable foraging habitat and mortality from Road Traffic Accidents. The creation of grassland habitats immediately alongside the Proposed Scheme in addition to ecological grassland compensation within 1.5km of the line (as proposed) are likely to act as a population 'sink' for Barn Owls, putting individuals at risk of collision/mortality. HS2 must commit to the creation and maintenance (in perpetuity) of suitable grassland habitats more widely dispersed in Buckinghamshire (and route-wide) to offset population losses to HS2.
Volume 3, Route-wide effects	
Section Number	*Comment*
8.1.14	The document states that where a significant adverse effect on the integrity of a LWS is expected, sufficient compensation has been incorporated into the Proposed Scheme to address effects on the conservation status of the habitats and species for which that LWS was designated. The location, size and form of compensatory habitat creation areas that will be provided has sought (where reasonably practicable) to adhere to the Lawton report principles of 'bigger, better, more joined up'. However, we consider the assertion from HS2 that the Proposed Scheme adheres to the Lawton Principles are not justified bearing in mind HS2 can only commit to something considered less than no net loss (i.e. no net loss where practicable to do so) and that insufficient habitat connectivity across the Proposed Scheme has been integrated to justify that newly created and existing habitats will be bigger, better and more joined up. The number of linear features crossing the Proposed Scheme is much less than the number of existing linear features connecting the existing landscape. The permanent fence along the rail corridor does little to facilitate the movement of terrestrial species across the route and the nature of the track bed, adjacent habitats and regular disturbance/turbulence effects will provide an effective barrier to many species of wildlife. A

	maximum of 18 trains per hour in peak hours (in each direction) would result in significant levels of disturbance/collision risk.
8.1.40	The document states that proposed planting will not be sufficiently mature to provide habitat linkages immediately, and therefore, there is the potential for temporary adverse effects on bat populations until these habitats establish. A series of measures will be implemented to limit the duration and scale of temporary habitat severance, which include establishing key alternative flight lines as early as is reasonably practicable, and the use of temporary features such as artificial hedgerows. All such measures will be provided in accordance with the ecological principles of mitigation that are included within the SMR Addendum (Volume 5: Appendix CT-001-000/2). Are the proposed mitigation measures really sufficient to maintain FCS? Monitoring of existing flight lines and alternate flight lines (including new plantings) must demonstrate the following prior to operational phase a) that bats are not using existing flight lines and at risk of collision/turbulence; and b) that proposed mitigation (i.e. plantings and crossing points) ARE being used by bats to demonstrate FCS will not be adversely affected. If bats are not crossing at the designated points, then it is likely they are either i) crossing elsewhere and at risk of collision/turbulence effects or ii) not crossing and therefore isolated from populations either side of the Scheme which would lead to population isolation, genetic impoverishment and a consequent reduction in FCS
8.1.43	HS2 refer to the potential for incidental killing of bats (and other species) as a result of train collisions. Following the implementation of the measures proposed, bat mortality as a consequence of the Proposed Scheme, will be reduced but not avoided. Through providing safe crossing points and accompanying planting to mitigate potential impacts at high risk locations (taking into consideration the rarity and the conservation status of the species in question), it is expected that mortality will be reduced to a level at which, for each species, it is incidental. An appropriate monitoring programme will be developed in consultation with Natural England, and implemented during operation in order to assist in meeting relevant government requirements under the European Communities Habitats Directive. HS2 must define the limits of what is 'incidental' mortality for each of the species concerned. What level of mortality is considered 'incidental' (rather than a level of killing detrimental to the favourable conservation status of the species concerned within its natural range) will differ according to the conservation status of the species concerned. HS2 must also provide details of how such 'incidental' mortality will be monitored through the operational lifespan of the project and what remedial measures could be undertaken.
8.1.72	Again - insufficient habitat permeability. We also consider that HS2 have made some major and largely unsupported assumptions about the ability of species to adapt to climate change – especially edge of range species that may act as ‘founding’ populations for future climate conditions.

8.1.69	It is recognised that, in the future, species and habitats will seek to adapt to climate change, but within many countries (including England), species will be constrained in their ability to adapt due to fragmented landscapes and insufficient and poorly distributed semi-natural habitat. The Proposed Scheme provides an opportunity to address these issues by creating a linear corridor of habitat and by de-fragmenting the landscapes through which it passes. HS2 will create a linear barrier (of ecologically sterile habitats) to lateral movement to many species, with additional risk of mortality through train strike/turbulence effects. Whilst habitat creation will form (in time) well, connected linear corridors either side of the Proposed Scheme that may be beneficial to some species (if these habitats are secured, maintained and managed appropriately in perpetuity), there is insufficient ecological permeability to the Scheme to justify the statement that it will de-fragment the landscapes through which it passes.
8.1.20 to 8.1.28	HS2 have not provided a clear indication of anticipated habitat losses and proposed habitat gains, detailing exactly where individual losses will be compensated. Where multiple site habitat losses will be compensated by the creation of lesser numbers of new habitat areas, it must be made clear what proportion of the new sites relates to which site lost. At present it is not clear how the apportioning of compensatory provision has been calculated.
8.1.35	Trains may pass quickly, but effects on bat populations could be significant and erosive over time. Any bats in sufficient close proximity to the train to be affected directly (by collision with train) or indirectly (through turbulence and potential secondary collisions with gantries/cabling/bridge structures designed as crossing points) are unlikely to survive. No collision risk or survival assessment has been undertaken to illustrate both best and worst-case scenarios. Best case being that 100% of bats avoid vegetation management zones 100% of time and use crossing points without being at risk of collision (i.e. flying between double planted rows of hedge/scrub, rather than alongside structures where they may be at risk of collision/turbulence). Worst case being that 100% of bats continue using existing flight lines (commuting and foraging) and being at risk of collision/turbulence as described above. Evidence from France (SETRA) suggests that large, fast moving vehicles travelling in isolation (like a high speed train) are most likely to cause bat mortality on motorways as higher volumes of traffic are more likely to deter bats from using infrastructure corridors through increased light and noise. HS2 must provide an assessment of the likely mortality rates to assess whether they are likely to significantly and detrimentally affect the FCS of the bat species concerned.
8.1.67	'*…there is the potential for in-combination adverse effects resulting from impacts on multiple local/parish value populations and assemblages of terrestrial invertebrates associated with the habitats found within existing railway land in London and central Birmingham'.* We believe that it is highly likely that there will be in-combination adverse effects resulting from impacts on multiple local/parish value

	populations and assemblages of terrestrial invertebrates associated with the habitats found outside of London and Central Birmingham. Even small areas of high quality habitat can support nationally significant assemblages of invertebrates. Inadequate assessment has been conducted and inadequate mitigation is proposed.
Volume 5, Appendix EC-005-002 Register of local level effects	
Section Number	*Comment*
Table 1 CFA 7	*'As part of a precautionary assessment it is assessed that the realignment of National Grid power lines will remove at least three ponds.'* The use of a precautionary approach should result in a conservative estimate of habitat loss, not one which could be exceeded!
Volume 5, Technical Appendix, ES 3.5.0.15.2 Scope and methodology report addendum	
Section Number	*Comment*
2.2.3 / 2.3.9 / 3.3.3	HS2 consistently state that replacement habitat will be created 6-12 months prior to the commencement of any translocation works in order to allow for flora and fauna in the compensation habitat to become established. This represents a single growing season and is not a precautionary approach. A single growing season is highly unlikely to enable the establishment of a fully functioning habitat that is capable of supporting protected species. Without allowing a greater period of time for habitat establishment that is broadly comparable to that outlined in their biodiversity offsetting methodology e.g. pond – 5 years, there is a greater risk of protected species mortality and failure to achieve no net loss. Similarly, HS2 consistently state 'wherever reasonably practicable'. HS2 should make a more accountable commitment to habitat provision in a timely and appropriate manner in order to achieve net loss (as targeted by HS2).
2.2.4	Seeding of ponds with plant material from sites to be lost would be a more economical and viable method of planting than the importation and purchase of plants. It would also be advisable to avoid a chain of replicated ponds habitats as a greater variety of habitat is likely to result in a greater biodiversity of flora and fauna.
2.4.5	As stated, if it is not the role of the EcIA process to validate site designations then there should be no suggestion that this may be possible. Validation of a designated site requires bespoke surveys to that end. Inclusion of this paragraph is somewhat alarming.
Volume 5, Technical Appendices	
Section Number	*Comment*
Ecology - Section 3 Methodology.	The level of survey effort and design of survey methods employed by HS2 (especially in relation to Bechsteins Bats) are inadequate to enable a robust assessment of the potential impacts of HS2 on bat populations. For the bat assemblage present two to three years of

	survey as a minimum would be expected to inform appropriate mitigation design. Lack of access to key habitats has constrained the amount of data that could be collected (e.g. lack of access to maternity roosts of Bechsteins Bats - on both sides of the proposed route) to radio-track more individuals to study landscape-scale bat movements and movements between colonies. Insufficient study of key movement periods (maternity and dispersal/swarming periods) and lack of knowledge of male Bechsteins bat movements are also major constraints to assessments. Small sample sizes of radio-tracked bats provide coarse resolution information of bats use of the landscape and HS2 have made too many unjustified assumptions in their assessment of bat habitat use. Survey design was biased towards recording/capture of bats at crossing points, rather than more systematic survey of the landscape as a whole (in particular the Aylesbury Link Railway) leading to flawed assessments. Lack of the ability to separate the calls of Myotis bats from transect, paired sampling and automated bat surveys is also a flaw to the data analysis.
Draft Environmental Minimum Requirements Annex 4: Draft Environmental Memorandum	
Section Number	*Comment*
1.3.3	'The parties to this Memorandum have therefore reached an understanding as to: 1) the aims to control and limit the environmental effects of constructing Phase One of HS2; 2) the mechanisms for ensuring consultation and liaison between the parties, monitoring of the impacts of the construction of Phase One of HS2, monitoring of the post construction performance of mitigation and compliance with (amongst other things) the environmental provisions in the High Speed Rail (London - West Midlands) Bill; and 3) the principles to be followed to achieve the aims during the ongoing design and construction of Phase One of HS2'. Monitoring of bat populations during the operational phase is critical to establish if the proposed mitigation has been successful or not and if the FCS of the bat species concerned are being adversely affected. This monitoring should be conducted independently.
3.1.1	We would like to see the National Environmental Forum continue to meet much more than one year post-commissioning to ensure that mitigation is working successfully and that created habitats are maturing towards target condition. The forum should only be disbanded once no net loss has been delivered. Ecological mitigation will take many more years to mature and monitoring will be required further into operational phase to know if mitigation has been successful. There needs to be a commitment to monitoring of habitats and species until proven that mitigation has been successful. Does point 2 (strategic programme for monitoring) include long-term monitoring? If so for how long?

Volume 5, Technical Appendices, Annex D: Ecology – technical notes: Methodology for demonstrating no net loss in biodiversity	
Section Number	*Comment*
3.1.3	Given that the new 'very high' category is being utilised for habitats that are deemed 'irreplaceable', it is arguable that the multiplier used for them should be higher than 8.
3.2.4	All habitats identified as being of low habitat distinctiveness will automatically be allocated a condition weighting of 1. *'This modification to the metric reflects the view that for habitats of low distinctiveness the condition of the habitat has negligible influence on the overall value of that habitat type'.* A habitat does not have to be distinctive to be valuable, and the condition of all habitats is of importance, no matter if they are rare habitat or not.
Table 1	Plantation ancient woodland should also be considered to fall under the 'very high' distinctiveness category as a large degree of its value is within the seedbanks, which should not be so easily undervalued.
Table 3	'Contiguous' habitat refers to any gap between habitat parcels being less than 15m. The ecological evidence for this gap is uncertain as many species are likely to be able to disperse across such a gap as well as gaps of a greater distance. This would appear to down weight the value of some habitats that will be functionally connected, yet removed by a gap of great than just 15m.
4.4.1	Added value should indeed be attributed to habitat creation within Biodiversity Opportunity Areas, provided that the measures meet the specific BOA criteria. However, without the actual calculation this is not possible to review. Furthermore, BOAs have not been given any weight where habitat is being impacted and are not referred to in formulating habitat creation. Consequently, it is difficult to see how added value by habitat creation within a BOA is being balanced by impacts to BAP habitats elsewhere and to habitats within BOAs.
Table 9	Without a detailed design it is difficult to consider the time required to reach target condition. This will depend on numerous factors such as the management regime and the age, diversity, density and composition of planting.
General, route-wide and systemic issues	
	HS2 have assessed the habitats of the Aylesbury Link Railway (ALR) as being important for a number of species of bats including Common and Soprano Pipistrelle, Daubenton's Bat, Natterer's Bat, Whiskered Bat, Brandts Bat and Bechsteins Bat. Assessment varies according to species, with the ALR habitats being assessed as a key commuting route for all genera of bats surveyed with highest activity recorded within the rail corridor (5.4.6). Significant bat activity was recorded in open habitats adjacent to the proposed route (5.5.3) The ALR habitats were assessed as being important foraging habitats for a number of species. Important crossing points were identified for a number of bat species including Bechsteins Bat. The potential use of the ALR and associated habitats by Bechsteins bats for foraging or as important flight lines between roosting sites and swarming sites has been inadequately assessed. Survey design refinements, improved access and further survey should be undertaken to provide more robust

	assessment (especially of potentially key movement periods in September (which largely have not been surveyed).
Ancient woodland	HS2 should provide details of exactly how this 'irreplaceable' ancient woodland habitat will be replaced with appropriate scientific evidence justifying the proposed methods will deliver target habitat condition. No indication of the likely levels of success of ancient woodland soil translocation has been provided. HS2 have chosen Local Biodiversity Action Plan habitats as target conditions for compensatory woodland habitats. We have deep concerns that such targets could not be achieved within the proposed timescale.
Tree planting	Vol 3.5.28. HS2 claims, *'As part of the Proposed Scheme's mitigation, 2 million trees will be planted. This planting is calculated to capture approximately 500,000 tCO2e over the 60 year operational assessment period; equivalent to an average of 8,366 tCO2e per year. The calculation of the carbon sequestration is based on factors from the Woodland Carbon Code'.* No assessment of how many trees and other areas of vegetation will be lost has been provided with the associated loss of carbon sequestration as presumably all removed vegetation material would be disposed of for burning, commercial use or wood chippings. Offsetting these figures against the calculated carbon capture figures would significantly decrease the value stated by HS2. We request that HS2 provide a net calculation of carbon capture.
Survey effort	Surveys undertaken by HS2 have been severely hampered by access constraints and weather conditions. It is therefore questionable whether a sufficient degree of field survey has been undertaken in order to inform assessments of potential harm to protected species. For example, in CFA 7 (EC-002-002, 2.4.27) a total of 46 ponds were scoped in for a HSI assessment (great crested newt), but access was only granted for 5, the remainder are subject to the precautionary approach. Similar access restrictions are particularly apparent for surveys of other amphibians, dormouse, bats, reptiles and invertebrates as well as across the other CFAs. As a protocol has been prepared by the land referencing team, it would seem likely that access effort could be disclosed as well as mapping of areas where access has/has not been arranged: ES 3.5.0.15.2 (Annex D), 2.5.1. All access to undertake field surveys will be organised by the land referencing team. A protocol for requesting and reporting upon access will be prepared and provided to consultants undertaking survey work. The lack of access renders the ecological survey overly reliant on a precautionary approach, which for a scheme of this size and impact, cannot be considered fit to inform appropriate assessment of the proposals impact upon habitats and species. Further, as a consequence, a large degree of information has had to be derived from aerial imagery. Often this has been used to derive Integrated Habitat Survey (IHS) classifications where access for Phase 1 survey was not obtained and/or for scoping habitats suitable for different taxa e.g. reptiles. For Buckinghamshire, appropriate IHS

	datasets could have been accessed if sought, which would have further improved this decision-making process and add further weight to the questionable use of data discussed in point 4 below.
Lawton principles and mitigation principles	The Lawton principles of: 'more, bigger, better and joined' habitats, as recognised by the Biodiversity 2020 strategy (DEFRA 2011) are consistently misquoted throughout the ES. Given that the ecological mitigation principles are strongly grounded in these principles, the misinterpretation of the Lawton report (Lawton 2010) fundamentally undermines their approach. The interpretation reported by HS2 is: ES 3.1.0, 9.8.7 '…sought to promote mitigation provision that adheres to the Lawton report principles of 'bigger, better, more joined up' and that will increase robustness to the effects of climate change through promoting movement of species through the landscape' The lack of measures to improve connectivity across the railway is also in conflict with the Lawton principles. For example, the following mitigation principle seeks to improve connectivity between GCN sites on one side of the track, not across the track. Thus, no attempt would be made to improve connectivity across the track, which would remain a barrier to GCN dispersal. ES 3.5.0.15.2, 2.1.7 'Where severance is identified as having the potential to result in an adverse effect on conservation status, the nominated undertaker will seek to minimise its effects through implementing habitat creation/restoration to increase connectivity with other known areas of suitable habitat in the landscape, and maintain the viability of these severed elements, for example by providing linear connectivity and new ponds which will promote connectivity between two previously separate metapopulations' The mitigation principles for GCN go on to state that amphibians: '… are known to utilise habitats that are common to operational railway corridors, including the use of gaps between ballast as refugia and/or hibernacula.' However, evidence suggests that high-speed trains, as opposed to conventional stock, have the capacity to lift and move ballast, therefore creating a hazard rather than an opportunity for GCN. Route-wide there are insufficient measures to enable flora and fauna, protected and otherwise, to safely traverse the line. Within CFA 7, 8 and 9 there is no commitment by HS2 to adequately mitigate for severance caused by the HS2 line. This is especially clear for terrestrial animals, which are likely to be directed to a small number of crossing points along the route, rather than being able to move across relatively freely with the provision of an appropriate number of tunnels, green bridges and other measures that, as well as being in line with the Lawton principles, will avoid potential harm to humans and animals alike.

	There are repeated mitigation measures which conflict with the Lawton principles by consolidating impacts on separate habitats/species into single mitigation areas. Fewer, larger habitat parcels being developed to mitigate for impacts to a range of habitats and species is not likely to result in robust and resilient ecological communities. Often the suggested 'enhancement' of mitigation areas is repetition of best practice which should already be incorporated into the design of created habitats: ES 3.5.0.15.2, 2.1.4 'Where it is not reasonably practicable to address the possible impact of the local population in-situ then opportunities will be taken to consolidate compensation provision as part of larger scale habitat creation areas.' ES 3.5.0.15.2, 2.1.8 'In extreme situations where it is not considered possible to maintain the viability of severed fragments of a population affected by the Proposed Scheme then the nominated undertaker will consider the trapping of great crested newts from land that lies outside the extent of the Proposed Scheme, in order to allow the full population to be relocated to the same receptor site.' ES 3.5.0.15.2, 2.1.2… 'For example, the design of areas of broadleaved woodland planted to compensate for losses of this habitat type may be altered to allow these areas to also incorporate great crested newt breeding ponds.' ES 3.5.0.15.2, 4.1.2… 'For example, the design of areas of broadleaved woodland planted to compensate for loss of woodland habitat may be altered to provide a graded woodland edge that will be suitable for foraging activity of a range of bat species, or bat boxes incorporated to provide immediate replacement roosting opportunities.' ES 3.5.0.15.2, 4.3.3… 'Where there is particular benefit in doing so, the final planting scheme and maintenance regime will, whilst taking account of the multiple functions of such areas, incorporate details that maximises the value of these habitat features in relation to bats (e.g. through scalloping woodland edges to provide sheltered areas that will support concentrations of insects and promote bat foraging).
Objective of no net loss	The NPPF (2012) sets out that, *'The planning system should contribute to and enhance the natural and local environment by: minimising impacts on biodiversity and providing net gains in biodiversity where possible" and "opportunities to incorporate biodiversity in and around developments should be encouraged.' The objective of no net-loss as set out by HS2 (ES 3.1.0, 9.8.6) directly conflicts with this policy statement. Despite this clear conflict with national policy, the target of no net loss is in any case at risk on several grounds.*' Throughout the ES HS2 suggest habitat establishment for protected species translocation over a period typically of 6-12 months. This represents a single season and is unlikely to render a habitat capable of supporting protected species. Furthermore, this time period is considerably shorter than that being used within the biodiversity offsetting calculation (temporal multiplier),

	which gives a more realistic expectation. Consequently, the potential success of species translocation is undermined and could lead to protected species mortality and result in biodiversity loss. The objective of no net loss, rather than targeting net gain, is reflected in statements throughout the ES where mitigation is concerned: ES 3.5.0.15.2, 2.3.6 / 3.3.1 'Where the quality of the terrestrial habitat to be provided post-construction will clearly be higher than that available pre-development, or habitat will be provided closer to the breeding pond, then compensation habitat areas provided may be on a less than 1:1 ratio.' ES 3.5.0.15.2, 6.2.2 'Where dormouse are confirmed to be present and the Proposed Scheme will result in losses of suitable habitat the nominated undertaker will act to ensure that these losses do not result in a detrimental effect on the FCS of the population concerned through providing replacement habitat. This may be achieved through either creation of new habitat or the enhancement of existing habitat to increase its potential value for dormouse.' In both instances above, the loss in overall habitat also removes the potential for that habitat to support GCN or dormouse. Consequently, the loss of suitable habitat should not be compensated through the enhancement of existing habitat. Contrary to the ES objectives, this would appear to be a poor use of the precautionary approach. This lacklustre approach to mitigation is finally compounded with ambiguous and non-committal language, for example: ES 3.5.0.15.2, 1.1.6 ... 'Where effects cannot be mitigated to a level where they are not significant then compensatory measures have been employed to (as far as is reasonably possible) offset any remaining adverse effects.' ES 3.5.0.15.2, 2.3.4 … 'the nominated undertaker will endeavour to provide habitat of equal or higher quality than that which is lost.' ES 3.5.0.15.2, 14.1.5… 'The most appropriate method of compensating for the loss of habitats of ecological value will be considered on a site by site basis taking into account the nature and value of the habitats involved and the financial and other practical implications associated with each of the above methods.'
Use of environmental data	ES 3.5.0.15.1, 9.6.1 'The impact assessment methodology for the Proposed Scheme follows the standard method for ecology as set out by the Institute of Ecology and environmental Management (IEEM) in their Guidelines for Ecological Impact Assessment (2006).' The CIEEM EcIA guidelines state that contextual information is essential to confirm spatial and temporal scope (CIEEM, 2006). However, data from Buckinghamshire and Milton Keynes Environment Records Centre (BMERC) is poorly represented and inaccurate. For bird data, a summary is presented below:

	• Example 1 (CFA 9) – Data misrepresented Grid Reference: SP912030 Site Name: Ballinger BMERC Data shows 26 species recorded at this grid reference within the past 10 years – Skylark, Mallard, Meadow Pipit, Swift, Lesser Redpoll, Linnet, Stock Dove, Cuckoo, House Martin, Yellowhammer, Hobby, Kestrel, Swallow, Mew Gull, Lesser Black-backed Gull, Red Kite, Marsh Tit, Green Woodpecker, Bullfinch, Starling, Whitethroat, Redwing, Song Thrush, Fieldfare, Mistle Thrush, Lapwing. • However Table 53 page.179 shows only 2 species - Cuckoo (58 records), House Martin (47). • Example 2 (CFA 10) – species data missing Grid Reference: SP860071 Site Name: Bacombe Hill BMERC Data shows 8 species recorded at this grid reference within the past 10 years - Meadow Pipit, House Martin, Hobby, Swallow, Wryneck, Marsh Tit, Bullfinch, Spotted Flycatcher. • However Table 65 page.194 shows only 1 species - Spotted Flycatcher (12 records). • Example 3 (CFA 10) – species data missing Grid Reference: SP848067 Site Name: Coombe Hill BMERC Data shows 30 species recorded at this grid reference within the past 10 years – Sky Lark, Meadow Pipit, Lesser Redpoll, Linnet, House Martin, Little Egret, Yellowhammer, Reed Bunting, Peregrine Falcon, Hobby, Kestrel, Brambling, Swallow, Wryneck, Red Kite, Yellow Wagtail, Spotted Flycatcher, Wheatear, Marsh Tit, Redstart, Willow Warbler, Green Woodpecker, Bullfinch, Firecrest, Starling, Whitethroat, Common Greenshank, Redwing, Song Thrush, Mistle Thrush. • However Table 65 page.194 shows only 1 species – Common Redstart (3 records). • Example 4 (CFA 10) – species data missing Grid Reference: SP870101 Site Name: Wendover Canal BMERC Data shows 29 species recorded at this grid reference within the past 10 years – Shoveler, Teal, Mallard, Gadwall, Meadow pipit, Pochard, Tufted Duck, Lesser Redpoll, Linnet, Stock Dove, House Martin, Little Egret, Reed Bunting, Brambling, Grey Wagtail, Spotted Flycatcher, Marsh Tit, Willow Warbler, Green Woodpecker, Bullfinch, Firecrest, Woodcock, Turtle Dove, Little Grebe, Redwing, Song Thrush, Fieldfare, Mistle Thrush. • However Table 65 page.194 shows only 3 species – Gadwall (1 record), Woodcock (4 records), Little Grebe (3 records).

	Furthermore, BMERC is inconsistently referenced throughout the ES, being referred to as Buckinghamshire County Council and Buckinghamshire Biological Records Centre as well as BMERC. The ES also relies heavily on aerial imagery, however, there is no indication of which aerial imagery was utilised and the age and timing of the aerial photography.
Long term security and monitoring of mitigation/ compensation measures	At present there is insufficient detail to suggest that mitigation/compensation measures will be appropriate in order to assess the effectiveness of the measures proposed. An appropriate monitoring plan needs to be produced and approved by the local authorities. At present monitoring sentiments appear to be based solely on those areas where mitigation/compensation is provided (e.g. Ecology Technical note – Ecological principles of mitigation 2.5.3 and 3.5.1) with the exception of LEMP provision as suggested in ESA 4.2, 5.1.3. The monitoring of on-going impacts of HS2 on the surrounding environs that do that not constitute a part of any mitigation/compensation plan will be agreed as a part of the EMR to be agreed at Royal Assent. At present the draft EMR offers no specific detail regarding the scope of this monitoring. ESA 4.2, 4.8.5 states that, *'the nominated undertaker will maintain or make provision to maintain and monitor new or managed habitat, for a sufficient period to ensure that the nature conservation objectives of the proposals are achieved'.* Any such maintenance and/or monitoring arrangements should be developed with, submitted and approved by local authorities. Similarly, the 'sufficient period' to ensure that nature conservation objectives have been met should be of sufficient length of time for this to be of no doubt, particularly in compensation areas which have been created as compensation for 'irreplaceable' habitats.
Biodiversity offsetting	HS2 has committed to using biodiversity offsetting to assess whether their aim of no net loss in biodiversity has been achieved. Comments on the overarching methodology are outlined, however, it is impossible to judge the appropriateness of the mitigation proposed without disclosure of the actual biodiversity offsetting calculation. As this detail is expected in spring 2014, it is another factor which does not facilitate effective consultation and undermines the ability of the planning process to effectively review the proposal.
Barn owl surveying	The survey extent and mitigation proposed for barn owl are both insufficient. Surveys were, *'undertaken up to 1.5km from the land required for the construction and operation of the Proposed Scheme'* (ES 3.5.2.7-15.2, 4.3.10). Beyond 1.5km access was not sought for surveys. Mitigation proposals take the form of owl nest boxes beyond this boundary provided landowners agree. Given the survey extent, there is no guarantee that such mitigation will be successful on the grounds that the baseline survey did not establish the status of barn owl beyond 1.5km into which mitigation measures of proposed and does not establish the suitability of habitat for barn owl. Furthermore, if the mitigation proposals were successful, they would only serve to boost barn own density along the 1.5km buffer, which would provide a source population that is likely to attempt to recolonize the impacted

	area causing further barn owl mortality. HS2 should consider improvements in barn owl foraging habitat and nesting opportunities in the wider environment in order to encourage sustainable barn owl populations. In addition, it is noted that 2013 was *'… a poor breeding year for Barn Owls[14] and this may have affected the survey results.'* Consequently, the impacts of HS2 on the sustainability of the barn owl populations may be even greater.
Pond survey methodology	The methodological approach used in the pond survey appears flawed. HS2 has sought to use three levels of assessment (rapid, PSYM and NPS). On several grounds the approach has consistently undervalued the habitats and misrepresented the findings. • The PSYM methodology can be partially employed using aquatic vegetation and/or macro invertebrate sampling, though both are preferred and the use of macro invertebrates over aquatic vegetation. If macro invertebrate sampling is used in the PSYM assessment, the NPS 3-minute kick sample method should employed. As the NPS method has been prescribed as the third-level of survey in the ES it is apparent that the rapid assessment has been used to inform calculation of the PSYM metric. Consequently, macro invertebrates have been under sampled and the number of families used in calculating the metric will be consistently under-estimated. • Aquatic vegetation should be sampled during the period June, July and August. In approximately 50% of the cases PSYM surveys were undertaken outside of this period which is likely to result in lower plant diversity. • Finally, in interpreting the data the ponds present within CFA 7-15 (for example) have been separated into quartiles ranging from poor to high quality. In doing so the method of interpretation ensures that some ponds will always be deemed poor quality regardless of their true ecological value. The only reasonable way to assess the ecological value of the pond is to carry out an appropriate PSYM assessment, which is not the case here. Ponds were only subject to assessment if they were permanent in nature. Temporary ponds (those that have period of dryness) are being lost from the landscape at a rapid rate, yet are home to specialist flora and fauna. It is not clear why temporary ponds were left un-assessed.
Translocation of ancient woodland	ES 3.5.0.15.2, 5.1.4 '*In defining and making recommendations for appropriate measures to address significant effects their deliverability should be considered, along with certainty about their likely success. Measures which are unlikely to be successful (probability estimated at below 50%) should not be included. Rather, certain/near-certain (probability estimated at 95% chance or higher) or probable (probability estimated above 50% but below 95%) measures should be recommended. For measures for which the success is regarded as 'probable', recommendations for monitoring/corrective action are likely to be appropriate.'*

	The translocation of ancient woodland appears to conflict directly with the mitigation principles laid out in the ES. There is no clear scientific evidence that suggests that translocation of ancient woodland can be successful, actually, more evidence suggests that it is unlikely to be successful. It is therefore hard to justify translocation as a mitigation technique that has a greater than 50% success rate. This generally accepted principle also appears to be recognised within the ES itself: ES 3.5.0.15.2, 14.1.3 *'Translocation of habitats is a costly process and does not always provide a habitat that is of higher value than that which can be reached through alternative approaches.'* However, if HS2 consider translocation of ancient woodland to be a viable technique, then the installation of measures to create connectivity across the line such as amphibian tunnels (ES 3.5.0.15.2, 2.1.9) and reptile tunnels (ES 3.5.0.15.2, 8.1.6), which are currently not relied upon in the mitigation/compensation strategy, should also be considered viable and installed as a matter of course.
Lack of detailed design	Ecology Technical note – Ecological principles of mitigation 1.1.4, *'In addition at hybrid Bill submission the Proposed Scheme will still be subject to completion of detailed design, which includes landscape design. An outline landscape design will be available on submission of the hybrid Bill.'* Ecology Technical note – Ecological principles of mitigation 1.1.5 'For the above reasons the Environmental Statement does not contain all of the details of the mitigation or compensation required for impacts on protected and/or notable habitats and species.' It is not possible to accurately identify the impacts to ecology without a detailed design scheme. Detailed design schemes are needed for: • Mitigation/compensation areas • Tunnel entrances • Vent access points • Green bridges • Viaducts • Landscaping The lack of detailed design leaves the proposal at odds with the mitigation hierarchy which requires the developer to seek suitable alternatives, or to reduce the impact of the proposal through design. Given the lack of specific design information on fundamental features of the proposal which could both impact and benefit ecology it is not possible to thoroughly consider the proposal. For example, the design of the viaduct proposed to cross the Colne Valley (CFA 7) has not been detailed, yet could offer opportunities for ecological enhancement within its structure as well as further impacts.
Mitigation of temporary effects	ES 3.5.0.15.2, 1.1.8 *'Where mitigation or compensation are required then the intention is to provide them within the confines of the land required for the construction of the Proposed Scheme as defined on*

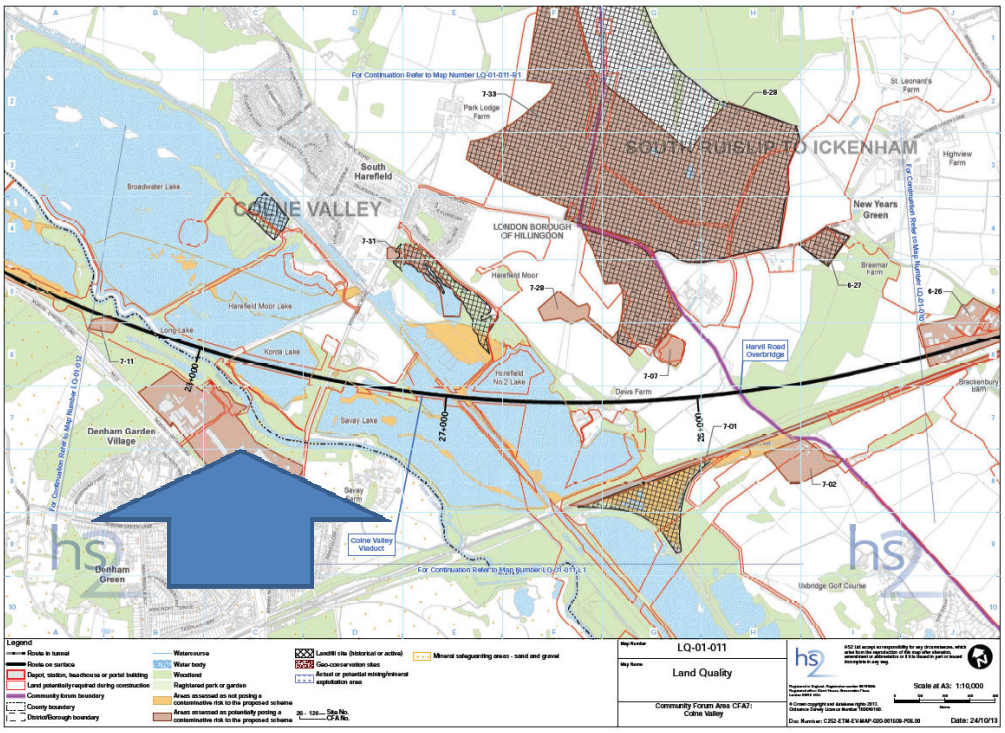
	the Parliamentary plans. Where this is not reasonably practicable then further means of providing mitigation/compensation provision beyond the land controlled by the Proposed Scheme will be considered.' The aim of HS2 is to provide the majority of mitigation and compensation measures within the land required for construction. Therefore, it is probably that there will be a significant lag between habitat created and habitat lost. This is made particularly clear where the ES states: 9.2.3 '*Where it is reasonably practicable to restore the habitats which are to be affected during construction then this will be conducted as soon as possible following the completion of construction.'* There is no consideration for phased restoration during the overall construction process, which would improve the likelihood of establishing functional habitats sooner rather than later and no guarantee that habitat creation will start immediately after the construction period '*where it is reasonably practicable'*. HS2 should make a more accountable commitment to habitat provision in a timely and appropriate manner in order to achieve net loss (as targeted by HS2) and to apply a precautionary approach to their mitigation/compensation package.

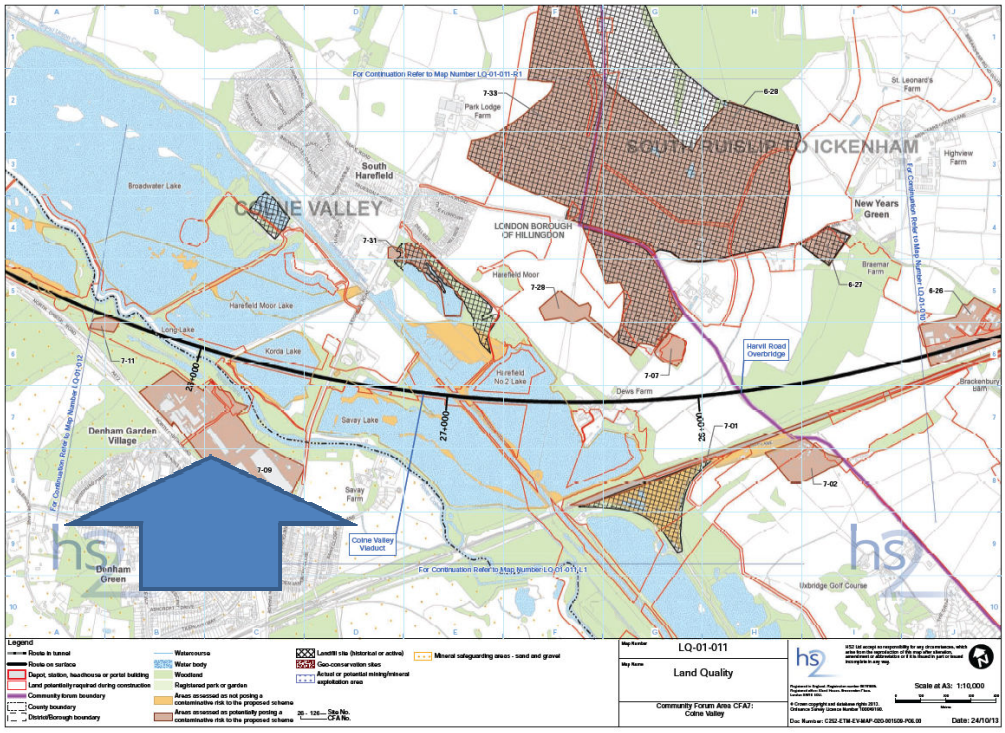
13. LAND QUALITY

General comments	
Section Number	*Comment*
	The theme of land quality is not adequately linked to the water theme and therefore details are absent from both sections on the actual impact and mitigation to prevent contamination from one source to the receptor The lack of site visits to key contaminated land that is identified by HS2 is extremely disappointing and will impair decision making with regard to these sites Actual mitigation options for identified sites are not presented and therefore the Councils cannot comment at this stage With regard to baseline risk assessment, the Councils question the methods used to score these as a number of elements remain 'high', 'severe' and 'likely' without consequence Where significant contamination is encountered, HS2 state that "a remedial options appraisal will be undertaken to define the most appropriate remediation techniques. The preferred option will then be developed into a remediation strategy, in consultation with regulatory authorities prior to implementation". The Councils consider that this is a sensible way forward and the relevant District Council consulted prior to any works actually taking place. A program of soil sampling will be required to ensure that all contaminated material has been removed/ reduced to a suitable level/guidance value prior to placement. The programme method and results should both be agreed with the relevant District Council.
Vol 5 Draft CoCP (CT-003-000)	The draft CoCP outlines a number of measures/procedures which will be applied to the construction of the proposed scheme. These include methods to control spillage and prevent contamination of adjacent areas, methods for the storage and handling of excavated material which includes both contaminated and uncontaminated material and the management of any unexpected contamination found during construction. If followed, the CoCP will address many of the comments the Councils previously made for the draft Environmental Statement with regard to the storage of potentially contaminative materials i.e. fuels and oils within the construction compounds and what procedure will be in place if any unexpected contamination is encountered during the construction of the proposed scheme.

P 39 11.2.4 P40 11.2.7	This paragraph says that the CoCP requires a programme of ground investigations to be undertaken prior to the construction of the proposed scheme to confirm areas of contamination. In addition a risk assessment will be undertaken to determine what, if any, site specific remediation measures will be required to allow the proposed scheme to be constructed safely and to prevent harmful future migration of contaminants. The Councils agree with this statement and recommend such ground investigations are undertaken. In addition the statement goes on to say where significant contamination is encountered, a remedial options appraisal will be undertaken to define the most appropriate remediation techniques. The preferred option will then be developed into a remediation strategy, in consultation with regulatory authorities prior to implementation.
	The ES does not provide details on the soil quality of areas for ecological mitigation. This is particularly important where new woodland is required. It is possible that some areas selected for ecological mitigation may not be suitable for woodland and the importation of improved soil may be required. This needs to be fully assessed prior to any works commencing.
Volume 2 CFA 7 Colne Valley	
Section Number	*Comment*
8.1.6	The Councils agree that land contamination is often closely linked to water resources; however this is not adequately covered with minimal detail in the linked section 13.
8.2.3	"Due to access constraints not all sites considered to have the greatest potential for contamination were visited". The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In the Councils opinion the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.
8.3.8	The final ES correctly identifies that the entire route section will be within a Source Protection Zone (SPZ). The majority of the Proposed Scheme will cross a Zone 1 Inner Protection Zone (SPZ1); there are also three groundwater abstractions for Public Water Supply (PWS) within 1km of this section of the route. This therefore indicates a high potential risk to water receptors. Again the reader is referred to section 13 which does not adequately consider the source, pathway and receptor or conceptual modelling in enough detail.

8.3.20	The final ES identifies two significant and one minor pollution incident to land; however no further details are provided to allow comment.
8.4.4	Locations for such activities as soil washing and bio remediation have not been presented.
8.4.13/ 8.4.18	Denham Media Park and Broadwater Park Industrial Estate (Map LQ-01-011, C7) Exposure of Principal Chalk and Secondary A Taplow Gravels Aquifer to leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater. Provides a very high baseline risk. As does 7-18. 7-19 and 7-20, 7-32. There is potential for disturbance of existing contamination at these sites
8.4.19	HS2 identify a risk relating to piling of the viaduct. It states that an appropriate method of piling will be selected to reduce vertical migration. This method is not presented and invariably will never be 100% successful. The Council would therefore welcome discussion on this important aspect and the proposed techniques to be used.
8.4.29	*"A minor adverse effect will occur at 7-11 as the increase in hard standing surrounding the site may increase surface water run-off into the site and potentially increase leaching of residual contamination to groundwater".* Once again the Final ES does not provide details as to how this will be mitigated.
8.4.34	It is not clear how the sterilisation of the resource has been classified as "not considered significant".
8.5.7	The Councils welcome the inclusion of long term monitoring as highlighted in the Councils draft response.
General Comment	As identified within the CoCP if any unexpected contamination is encountered during the construction of the proposed scheme the relevant District Council must be informed and a remedial strategy developed and implemented.
MAPBOOK http://assets.dft.gov.uk/hs2-environmental-statement/volume-5/land-quality/Vol5_CFA7_Land_quality_Data_appendix_LQ-001-007.pdf	4.1.1 There were no site visits carried out due to access constraints and no additional site data have been identified.





Volume 2 CFA 8 The Chalfont's and Amersham	
Section Number	*Comment*
8.1.3	HS2 identify the main environmental features of this area as the River Misbourne, Shardeloes Lake, and the Chilterns AONB at the northern end of the Chalfont's and Amersham study area. Each of these elements is prized by the local community and the best mitigation should be used to safeguard these areas.
8.1.6	The Councils agree that land contamination is often closely linked to water resources; however this is not adequately

	covered with minimal detail in the linked section 13.
8.2.2	Utility works on the highway should not be excluded for the purposes of reviewing areas of potential contamination.
8.2.3	"*Due to access constraints not all sites considered to have the greatest potential for contamination were visited".* The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "*the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment"*. In the Councils option the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.
8.3.8	The final ES correctly identifies that the majority of the route section will be within a Source Protection Zone (SPZ). The majority of the Proposed Scheme will cross a Zone 1 Inner Protection Zone (SPZ1), 6 public water supply abstractions and 1 private abstraction. This therefore indicates a high potential risk to water receptors. Again the reader is referred to section 13 which does not adequately consider the source, pathway and receptor or conceptual modelling in enough detail.
8.4.4	Locations for such activities as soil washing and bio remediation have not been presented.
8.4.9	8-1, *"Exposure of secondary A Gerrards Cross Gravel aquifer and principal Chalk aquifer to leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater"*. 8-6 *"Exposure of principal Chalk aquifer to leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater".* This indicates a main baseline risk of HIGH. Once again the Final ES does not provide acceptable details as to how this will be mitigated.
8.4.15	There is a possibility that rainwater may currently pass through the wastes in the Warren Farm landfill above the tunnel and percolate down through the chalk as a weak leachate. In addition, there may be some gas migration from the landfill through the chalk, which could enter into the future tunnel excavation. The Final ES states it would be dealt with by draining to an appropriate location and ventilation of the enclosed space, however is devoid of details and where the appropriate location would be.
8.4.19	Whilst this may be the case for distant historical contamination. By stating that, *"the permanent significance is deemed to be negligible even if the risk is assessed as remaining high"*, HS2 leave a gap in the risk related to areas in close proximity that have a 'high' main post construction risk.

8.4.24	The Councils would expect HS2 to monitor tunnelling activity and ensure that there are no impacts on the SSSI.
8.5.7	The Councils welcome the inclusion of long term monitoring as highlighted in the Councils draft response.
8.1.3	HS2 identify the main environmental features of this area as the River Misbourne, Shardeloes Lake, and the Chilterns AONB at the northern end of the Chalfont's and Amersham study area. Each of these elements is prized by the local community and the best mitigation should be used to safeguard these areas.
8.1.6	The Councils agree that land contamination is often closely linked to water resources; however this is not adequately covered with minimal detail in the linked section 13.
8.2.2	Utility works on the highway should not be excluded for the purposes of reviewing areas of potential contamination.
8.2.3	"*Due to access constraints not all sites considered to have the greatest potential for contamination were visited"*. The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "*the lack of site visits to verity desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment".* In the Councils option the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.
8.3.8	The final ES correctly identifies that the majority of the route section will be within a Source Protection Zone (SPZ). The majority of the Proposed Scheme will cross a Zone 1 Inner Protection Zone (SPZ1), 6 public water supply abstractions and 1 private abstraction. This therefore indicates a high potential risk to water receptors. Again the reader is referred to section 13 which does not adequately consider the source, pathway and receptor or conceptual modelling in enough detail.
8.4.4	Locations for such activities as soil washing and bio remediation have not been presented.
8.4.9	8-1, *"Exposure of secondary A Gerrards Cross Gravel aquifer and principal Chalk aquifer to leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater".* 8-6 *"Exposure of principal Chalk aquifer to leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater".* This indicates a main baseline risk of HIGH. Once again the Final ES does not provide acceptable details as to how this will be mitigated.
8.4.15	There is a possibility that rainwater may currently pass through the wastes in the Warren Farm landfill above the tunnel and percolate down through the chalk as a weak

	leachate. In addition, there may be some gas migration from the landfill through the chalk, which could enter into the future tunnel excavation. The Final ES states it would be dealt with by draining to an appropriate location and ventilation of the enclosed space, however is devoid of details and where the appropriate location would be.
8.4.19	Whilst this may be the case for distant historical contamination. By stating that, *"the permanent significance is deemed to be negligible even if the risk is assessed as remaining high",* HS2 leave a gap in the risk related to areas in close proximity that have a 'high' main post construction risk.
8.4.24	The Councils would expect HS2 to monitor tunnelling activity and ensure that there are no impacts on the SSSI.
8.5.7	The Councils welcome the inclusion of long term monitoring as highlighted in the Councils draft response.
8.1.3	HS2 identify the main environmental features of this area as the River Misbourne, Shardeloes Lake, and the Chilterns AONB at the northern end of the Chalfont's and Amersham study area. Each of these elements is prized by the local community and the best mitigation should be used to safeguard these areas.
8.1.6	The Councils agree that land contamination is often closely linked to water resources; however this is not adequately covered with minimal detail in the linked section 13.
8.2.2	Utility works on the highway should not be excluded for the purposes of reviewing areas of potential contamination.
8.2.3	"*Due to access constraints not all sites considered to have the greatest potential for contamination were visited".* The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "*the lack of site visits to verity desktop information and the lack of complete site walkovers are considered unlikely to have substantially affected the land quality assessment".* In the Councils option the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.
8.3.8	The final ES correctly identifies that the majority of the route section will be within a Source Protection Zone (SPZ). The majority of the Proposed Scheme will cross a Zone 1 Inner Protection Zone (SPZ1), 6 public water supply abstractions and 1 private abstraction. This therefore indicates a high potential risk to water receptors. Again the reader is referred to section 13 which does not adequately consider the source, pathway and receptor or conceptual modelling in enough detail.
8.4.4	Locations for such activities as soil washing and bio remediation have not been presented.
8.4.9	8-1, "Exposure of secondary A Gerrards Cross Gravel aquifer and principal Chalk aquifer to leaching of contaminants from

	soil to groundwater and vertical and lateral migration in groundwater". 8-6 "Exposure of principal Chalk aquifer to leaching of contaminants from soil to groundwater and vertical and lateral migration in groundwater". This indicates a main baseline risk of HIGH. Once again the Final ES does not provide acceptable details as to how this will be mitigated.
8.4.15	There is a possibility that rainwater may currently pass through the wastes in the Warren Farm landfill above the tunnel and percolate down through the chalk as a weak leachate. In addition, there may be some gas migration from the landfill through the chalk, which could enter into the future tunnel excavation. The Final ES states it would be dealt with by draining to an appropriate location and ventilation of the enclosed space, however is devoid of details and where the appropriate location would be.
8.4.19	Whilst this may be the case for distant historical contamination. By stating that, *"the permanent significance is deemed to be negligible even if the risk is assessed as remaining high"*, HS2 leave a gap in the risk related to areas in close proximity that have a 'high' main post construction risk.
8.4.24	The Councils would expect HS2 to monitor tunnelling activity and ensure that there are no impacts on the SSSI.
8.5.7	The Councils welcome the inclusion of long term monitoring as highlighted in the Councils draft response.
General Comment	As identified within the CoCP, if any unexpected contamination is encountered during the construction of the proposed scheme the relevant District Council must be informed and a remedial strategy developed and implemented.
Volume 2 CFA9 Central Chilterns	
Section Number	*Comment*
8.1.3	HS2 identify the main environmental features of this area environmental features of this area include the River Misbourne; the underlying Chalk Principal aquifer; the Chilterns AONB; Mantle's Wood, Hedgemoor, Farthings Woods and Sibley's Coppice LWS and the Marylebone to Aylesbury Line at the southern end of the route section. These are extremely important features and the best mitigation should be used to safeguard them.
8.1.5	The Councils agree that land contamination is often closely linked to water resources; however this is not adequately covered with minimal detail in the linked section 13.
8.2.3	

	"Due to access constraints not all sites considered to have the greatest potential for contamination were visited". The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In the Councils opinion the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets. 'Site visit notes are presented in Volume 5:Appendix LQ-001-009' which are actually blank.
8.3.6	"*The White Chalk has been designated as a Principal aquifer by the Environment Agency"*. The Councils are extremely concerned on any impacts that may be detrimental to this aquifer and feel that insufficient work has been presented to provide confidence.
8.3.9	HS2 identify one public water supply abstractions (PWS) and one licensed abstractions (excluding PWS) .This reinforces the importance of planning for activities in this area that may inadvertently impact said water resources. In addition, if contamination were to occur then the impact may not be visible for some time and would be almost impossible to remediate.
8.4.3	HS2 suggest that a preferred option will then be developed into a remediation strategy, in consultation with regulatory authorities prior to implementation. The Council recommends that this is replaced with "*approved* by Part 2A regulatory authorities prior to implementation".
8.4.4	Locations for such activities as soil washing and bio remediation have not been presented.
8.4.20	Whilst this may be the case for distant historical contamination. By stating that, "*the permanent significance is deemed to be negligible even if the risk is assessed as remaining high"*, HS2 leave a gap in the risk related to areas in close proximity that have a 'high' main post construction risk.
8.4.25	HS2 indicate that it may also be necessary to install ground (landfill) gas and leachate control systems within affected old backfilled sites, on a temporary or permanent basis". It is however not stated who would be responsible for their upkeep and action if control systems detected unexpected vapour or leachate.
8.5.7	The Councils welcome the inclusion of long term monitoring as highlighted in the Councils draft response.
General Comment	As identified within the CoCP if any unexpected contamination is encountered during the construction of the proposed scheme the relevant District Council must be informed and a remedial strategy developed and implemented.

Volume 2 CFA10 Dunsmore, Wendover and Halton	
Section Number	*Comment*
8.1.3	HS2 identify the main environmental features of this area as the underlying Chalk Principal aquifer; the existing Marylebone to Aylesbury Line; and Bacombe and Coombe Hills SSSI. These are extremely important features and the best mitigation should be used to safeguard them.
8.1.6	The Councils agree that land contamination is often closely linked to water resources; however this is not adequately covered with minimal detail in the linked section 13.
8.2.2	Utility works on the highway should not be excluded for the purposes of reviewing areas of potential contamination.
8.2.3	"*Due to access constraints not all sites considered to have the greatest potential for contamination were visited".* The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "*the lack of site visits to verity desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment"*. In the Councils option the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.
8.3.7	"*The Chalk has been designated as a Principal aquifer by the Environment Agency"*. The Councils are extremely concerned on any impacts that may be detrimental to this aquifer and feel that insufficient work has been presented to provide confidence.
8.3.9	HS2 identify three public water supply abstractions (PWS) and five licensed abstractions (excluding PWS) that abstract from the Chalk aquifer within 1km of the route in this study area. This reinforces the importance of planning for activities in this area that may inadvertently impact the aquifer. In addition, if contamination were to occur then the impact may not be visible for some time.
8.4.4	Locations for such activities as soil washing and bio remediation have not been presented.
8.4.15	The Final ES states that, *"The temporary effect and significance has been determined by calculating the change in risk between the main baseline risk and the main construction risk. Therefore, where there is no change between the main baseline risk and the main construction risk, the temporary effect significance is deemed to be negligible even if the risk is deemed to be high".* This method should be outlined in more detail.
8.4.20	Whilst this may be the case for distant historical contamination. By stating that "*the permanent significance is deemed to be negligible even if the risk is assessed as remaining high"*, HS2 leave a gap in the risk related to areas in close proximity that have a 'high' main post construction risk.

8.5.7	The Councils welcome the inclusion of long term monitoring as highlighted in the Councils draft response.
General Comment	A total of 14 areas of potentially contaminated land have been identified in this area 6 of which were taken onto further detailed risk assessment. Here the potential risks were fully assessed and it has been concluded that the sites identified are all located outside of the area required to construct the proposed scheme. Therefore it is considered unlikely that these areas will be affected by the proposed scheme. I agree with this conclusion As identified within the CoCP; if any unexpected contamination is encountered during the construction of the proposed scheme the relevant District Council must be informed and a remedial strategy developed and implemented.
Volume 2 CFA11 Stoke Mandeville and Aylesbury	
Section Number	*Comment*
..	A total of 17 areas of potentially contaminated land have been identified in this area 5 of which were taken onto further detailed risk assessment. The majority of these areas were historical landfills or potentially infilled pits. During the construction it has been identified that there are risks to the Secondary An alluvium and principal portland limestone aquifers from vertical and lateral migrations of contaminated water/leachate from the existing Princes Risborough to Aylesbury Line and the Hartwell landfill. This is because these areas are located within a cutting for the proposed scheme. Therefore during the construction phase the developers must be mindful of this potential contamination migration into the underlying aquifer and undertake appropriate action/measures where necessary. In addition if any suspected fill material or ground gas is encountered this must be reported to the site manager or equivalent. However I agree with the conclusion that following remedial work and completion of the proposed scheme there will be an overall negligible effect in relation to land contamination.
8.1.3	HS2 identify the main environmental features of this area as the River Thame and its tributaries including Stoke Brook and Bear Brook, the underlying Portland Stone Principal Aquifer, and Hartwell Estate perimeter walls Local Geological Site (LGS). These are extremely important features and the best available mitigation should be used to safeguard them.
8.1.6	The Councils agree that land contamination is often closely linked to water resources; however this is not adequately covered with minimal detail in the linked section 13.
8.2.2	Utility works on the highway should not be excluded for the purposes of reviewing areas of potential contamination.

8.2.3	"Due to access constraints not all sites considered to have the greatest potential for contamination were visited". The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In the Councils opinion, the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.
8.3.9	"The Environment Agency has designated the Portland Stone Formation as a Principal Aquifer". The Councils are extremely concerned on any impacts that may be detrimental to this aquifer and feel that insufficient work has been presented to provide confidence.
8.3.14	"The Environment Agency reported that there were two licensed abstractions, for non- PWS uses, within 1km of the route. Both licensed abstractions are from wells. One well is located approximately 700m west of the Aylesbury north cutting, just north of Upper Hartwell. The other well is approximately 400m north east of the Thame Valley viaduct cutting, on the western side of Aylesbury". This reinforces the importance of planning for activities in this area that may inadvertently impact the aquifer. In addition, if contamination were to occur then the impact may not be visible for some time.
8.3.25	"The perimeter walls at the Hartwell Estate have been identified by Buckinghamshire County Council as a LGS as they are constructed of Portland Stone containing the remains of the distinctive large ammonite *Titanites giganteus".* However, HS2 then do not identify whether any protection measures are required to ensure this site is not disturbed or contaminated.
8.4.1	Requirements include "a cap for the nearby landfill area with a secondary area to the south in the form of a reed bed to trap potential contaminants leaching out, to the west of the Proposed Scheme and to the south of the A418 Oxford Road." This must be discussed further with the relevant District Council to ensure it will be effective to control leachate.
8.4.4	Locations for such activities as soil washing and bio remediation have not been presented.
8.4.10	HS2 identify a "High baseline risk for Former Hartwell clay, brick and tile works and landfill (Map LQ-01-23, E5)" for on-site human receptors. However details on how this risk will be managed are not presented.
8.4.15	"Risks to the Secondary A Alluvium and the Principal Portland Limestone Aquifers from vertical and lateral migration of contaminated groundwater/leachate are considered to be higher from the existing Princes Risborough to Aylesbury Line and the Hartwell landfill

	respectively during construction as they are directly located within the area of cutting for the Proposed Scheme. Therefore, the potential exists to mobilise contaminants during construction works in these areas and this could result in a minor adverse effect that will not be significant". Again, the Councils remain concerned that groundwater flow is not fully understood and requires further work to ensure risks are mitigated.
General Comment	A total of 17 areas of potentially contaminated land have been identified in this CFA, 5 of which were taken onto further detailed risk assessment. The majority of these areas were historical landfills or potentially in filled pits. During the construction it has been identified that there are risks to the Secondary An alluvium and principal portland limestone aquifers from vertical and lateral migrations of contaminated water/leachate from the existing Princes Risborough to Aylesbury Line and the Hartwell landfill. This is because these areas are located within a cutting for the proposed scheme. Therefore during the construction phase HS2 must be mindful of this potential contamination migration into the underlying aquifer and undertake appropriate action/measures where necessary. In addition if any suspected fill material or ground gas is encountered this must be reported to the site manager or equivalent.
	In addition if any unexpected contamination is encountered during the construction of the proposed scheme the Environmental Health and Licensing Department must be informed and a remedial strategy developed and implemented.
Volume 2 CFA12 Waddesdon and Quainton	
Section Number	*Comment*
8.1.3	HS2 identify the main environmental features of this area as the River Ray, Sheephouse Wood SSSI, Finmere Wood SSSI, Grendon and Doddershall Meadows LWS located at the northern end of the study area. These are extremely important features and the best available mitigation should be used to safeguard them.
8.1.7	The Councils agree that land contamination is often closely linked to water resources; however this is not adequately covered with minimal detail in the linked section 13.
8.2.2	Utility works on the highway should not be excluded for the purposes of reviewing areas of potential contamination.
8.2.3	"Due to access constraints not all sites considered to have the greatest potential for contamination were visited". The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In

	the Councils opinion the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.
8.3.7	"To the north of Waddesdon, the River Alluvium and the Head deposits have been designated by the Environment Agency as Secondary A aquifers". The Councils are extremely concerned on any impacts that may be detrimental to this aquifer and feel that insufficient work has been presented to provide confidence.
8.3.16	HS2 identify a "substantiated pollution incident from fly tipping west of the Buckinghamshire Railway Centre (see Map LQ-01-026, D6 in Volume 5, Land Quality Map Book).However, no further details are provided or method statements presented.
8.3.20	HS2 identify sensitive receptors such as the River Ray and associated tributaries and Sheephouse Wood SSSI, however, they do not identify whether any protection measures are required to ensure this sites are not disturbed or contaminated.
8.4.4	Locations for such activities as soil washing and bio remediation have not been presented.
General Comment	A total of 11 areas of potentially contaminated land have been identified in this area 3 of which were taken onto further detailed risk assessment. The majority of these areas were infilled domestic water wells and ponds. The risk assessments have identified that the overall effect in relation to land contamination once the proposed scheme has been completed is negligible and I agree with this conclusion. However if any unexpected contamination is encountered during the construction of the proposed scheme the Environmental Health and Licensing Department must be informed and a remedial strategy developed and implemented.
	Finally it has been identified that it may be necessary to install ground (landfill) gas and leachate control systems at areas of historical infilling to ensure that ground (landfill) gas and leachate migrations pathways are controlled and do not adversely affect the proposed scheme or the wider environment as a consequence of the proposed scheme. If such a system is installed during the construction of the proposed scheme all details of the scheme must be submitted to the Environmental Health and Licensing Department for approval.
Volume 2 CFA 13 Calvert, Steeple Claydon, Twyford and Chetwode	
Section Number	*Comment*
8.1.3	HS2 identify the main environmental features of this area as Padbury Brook and tributaries; the underlying Secondary A aquifers (Alluvium, River Terrace sand and gravels, Kellaways and Cornbrash Formations); Grebe Lake and the lake at Calvert Jubilee nature reserve; Local

	Wildlife Sites (LWS) including West Wood, Great Moor Sailing Club, Calvert Jubilee, Barton Hartshorn Railway Wood, and Decoypond Wood; Tingewick Meadows SSSI and Sheephouse Wood SSSI; and the existing Aylesbury Link railway line at the southern end of the route. These are extremely important features and the best available mitigation should be used to safeguard them.
8.1.6	The Councils agree that land contamination is often closely linked to water resources; however this is not adequately covered with minimal detail in the linked section 13.
8.2.2	Utility works on the highway should not be excluded for the purposes of reviewing areas of potential contamination.
8.2.3	"Due to access constraints not all sites considered to have the greatest potential for contamination were visited". The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In the Councils opinion, the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.
8.3.3	HS2 have used geological mapping to identify in filled ground within 250m of the route. The accuracy of such mapping should consider unlicensed and unauthorised tipping that may have historically occurred in these areas. Planning enforcement teams may hold additional details of enforcement against such historical activities.
8.3.9	"The Kellaways Formation and Cornbrash Formations have both been designated in this area as Secondary A aquifers by the Environment Agency" The Councils are extremely concerned on any impacts that may be detrimental to this aquifer and feel that insufficient work has been presented to provide confidence.
8.3.29	HS2 identify sensitive receptors such as Padbury Brook and Tingewick Meadows SSSI and Sheephouse Wood SSSI, however, they do not identify whether any protection measures are required to ensure this sites are not disturbed or contaminated.
8.4.4	Locations for such activities as soil washing and bio remediation have not been presented.
8.4.15	HS2 state that "The railway cutting immediately adjacent to the operational Calvert Landfill will require excavation into *what is expected to be* natural ground adjacent to the landfill after passing through any track bed material". The Councils (as mentioned in 8.3.3) have several experiences where areas of landfilling are incorrectly mapped and historical activities that may have been unauthorised have occurred. HS2 must undertake a site survey to confirm the former site boundaries and extent.
General Comment	Future Baseline, states that there is currently planning

	permission for a major housing development over the former Calvert Brickworks site. It is assumed, should the development go ahead, that a site investigation and potential remediation of the site will be undertaken and therefore there will be a potential benefit effect to baseline conditions. I would question this statement because as far as I am aware the Calvert Brickworks was redeveloped in 2003 with the current Calvert Green housing estate. At this time the whole site was investigated for the presence of contaminated land and remedial works were completed and I do not believe any additional development is due to take place.
	A total of 12 areas of potentially contaminated land have been identified in this area 9 of which were taken onto further detailed risk assessment. The majority of these areas were historic landfills and historical or current railway lines. The risk assessments have identified that once completed the proposed scheme will have either a reduction or no change in the level of risk which already exists at each site and I agree with this conclusion. However part of the construction work includes introducing a railway cutting immediately adjacent to the operational Calvert Landfill site which will require excavation into what is expected to be natural ground. There is however the potential to encounter landfilled materials and caution should be taken when undertaking these works. In addition if such material is encountered there is also the potential to come across ground (landfill) gas and leachate. If such material or ground gas is encountered the Environmental Health and Licensing Department must be informed immediately.
	It has also been identified that it may be necessary to install ground (landfill) gas and leachate control systems at areas of historical infilling to ensure that ground (landfill) gas and leachate migrations pathways are controlled and do not adversely affect the proposed scheme or the wider environment as a consequence of the proposed scheme. If such a system is installed during the construction of the proposed scheme all details of the scheme must be submitted to the Environmental Health and Licensing Department for approval.
	The report goes onto state that it is unlikely the remaining historical landfills will cause an effect due to their distance from the proposed scheme. I agree with this comment however the developers must be made aware there are areas of historic landfill in the vicinity and if any likely landfilled material is encountered it must be reported immediately to the site manager or such equivalent. In addition if any unexpected contamination is encountered during the construction of the proposed scheme the Environmental Health and Licensing Department must be informed and a remedial strategy developed and

	implemented.
CFA 14 Newton Purcell to Brackley	
Section Number	*Comment*
8.1.3	HS2 identify the main environmental features of this area as the River Great Ouse, Helmdon SSSI and the underlying White, Taynton and Blisworth Limestone Principal aquifers. These are extremely important features and the best available mitigation should be used to safeguard them.
8.1.5	The Councils agree that land contamination is often closely linked to water resources; however this is not adequately covered with minimal detail in the linked section 13.
8.2.3	"Due to access constraints not all sites considered to have the greatest potential for contamination were visited". The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In the Councils opinion, the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.
8.3.9	"The White Limestone, Taynton and Blisworth Limestone Formations have been designated as a Principal aquifer by the Environment Agency." The Councils are extremely concerned on any impacts that may be detrimental to this aquifer and feel that insufficient work has been presented to provide confidence.
8.3.29	HS2 identify sensitive receptors such as Principal aquifer of the White Limestone Formation, Helmdon SSSI and river The Great Ouse, however, they do not identify whether any protection measures are required to ensure this sites are not disturbed or contaminated.
8.4.4	Locations for such activities as soil washing and bio remediation have not been presented.
8.4.16	"There is a potential for soil disturbance and the mobilisation of contaminants where construction activities such as piling and the construction of cuttings and culverts directly encounter contaminated materials. Sites where this may occur include Finmere Railway Cutting Landfill, the former Great Central Main Line along the route and the former potentially in filled sand and gravel extraction sites". Again, no real detail is provided in the Final ES as to how impacts and risks will be mitigated. The Councils expect further dialogue on these aspects.
8.4.17	"During the construction of the cutting across Helmdon Disused Railway SSSI, there is an increased likelihood of mobilising contaminants from the former railway (where the extent and nature of infill and build-up of the tracked is not

	fully understood at present). This has the potential to affect surface water receptors in this area by virtue of contaminant leaching in rainwater and subsequent run-off and might also cause windblown dusts to affect the remainder of the SSSI". Again, no real detail is provided in the Final ES as to how impacts and risks will be mitigated. The relevant Councils expect further dialogue on these aspects.
General Comments	A total of 23 areas of potentially contaminated land have been identified in this CFA, 13 of which were taken onto further detailed risk assessment. The majority of these areas were landfills (historical and current) and historically potentially in filled gravel or clay pits. Although only a small part is within Buckinghamshire, if any unexpected contamination is encountered during the construction of the proposed scheme the relevant District Council must be informed and a remedial strategy developed and implemented.

Volume 5: Land Quality Data appendix

Volume 5: Land Quality Data appendix (LQ-001-007)

Technical Appendices Colne Valley	
Section Number	*Comment*
3.1 Baseline risk assessment	Vertical and lateral migration of contaminated groundwater/leachate to Principal Chalk aquifer at surface and Controlled Waters is identified by HS2 as likely and severe consequence. This is for the disused chalk pit and historical Pynesfield Farm Landfill (Area ref 7-18), Maple Cross Landfill (Area ref 7-20), Pynesfield Farm Landfill (Area ref 7-32) and disused chalk pits and historical landfill (Area ref 7-19). Denham Media Park and Broadwater Park Industrial Estate (Area ref 7-9) is identified by HS2 as a high likelihood, severe consequence and risk very high. However, no further details are provided on how these issues will be dealt with by HS2. These are significant risks that have been identified and it is not acceptable for them to remain unconsidered.
4.1.1	"There were no site visits carried out due to access constraints and no additional site data have been identified". The Councils would therefore expect the Final

	ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In the Councils opinion the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.

Volume 5: Land Quality Data appendix (LQ-001-008)

Technical Appendices Chalfonts & Amersham	
Section Number	*Comment*
3.1 Baseline risk assessment	Vertical and lateral migration of contaminated groundwater/leachate is identified by HS2 as likely and severe consequence. This is for the inert landfill at Warren Farm (Area ref 8-1) and impact on controlled waters and principal chalk aquifer at Round Dell Wood Landfill (Area ref 8-6). However, no further details are provided on how these issues will be dealt with by HS2. These are significant risks that have been identified and it is not acceptable for them to remain unconsidered.
3.4	"Vertical and lateral migration of contaminated groundwater/leachate into the Secondary A Gerard's Cross gravel aquifer at surface and Principal Chalk aquifer at Depth" gives a baseline risk of 'high', construction risk of 'high' and post construction risk of 'high'. The construction significance and post construction significance is then assessed as negligible. The Councils question the method used to derive such an assessment of risk when clearly HS2 consider both the baseline and construction risk as high.
4.1.1	"There were no site visits carried out due to access constraints and no additional site data have been identified". The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In the Councils opinion the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.

Volume 5: Land Quality Data appendix (LQ-001-009)

Technical Appendices Central Chilterns	
Section Number	*Comment*
4.1.1	"There were no site visits carried out due to access constraints and no additional site data have been

	identified". The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In the Councils opinion the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.

Volume 5: Land Quality Data appendix (LQ-001-010)

Technical Appendices - Dunsmore, Wendover and Halton	
Section Number	*Comment*
3.1 Baseline risk assessment	Exposure to asphyxiative or explosive gases and Lateral migration and concentration of asphyxiative or explosive gases/vapours is identified by HS2 as likely and severe consequence. This is for the petrol filling station and vehicle repair garage (Area ref 10-9). However, no further details are provided on how these issues will be dealt with by HS2. These are significant risks that have been identified and it is not acceptable for them to remain unconsidered.
3.4	Concentration of asphyxiative or explosive gases in onsite Buildings gives a baseline risk of 'high', construction risk of 'high' and post construction risk of 'high'. The construction significance and post construction significance is then assessed as negligible. The Councils question the method used to derive such an assessment of risk when clearly HS2 consider both the baseline and construction risk as high.
4.1.1	"There were no site visits carried out due to access constraints and no additional site data have been identified". The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In the Councils opinion the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.

Volume 5: Land Quality Data appendix (LQ-001-011)

Technical Appendices - Stoke Mandeville and Aylesbury	
Section Number	*Comment*
3.1 Baseline risk assessment	Exposure to asphyxiative or explosive gases and Vertical and lateral migration of contaminated groundwater/leachate is identified by HS2 as likely and severe consequence. This is for the former Hartwell clay, brick and tile works and landfill (Area ref 11-3)

	However, no further details are provided on how these issues will be dealt with by HS2. These are significant risks that have been identified and it is not acceptable for them to remain unconsidered.
4.1.1	Whilst the Councils are pleased to see that an inspection of a site has actually taken place (absent from CFAs 7, 8, 9, 10, 12) the detail provided is not sufficient or robust. This does not allow meaningful interpretation of possible on site contamination and a more thorough survey method must be used for the remaining unvisited sites across the Bucks CFA areas.

Volume 5: Land Quality Data appendix (LQ-001-012)

Technical Appendices - Waddesdon and Quainton	
Section Number	*Comment*
4.1.1	"There were no site visits carried out due to access constraints and no additional site data have been identified". The Councils would therefore expect the Final ES to state that these will be visited and timeframes set out. In addition, "the lack of site visits to verify desktop information and the lack of complete site walkovers is considered unlikely to have substantially affected the land quality assessment". In the Councils opinion the site walkover is one of the most useful and relevant parts of a phased review of land quality. It will often show elements totally absent from historical plans or historical datasets.

Volume 5: Land Quality Data appendix (LQ-001-013)

Technical Appendices - Calvert, Steeple Claydon, Twyford and Chetwode	
Section Number	*Comment*
4.1.1	Whilst the Councils are pleased to see that an inspection of a site has actually taken place (absent from CFAs 7, 8, 9, 10, 12) the detail provided is not sufficient or robust. This does not allow meaningful interpretation of possible on site contamination and a more thorough survey method must be used for the remaining unvisited sites across the Bucks CFA areas.

Volume 5: Land Quality Data appendix (LQ-001-014)

Technical Appendices - Newton Purcell to Brackley	
Section Number	*Comment*
3.1 Baseline risk assessment	Concentration of asphyxiative or explosive gases is identified by HS2 as likely and severe consequence. This is

	for the Finmere Quarry landfill (Area ref 14-1) and petrol filling station (Area ref 14-10) However, no further details are provided on how these issues will be dealt with by HS2. These are significant risks that have been identified and it is not acceptable for them to remain unconsidered.
3.4	"Lateral migration and concentration of asphyxiative or explosive gases in on-site buildings" and "Exposure to asphyxiative or explosive gases by petrol filling station employees" gives a baseline risk of 'high', construction risk of 'high' and post construction risk of 'high'. The construction significance and post construction significance is then assessed as negligible. The Councils question the method used to derive such an assessment of risk when clearly HS2 consider both the baseline and construction risk as high.
4.1.1	Whilst the Councils are pleased to see that an inspection of a site has actually taken place (absent from CFAs 7, 8, 9, 10, 12) the detail provided is not sufficient or robust. This does not allow meaningful interpretation of possible on site contamination and a more thorough survey method must be used for the remaining unvisited sites across the Bucks CFA areas.

14. LANDSCAPE AND VISUAL ASSESSMENT

Volume 5 Scope and Methodology Report	
Section Number	*Comment*
Landscape Design	A fundamental issue in the LVIA methodology is there is a complete disconnect with design and mitigation. LVIA should be an iterative process where the findings of the landscape assessment should influence the design - so we have a considered approach to mitigating landscape and the receptors. However design appears to be carried separately from the assessment which goes against recommended guidance. Information on design detail is absent (to be considered at a later stage) - much of what is included on design is of a generic nature - listed in chapter 12 of the CoCP - Landscape and Visual. There is little apparent commitment to achieving high standards of aesthetic design. HS2 is of national significance and its design should reflect this. The design of bridges, viaducts and other infrastructure should be subject to international design competition. A design review body should be set up to review all design aspects of HS2 in the same way that a Design Review body was set up for the Olympics and has recently been set up by Network Rail. To ensure consistency the design and application of common elements and options should be defined and controlled through a Design Code which is subject to independent design review. The requirement for local planning authorities to approve 'certain matters' is described as a process only and may not allow for any genuine dialogue over design quality and locally distinctive design. Wherever possible mitigatory planting should be established well in advance of construction to minimise the visual impact of construction work.
Landscape and Visual Impact Assessment methodology	The LVIA methodology adopted in the ES is not clear. The latest guidance on LVIA was published in 2013, known as GLVIA3 which supersedes GLVIA 2nd edition. Guidance from the landscape institute states that an assessment commenced with GLVIA2 should be completed using that edition. However HS2's documentation is inconsistent, referring in the SMR to the use of GLVIA 2nd edition with some reference to GLVIA 3rd edition (SMR 12.5.2).
Landscape Assessment (SMR Vols 1& 2)	• The LVIA has created a new landscape character assessment, creating c. 60 landscape character areas covering the HS2 route through Buckinghamshire. However it is questionable whether a new assessment is needed. As 5.15 of the GLVIA3 states*: 'Completely new supplementary Landscape Character Assessment work covering the whole*

	study area will only be required when there are no existing assessments or when they are available but have serious limitations that restrict their value or do not provide information at an appropriate level'. Buckinghamshire already has up to date, district level landscape character assessments for the Vale of Aylesbury 2008, Chiltern, South Bucks and Wycombe 2011. These are acknowledged as being some of the most detailed (in both scale and scope) and are recently completed. So there is no justification for HS2 Ltd to commission another survey. • It is unclear why existing LCAs have been broken down into smaller units and differences between the different areas are insufficiently clear. • HS2's landscape character assessment is superficial, simplistic and far less substantive than those from the existing district LCAs, despite having an increased number of Character Areas. • The HS2 LCA appears to have been carried out on a visual basis only and does not provide a holistic view, which should account for the different facets of landscape. The GLVIA emphasises the interrelationships with other topics such as cultural heritage, soils, flora and fauna, perception, noise, smells: *'LVIA should adopt a broad and inclusive ELC definition of landscape embracing, among other things, seascapes and townscapes as well as all forms of rural landscape. 3.17 'It is important that the information assembled is considered alongside information from other parallel studies such as cultural heritage and ecological studies, to ensure an integrated approach'.* • The HS2 Landscape Character Assessment omits key baseline data – there is mention in the SMR 12.2.8 that other landscape work, including the Historic Landscape Characterisation (although there is no evidence that the HLC for Buckinghamshire 2006 or the Chiltern Historic Landscape Characterisation Project 2009 was used in the assessment. • Landscape assessment is based on landscape condition, tranquillity, landscape value and sensitivity. Landscape Value is based on designations only, which is insufficient to define value. No recognised method has been used to assess tranquillity and suggested method is considered inadequate. • Assessment does not define landscape character, landscape characteristics, and landscape elements to help inform successful integration of the scheme into the landscape. • LVIA does not inform design and mitigation as it is meant to

	• The landscape and visual impact of construction routes, e.g. if works to road widths, bridges etc are required have not been assessed. • Scope of assessment: tends to be based on an arbitrary area There is no adequate assessment of cumulative indirect impacts on landscape further afield from the construction of the line.
Visual Assessment	• There are concerns about the definition of the Zone of Theoretic Visibility. The selection of the ZTV is set at 8 metres for construction and 5 metres for operation (SMR Vol. 2). This means that the height of railway gantries are not included in the assessment, whereas these should form part of the visual envelope in the same way that pylons or telecommunication masts would be assessed for their visual impact. • ZTVs do not take account of the revised placement areas – representing the works. • The final selection of receptors/viewpoints and associated photomontages were not agreed with the Buckinghamshire Councils despite HS2 Ltd's insistence. Since the draft ES, only a handful of the suggested amendments to receptors have been incorporated into the survey. • Nearly all the receptors assessed are located along publicly accessible places: rights of way, highways and parks and gardens; however there is an absence of receptor points from residences, (particularly historic, listed buildings with setting issues), historic monuments and ecological sites. The SMR states the difficulty in gaining access to these areas, so in the absence have carried out an estimate of impacts. Consequently the visual assessment cannot adequately predict the impact of the scheme on amenity and setting of these important assets in the landscape. • The choices of verifiable photomontages were not agreed with local authorities. • Although the methodology used in the production of photomontages is in line with best practice the final images produced are not satisfactory and border on the disingenuous. Arguably they are showing the development in a favourable light. Examples: • Images have used subdued palette of colours for reconstructions exaggerating the blending in of railway infrastructure (e.g. the appearance of the Colne Valley viaduct). • Construction images misleading - movement of earth, e.g.

	Dunsmore (LV-010190) shows brown soil blended in with ploughed landscape even though the underlying geology is chalk so the spoil should be gleaming white. • Not all verifiable Photomontages are published at the right scale and size. Photomontages produced with multiple photographs, to create a wraparound panorama, should be displayed at scale larger than the images published at A3. • As mentioned, nearly all the photomontages produced are viewed at right angles to the track. There are very few photomontages looking down the line, which has a bigger visual impact to receptors in landscape terms. • Photomontages that depict planting are flawed. The ES does not specify the species of trees, or the size/maturity of nursery stock that will be used as mitigation/screening. It is assumed that native tree species, representative of South Bucks and Chilterns landscape, will be planted; these will be broadleaf species such as oak, beech, which have very slow growth rates. The pictures showing landscapes 15 years into the operation of the line exaggerate the growth of trees.
	There is a disconnect with the iterative process of the LVIA. The main mitigation measure is principally bunding and planting. Buckinghamshire Councils are concerned that there is little specification on planting. It is questionable the appropriateness of some of the mitigation works, which can have unintended consequences and landscape impacts: • Bunding: designed to screen the railway and minimise noise can take up huge areas of the landscape – many being up to 250 metres in width to as much as 600 metres in length e.g. at Hunts Green. • Land take of bunding will have an impact on the functioning of farms, it is also questionable how feasible it would be to farm if the land reverted to agriculture. • Bunding will also cover archaeological monuments and landscape features. • Can form an incongruous feature that does not fit in with landscape character in some instances it would be preferable to see the railway. • Concerns about legacy/management – onus on landowner rather than the future rail operator. • Tree planting is the principal means of screening. Not always appropriate can hide the landscape. Landscape is

	the sum of different parts. • Proposal plans showing landscape mitigation should also show how the proposals relate to existing hedges and woodland to ensure that the linear emphasis of the line does not become a dominant landscape feature. • Where possible migratory planting should be established in advance of construction to minimise the visual impact of construction works. Growth rates of planting are not going to be the same for all locations. They depend on species, micro-climate, soil type, drainage, quality of stock, planting techniques, maintenance and management. • Where roads are widened, re-routed and new roads constructed in rural areas it will be important to maintain or replace rural characteristic verges, native species hedges and hedgerow trees. This is not evident. • Green tunnels and green bridges; where appropriate for landscape and wildlife benefits, green tunnels and bridges should be designed to be capable of supporting the growth of native species trees and shrubs to maturity. This is not stated. • Balancing ponds have an engineered appearance on the plans. They must be shaped to suit landscape context and as appropriate marry into existing contours. • Earth shaping is shown in a diagrammatic way. Actual earth shaping must respond to landscape context and as appropriate marry into existing contours. • It is unclear how construction compounds visual impact will be mitigated.
Location specific comments	
CFA 7 Vol 2 P14 2.2.7 Bullet 5	The viaduct will have a solid 1.4m high protection barrier adjacent to the tracks on each side. There will also be a 3m high noise fence barrier. There is still little information on the design of the viaduct despite further details being requested so the visual impact cannot be judged.
P17 2.2.7	It is unclear how the balancing ponds will fit into the environment and the landscape. It would be an environmental benefit to have overhead cables moved underground. The visual impact of 600m by 3m noise fence barriers cannot be judged without knowing more about the design.
P18 2.2.9 Bullet 1	More detail is needed on landscape earthworks to provide noise and visual screening and how effective these will be.

Bullet 3	A strip of planting along the eastern side of A412 Denham Way. There is no detail about this type of planning, what species or whether this will be effective in winter.
P18 2.2.9 Bullet 7	Refers to an overbridge and that the approaches will be planted to integrate it into the landscape. Buckinghamshire councils feel the body of the bridge should also be planted to provide ecological and visual benefits. The type of planting is not stated.
P19 2.2.9 Bullet 7	Refers to West Hyde auto-transformer station. More detail is needed with regard to design, materials and type of species to be used for screening in order to understand the impacts.
P19 2.2.11 Bullet 1	Refers to the portal building. There are no dimensions in the ES or details of type of materials to be used, design and screening to inform the impact.
Bullet 8	Refers to a new Scottish and Southern Energy substation. This was not mentioned in the draft ES and there are no details of the visual effects.
CFA 10 Vol 2 Plans CT-06-034b to CT-06-038	A continuation of a bored tunnel/green tunnel to the edge of the AONB west of Wendover would be preferable to maintain the special character of the AONB, although the impact of ventilation shafts and other surface structures, tunnelling compounds, spoil placement and any necessary lengths of open cutting would need to be assessed as would the consequences further up the line towards Stoke Mandeville and Aylesbury. This option is not assessed. Sustainable Placement area to north-west of Leather Lane; it is not clear why this area was selected for sustainable placement of spoil. It is not clear how long it will remain in use for placement/removal of spoil or how it will be managed to avoid silting/pollution from run-off and generation of dust. There is no indication within the ES what the visual impact will be and how it will be mitigated. The complexity of the interaction between landform and proposals in the area between Leather Lane and the green tunnel portal west of Wendover should be 3-D modelled to help refine and explain the proposals and their mitigation. There needs to be high quality design of both Wendover Dean and Small Dean viaducts through design competition and review by independent design panel. To balance some of the negative visual impacts in this area it should be possible to underground the power lines. It is unclear what measures will be taken to minimise the visual impact of construction compounds.

	The tunnel portal illustrated in the photomontage on Figure No LV-01-051 at Bacombe Lane is a very monolithic and obtrusive feature. Although it is intended to screen it with planting its design should be subject to design development and independent design review. The earthshaping of the cover to the Wendover Green tunnel should be married into the existing contours and not appear the way it is shown as a linear bund.
Plan CT-06-039 and Vol 2 p15, para 2.2.14 3rd bullet point	This bullet point highlights the landscape treatment of the scheme with tree planting to the east and hedgerow planting to the west. The reasoning for differing landscape treatments on either side is unclear but it should have been informed by the surrounding landscape character and the LVIA. Map CT-06-039 (mapbook Vol2, CFA10) shows hardly any landscape treatment to accompany the landscape earthworks along the western side, which could help to integrate the scheme into the landscape. Proposed landscape treatment is considered insufficient to integrate both the tunnel portal and the track into the surrounding landscape. Notwithstanding that no information has been given re the western tunnel portal. If photomontage LV-01-235- view from Bacombe Lane of the eastern tunnel portal is anything to go by the western tunnel portal might have a similarly utilitarian design approach which will not even be mitigated by any planting.
P15, para 2.2.14 4th bullet point	Noise barriers are proposed at top and bottom of cutting in sections. No detail on appearance given. These, if of unsympathetic design might be visible in views due to the very limited amount of planting. The councils are concerned about the potential impact of these on landscape character and views.
P16, para 2.2.14 2nd bullet point	Appearance of portal buildings and auto-transformer station unclear, both of which could have a significant visual impact. WDC are concerned about the potential impact of this feature on character and views.
P16, para 2.2.14 3rd bullet point	Little information has been given on the appearance and lighting of the maintenance loop. Buckinghamshire councils are concerned about the potential impacts of this on views.
P136, para 9.2.1 P137, para 9.3.3 & 9.3.4	Buckinghamshire Councils welcome the provision of the ZTV but takes issues with some aspects of the methodology as outlined in the comments on the SMR vol 1& 2. Key issues include: • Landscape assessment is based on landscape condition, tranquillity, landscape value and sensitivity.

	Landscape Value is based on designations only, which is insufficient to define value. No recognised method has been used to assess tranquillity and suggested method is considered inadequate. • Landscape assessment uses its own landscape character assessment rather than the existing more detailed local LCAs. This is not in accordance with best practice. LCA descriptions are short and superficial and far less substantive than those from the existing LCAs, despite having an increased number of LCAs. It is unclear why existing LCAs have been broken down into smaller units and differences between the different areas are insufficiently clear; • The assessment has been carried out on a visual basis only – other assessment considerations such as perception, noise, smells etc have not considered. This is considered insufficient and not in accordance with best practice (check) • Assessment does not define landscape character, landscape characteristics, defining and detracting landscape elements to help inform how the scheme could successfully be integrated into the landscape • LVIA does not inform design and mitigation as it is meant to • The landscape and visual impact of construction routes, e.g. potential works to road widths, bridges etc have not been assessed
P141, para 9.4.1	Buckinghamshire Councils welcome that the ES recognises that significant effects will arise during construction. Given the timescale of the development impacts might last for several years causing long-term impacts on people and views. The councils are concerned about the long duration of some of the 'temporary impacts'.
P142, para 9.4.2 & p166, para 9.5.1	Neither section includes the maintenance loop suggesting that it has not been assessed in LVIA terms despite comprising a wider, lit section on an un-vegetated embankment. Buckinghamshire Councils are concerned about the impact of the maintenance loop on views including night-time views.
P168, para 9.5.7	Mitigatory planting growth rate of 450mm per year are referred to. This growth rate is greater than experience would suggest is realistic for most native species in this area. Growth rates of planting are not going to be the same for all locations.
P162, para 9.4.127	No information has been given why the impact of lighting is considered not to be significant. The assessment process is not clear. Potential impact on AONB.
P165, para 9.4.150	The assessment does not appear to inform mitigation and suggests that mitigation planting is to be considered at detailed design stage. This is an inappropriate approach.

	Although it is recognised that many details of the scheme are not yet available, sufficient information should have been made available for the LVIA to assess the impact and to inform the need for mitigation, such as screen planting. Mitigation should be in keeping with the local landscape character. Planting also requires considerable time to establish and to provide a meaningful screen. Planting should be carried out early in the process to provide mitigation during construction.
P166, para 9.5.2	Proposed avoidance and mitigation measures are welcomed but it is unclear how these have informed the scheme. The appropriateness of each measure is key to ensure successful integration into the landscape – embankments must be sufficiently shallow for them to be in character with this flat landscape. Planting must comprise appropriate type of planting, species etc
P170, para 9.5.20, - 9.5.23, P187, para 9.5.183 – 9.5.184, Vol 2 CFA10 map book, map CT-10-021a	Map CT-10-021a shows hardly any planting along the landscape earthworks on western side of the track but the LVIA relies on a reduction of the impact through planting. Appropriate landscape treatment, which is in character with the surrounding area should be included. Earth banks and embankments must be of sufficiently shallow gradient for this landscape modelling approach to be successful which might require considerable landtake. Embankments that are too steep will themselves become an incongruous feature in the landscape. Planting (type, species) must also be in keeping with the surrounding landscape character.
P171, para 9.5.30, mapbook Vol 5, LVIA, CFA10, appendix 2 LV-001-010	Buckinghamshire Councils question that night time assessment have only been undertaken for significantly affected viewpoints. Some viewpoints might be particularly sensitive to lighting even if they are not significantly affected during the day. The absence of night time assessments from viewpoints like Coombe Hill are considered a short-coming, in particular in light of the popularity of the viewpoint, the extent of the view and the visibility of the maintenance loop from this viewpoint.
Map LV-01-051	The tunnel portal illustrated in the photomontage at Bacombe Lane is a very monolithic and obtrusive feature. Although it is intended to screen it with planting its design should be subject to design development and independent design review.
P189, para 9.5.195, Map LV-01-058	Buckinghamshire Councils believe that the photomontage for this viewpoint is incorrect. It is believed that elements such as the overhead equipment or noise barriers will be visible between the two embankments of the road bridge. The impact on this viewpoint is likely to be greater than shown. Inaccuracy of photomontage raises concerns with regard to the accuracy

	and quality of the photomontage work in general.
P189, para 9.5.199, CT-06-040a	The visual assessment relies on planting to integrate the scheme, however, whilst planting is proposed in the surrounding fields map CT-06-040a does not indicate any planting on the north eastern embankment to the overbridge to assist with its integration in the landscape. The visual impact might be greater than stated.
P189, para 9.5.200 & para 9.5.205, CT-06-040	The ES makes reference to additional lighting for the operation of the scheme but it is unclear whether this refers to lighting of the maintenance loop, which is located a short distance away or the line itself. If the line was to be lit, night-time impacts would increase not only on this viewpoint but on viewpoints along the line. Lack of information on lighting. The earth shaping of the cover to the Wendover Green tunnel should be married into the existing contours and not appear the way it is shown as a linear bund.
CFA 11 General landscape comments	
	The cumulative impact of SM bypass and HS2 line on landscape character is insufficiently assessed. There is Limited assessment of the visual impact of the SM on road user and users of the PRoW. Impacts on landscape character and views likely to be more severe requiring more and better mitigation.
Plans CT-06-043 & 044	The area between the line and the edge of Aylesbury is shown as 'grassland habitat creation'. This area must not be treated as left over space. Positive proposals and funding in perpetuity for its landscape, amenity, recreational and ecological enhancement must be made in consultation with local authorities.
Plan CT-06-043 & 044	The National Trust has put forward alternative proposals for the area forming the context of historic house and gardens/ landscape of Hartwell House and the edge of Aylesbury. The reason for HS2 Ltd not following this alternative appears to be related to land take. It assumes a cut and cover technique is used, however the same techniques as proposed in tight urban locations i.e. bored piling or diaphragm walls would minimise the area required.
P180, para 9.5.57, Dwg CT-06-041	Different landscape treatments are proposed on either side of the line with no earth bunding being proposed along the western side. Proposed landscape treatment of hedgerow planting is considered insufficient to mitigate the cumulative visual impact of both the line and the SM bypass in views from the West. More mitigation required (which is in character with the surrounding landscape character) to mitigate impacts on views and to achieve a successful integration into the surrounding landscape.

CFA 12 Plan CT-05-048	The impact on the historic and sensitive parkland setting of Waddesdon Manor is likely to be harmed during the construction period by the roadhead adjacent to Wayside Farm. Alternative location or mitigation should be considered.
Plan CT-06-050	The proposals for this area should be modelled in 3-D to aid understanding of their impact and the best way to mitigate their impact through design.
CFA 13	Given the complexity of combined elements of HS2, East-West Rail and the Energy from waste plant a 3-D model of this area should be 3-D modelled to help refine and explain the proposals and their mitigation. The cumulative impact of the proposals and the approved Energy from Waste plant should have been assessed.
Plan CT-06-053	Sheephouse Wood Mitigation Structure; there are no details of the design of this structure other than that it will be 800m long and 10m high. This could be a highly visually obtrusive feature. It must be designed to minimise visual impact. The design should be developed in consultation with local authorities. The proposals appear to encroach on an area of mitigatory planting for the Energy from Waste Plant. This planting must be replaced as part of the HS2 works.
Plan CT-06-055	Sustainable Placement area; it is unclear why this area was selected for sustainable placement of spoil or how long it will remain in use for placement/removal of spoil. It should be made apparent how it will be managed and how potential pollution from dust and silt run-off will be controlled. It is not clear what its visual impact will be and how it can be mitigated. There is no mitigation shown for the temporary railhead/construction area associated with the Infrastructure Maintenance Depot (IMD) south of Steeple Claydon. As this could be operational for up to ten years it is important that some advanced planting, even if it has a temporary life, should be undertaken to safeguard the amenity of residents of Steeple Claydon. Buildings of up to 13m in height on the Infrastructure Maintenance Depot could have a significant effect depending on design and size. The viaduct at Twyford does not appear on the photomontages but, coupled with noise barriers, could be a visually obtrusive feature the design of which must be considered in relation to the sensitive local context of the edge of Twyford and a group of Listed Buildings.
Plan CT-06-059A	A green tunnel at Chetwode would be more appropriate here

	to protect the special tranquillity of this village and its Listed Buildings.
CFA 14	Westbury viaduct will transform the tranquil undeveloped character of this part of the wide valley of the River Great Ouse and needs the same level of design input as the Wendover Dean viaduct. The Turweston green bridge, or a green tunnel, should be extended in a north-westerly direction to allow for reinstatement of the playing fields and reduce the harm to the landscape setting of the village. Turweston viaduct – see comments above re design of Wendover Dean, Small Dean, Twyford & Westbury viaducts.

15. SOCIO-ECONOMICS

[Insert when received from BBF]

16. SOUND, NOISE AND VIBRATION

General Comments	
	The Environmental Statement is unwieldy and cumbersome. Despite the Promoters' efforts to simplify access to the topics the network of cross references between volumes is a paper chase. Worse than this when the paper chase is ended there is often no substance to the information provided. For example the noise model suggests barrier heights as mitigation but there is no detail to the barrier construction which may be a completely different height depending on the EMR requirements yet to be set. (See SV-01-017 OSVO9-CO2).
	The scope and methodology report (addendum) states: During the day (0700-2300), an operational noise adverse or beneficial effect on a receptor will be identified where the impact of the Proposed Scheme is: 1) An absolute free-field sound level at or above 50 dB LpAeq,16hr; and 2) Where the magnitude of the impact and its effect on a receptor is indicated by the change in the equivalent continuous sound level as defined in Table 33. During the night (2300-0700), an operational noise adverse or beneficial effect on a receptor will be identified where the impact of the Proposed Scheme is: 1) An absolute free-field sound level at or above 40 dB LpAeq,8hr; and 2) Where the magnitude of the impact and its effect on a receptor is indicated by the change in the equivalent continuous sound level as defined in Table 33. Buckinghamshire Councils are concerned that this method may underestimate impacts in areas where the baseline sound levels are low.
	The Promoters have not carried out a comprehensive sound, noise and vibration baseline assessment in the AONB (except for those locations where the community resides or works). It could be said that this is a major omission from the environmental statement. The Promoter has argued that this assessment is not within the Sound, Noise and Vibration theme and referred officers to the landscape assessment (see LV-001-009). Here it can be seen that most LCAs are reported as having a high sensitivity to change.
	The identification of significant effects in relation to individual

	and small groups of properties only identifies a significant effect where significant observed adverse effect levels (SOAELs) set by the Promoter are exceeded. The Buckinghamshire Councils are concerned that when assessing significance for individual dwellings the Promoters do not take change in levels into account.
	Whilst it is accepted that the Promoters' use of a sixteen hour day time LAeq is standard practice the Buckinghamshire Councils are concerned that this may mask the significance of impacts generated by the project in the evening when residents have a reasonable expectation of peace and quiet. This principle also applies to the Promoters use of an eight hour night time LAeq. Indeed, HS2 trainsets will only operate for three hours of this period. The Councils concerned that smoothing the data over an eight hour night time period may mask the significance of impacts particularly in the period between 11pm and midnight when many residents are trying to get to sleep and five and seven in the morning when sleep patterns may be adversely affected.
	From the Health Impact Assessment it can be seen that the LOAEL set by the Promoter is based partially on dose response curves related to annoyance. These curves are based on the total noise experienced not just the noise from a particular source. The Buckinghamshire Councils assert that the LOAEL for this project should be based on the total noise not just the noise from HS2 trains. There are significant communities, especially in Aylesbury where the total noise level exceeds the LOAEL but because the HS2 only noise is less than the LOAEL no further assessment is carried out.
	The adoption of a route wide system of LOEAL's and SOAEL's appears to go against the guidance on application of The National Planning Policy Framework which recommends that the existing noise climate around the site of the proposed operations, including background noise levels at nearby noise-sensitive properties should be assessed.
	Buckinghamshire Councils consider that the Promoters should compensate local authorities for the cost of checking for compliance with sound, noise and vibration design standards.
Volume 2: Community Forum Area Report **CFA7 Colne Valley**	
Section Number	*Comment*
PDF 212 P205 11.1.2	Buckinghamshire Councils are concerned that these sections do not give a full picture of operational noise and vibration, only reporting it if there is a likely significant impact defined by a methodology which the Council does not agree with.
PDF 213 P 206 11.2.6	Existing baseline Buckinghamshire Councils are concerned that the existing baseline around Savay Lake could drop below the model

	lower cut off for impact identification and therefore mask significant effects.
PDF 215 P208 11.3.2	Effects arising during construction Buckinghamshire Councils do not accept that tunnelling support activities necessarily need to be undertaken during the night time and evening. Buckinghamshire Councils would like to have seen more detail in the ES.
P215 PDF 265 11.3.5	Effects arising during construction “Best Practicable Means (BPM) as defined by the Control of Pollution Act 1974 (CoPA) and Environmental Protection Act 1990 (EPA) will be applied during construction activities to minimise noise (including vibration) at neighbouring residential properties” Buckinghamshire Councils note that best practicable means is decided by the Court and is not defined in the Control of Pollution Act 1974. Buckinghamshire Councils consider that in some locations residential properties should have better than this, best available technique not best practicable means. Buckinghamshire Councils are concerned that non-residential receptors are not covered here. “as part of BPM, mitigation measures are applied in the following order:” Buckinghamshire Councils consider that control over working hours should be given a high priority when deciding on mitigation measures. Noisy works during the evening or at night should be avoided. “where, despite the implementation of BPM, the noise exposure exceeds the criteria defined in the draft CoCP, noise insulation or ultimately temporary rehousing will be offered in accordance with the draft CoCP’s noise insulation and temporary re-housing policy” Buckinghamshire Councils are concerned that the CoCP is still in draft form; any criteria defined therein may be changed to the detriment of residents. “lead contractors will seek to obtain prior consent from the relevant local authority under Section 61 of CoPA for the proposed construction works. The consent application will set out BPM measures to minimise construction noise, including control of working hours, and provide a further assessment of construction noise and vibration including confirmation of noise insulation/temporary re-housing provision;” Buckinghamshire Councils are concerned that by passing

	accountability to “lead contractors” HS2 may not take responsibility for their obligations under CoPA.
PDF 217 P210 11.4.8	Non-residential receptors: direct effects Buckinghamshire Councils are concerned that the Promoters may have missed significant impacts at OSV07-CO2 because the lightweight construction of some of the dwellings within that community may not have been taken into account.
PDF 219 P212 11.5.4	Avoidance and mitigation measures Buckinghamshire Councils are concerned that the Promoters may not be able to meet this design promise. Buckinghamshire Councils expect that any promise such as this be incorporated into a binding agreement with penalties for non-compliance.
11.5.5	Buckinghamshire Councils are concerned that the Promoters may not be able to meet this design promise. Buckinghamshire Councils expect that any promise such as this be incorporated into a binding agreement with penalties for non-compliance.
11.5.6 and 11.5.8	Buckinghamshire Councils would question the need for extensive earthworks where smaller barriers closer to the source could be as effective and less visually intrusive. (see Promoters point at 11.5.7)
PDF 220 P213 11.5.9	Airborne noise Buckinghamshire Councils are concerned that the Promoters may have missed significant impacts at OSV07-CO2 because of the lightweight construction of some of the dwellings within that community. Buckinghamshire Councils suggest that effectively taller barriers may be required to properly protect communities OSV07-C01, OSV07-C02 and OSV07-C03 and non-residential receptors at OSV07-N01 and OSV07-N02.
11.5.10	Buckinghamshire Councils consider that this approach is flawed and contrary to that adopted for the definition of LOAEL and SOAEL for other sound, noise and vibration topics. The absence of a defined level at LOAEL (although it is implied that this may lie at background minus 5 dB) in conjunction with no reported adverse effects by virtue of no technical assessment having taken place, means that potential significant adverse effects associated with groups of dwellings or shared community areas where the adverse effects lie between LOAEL and SOAEL are not reported in the ES. Buckinghamshire Councils are concerned that the requirements of the EIA Regulations may not have not been met.
1.5.13	Buckinghamshire Councils do not agree with the method adopted by the Promoters to assess the significance of impacts. This point is expanded in the response to Volume 5: Appendix SV-001-000 submitted separately.

1.5.14	Ground-borne noise and vibration Buckinghamshire Councils consider that this approach is not acceptable because a significant increase in vibration from the track system (excited by the behaviour of the trainsets) occurs at about 180 kph (Swedish Deep Stabilization Research Centre, Report 10). In SV-001-00, The Promoters acknowledge that "Rayleigh waves" could occur but dismisses their significance as being a "relatively rare situation". Buckinghamshire Councils consider that the Promoters should have included more information about the likely design of the track and track bed to avoid significant vibration effects.
PDF 222 P215 Table 18	Buckinghamshire Councils are concerned that the Promoters may have missed significant impacts at OSV07-CO2 because of the lightweight construction of some of the dwellings within that community. Buckinghamshire Councils suggest that taller barriers may be required to protect communities OSV07-C01, OSV07-C02 and OSV07-C03 and non-residential receptors at OSV07-N01and OSV07-N02.
Volume 2: Community Forum Area Report CFA8 The Chalfont's and Amersham	
Section Number	*Comment*
P131 PDF 140 11.1.2	Introduction The assessment of likely significant effects from operational noise and vibration on agricultural, community, cultural heritage or ecological receptors and the assessment of tranquillity are presented in Sections 3, 5, 6, 7 and 9 of this report respectively. Buckinghamshire Councils are concerned that these sections do not give a full picture of operational noise and vibration, only reporting it if there is a likely significant effect as defined by a methodology which the Promoters have sponsored and written.
P132 PDF 141 11.2.6	Existing baseline The Promoters state that sound levels in the study area reduce during the night-time period due to the reduction in traffic movements on local roads, giving night-time noise levels typically between 5 to 10dB below daytime levels, with the smaller 5dB difference generally applying in the quiet locations located distant from existing road traffic. Although baseline levels around the Chalfont St Giles vent shaft have been published in the environmental statement there is there is no assessment of operational impacts. The Promoters have assumed that the measures to control of noise from stationary systems (Appendix SV-001-000: Annex E) will be sufficient to reduce any adverse impacts.

	Buckinghamshire Councils require further information on the modifications to the HS1 groundborne sound and vibration model that have been applied to develop the HS2 model. The Council also requires further information on the calibration or validation exercise undertaken for the HS2 groundborne sound and vibration model particularly using HS1 measurement data. The Council is concerned that the assessment of significant groundborne sound and vibration effects does not apply the SOAEL and LOAEL at an appropriate point on the scale and that no provision for uncertainty in the prediction model has been applied in the EIA.
General	Buckinghamshire Councils are also concerned about, and require an assessment of • the mitigation of micro-pressure waves at the tunnel portal • operational groundborne noise and vibration from high speed trains (assessment criteria, bow wave generation in soft soils and chalky soils) • adequacy of model for site specific considerations • long term track maintenance requirements • trackform design for example if and where the Promoter proposes to use floating slab track in tunnels
P134 PDF 143 11.3.2	Effects arising during construction The Promoter states that it has been assumed that significant noise and vibration effects arising from use of the temporary railway will be avoided through appropriate design and maintenance specification. Buckinghamshire Councils consider that this statement needs to be substantiated by examples of the methods to be employed during design and maintenance. Buckinghamshire Councils have noted that the Amersham vent shaft will be used for servicing the tunnel boring machine, however cannot find an explanation of what this involves in practice. Buckinghamshire Councils would like to have seen more detail in the ES.
P134 PDF 143 11.3.3	Effects arising during construction The Promoter states that, at certain times excavation and concrete supply for sprayed concrete lined (SCL) cross passage tunnels will need to be undertaken during the

	evening and night-time for reasons of safety, and engineering practicability." Buckinghamshire Councils are concerned that there is no assessment of how this will impact upon receptors. Buckinghamshire Councils are aware that SCL works can take a long time and notes that there is no impact assessment relating to this beyond the draft CoCP.
P134 PDF 143 11.3.5	Local limitations The Promoter states "However, sufficient information has been obtained to undertake the assessment." Buckinghamshire Councils would like to receive a full justification of how "professional judgement" has been used when filling in the gaps in the baseline.
P134 PDF 143 11.3.6	Avoidance and mitigation measures "Best Practicable Means (BPM) as defined by the Control of Pollution Act 1974 (CoPA) and Environmental Protection Act 1990 (EPA) will be applied during construction activities to minimise noise (including vibration) at neighbouring residential properties" Buckinghamshire Councils note that best practicable means is decided by the Court and is not defined in the Control of Pollution Act 1974. Buckinghamshire Councils consider that in some locations residential properties should have better than this, best available technique not best practicable means. Buckinghamshire Councils are concerned that non-residential receptors are not covered here. "as part of BPM, mitigation measures are applied in the following order:" Buckinghamshire Councils consider that control over working hours should be given a high priority when deciding on mitigation measures. Noisy works during the evening or at night should be avoided. "where, despite the implementation of BPM, the noise exposure exceeds the criteria defined in the draft CoCP, noise insulation or ultimately temporary rehousing will be offered in accordance with the draft CoCP's noise insulation and temporary re-housing policy" Buckinghamshire Councils are concerned that the CoCP is still in draft form; any criteria defined therein may be changed to the detriment of residents. "lead contractors will seek to obtain prior consent from the relevant local authority under Section 61 of CoPA for the

	proposed construction works. The consent application will set out BPM measures to minimise construction noise, including control of working hours, and provide a further assessment of construction noise and vibration including confirmation of noise insulation/temporary re-housing provision;" Buckinghamshire Councils are concerned that by passing accountability to "lead contractors" HS2 may not take responsibility for their obligations under CoPA.
P135 PDF 144 11.3.7	Buckinghamshire Councils are concerned that by passing accountability to "lead contractors" HS2 may not take responsibility for their obligations under CoPA. Furthermore, monitoring data should also be provided regularly to the local authority or authorities where the works are executed. Although not a matter for the ES Buckinghamshire Councils are concerned that by the taking the CoPA section 60 and 61 appeal decision away from the Court and giving it to the Secretary of State the Nominated Undertaker will benefit from a biased arrangement, the NU having been appointed by the Promoters, one of whom is represented by the Secretary of State. The Promoter states that in addition to this mitigation, taller screening as described in the draft CoCP (69) has been assumed along the edge of the construction site boundary vent shaft compounds a Chalfont St Peter, Chalfont St Giles and Amersham. Buckinghamshire Councils have been unable to find this reference in the draft CoCP or on the construction plans. Chiltern District considers that the Promoters should compensate local authorities for the cost of policing compliance with noise and vibration compliance.
P135 PDF 144 11.3.9	Assessment of impacts and effects With regard to noise outside dwellings, the assessment of temporary adverse effects (9) takes account of construction noise relative to existing sound levels." Buckinghamshire Councils have been unable to identify this assessment within the ES further (9) refers to "Three Rivers District Council"
P135 PDF 144 11.3.11	Residential receptors: direct effects – communities "In this area, the mitigation measures reduce the effects of outdoor construction noise on the acoustic character around the local residential communities such that the adverse effects identified are considered to be not significant."

	The Buckinghamshire Councils note that the ES says mitigation will be incorporated which is regarded by the Promoter to constitute best practicable means. The Councils are concerned that the way in which best practicable means will be achieved should have been to be included in the ES and or LEMP rather than omitted. Otherwise it is not possible for the Councils to gauge the extent to which more extensive measures should or should not have been be considered. Further should the bill get royal assent an appeal in this respect would be heard by the Secretary of State and not the Court which means that the Promoter would both set the standard and decide the outcome of an appeal. Buckinghamshire Councils consider that this principle is wrong. Further Buckinghamshire Councils are concerned that the measures which have (and have not) been incorporated currently in the ES, could prejudice future cross party negotiations on BPM. Buckinghamshire Councils require further assurances regarding the groundborne noise and vibration effects likely during the operation of the temporary construction railway and the TBM during tunnel construction, as well as other sub-surface activities known to cause unacceptable magnitudes of prolonged groundborne noise and vibration. Buckinghamshire Councils consider that control over working hours should be given a high priority when deciding on mitigation measures Buckinghamshire Councils are concerned that the CoCP is still in draft form; any criteria defined therein may be changed to the detriment of residents “lead contractors will seek to obtain prior consent from the relevant local authority under Section 61 of CoPA for the proposed construction works. The consent application will set out BPM measures to minimise construction noise, including control of working hours, and provide a further assessment of construction noise and vibration including confirmation of noise insulation/temporary re-housing provision;” “lead contractors will undertake and report such monitoring as is necessary to assure and demonstrate compliance with all noise and vibration commitments. Monitoring data will be provided regularly to and be reviewed by the Nominated Undertaker and will be made available to the local authorities; and Buckinghamshire Councils are concerned that by passing accountability to “lead contractors” HS2 may not take responsibility for their obligations under CoPA. Furthermore,

	monitoring data should also be provided regularly to the local authority or authorities where the works are executed.
P136 PDF 145 11.3.16	Non-residential receptors: indirect effects The Promoter states, significant noise effects on non-residential receptors arising from construction traffic are unlikely to occur in this area. Buckinghamshire Councils would like to know how the Promoters came to this conclusion given that the extra vehicle movements predicted for the Amersham vent shaft alone are up to an estimated four hundred per day during the busiest six month period. (80-100 car/lgv movements, 90-100 hgv two way trips, See table 15 P144) .
P136 PDF 145	Summary of likely residual significant effects “HS2 Ltd will continue to seek reasonably practicable measures to further reduce or avoid these significant effects. In doing so HS2 Ltd will continue to engage with stakeholders to fully understand the receptor, its use and the benefit of the measures. The outcome of these activities will be reflected in the Environmental Minimum Requirements.” Buckinghamshire Councils consider that: 1) HS2 should aim for the best measures to reduce or avoid significant effects 2) This statement implies that HS2 does not yet fully understand the receptors. 3) HS2 has not specified a process to record the “activities” or how they will form the Environmental Minimum Requirements
P137 PDF 146 11.4.2	Local assumptions and limitations “The expected passenger service frequency for both Phase One, and Phase One with Phase Two services are described in Volume 173. As a reasonable worst case, this assessment is based upon the service pattern for Monday to Saturday including Phase Two services” etc. Table 14 shows only peak hour flows. Buckinghamshire Councils consider the trains running in the shoulder hours are more likely to be noticed by residents because background noise and vibration levels are lower at those times.
P137 PDF 146	Avoidance and mitigation measures “Significant ground-borne noise or vibration effects will be avoided or reduced through the design of the track and

	track-bed." Buckinghamshire Councils consider that this approach is not acceptable because a significant increase in vibration from the track system (excited by the behaviour of the trainsets) occurs at about 180 kph (Swedish Deep Stabilization Research Centre, Report 10). In SV-001-00, The Promoters acknowledge that "Rayleigh waves" could occur but dismisses their significance as being a "relatively rare situation". Buckinghamshire Councils consider that the Promoters should have included more information about the likely design of the track and track bed to avoid significant vibration effects. Buckinghamshire Councils are concerned that the requirements of the EIA Regulations may not have been met.
Volume 2: Community Forum Area Report CFA9 Central Chilterns	
PDF 184 P175	Introduction The Promoter states that the assessment of likely significant effects from operational noise and vibration on agricultural, community, cultural heritage or ecological receptors and the assessment of tranquillity are presented in Sections 3, 5, 6, 7 and 9 of this report respectively. Buckinghamshire Councils are concerned that these sections do not give a full picture of operational noise and vibration, only reporting it if there is a likely significant impacts as defined by a methodology that the Council does not agree with. Buckinghamshire Councils would like to point out that this area is prized for its tranquillity. Buckinghamshire Councils note that each LCA in this CFA is reported elsewhere as having a high sensitivity to change. Buckinghamshire Councils consider that this is not reflected in the operational or construction assessment methodology which refers the reader to the landscape theme.
PDF 226 P185	Existing baseline In the quieter areas in locations away from roads this document reports that daytime sound levels are typically 45 to 50dB (11.2.3 and 11.2.4 for example). 11.2.7 acknowledges that night time sound levels are up to 10dB lower than daytime levels. By implication the report acknowledges that night time background levels of 35dB have been measured in this CFA. A residential receptor could therefore be subjected to a doubling of sound pressure (3dB) which approximates to the change in sound pressure which is perceptible to the human ear without the model reporting it. This because an impact is only recorded if an absolute free field sound level from operational noise is at or

	above 40dB (LpAeq,8hr) at the receptor. A similar argument can be made for daytime noise. Buckinghamshire Councils are of the opinion that the model may underestimate impacts which could accumulate to become significant in areas where the background sound is low. In general, Buckinghamshire Councils require further information on the modifications to the HS1 groundborne sound and vibration model that have been applied to develop the HS2 model. The Council also requires further information on the calibration or validation exercise undertaken for the HS2 groundborne sound and vibration model particularly using HS1 measurement data. The Council is concerned that the assessment of significant groundborne sound and vibration effects does not apply the SOAEL and LOAEL at an appropriate point on the scale and that there is no provision for uncertainty in the prediction model within the EIA.
General	Buckinghamshire Councils are also concerned about, and requires an assessment of: 1) the mitigation of micro-pressure waves at tunnel portal 2) operational groundborne noise and vibration from high speed trains (assessment criteria, bow wave generation in soft soils and chalky soil) 3) adequacy of model for site specific considerations 4) long term track maintenance requirements 5) trackform design for example if and where the Promoter proposes to use floating slab track in tunnels The Promoters have not carried out a comprehensive sound noise a vibration baseline assessment (except for those locations where the community resides or works) in the AONB. Buckinghamshire Councils consider this to be a major omission from the environmental statement. This is because the intrinsic value of the AONB could be reduced by the sound noise and vibration impacts generated by the scheme.
PDF 187 P178 11.3.3	Effects arising during construction Some tunnelling support activities at Chilterns tunnel north portal will need to be undertaken during the evening and night-time for reasons of engineering practicability. Buckinghamshire Councils are concerned that there is no mitigation proposed beyond the CoCP (currently draft) and

	LEMP (which does not exist).
PDF 187 P178 11.3.4	Effects arising during construction "The assessment takes account of people's perception of noise throughout the day. More stringent criteria are applied during evening and night-time periods, when people are more sensitive to noise, compared to the busier and more active daytime" Period" Buckinghamshire Councils are concerned that the methodology used in construction noise assessment was devised by HS2's main consultant and does not favour the best interests of residents. It is based on the following: Use of the 'Example Method 1 – The ABC method' presented in Annex E of BS 5228-1 [3], to define threshold for significant impact. 1) Any single property above Category C thresholds constitutes a significant effect; 2) 5 or more properties above Category A or B constitutes a significant effect; 3) Effect occurs only if construction noise to occur for at least one month above the threshold; and 4) If the ambient noise levels are greater that Category C levels then a significant impact only occurs if there is more than a 3 dB change in overall noise levels as a result of construction. The calculated construction noise levels presented in the ES are described as monthly averages. If this means that a logarithmic average noise level has been calculated for each month then there is potential for an underestimation of the noise levels. This time span condition is not presented in BS 5228-1 for this method. For example if a noise level for 70 dB LAeq,10hr was calculated to take place for 15 days of the month with 60 dB LAeq,10hr produced for the rest of the month, then the logarithmic average over the month would be 67 dB LAeq10hr (i.e. -3 dB). The highest values are therefore not always reflected.
PDF 187 P178 11.3.6	Avoidance and mitigation measures Council notes that the ES says mitigation will be incorporated which is regarded by the Promoter to constitute best practicable means. The Council believes that the way

	in which best practicable means will be achieved needs to be included in the ES and or LEMP rather than omitted. Otherwise it is not possible for the Council to gauge the extent to which more extensive measures should or should not have been be considered. Further should the bill get royal assent an appeal in this respect would be heard by the Secretary of State and not the Court which means that the Promoter would both set the standard and decide the outcome of an appeal. Buckinghamshire Councils consider that this principle is wrong. Buckinghamshire Councils are concerned that the measures which have (and have not) been incorporated and as currently reported in the ES, could prejudice future cross party negotiations on BPM. Buckinghamshire Councils require further assurances regarding the groundborne noise and vibration effects likely during the operation of the temporary construction railway and the TBM during tunnel construction, as well as other sub-surface activities known to cause unacceptable magnitudes of prolonged groundborne noise and vibration. Buckinghamshire Councils consider that control over working hours should be given a high priority when deciding on mitigation measures Buckinghamshire Councils are concerned that the CoCP is still in draft form; any criteria defined therein may be changed to the detriment of residents. The Promoter states that lead contractors will seek to obtain prior consent from the relevant local authority under Section 61 of CoPA for the proposed construction works. The consent application will set out BPM measures to minimise construction noise, including control of working hours, and provide a further assessment of construction noise and vibration including confirmation of noise insulation/temporary re-housing provision; Also “lead contractors will undertake and report such monitoring as is necessary to assure and demonstrate compliance with all noise and vibration commitments. Monitoring data will be provided regularly to and be reviewed by the Nominated Undertaker and will be made available to the local authorities; and etc” Buckinghamshire Councils are concerned that by passing accountability to “lead contractors” HS2 may not take responsibility for their obligations under CoPA. Furthermore, monitoring data should also be provided regularly to the local authority or authorities where the works are executed. Buckinghamshire Councils require that they are able to

	contribute to the definition of the roles and responsibilities of the project manager and contractors in the process of drafting the CoCP and LEMPs. Further that they have an executive role in the administration and implementation the required off-site mitigation measures prior to any noisy works taking place, and that there is definitive legal redress available to them in the event that any agreements are broken. Buckinghamshire Councils consider that the Promoters should compensate local authorities for the cost of checking compliance with noise and vibration design standards. "Appendix SV-003-009 reports Night time working at the South Heath Green Tunnel, Phase 1b sections C, D and E during - cutting and excavation." Buckinghamshire Councils would like to know on what basis this is justified.
PDF188 P179 11.3.7	Avoidance and mitigation measures In addition to this mitigation, taller screening as described in the draft CoCP(84) has been assumed along the south-western edge of the construction site boundary adjacent to the residential communities on Hyde Lane, Chesham Road, Frith Hill and along the north-eastern edge of the construction site boundary adjacent to the residential communities at South Heath. In addition, taller screening has been assumed around the Little Missenden vent shaft site. Buckinghamshire Councils have been unable to find specific referenced to this taller screening on the construction plans. It is not possible to assess if the assumption is reasonable. Buckinghamshire Councils would like to be provided with more detail than is currently in the ES.
PDF188 P179 11.3.8	Avoidance and mitigation measures "Noise insulation will be offered for qualifying buildings as defined in the draft CoCP Noise insulation and temporary re-housing policy. Noise insulation or ultimately temporary re-housing will avoid residents being significantly affected (85) by levels of construction noise inside their dwellings. The assessment reported in this section provides an estimate of the buildings that are likely to qualify for such measures." Buckinghamshire Councils are concerned that the methodology adopted by the Promoter for the identification of significant construction airborne noise impacts requires high changes in noise level before a significant impact is identified. This is due in part to the rounding of baseline values and the Promoter's policy of presenting noise levels resolved on a monthly basis. The current methodology

	potentially hides significant effects that might arise if alternative methods applied on other recent major infrastructure projects were to be used.
PDF 192 P183 11.4.5	Avoidance and mitigation measures Buckinghamshire Councils are concerned that the Promoters may not be able to meet this design promise. Buckinghamshire Councils expect that any promise such as this be incorporated into a binding agreement with penalties for non-compliance.
11.4.6	Buckinghamshire Councils are concerned that the Promoters may not be able to meet this design promise. Buckinghamshire Councils expect that any promise such as this be incorporated into a binding agreement with penalties for non-compliance.
11.4.7 and 11.4.8	Buckinghamshire Councils would question the need for extensive earthworks barriers when smaller closer barriers could be as effective and less visually intrusive.
PDF 192 P183 11.4.9	Airborne noise Buckinghamshire Councils are concerned that the Promoters have not assessed the impacts from trains entering and leaving the tunnel caused by micro pressure waves.
11.4.10	Buckinghamshire Councils consider that this approach is flawed and contrary to that adopted for the definition of LOAEL and SOAEL for other sound, noise and vibration topics. The absence of a defined level at LOAEL (although it is implied that this may lie at background minus 5 dB) in conjunction with no reported adverse effects by virtue of no technical assessment having taken place, means that potential significant adverse effects associated with groups of dwellings or shared community areas where the adverse effects lie between LOAEL and SOAEL are not reported in the ES. Buckinghamshire Councils are concerned that the requirements of the EIA Regulations may not have been met.
PDF 193 P184 11.4.17	Residential receptors: direct effects –communities Buckinghamshire Councils does not agree with the method adopted by the Promoters to assess the significance of impacts. This point is expanded in the response to Volume 5: Appendix SV-001-000 submitted separately. Buckinghamshire Councils are concerned that there may be significant impacts not identified by the Promoter.
Volume 2: Community Forum Area Report **CFA10 Dunsmore, Wendover and Halton**	
P201 11.1.1	Introduction Buckinghamshire Councils do not believe that the operational noise assessments adequately reflect the

	impacts on individual dwellings or the impacts of night time noise. The Promoters have not carried out a comprehensive sound noise a vibration baseline assessment (except for those locations where the community resides or works) in the AONB. Buckinghamshire Councils consider this to be a major omission from the environmental statement because the intrinsic value of the AONB could be reduced by the sound, noise and vibration impacts generated by the scheme
P202 11.2.5	It should be noted that military helicopters do not routinely operate from RAF Halton. Only light aircraft, micro-lights, powered gliders and glider tugs operate routinely from the airfield at Halton.
P204 11.3.5	The Promoters states that lead contractors will seek to obtain prior consent from the relevant local authority under Section 61 of CoPA for the proposed construction works. The consent application will set out BPM measures to minimise construction noise, including control of working hours, and provide a further assessment of construction noise and vibration including confirmation of noise insulation/temporary re-housing provision and that lead contractors will undertake and report such monitoring as is necessary to assure and demonstrate compliance with all noise and vibration commitments. Monitoring data will be provided regularly to and be reviewed by the Nominated Undertaker and will be made available to the local authorities; etc Buckinghamshire Councils are concerned that by passing accountability to "lead contractors" HS2 may not take responsibility for their obligations under CoPA. Furthermore, monitoring data should also be provided regularly to the local authority or authorities where the works are executed.
P205 11.3.9	Whilst accepting there are avoidance, mitigation and control measures using Section 61 of the Control of Pollution Act, Buckinghamshire Councils are concerned that assessments of construction noise have been averaged over monthly periods, which could hide significant effects that occur in to short time periods. This assessment methodology is not consistent with the criteria used to determine noise insulation/temporary rehousing where the trigger levels only need to be exceeded for 10 days in any 15 day period.
P207 11.3.21	Buckinghamshire Councils note the Promoters commitment to seek "reasonably practicable measures" to further reduce or avoid significant effects from construction but would expect HS2 and its contractors to use best available measures to avoid or reduce construction impacts.
P209 11.4.11	Airborne noise Buckinghamshire Councils are concerned that the Promoters

	have not assessed the impacts from trains entering and leaving the tunnel.
P210 11.4.17	Residential receptors: direct effects-individual dwellings. Buckinghamshire Councils consider that it is not sufficient to base assessment of significant day time effects on individual (or small groups) of dwellings wholly on the criteria contained in the Noise Insulation Regulations and that some account should be taken of the change in noise level experienced at these properties. An internal assessment shows that an additional 10 properties in this area would experience a noise increase of 6dB or greater.
P211 11.4.20	Residential receptors: direct effects-communities. Buckinghamshire Councils consider that the assessment of night time noise using an eight hour LAeq period when trains will only be operational for two to three hours in that period does not adequately reflect the impact of the scheme. A 4dB increase in the eight hour LAeq would imply noise increases of 7dB to 8dB during the times that trains are operational i.e. the sensitive periods between 11pm and midnight and 5am and 7am. Using this argument, an internal assessment demonstrated that an additional seventeen properties in this area could experience a noise increase of 4dB or greater.
P211 11.4.22	Buckinghamshire Councils consider that the 85/80 dBAmax assessment criterion is not acceptable in quiet rural areas and it would not be reasonable to expect a householder to receive a maximum noise within a bedroom of 45dBLAmax. This is supported in both WHO Night Noise Guidelines and BS8233. For many planning applications the developer would be expected to design so that LAmax is kept below 60-65dB. An internal assessment shows that an additional one hundred and twenty six properties in this area would be classified as suffering significantly effects if a LAmax of 65dB was adopted instead. Buckinghamshire Councils are concerned that there may be significant impacts in the area of Strawberry Hill and Kings Ash particularly in the evening and night (END) periods. Buckinghamshire Councils also note that there is a property on the edge of Grimms Ditch about which this part of the ES is silent.
P211 11.4.23	Buckinghamshire Councils are concerned that it is not possible to determine the actual properties included in the communities identified as significantly effected and the

	potential that this might impact on individual resident's abilities to make future compensation claims.
ES 3.5.2.10.10 (Table 1)	Existing baseline Buckinghamshire Councils are concerned that the existing baseline noise level in respect of assessment location 314652 has been overestimated as it is believed that inadequate account has been taken of the potential lower baseline noise level at these premises due to its distance from Nash Lee Road, the predominant background noise source. As such the adverse effect may well have been underestimated. As such the assumptions and calculations in respect of the baseline noise level at this premise should be reassessed.
Volume 2: Community Forum Area Report CFA11 Stoke Mandeville and Aylesbury	
P203 11.1.1	Introduction Buckinghamshire Councils do not believe that the operational noise assessments adequately reflect the impacts on individual dwellings or the impacts of night time noise.
P204 11.3.3	Buckinghamshire Councils are concerned that by passing accountability to "lead contractors" HS2 may not take responsibility for their obligations under CoPA. Furthermore, monitoring data should also be provided regularly to the local authority or authorities where the works are executed.
P207 11.3.4	Whilst accepting there are avoidance, mitigation and control measures using Section 61 of the Control of Pollution Act, Buckinghamshire Councils are concerned that assessments of construction noise have been averaged over monthly periods, which could hide significant effects that occur in to short time periods. This assessment methodology is not consistent with the criteria used to determine noise insulation/temporary rehousing where the trigger levels only need to be exceeded for 10 days in any 15 day period.
P211 11.5.15	Residential receptors: direct effects-individual dwellings. Buckinghamshire Councils consider that it is not sufficient to base assessment of significant day time effects on individual (or small groups) of dwellings wholly on the criteria contained in the Noise Insulation Regulations and that some account should be taken of the change in noise level experienced at these properties. An internal assessment shows that an additional 8 properties in this area would experience a noise increase of 6dB or greater.
P211	Residential receptors: direct effects-communities

11.5.18	Buckinghamshire Councils consider that the assessment of night time noise using an eight hour LAeq period when trains will only be operational for two to three hours in that period does not adequately reflect the impact of the scheme. A 4dB increase in the eight hour LAeq would imply noise increases of 7dB to 8dB during the times that trains are operational i.e. the sensitive periods between 11pm and midnight and 5am and 7am. Using this argument, an internal assessment demonstrated that an additional one hundred and forty five properties in this area could experience a noise increase of 4dB or greater.
P211 11.5.18	Buckinghamshire Councils are concerned that there is no representative assessment for a ninety two bedroom care home currently being constructed on the A4010 at North Lee (Map ref SV-01-021 I 8). This development will suffer impacts from both the railway and potentially the realignment of the A4010 at the southern end of the Stoke Mandeville bypass. Buckinghamshire Councils request that an assessment of both rail and road noise is carried out for this property.
P211 11.5.20	Buckinghamshire Councils consider that the 85/80 dBAmax assessment criterion is not acceptable in quiet rural areas and it would not be reasonable to expect a householder to receive a maximum noise within a bedroom of 45dBLAmax. This is supported in both WHO Night Noise Guidelines and BS8233. For many planning applications the developer would be expected to design so that LAmax is kept below 60-65dB. An internal assessment shows that an additional forty eight properties in this area would be classified as suffering significant effects if a LAmax of 65dB was adopted.
P212 11.5.22	Buckinghamshire Councils are concerned that it is not possible to determine the actual properties included in the communities identified as suffering significant effects and the potential that this will have on individual resident's abilities to make future compensation claims.
P213 11.5.23	Buckinghamshire Councils recognise and welcome the positive benefit to residents in Stoke Mandeville resulting from the provision of the Stoke Mandeville by-pass, however, Buckinghamshire Councils are concerned that this may generate a new significant impact on properties in the south west of Aylesbury and Booker Park School (11.5.26). Buckinghamshire Councils request a noise barrier on this road to mitigate the impact. In addition Buckinghamshire Councils have concerns that the divergence of traffic around Stoke Mandeville could lead

	to a significant increase in traffic using the B4443 Mandeville Road leading into Aylesbury which could have a significant effect on properties located next to it. This area is outside the 1km assessment area and therefore there appears to be no assessment of this potential significant impact.
P213 11.5.22	There is a significant effect on one hundred and thirty dwellings to the south west of Aylesbury. Buckinghamshire Councils ask if an assessment has been carried out on the benefit of increasing the effective barrier height from 5m to 6m or higher.
P213 11.5.22	Buckinghamshire Councils are concerned that there are some discrepancies between the data contained in the Volume 5 Technical appendices (SV-004-011: ES 3.5.2.11.12) and the noise mapping shown in the Volume 2 map books and ES 3.5.1.9.2. Volume 5 Map book. Assessment location 304833 is shown on the maps (SV-02-22) as at least 100m outside the 40dB night contour, however, the noise assessment details suggest the proposed scheme only noise level is 40dB at that location.
11.5.22	Buckinghamshire Councils are concerned about the assessment carried at Lower Hartwell (AL 305767) where noise level and change in noise levels appear to be similar to the levels at Sedrup where a significant effect has been identified. The Volume 5 technical appendix (ES 3.5.2.11.12) shows noise from the proposed scheme noise of 50 to 41 dB and changes in noise levels of 5 and 4dB. Buckinghamshire Councils consider this to be a likely significant effect.
ES 3.5.2.11.10 (Table 1)	Existing baseline Buckinghamshire Councils are concerned that inadequate explanation has been provided for the screening correction to the existing baseline noise level in respect of assessment location 312566 and it is believed this should be reassessed or an explanation provided for the calculation carried out.
Volume 2: Community Forum Area Report CFA 12 Waddesdon and Quainton	
P189 11.1.1	Introduction Buckinghamshire Councils do not believe that the operational noise assessments adequately reflect the impacts on individual dwellings or the impacts of night time noise.
P192 11.3.3	Buckinghamshire Councils are concerned that by passing accountability to “lead contractors” HS2 may not take responsibility for their obligations under CoPA. Furthermore, monitoring data should also be provided regularly to the local authority or authorities where the works are executed.
P193 11.3.3	Whilst accepting there are avoidance, mitigation and control measures using Section 61 of the Control of Pollution Act, Buckinghamshire Councils are concerned that assessments of construction noise have been averaged over monthly

	periods, which could hide significant effects that occur in to short time periods. This assessment methodology is not consistent with the criteria used to determine noise insulation/temporary rehousing where the trigger levels only need to be exceeded for 10 days in any 15 day period.
P193 11.4.6	Buckinghamshire Councils are concerned that the traffic noise assessments are based on assessed levels ten metres from the edge of the nearside carriageway (Volume 5 technical appendix SV-003-012: ES 3.5.2.13.11 page 22 para 4.3.9) It is suggested that this could significantly underestimate impacts arising from traffic movements especially through small villages where many houses are located close to the road.
P194 11.4.13	Buckinghamshire Councils are concerned that in this summary paragraph identifies two significant effects i.e. residential and non-residential receptors in Waddesdon and north of Gawcott. These are not identified previously in this volume. The 'north of Gawcott' this area is not identified in the Volume 5 technical appendix SV-003-012 (ES 3.5 2.12.11). Buckinghamshire Councils would like to be advised of the physical location "north of Gawcott" and how many receptors are likely to suffer significant effects and identify the impacts included therein.
P197 11.5.12	Residential receptors: direct effects-individual dwellings Buckinghamshire Councils consider that it is not sufficient to base assessment of significant day time effects on individual (or small groups) of dwellings wholly on the criteria contained in the Noise Insulation Regulations and that some account should be taken of the change in noise level experienced at these properties. An internal assessment shows that an additional thirteen properties in this area would experience a noise increase of 6dB or greater.
p197 11.5.15	Residential receptors: direct effects-communities Buckinghamshire Councils consider that the assessment of night time noise using an eight hour LAeq period when trains will only be operational for two to three hours in that period does not adequately reflect the impact of the scheme. A 4dB increase in the eight hour LAeq would imply noise increases of 7dB to 8dB during the times that trains are operational i.e. the sensitive periods between 11pm and midnight and 5am and 7am.

	Using this argument, an internal assessment demonstrated that an additional thirty properties in this area could experience a noise increase of 4dB or greater.
p198 11.5.17	Buckinghamshire Councils consider that the 85/80 dBAmax assessment criterion is not acceptable in quiet rural areas and it would not be reasonable to expect a householder to receive a maximum noise within a bedroom of 45dBLAmax. This is supported in both WHO Night Noise Guidelines and BS8233. For many planning applications the developer would be expected to design so that LAmax is kept below 60-65dB. An internal assessment shows that an additional sixteen properties in this area would be classified as suffering significant effects if a LAmax of 65dB was adopted.
Volume 2: Community Forum Area Report **CFA 13 Calvert, Steeple Claydon, Twyford and Chetwode**	
P225 11.1.1	Introduction Buckinghamshire Councils do not believe that the operational noise assessments adequately reflect the impacts on individual dwellings or the impacts of night time noise.
P228 11.3.5	Buckinghamshire Councils are concerned that by passing accountability to "lead contractors" HS2 may not take responsibility for their obligations under CoPA. Furthermore, monitoring data should also be provided regularly to the local authority or authorities where the works are executed.
229 11.4.1	Whilst accepting there are avoidance, mitigation and control measures using Section 61 of the Control of Pollution Act, Buckinghamshire Councils are concerned that assessments of construction noise have been averaged over monthly periods, which could hide significant effects that occur in to short time periods. This assessment methodology is not consistent with the criteria used to determine noise insulation/temporary rehousing where the trigger levels only need to be exceeded for 10 days in any 15 day period.
P230 11.3.11	Buckinghamshire Councils are concerned that the traffic noise assessments are based on assessed levels ten metres from the edge of the nearside carriage way (Volume 5 technical appendix SV-003-013: ES 3.5.2.13.11 page 23 para 4.3.8) this could significantly underestimate impacts arising from traffic movements especially through small villages where many houses are located close to the road.
P232 11.4.3	Buckinghamshire Councils are concerned about the lack of detail available to judge the noise assessment of both the IMD and the rail head (during the construction phase) at Calvert.
P232 11.4.4	Buckinghamshire Councils are concerned by the statement that "it is possible that deliveries of maintenance materials could occur by road or rail at any time of day or night".

	Buckinghamshire Councils will seek assurances that night time deliveries to this site will be minimised and that handling of any materials delivered on site during the night time period is only carried out if it can be done without disturbing local residents.
P234 11.4.19	Residential receptors: direct effects-individual dwellings. Buckinghamshire Councils consider that it is not sufficient to base assessment of significant day time effects on individual (or small groups) of dwellings wholly on the criteria contained in the Noise Insulation Regulations and that some account should be taken of the change in noise level experienced at these properties. Our assessment shows that an additional 11 properties in this CFA area experience a noise increase of 6dB or greater.
P234 11.4.19	Buckinghamshire Councils are aware that mitigation is proposed to protect bats around Sheephouse Wood. It is unclear at this time what this mitigation will consist of. Buckinghamshire Councils request that this structure is acoustically tested to ensure it does not produce any unwanted acoustic effects at properties located along Lawn Hill.
P235 11.4.21	Residential receptors: direct effects-communities Buckinghamshire Councils consider that the assessment of night time noise using an eight hour LAeq period when trains will only be operational for two to three hours in that period does not adequately reflect the impact of the scheme. A 4dB increase in the eight hour LAeq would imply noise increases of 7dB to 8dB during the times that trains are operational i.e. the sensitive periods between 11pm and midnight and 5am and 7am. Using this argument, an internal assessment demonstrated that an additional eighty four properties in this area could experience a noise increase of 4dB or greater.
P235 11.4.23	Buckinghamshire Councils consider that the 85/80 dBAmax assessment criterion is not acceptable in quiet rural areas and it would not be reasonable to expect a householder to receive a maximum noise within a bedroom of 45dBLAmax. This is supported in both WHO Night Noise Guidelines and BS8233. For many planning applications the developer would be expected to design so that LAmax is kept below 60-65dB. An internal assessment shows that an additional thirty two properties in this area would be classified as suffering significant effects if a LAmax of 65dB was adopted.
P236	There is a significant effect on 50 dwellings at Calvert Green.

11.4.25	Buckinghamshire Councils ask if an assessment has been carried out on the benefit of increasing the effective barrier height from 5m to 6m or higher.
P236 11.4.25	There is a significant effect on 10 dwellings in Twyford. Buckinghamshire Councils ask if an assessment has been carried out on the benefit of increasing the effective barrier height from 5m to 6m or higher and increasing the barrier height on the viaduct from 4 to 5m.
P236 11.4.25	There is a significant effect on 25 dwellings in Chetwode. Buckinghamshire Councils ask if an assessment has been carried out on the benefit of increasing the effective barrier height from 5m to 6m or higher.
Volume 2: Community Forum Area CFA 14 Newton Purcell, to Brackley	
P211 11.1.1	Introduction Buckinghamshire Councils do not believe that the operational noise assessments adequately reflect the impacts on individual dwellings or the impacts of night time noise.
P214 11.3.3	Buckinghamshire Councils are concerned that by passing accountability to "lead contractors" HS2 may not take responsibility for their obligations under CoPA. Furthermore, monitoring data should also be provided regularly to the local authority or authorities where the works are executed.
P214 11.3.3	Whilst accepting there are avoidance, mitigation and control measures using Section 61 of the Control of Pollution Act, Buckinghamshire Councils are concerned that assessments of construction noise have been averaged over monthly periods, which could hide significant effects that occur in to short time periods. This assessment methodology is not consistent with the criteria used to determine noise insulation/temporary rehousing where the trigger levels only need to be exceeded for 10 days in any 15 day period.
Volume 5: Technical Appendices SV-001-000	
Section Number	*Comment*
PDF 6 P1 1.1.2	Introduction The Promoter states that The outcomes of the assessment are reported in the relevant Volume 5 appendices for each CFA, as follows: 1) baseline sound, noise and vibration (Appendix SV-002-0xx); 2) construction sound, noise and vibration (Appendix SV-003-0xx); and 3) operational sound, noise and vibration (Appendix

	SV-004-0xx)." In order to understand the ES the reader often needs to open many documents simultaneously to follow the cross references. Buckinghamshire Councils are concerned that this approach has resulted in the ES becoming beginning a "paper chase" and because of the multiple links that need to be followed to discover detail, difficult to access. Indeed the Promoter's omissions from the USB memory stick indicate how difficult it was to publish an ES for the project. In the case of Berkeley v SSETR (2000), the House of Lords commented that an ES must not be a paper chase. Lord Hoffman said, "the point about the environmental statement contemplated by the Directive is that it constitutes a single and accessible compilation, produced by the applicant at the very start of the application process, of the relevant environmental information and the summary in non-technical language." However it is accepted that the Promoters have provided a non-technical summary.
PDF 7 P2 6.1.1	Operation of stationary systems, assessment methodology The Promoter has adopted a route-wide approach has been in assessing noise produced by stationary systems, including: tunnel ventilation; trackside equipment (particularly electrical equipment such as auto-transformers); static equipment located at stations; static sources located within depots; and public address/voice alarm systems. Buckinghamshire Councils consider that The approach is flawed and inconsistent with the carefully considered approach adopted for the definition of other sound, noise and vibration topics. The absence of a defined level at LOAEL (although it is implied that this may lie at background minus 5 dB) in conjunction with no reported adverse effects by virtue of no technical assessment having taken place, means that potential significant adverse effects associated with groups of dwellings or shared community areas where the adverse effects lie between LOAEL and SOAEL are not reported in the ES. It follows therefore that the requirements of the EIA Regulations may not have been met.
PDF 8 P3 8.1.1	Assessment of effects (route-wide) The Promoters states that a number of potential sound, noise and vibration effects have been assessed on a route-wide basis and have been identified as unlikely to be significant. Buckinghamshire Councils would like to point out that conversely a number of potential sound, noise and vibration effects have not been assessed, examples of these are effects

	from static and stationary sources, overnight maintenance of assets, tunnel boom and Rayleigh waves. As an example see Appendix SV-001-000: Annex G. Buckinghamshire Councils are also concerned that there has been no baseline data collected for public rights of way (PRoW) but despite this the Promoters state "Significant noise effects are therefore considered unlikely on PRoW during either construction or operation." (PDF 148 P7 SV-001-000)
PDF 13 P2 1.1.7	Introduction The Promoter suggests that for sound, noise and vibration it is helpful to differentiate between impacts and effects. Based on the guidance in the emerging National Planning Practice Guidance (NPPG) and the Design Manual for Roads and Bridges the following definitions have been adopted: *Impact: the introduction of a new sound or vibration into an existing environment; and * Effect: the noise effect on the receptor / community subject to an impact. The noise effect is therefore linked to the level of the impact, the sensitivity of the receptor and other key matters such as the existing acoustic environment. Buckinghamshire Councils consider that receptor/community impacts are not precisely described, there are no definitive lists (describing land and premises) suffering impacts. Buckinghamshire Councils would like to have seen lists of residential and non-residential premises and community areas published and linked to references such as "OSV09-C02" which is unhelpfully defined as "South Heath: approximately 10 dwellings in the vicinity of Potter Row." Buckinghamshire Councils are concerned that this methodology does not capture the AONB as a receptor.
PDF 14 P3 1.3.1	Significance criteria The Promoter states that the approach adopted reflects the requirements of the EIA Directive, current best practice, and Government's noise policy (as defined in Defra's Noise Policy Statement for England (NPSE) and the emerging NPPG. Buckinghamshire Councils are concerned that the Promoters may have misinterpreted the emerging NPPG by defining LOAEL and SOAEL on a route wide basis. The NPPG states: "Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:

	1) whether or not a significant adverse effect is occurring or likely to occur; 2) whether or not an adverse effect is occurring or likely to occur; and 3) whether or not a good standard of amenity can be achieved." It could be argued that the concept of acoustic environment is linked to local matters. For example, the acoustic environment in a metropolitan area will be different to that in a rural area. Furthermore Buckinghamshire Councils are concerned that no impacts identified below lower cut-offs when the Promoter is assessing operational noise from the trainsets and that this might alter the conclusions presented in the CFA reports. In the quieter areas in locations away from roads (e.g. Volume 2 CFA 9) daytime levels can be typically 45 to 50dB. It is acknowledged that night time sound levels here are up to 10dB lower than daytime levels. Therefore by implication the night time background levels of 35dBA have been measured. A residential receptor could therefore be subjected to an increase of sound pressure of 5dB which approximates to a change in sound pressure which is clearly noticeable to the human ear without the model recognising a direct log term operational sound impact (elsewhere equating to a minor long term impact or a moderate impact short term). This because an impact is only recorded if an absolute free field sound level from operational noise is at or above 40dB (LpAeq,8hr) at the receptor. A similar argument can be made for daytime noise. In this way the model could under estimate the number of impacts which may accumulate to form significant effects in areas where the baseline is low. As HS2 noise only occurs for three hours in the night time period this means that a 5db increase in the LAeq8hr requires a much larger increases in the hours that trains actually operate.
PDF 15 P4 1.3.10	EIA Directive The Promoter acknowledges that significant effects also need to be identified when the level of (total) noise or vibration is above any threshold above which significant adverse effects on health and quality of life would occur and as taken guidance on this point can be taken from the Government's noise policy. Page 7 Para 2.14 of the Governments noise policy also states: "It is recognised that noise exposure can cause annoyance and sleep disturbance both of which impact on quality of life. It is

	also agreed by many experts that annoyance and sleep disturbance can give rise to adverse health effects. The distinction that has been made between „quality of life effects and „health effects recognises that there is emerging evidence that long term exposure to some types of transport noise can additionally cause an increased risk of direct health effects. The Government intends to keep research on the health effects of long term exposure to noise under review in accordance with the principles of the NPSE. Section 5.6.20 of the HIA states: “There is evidence to suggest an association between exposure to noise and cardiovascular effects. A broad indication of a potential for increased risk of cardiovascular effects may be given where: • the exposure to noise is relatively high [> 60 dB]; and • noise from the Proposed Scheme is equal to or exceeds the existing ambient noise levels (see Appendix 6). Section 5.6.21 of the HIA states: “The environmental assessment has identified approximately 250 residential properties that will be subject to these conditions. Given the small fraction of the population within the study area potentially exposed to relatively high noise levels due to the Proposed Scheme, and the much larger proportion of that population already exposed to high noise levels from existing sources, it is highly unlikely that the Proposed Scheme will result in an increase in the risk of cardiovascular effects within the study area.” Buckinghamshire Councils are concerned that this approach is simplistic and does not take full account of the current evidence base.
PDF 16 P5 1.3.14	Government noise policy These terms are adopted in the Government’s emerging planning guidance (8) on noise. The guidance links them directly, in increasing severity, to four levels of effect: 1) Effect; 2) Adverse effect; 3) Significant adverse effect; and 4) Unacceptable adverse effect.” Buckinghamshire Councils are concerned that that the Promoter has not mapped this clearly onto the EIA

	methodology it has used.
PDF 17 P6 1.3.16	EIA Directive “The noise policy notes that triggers should be defined for the onset of adverse effects (LOAELs) and significant adverse effects (SOAELs) in terms of total levels of exposure. Also that these trigger values should reflect the nature of the noise source, the sensitivity of the receptor and local context.” Buckinghamshire Councils are concerned that the ES is adopting LOAEL and SOAEL levels for operational noise are for the entire length of the line which may contradict Government guidance and noise policy which states that LOAELs and SOAELs should ‘reflect the nature of the noise source, the sensitivity of the receptor and local context’. Whilst recognising that altering the LOAELs and SOAELs might not alter the impacts reported by the ES it could change the number of significant effects and significant adverse effects. The current methodology employed treats some single dwellings (and small groups of dwellings) unfairly in that no account is taken of the current baseline and the change in noise generated by the scheme. A key concern is that this approach could set a precedent for the emerging noise policy. Future noisy developments in areas of low background noise levels could refer to the project as a justification for setting LOAELs and SOAELs above what might be reasonable based upon the existing local circumstances.
PDF 17 P6 1.3.17	EIA Directive The Promoters say that it is for a project to identify relevant SOAEL taking account the different sources of exposure and different receptors. Buckinghamshire Councils reserve the right to dispute the SOAEL.
PDF 17 P6 1.3.18	EIA Directive The Promoters say that adverse and significant adverse noise and vibration effect thresholds are defined for the Proposed Scheme in the later sections of this Annex based on best practice and previous projects. Buckinghamshire Councils note that the Promoter may be misinterpreting the NPSE and the emerging NPPG.
PDF 20 P9 1.4.15 1.4.16 1.4.17 (Table 28	Ground-borne sound, noise and vibration The magnitude of the impacts and available dose-response information Buckinghamshire Councils consider that reliance on

SMR) 1.4.18 (Table 31 SMR)	conclusions from assessment matrices can be misleading. HS2 has subjectively used professional judgement when establishing baseline then made objective assessments and overlaid this with an objective framework. This Council would like to point out that when using this method site-specific factors can be overlooked, an assessment methodology developed for one project (e.g. HS1) may not be appropriate for another, regardless of the project similarities.
PDF 22 P11 1.4.20 1.4.22	Ground-borne sound – construction and operation The Promoter states that the background and evidence for these criteria is set out in the Report 'Impacts of Tunnelling in the UK '. Buckinghamshire Councils note that the Promoter seeks to underpin the justification for some of the clauses that follow 1.4.20 on a report that was not made available to the PFSG-A and that the Promoter sponsored. The report was published in September 2013. The report states "The ES sets out envisaged mitigation measures to avoid or reduce any significant effects that are identified. The ES will also present any likely residual significant effects – these are significant effects that are likely to arise, taking account of the envisaged mitigation."(Ref Impacts of Tunnelling in the UK P58 8.4.3). However the Volume 2 CFA9 Central Chilterns document P184 11.4.14 states "Significant ground-borne noise or vibration effects will be avoided or reduced through the design of the track and track-bed." The ES therefore does NOT set out mitigation measures as implied by the Impacts of Tunnelling in the UK report but promises merely to avoid impacts. Buckinghamshire Councils consider that the promise that a future specification, deemed to satisfy a standard set by the Promoters, is not acceptable in an environmental statement written to satisfy the EIA directive. Buckinghamshire Councils reject the argument that the report "Impacts of Tunnelling in the UK" provides evidence for the criteria on the grounds that the evidence presented is: 1) Out of date 2) With the exception of HS1 is based on low speed trains 3) Is only validated to 300 kph 4) Provides no reference to how the validation at 3 above was achieved 5) Favours the argument that floating slab track will be not be required in the tunnels because it is not proven under high speed operation. (P62 8.5.22) Ground-borne vibration

	The Promoter states that residential receptors (dwellings) forecast to experience ground-borne vibration (measured indoors, near the centre of any dwelling room on the ground floor)greater than: - ground-borne vibration inside dwellings: 0.8 VDV m/s1.75 daytime (0700- 2300); or -ground-borne vibration inside dwellings: 0.4 VDV m/s1.75 night time (2300– 0700) have been identified as being likely to experience a significant adverse vibration effect (5) from construction or operation of the Proposed Scheme. Buckinghamshire Councils note that table 1 of BS6472 suggests that for example, for VDVs somewhere between 0.4 and 0.8 m/s1.75 adverse comment regarding daytime vibration levels becomes possible and somewhere between 0.2 and 0.4 m/s1.75 at night. In planning terms the old PPG24 indicated that BS6472 should be used to assess vibration, but there is no guidance as to what is an acceptable level it could be argued that the objective should be to avoid vibration levels where adverse comment would be possible, i.e. ensure vibration eVDV's are less than the 0.4 to 0.8 m/s1.75 by day bad and less than 0.2 to 0.4 m/s1.75 band by night. Buckinghamshire Councils consider that greater than 0.4 VDV m/s1.75 daytime (0700- 2300) and 0.2 VDV m/s1.75 night time (2300– 0700) should be used to identify a significant adverse vibration effect (SOAEL) from construction or operation of the Proposed Scheme. Buckinghamshire Councils require further information on the modifications to the HS1 groundborne sound and vibration model that have been applied to develop the HS2 model. The Council also requires further information on the calibration or validation exercise undertaken for the HS2 groundborne sound and vibration model particularly using HS1 measurement data. The Council is concerned that the assessment of significant groundborne sound and vibration effects does not apply the SOAEL and LOAEL at an appropriate point on the scale and that no provision for uncertainty in the prediction model has been applied in the EIA. Buckinghamshire Councils are also concerned about, and requires an assessment of, the areas where the vertical tunnel alignment is close to the surface.
PDF 24 P 13 1.4.28	Residential direct effects - communities Construction and operation of the Proposed Scheme “For the purposes of the assessment, “considered significant

1.4.29	on a community basis" refers to residential community areas defined as a group of residential dwellings situated close to each other. Such residential community areas will usually be part of a named city, town, village or hamlet, in which case the name of the village etc. is used to help describe the significant effect. Each significant effect has been given a unique ID, for example OSV12 C02. As an example this ID refers to operational sound and vibration (OSV), in community forum area number 12 (Waddesdon and Quainton) and this is the 2nd significant effect identified on a community basis (C02). These IDs are provided to navigate the reader between the text in Volume 2 and Volume 5: CFA reports, their tables and maps"
1.4.31	"There may be unique circumstances where secondary criteria are required to assess the significance of a potential effect arising. These are considered later in this section." Buckinghamshire Councils consider that this methodology does not capture all significant effects. The Promoters have discretion to exclude individual residential receptors using the argument that the receptor is not a community. This methodology does not provide a clear technical and objective statement of the environmental circumstances. Buckinghamshire Councils suggests that the Promoters should provide an easily accessible list of unique circumstances where secondary criteria have been used to assess the significance of a potential effect arising. "Where effects from more than one source are identified at the same assessment location (i.e. levels of exposure greater than the relevant LOAEL) an assessment is undertaken to determine whether cumulatively a significant combined effect should be reported, even if taken individually the effects would not be classified as significant. The cumulative assessment, where appropriate, makes use of available dose-response relationship information." Buckinghamshire Councils are concerned that this approach would exclude cumulative effects as a result of triggers just below multiple LOAELs e.g. from a combination of groundborne and airborne sources or multiple construction sources. Buckinghamshire Councils consider that the Promoters should describe when the cumulative assessment would become "significant adverse"
P15 PDF 156	"The assessment considers the noise and vibration exposure at each receptor and the receptor's generic sensitivity. With regard to specific sensitivity the assessment in on a worst case basis, assuming that the receptor is the most sensitive it can be (for example, assuming that for a school the teaching spaces are at the closest point to the Proposed Scheme, facing the route with windows partially open)."

	Buckinghamshire Councils consider that the AONB should be considered as a receptor. (ENV,C, 1/SER/2002/0104R) Definition, Identification and Preservation of Urban & Rural Quiet Areas Recommendation 6 suggests that: The upper noise limit criterion for rural quiet areas should be 40 dB LAeq,24 hour or its equivalence in Lden. Further Paragraph 3.47 of the same report says: "The development of the transport infrastructure is likely to increase within Europe. This will require the building of new road and rail routes. The impact of such routes is likely to have a major impact upon quiet areas and the need to protect the quiet areas from additional noise should be a significant factor in the choice of any new route." Buckinghamshire Councils consider that the AONB must be considered as a receptor.
P15 PDF 156 1.4.41	Non-residential receptors: direct effects "Where significant effects are forecast on this basis, HS2 Ltd will continue to seek reasonably practicable measures to further reduce or avoid these significant effects. In doing so HS2 Ltd will continue to engage with stakeholders to fully understand the receptor, its use and the benefit of the measures. The outcome of these activities will be reflected in the Environmental Minimum Requirements." Buckinghamshire Councils are concerned that the Promoters have too much control over the identification of significant effects and will only offer reasonably practicable measures to reduce or avoid such effects. Buckinghamshire Councils expect the Promoters to use best available mitigation to avoid or reduce all environmental impacts (not just significant effects). Buckinghamshire Councils are concerned that the Promoters are not clear on how it will procure undertakings and assurances and if it can influence the setting of Environmental Minimum Requirements.
P17 PDF 28	Ground-borne vibration impact criteria for non-residential receptors (refer to SMR) Description: Offices; Schools; and Places of Worship. VDVday [m/s1.75]: 0.4 Potential Effect: Adverse 'A' This is not entirely consistent with P11 PDF 22 1.4.22 "Residential receptors (dwellings) forecast to experience ground-borne vibration (measured indoors, near the centre of

	any dwelling room on the ground floor)greater than: -ground-borne vibration inside dwellings: 0.8 VDV m/s1.75 daytime (0700- 2300); or -ground-borne vibration inside dwellings: 0.4 VDV m/s1.75 night time (2300– 0700) have been identified as being likely to experience a significant adverse vibration effect (5) from construction or operation of the Proposed Scheme:" Buckinghamshire Councils consider residential receptors should be treated similarly.
P20 PDF 31 1.5.9 1.5.12	Airborne sound and noise - Residential receptors "The criteria defined in the SMR generally allow the assessment of effects to be undertaken on a reasonable worst case basis, taking account of public available information about each receptor. The basis of the adopted criteria is discussed further in the rest of this section. Technical supporting information is presented in the technical appendices in Volume 5 of the ES. " Buckinghamshire Councils are concerned that the Promoter is relying on publicly available information about each receptor. Buckinghamshire Councils would point out that the Promoter has not been able to get access to all of the locations it would have preferred. Residential receptors (dwellings) forecast to experience a noise level from construction activities that is greater than the following criteria for any period exceeding one month have been identified as being likely to experience a significant adverse noise effect from construction of the proposed scheme: *Noise outside dwellings from the Proposed Scheme at the facade: 75 dB (LpAeq,12hr) during the day; 65 dB (LpAeq,1hr) during the evening; or 55 dB (LpAeq,1hr) during the night, or above the existing ambient if this is higher. Buckinghamshire Councils are concerned that adopting a single set of SOAELs for individual dwellings for construction noise is not supported by the impacts table (SMR table 32) which suggests that impacts are determined by the baseline ambient sound levels as well as the noise level arising from the works. Buckinghamshire Councils suggest that the SOAEL for construction activities should be vary dependant on existing baseline noise levels.

P21 PDF 32 1.5.15	Residential receptors: direct effects – individual dwellings Construction of the Proposed Scheme "The criteria defined in the SMR generally allow the assessment of effects to be undertaken on a reasonable worst case basis, taking account of public available information about each receptor. The basis of the adopted criteria is discussed further in the rest of this section. Technical supporting information is presented in the technical appendices in Volume 5 of the ES." Buckinghamshire Councils consider that the Promoter has used a methodology devised by is its main contractor for the identification of significant construction airborne noise impacts that requires relatively high changes in noise level before a significant impact is identified. This is due to the rounding of baseline values and the Promoter's preference to present the baseline levels as monthly averages.
P22 PDF 33 1.5.21	Operation of the Proposed Scheme "Residential receptors (dwellings) forecast to experience a noise level greater than the following criteria have been identified individually as being likely to experience a significant adverse noise effect from operation of the proposed scheme: * Noise outside dwellings (free-field) from the Proposed Scheme only: 65 dB LpAeq, 0700-2300 during the day; or 55 dB LpAeq, 2300-0700 during the night." Buckinghamshire Councils consider that the methodology used to identify community impacts, i.e. a professional judgement on significance of effects where impacts occur between the LOAEL and SOAEL, should also be applied to single dwellings and small groups of dwellings. The significance of the effect on the dwellings should not be assessed on the absolute noise level, i.e. exceeding the SOAEL, but should also take into account the nature of the existing soundscape and the magnitude of the change in noise level.
P23 PDF 34 1.5.26 1.5.28	Operation of the Proposed Scheme "In addition to the SOAEL for night noise from the Proposed Scheme as described above, significant adverse effects are reported on dwellings where, during the night (2300 – 0700), the forecast maximum sound level from the Proposed Scheme at the façade of the dwelling is above 85 dB LpAFmax (where the number of train pass-bys exceeding this value during the night is less than or equal to 20) or 80 dB LpAFmax (where the number of train pass-bys exceeds 20). This is based on the

	objective evidence in published research 26 27 28." The ES describes levels for SOAEL which would trigger the provision of noise insulation to mitigate the significant effects but does not define a LOAEL in terms of LpAFmax which precludes the consideration of the observed effects of non-awakening sleep disturbance where these can be attributed to lower LpAFmax levels (i.e. disturbing peaks in the noise). Buckinghamshire Councils are concerned that the Promoter may have underestimated adverse sleep disturbance effects by avoiding LOAEL for LpAFmax (including LpAFmax noise levels and their incidence). In general terms, Buckinghamshire Councils consider that the Promoter could reduce LpAFmax at the façade of dwellings (and inside bedrooms) likely to be affected in this way by reducing the speed of the HS2 trainsets during the night period. "Where the level of noise or vibration caused by the Proposed Scheme is greater than the lowest adverse effect threshold but is lower than the significant adverse effect threshold, people's perception of the effect is generally indicated by the increase in noise or vibration. This is the increase compared to the environment without the Proposed Scheme." Buckinghamshire Councils note that whilst the National Planning Policy Framework and the Noise Policy Statement for England are relatively established, draft National Planning Policy Guidance on noise published by the Department for Communities and Local Government was only issued in August of 2013 and the DCLG are considering the comments received. As an example, HS2 has opted to apply the interim target (IT) defined by the WHO Night Noise Guidelines for Europe, on the basis that 'residents are considered to be significantly affected by the resulting noise inside their dwelling'. The WHO states that the "interim target (IT) of 55 dB Lnight, outside is recommended in the situations where the achievement of NNG is not feasible in the short term 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.
P25 PDF 36 1.5.36	Construction of the Proposed Scheme Therefore Government policy in essence requires that 'all reasonable steps' are taken to mitigate noise, i.e. Best Practicable Means (BPM) should be applied between LOAEL and SOAEL. The requirement to employ BPM to minimise noise is embedded in the draft Code of Construction Practice (CoCP).

	Buckinghamshire Councils are concerned that BPM is being used rather than best available techniques to mitigate noise. The Council is also concerned that the Promoter is using its own standards when setting LOAL and SOEL.
P26 PDF 37 1.5.44	Operation of the Proposed Scheme "The thresholds of 50 dB LpAeq,0700-2300 and 40 dB LpAeq,2300-0700 therefore represent the onset of the lowest observed community noise effects during the day (annoyance) and night (risk of sleep disturbance) consistent with guidance such as the World Health Organization Guidelines. No adverse effects are therefore generally likely below these absolute levels of sound exposure." Buckinghamshire Councils note that the Promoters have chosen not to separate day and evening in the ES. (See Directive 2002/49/EC of the European Parliament and of the Council Article 3 Definitions) Buckinghamshire Councils are concerned that using the 'equivalent continuous sound level' (Leq) of daytime sound levels over a 16 hour period (including the evening period) can hide adverse significant effects caused by HS2 trainset noise events, especially in the evening period (19.00 to 23.00 hrs) when the difference between baseline noise levels and operational noise from the project increases and is therefore more impactive. Many residents value the evening period as a time of quiet relaxation after a day's work. Residents in the summer months also have a reasonable expectation of the quiet enjoyment of outside spaces. Mitigation could be achieved by slowing the speed of the trainsets during the evening periods of the timetable. Buckinghamshire Councils therefore seek a cost benefit analysis from the Promoter comparing the costs of reducing the speed of the HS2 trainsets during the evening periods with the benefits gained which would be gained by residents from mitigation. Buckinghamshire Councils are concerned that using the 'equivalent continuous sound Level' (Leq) of night time sound over an 8 hour period can hide adverse significant effects caused by HS2 trainset noise events, especially in the operational periods (23.00 to 24.00 and 05.00 to 07.00) when the difference between baseline noise levels and operational noise events from the project could be substantial and affect both the onset of sleep, disturb sleep and affect sleep patterns (Night Noise Guidelines for Europe). Mitigation could be achieved by slowing the speed of the trainsets during the night period of the timetable. Buckinghamshire Councils therefore seek a cost benefit analysis from the Promoter comparing the

	costs of reducing the speed of the HS2 trainsets during the night period with the benefits which would be gained by residents from mitigation. Buckinghamshire Councils are also concerned that the impacts of overnight maintenance trains have not been assessed.
P20 PDF P131	The magnitude of the effects and available dose-response information "1.5.11 For residential receptors (dwellings), the assessment has differentiated between two situations. *where the magnitude of the impact is so great that the absolute noise inside dwellings would give rise to a significant adverse effect; and *where the magnitude of the absolute sound level is not in itself significant inside a dwelling but where the change in sound level outside dwellings would, when considered in aggregate across a number of dwellings and their shared community open areas19, constitute a significant adverse effect on the acoustic character of the area such that there is a perceived change in the quality of life." Buckinghamshire Councils consider that this methodology does not capture all significant effects. The Promoters have discretion to exclude individual residential receptors using the argument that the receptor is not a community. This methodology does not provide a clear technical and objective statement of the environmental circumstances. Buckinghamshire Councils suggest that the Promoters should be more transparent in the way in which this information is presented. It is suggested that the same methodology (with details of the individual assessment) should be applied to individual/small groups of properties.

17. TRAFFIC AND TRANSPORT

Volume 2: Community Forum Area Reports **Comments apply to reports 7 - 14**	
12.4 Delays at junctions, road closures and increased traffic flows.	Highway condition surveys should be carried out for all haul routes and diversion routes. Upgrading haul routes and diversion routes should be carried out prior to use rather than maintaining and repairing existing We have concerns of width and carriageway condition in the remote parts of the county and will welcome further dialogue on the relative merits of passing places or more comprehensive widening, based on realistic forecasts of vehicle movements and conflict with farm machinery. We would like more information regarding what delays in minutes have been assessed and how has capacity been determined to

	assess the effects. We need clarification whether the increase in construction traffic has been accounted for in these assessments. It appears that the environmental impact on villages that will be on diversion routes has not been assessed, including increased in speeds due to long diversion routes, possible rat running routes and road safety impacts. What is the impact on the farming community in rural areas, access to land especially during harvest time and suitability of diversion routes for large farm machinery? Increase travel time and delays need to be assessed in minutes, particularly for Public Transport Services. Severe / moderate and minor are not tangible. The impact on local small businesses such as public houses and village shops relying on passing trade and local economies due to closures and diversions has not been assessed. On street parking – the impact on diversion routes and increase in delays has not been assessed adequately; it is not just the distance that needs to be assessed. We have in excess of 800 events, some community, others national and international events, including the Paralympic Flame Festival at Stoke Mandeville Stadium for the Olympics and Paralympics. The impact of HS2 will be significant on many of these events which will adversely affect community cohesion, local economy and reputation. We are also trying to establish Buckinghamshire as a preferred location for film producers and have successfully attracted Hollywood productions, we currently have a Private Members' Bill in Parliament to allow closures for filming purposes. HS2 will significant impact on filming activities and therefore local economy. **Passenger Transport:** It is important to recognise that on the roads served by bus services (sections 12.3.7), even short-term minor adverse impacts have a potential impact on reliability. In order to continue to provide reliable services in the face increased congestion requires either a lower level of service (increasingly journeys times for each bus and hence few journeys on each route) or increased resource to maintain level of service. Each have commercial impacts (or budgetary impacts where contract services are involved). **Road safety:** Collisions along the routes subject to an increase in haulage, works and diverted traffic should be assessed. The A413, A41, A412, A355 and B4443 in particular are routes that regularly

	feature as having a high KSI collision rate per km in our annual route analysis. These routes are likely to be affected by the vehicle trip generation from construction site compounds.
Bridges	We understand that responsibility for maintaining bridges carrying new or altered highways over a railway can be delegated to the highway authority by agreement. We believe that HS2 and/or Network Rail are best placed to deal with the railway interaction needed when inspecting and maintaining. There is no benefit to BCC agreeing to take on these structures, only expensive and time consuming work liaising with the rail authorities to gain access to a line with up to 18 trains per hour travelling under any bridges.
Passenger transport	We are unclear if the impact on commercial services is being assessed. In particular, funding for the additional resources needed to maintain existing timetables/service levels: • Services directly impacted by diversions • Service impacted more generally by additional construction traffic and/or additional traffic on bus routes as a result of diversions eg the Aylesbury network will inevitably be affected and is fragile commercially. Most commercial bus services operate at the limit of commerciality taking into account vehicle requirements and running times. It is important to realise even an incremental increase in journey times can result in a significant increase in resource needed to maintain the level of service and to identify where HS2 construction will lead to this type of increase. Additionally, the impact of diversions on existing passenger levels needs to be assessed. For example, the diversion route around Stoke Mandeville will cut off a significant proportion of the current passengers which would potentially have a significant impact on the commercial viability of the service. Similarly, we are unclear if these impacts are being assessed for supported bus routes. This should include the impact of community severance where passengers are no longer able to access a commercial service and BCC are forced to provide some form of accessibility service. An additional impact that needs to be considered and calculated is on the additional resource needed to ensure information on diversions etc is communicated to the traveling public. This would include roadside information, physical bus-stop location and electronic information. Aylesbury is subject to major development and as such future passenger transport is difficult to project. We are unclear if the impact on home to school transport has been being assessed. This will need to involve Amey Client

	Transport and Children and Young People Services within the Highways Authority, and will need to consider resource issues and the effect on school catchments from severance.
Parking	Our concerns centre around the impact caused by the resultant congestion and slowed traffic flows. Such traffic delays will have a negative effect on the parking enforcement operations insomuch that mobile enforcement officers will be less effective (slower) in negotiating the highway network and also by having to travel further due to diversions. This has a negative effect on both the ability to deliver the service to customers and our duty to prevent congestion by enforcement measures. The local authority will be financially disadvantaged since fewer penalty charge notices would be issued for reasons explained above – this issue applies where all enforcement routes are affected by HS2. The financial effect will upset all forecast income built from past business modelling. There is significant risk that the client will not achieve its anticipated income and therefore its sustainability as a service. The diversionary traffic will also cause an increase in our operations carbon footprint. As a general observation, we suggest that greater congestion will result in greater demand for kerbside waiting restrictions. This is an issue that will create greater demand for correspondence administration and complaints will rise when we cannot afford to introduce additional waiting restrictions. We note that there will be a loss of general non-designated parking – Wendover cricket Ground and some in Waddesdon to name two. The effects of displaced parking will be significant and impact negatively on residents and locals lives potentially causing further complaints and congestion. It is true to say that the same applies in more urban areas where unrestricted parking may be unavailable due to road closures / alterations, therefore parking will potentially cause chaos where it is not managed before construction begins. Regarding areas where parking is regulated (on-street), any amended road layouts, diversion routes or new roads will require amended / new TROs / physical works – signs and lines etc. There are potentially hundreds of thousands of pounds worth of alterations required and so too the resource to undertake the management and commissioning of the works. With this in mind, there may be reason to consider that certain areas will become less enforceable and require enforcement patrol adjustments and associated works such as altering the software on the enforcement officers computers – again at cost that are not budgeted for. We understand there are new hybrid powers to introduce TROs

	but we are unsure of the options to revoke or reinstate old TROs following any streets that may revert back to pre HS2 works status. There is the further complication that any new routes will cause knock-on parking / congestion issues that may only materialise after the HS2 works have started / finished.
Design Approach Statement	We would like to refer back to the comments which Buckinghamshire County Council made on the Design Approach Statement in February 2013. These comments were to ensure all temporary and permanent works as part of the HS2 project have a neutral or positive impact on the condition of BCC assets.
Volume 2: Community Forum Area report 7: Colne Valley	
2.3 (various sub sections)	Construction programmes are not detailed and there is insufficient information regarding diversion routes or when they are likely to happen. Conflicts between diversion routes cannot be assessed adequately, nor the cumulative impact of displaced traffic with multiple closures along the route, whether temporary and / or permanent. We need more detailed information about the diversion route implications for Moorhall Road and A412 Denham Way whilst the viaduct is constructed. We have further concerns about the A412. The visibility requirements of the road must be maintained and responsibility for the crash barriers discussed.
12.3.7	On the final bullet point A40/640 should be A40/740
12.4.13	A412 Denham Way is a critical junction that is adversely impacted when there is an incident on M25 / M40.
12.4.14	In regards to road closures and diversions in this area, please be aware that: • On Denham Way, rail over bridge with signed 16'3" height restriction • On Tilehouse Lane, rail over bridge with signed 16'3" height restriction
Volume 2: Community Forum Area report 8: Chalfont's and Amersham	
2.3 (various sub sections)	It is unclear why the M40 Junction 4, A4010 & A40 are being used as construction routes. This is unacceptable, particularly with the High Wycombe Town Centre Masterplan that is due to be constructed in the next 5 – 10 years, which involves major road construction to move the A40. The congestion in the Town will be excessive due to road works and additional construction traffic will compound this issue. Construction traffic should use M40 / A418. Construction programmes are not detailed and there is insufficient information regarding diversion routes or when they are likely to happen. Conflicts between diversion routes cannot be assessed adequately, nor the cumulative impact of displaced traffic with multiple closures along the route, whether temporary and / or permanent.

	We would be concerned about the suitability of Bottom House Farm Lane (and other roads from their junctions with main roads to Vent Shafts) for construction traffic –changes and reinstatement may need to take place.
12.3.7	Please note that route 1 is a jointly operated high-frequency formal Quality Agreement route, the “One” and includes the Sunday 52. Twice daily service 581 has been omitted.
12.3.8	Correction - Service 353 not 355
12.4.14	We are concerned about the suitability of Bottom House Farm Lane (and other roads from their junctions with main roads to Vent Shafts) for construction traffic. We expect HS2 Ltd to be clear about what changes and reinstatement will take place.
Volume 2: Community Forum Area report 9: Central Chilterns	
2.3 (various sub sections)	Construction programmes are not detailed and there is insufficient information regarding diversion routes or when they are likely to happen. Conflicts between diversion routes cannot be assessed adequately, nor the cumulative impact of displaced traffic with multiple closures along the route, whether temporary and / or permanent.
2.3.17	Construction routeing in the Chilterns should avoid rural lanes as far as possible. To support this, we ask that dedicated haul routes from the A413 should be investigated (e.g. from the Great Missenden roundabout). This would also avoid intensifying existing safety issues with minor junctions onto the A413.
Volume 2: Community Forum Area report 10: Dunsmore, Wendover and Halton	
2.2.11	We are concerned about the Rocky Lane Underbridge creating drainage issues with the carriageway being 3m below existing ground level.
2.3 (various sub sections)	It is unclear why the M40 Junction 4, A4010 & A40 are being used as construction routes. This is unacceptable, particularly with the High Wycombe Town Centre Masterplan that is due to be constructed in the next 5 – 10 years, which involves major road construction to move the A40. The congestion in the Town will be excessive due to road works and additional construction traffic will compound this issue. Construction traffic should use M40 / A418. Construction programmes are not detailed and there is insufficient information regarding diversion routes or when they are likely to happen. Conflicts between diversion routes cannot be assessed adequately, nor the cumulative impact of displaced traffic with multiple closures along the route, whether temporary and / or permanent.
2.3.20	HS2 Ltd proposes to access the Small Dean viaduct compound via a variety of routes including the A4010, A4129 and M40 which would take construction traffic through Wycombe District including High Wycombe and Princes Risborough. We are concerned about the impact this might have on residents and communities, in particular through Princes Risborough and along the route of the

	A4010 and A4129.
2.3.25	We expect there to be consideration of an off-line structure on Bowood Lane in order to reduce the impact on construction.
2.3.50	Wendover Green Tunnel (North) Satellite Compound (later Portal Buildings) has access directly off A413 Wendover Bypass. This is not acceptable and an alternative route off the A413/B4009 roundabout should be considered.
12.3.4	The two way flow on Rocky Lane must be maintained. Wendover Green Tunnel (North) Satellite Compound (later Portal Buildings) has access directly off A413 Wendover Bypass. This is not acceptable and an alternative route off the A413/B4009 roundabout should be considered.
12.4.13	Queues and delays on selected junctions in the district are expected to increase during the construction period. A major adverse effect (traffic flow at junction is beyond or very close to capacity) is expected on junction A4010 Risborough Road with B4009 Nash Lee Road, a moderate effect (traffic flow at junction approaches capacity) is expected on junction A413 with B4009 Nash Lee Road. We are concerned about the impact these effects will have on the residents, communities and businesses in the vicinity.
12.4.14	We need to know what standards are proposed for the temporary link road Ellesborough Road and Bacombe Lane.
12.4.15	Major effects due to an increase in HGVs are predicted for the A4010 Aylesbury Rd/ Risborough Rd between A4129 Longwick Rd and the scheme, B4009 Nash Lee Road, and A413 London Rd/ Nash Lee Rd. We are concerned about the impacts this will have on residents and businesses in this northern area of Wycombe District. The change in traffic flows for High Wycombe due to the use of M40 junction 4 does not appear to have been assessed: there seem to only be assessments on roads local to the compounds / satellite compounds and impact of road closures. It is proposed to access the Nash Lee Overbridge compound via Nash Lee Road, B4009, A4010 and the M40. However, Nash Lee Road is not suitable for HGV routing due to on street parking at Chalkshire Road, residents do not have any off street parking. We are concerned about the impact of construction traffic and associated disruption on residents and businesses in this area.
Volume 2: Community Forum Area report 11: Stoke Mandeville and Aylesbury	
	South of Aylesbury the HS2 scheme now includes a “Stoke Mandeville” bypass as part of the core project – following discussions between HS2 Ltd and Buckinghamshire County Council. While the point is made that this will relieve Stoke Mandeville, very little consideration appears to have been given to the impacts of moving the traffic to the south of Aylesbury onto the B4443 Lower Road with possibly the majority of it going north along Lower Road to the Churchill Avenue junction and then

	Mandeville Road to the Gyratory System; or the impacts of moving traffic from the Terrick roundabout on the A4010 onto the B.4009 Nash Lee Road and then onto the A413 into Aylesbury. No analysis of these impacts is included in any of the transport assessment or other documentation.
Volume 5 TR-001-000 Annex B(iii)	The baseline survey report includes some baseline 2012 figures for AADT, am and pm peak flows for Lower Road and some am and pm peak hour flows for 2021 and 2026 but nothing else. There does not appear to be any assessment of traffic flows on the Stoke Mandeville bypass.
Volume 5 TR-001-000 Part 6	At present, A4010 traffic can split at Stoke Mandeville to access Aylesbury via the B4443 Lower Road or continue on to the A413 Wendover Road. There seems no consideration of what happens to the existing traffic flows on the A4010 once the bypass is in place and where it will go. In the Wendover section, (see tables on page 7-134) seems to imply that the A4010 diverted traffic is expected to take Nash Lee Road to the Wendover Bypass. If correct this will have significant impacts on the existing properties at Terrick and along Nash Lee Road. If this is proposed, it will require Nash Lee Road being improved along its entire length to the Terrick junction. Routing all traffic onto the A413 Wendover Road, if that is the proposal, must have significant impacts for Wendover Road and the residents on it; again this does not seem to be addressed anywhere. Even if the above is proposed for action the traffic figures shown for Lower Road do show significant increases which are likely to impact on the southern Aylesbury urban network.
Volume 5 part 6 Country Assessment 7.7.69 & 7.7.35	There is very little consideration in the ES of the possible environmental impacts involved with building the Stoke Mandeville bypass. The bypass is not even considered as a major construction project. The paragraphs relate to railway works.
	Unfortunately, because all the documentation is set out in CFA areas, it is difficult to assess overall impacts for Aylesbury and surrounding area, especially in terms of the traffic dimension. Traffic impacts/changes in a particular CFA do not seem to be included/referenced as having possible add on impacts/changes in an adjoining CFA. Everything seems compartmentalised and there seems little evidence of cross referencing between the CFAs. The traffic assessment is very difficult to understand and does not appear to be complete or comprehensive in looking at the local and wider impacts of HS2 and associated works. This must be a major deficiency of the ES. These omissions must be addressed and a full modelling undertaken to assess traffic transport impacts around Aylesbury and propose appropriate mitigation/improvements.
12.3.1	Impact on Aylesbury cannot have been adequately assessed since the introduction of signalised junctions on the Tring Road which has significantly changed driver behaviour and preferred

	routes.
12.3.6	• The Line 280 service (Aylesbury to Oxford) which will be severely affected, has been missed off this list. It is a high quality, frequent route and is the single most important bus route in Buckinghamshire in terms of passenger numbers. • Also omitted: • Route 110 runs Aylesbury – Thame via Stone, and also carries school pupils to Aylesbury schools and Lord Williams. • Route 111 runs Aylesbury – Oakley on weekdays • Route 112 runs Aylesbury – Bishopstone – Oakley on Weds and Fridays. **This serves Marsh Lane, which is due to be severed.** • There is no mention of the Aylesbury Urban network. All services on the Bicester Road, Oxford Road, ring road and using roads which form junctions with these routes are potentially impacted. This includes: • Silver Rider 1, Fairford Leys – Oxford Road – town centre – Buckingham Road (junction with ring road at Horse and Jockey) – Buckingham Park • Blue Route 2 & Route 5, town centre – Bicester Road – Haydon Hill and Quarrendon • Orange Route 3, town centre – Elmhurst – Weedon Road (ring road) – Quarrendon Estate – Haydon Hill (junctions with Bicester Road) • Green Route 4, Coppice – ring road – Bierton Road – town – Bicester Road – Berryfields – Parkway Station • Water Rider 6/7, town – Elmhurst (two junctions with ring road) – Watermead • Red Route 9, town – Oxford Road – Walton Court – Hospital • Route 11 – town – Oxford Road – Southcourt • Further, Aylesbury is subject to major residential developments and as such an increase in bus services can be anticipated. Timescales and extent of requirements are not forecast.
2.3.26	We have concerns the Highway Authority adopting the A4010 Risborough Road underpass for non-motorised users. There needs to be careful consideration and discussion with regard to drainage, lighting and prevention from vandalism, and future maintenance liabilities.
12.4.14	A positive effect has been identified in that through traffic to Marsh Lane will be removed from the Marsh Level Crossing so less potential for conflict with trains
12.4.15	Mitigation measures are required for the existing A418 which will

	be downgraded to an access road. We need to know what changes will be put in place to make it more appropriate for its new use. On the new A418, we expect to see measures which will maintain the existing cycle route.
12.5.6	Consideration needs to be given to constructing an off-line roundabout connecting the Stoke Mandeville Bypass with Lower Road. This would reduce construction impact and remove need for further properties. Opportunity to improve road alignment to east of proposed roundabout to tackle collision area and improve access to properties, cycleway and parking. We would like to see junction assessments to determine the most appropriate junction here.
12.5.10	The Stoke Mandeville diversion of service 300/321 is permanent, and the issue of passenger severance remains. This is not of benefit to the Aylesbury – High Wycombe bus services which importantly serve Stoke Mandeville village. The loss of service to Stoke Mandeville village loses vital commercial revenue for these services, but also creates the issue of the remaining resource (service 55) in Stoke Mandeville being inadequate for the village and also removing the direct link to Princes Risborough (school and town) and High Wycombe.
Volume 2: Community Forum Area report 12: Waddesdon and Quainton	
2.3.59	The ES identifies the construction programme for works south of Quainton involving diversions to Station Road and impacts on overflow car parking supporting the significant tourist attraction of the Buckinghamshire Railway Centre. This programme will likely involve the closure of the overflow car park for at least 9 months but possibly for a longer period of up to/over two years.
5.4.7	The ES confirms the tourism/educational attraction of the Railway Centre and its importance in the local area/economy. The works to construct HS2 will lead to a temporary closure of the car park (a potential loss of some 400 spaces for 9 months – 2 years+) and a permanent reduction of some 160 spaces almost halving the capacity. This has the potential not only for significant detrimental impact on the attractiveness of a major tourist attraction in Aylesbury Vale but also potential for possible wide spread parking problems/issues on minor roads/verges around Quainton as visitors seek overspill car parking.
5.4.8 & 5.4.10	The ES confirm that the works; both temporary and permanently, will have a significant effect/impact. Surprisingly, nothing is forthcoming on how such a significant effect will be mitigated. The acknowledgement of significant impacts must be addressed with replacement proposals.
Volume 5 CM-001-012 2.4	Impacts remain with no suggested mitigation. HS2 Ltd needs to identify solution to avoid significant impacts on the operation of the Buckinghamshire Railway Centre and the resultant disturbance/parking problems which may/will be created.
12.4.14	Regarding the A41 realignment: • There are sections of A41 which are access only: can these

	be adopted by local farmers/land owners (i.e. anything East of Waddesdon Hill) • The abandoned section of Blackgrove Rd north of HS2 could be changed back to farmland. This should be considered in conjunction with landowners. • The existing staggered crossroads adjacent to Grand Lodge should be changed to improve the setting whilst altering the priority of the road to Waddesdon Hill. • Provision should be given to a right turn lane from new A41 into old A41 for southbound traffic turning towards Waddesdon Hill. • There must be careful consideration about how to construct the tie into the existing A41 on traffic sensitive road. This may require a different form of junction at the junction to the old A41. The diversion of Station Road appears to be excessive - taking the route 450m to the northwest of the existing alignment. Further consideration to a closer alignment should be given with consideration to the requirements of the Bucks Rail Centre.
12.5.5	As highlighted by Quainton Parish Council, the new road alignment of Station Road will mean light intrusion for some residents of Station Road as there will be headlights shining directly into their houses. This needs to be mitigated.
Volume 2: Community Forum Area report 13: Calvert, Steeple Claydon, Twyford and Chetwode	
12.3.7	In addition to Aylesbury link railway, Bicester to Bletchley link also appears to require possession with a potential adverse impact that needs to be managed properly. It is unclear what the impact on freight movements would be. Presently, the line near the proposed depot is used for reversing freight trains from Bicester to Calvert (unclear the impact of EWR on this in the long term though), but passenger services are not the only consideration.
12.4.14	We require further clarification to confirm details of School Hill crossing of HS2 and Aylesbury Link Rail Line. The map appears to show School Hill on same alignment, but text refers to realignment 25m to the east. We are unclear whether the pumping station adjacent to the Chardon Lodge Underbridge is for the Perry Hill realignment cutting or if it is associated with the railway. If it is for the highway, it is unclear who will maintain the pumping station at Charndon Lodge Underbridge. The road is 9m below existing ground levels. We require confirmation of the highway boundary – for example whether the access road to Manthorn Farm and Chetwode Autotransformer Station is privately owned.
12.4.15	There should be consideration of constructing West St overbridge off-line in order to reduce construction impact.

12.4.16	Consideration of constructing School Lane overbridge off-line to reduce construction impact.
	HS2 Ltd must maintain good communications with BCC to ensure operational requirements for waste transfer site are met.
	It is unclear how existing railway access is maintained and also how HS2 accommodates/allows for East West Rail (EWR) proposals; especially, is the corridor shown wide enough and all within existing operational boundaries on the northern side of the route? It is very difficult to confirm or otherwise from the plans and documentation.
	It is still very unclear how HS2 fits in with the EWR proposals, which is likely to be operating (or imminently by the time HS2 construction begins. The ES does not appear to fully acknowledge the strategic significance of EWR as a key part of the new electric spine running from the south coast to Sheffield. It uses the term 'Bicester to Bletchley line' (Volume 2 CFA13 para 2.3.12) and 'Aylesbury link' (para 2.3.11) rather than referencing them as an integrated cross country EWR route that is:- • Included in the National Infrastructure Plan • Confirmed as a 'must do' committed rail project in the July 2012 High Level Output Specification (HLOS) for EWR service to be operational by December 2017.
	Buckinghamshire councils have significant concern about the physical, operation, timing and costing impacts of the HS2 proposals on EWR. Aylesbury Vale District Council and Buckinghamshire County Council are committing over £15m to the EWR project and there does seem a danger that the HS2 scheme could lead to unnecessary expense from the public purse by opening EWR only to close it and realign it in the Calvert area: or put it back by up to 4 years (to 2021) as seems to be proposed in the Volume 2 Community Forum Area report CFA13 – Figure 7 construction phasing at the Infrastructure Maintenance Depot, described in the 5 phases of work detailed in para 2.3.12. HS2 Ltd's only response seems to be that they are 'still talking with Network Rail'. To understand and assess the full impact of HS2 more certainty is required on how the two schemes will develop and co-exist.
	The full EWR Scheme includes the Aylesbury to Princes Risborough Link; proposed for diversion over HS2. No information is available on the impact of a likely closure of this line for an indeterminate time period and the impacts of such a closure. This is a deficiency in the ES.
	More detail required about the origins of the material that make up the sustainable placement area at Calvert/Steeple Claydon; indications are that the origin is Old Oak Common in London. This material is likely to come up the Chiltern line via the Aylesbury – Princes Risborough Link. There appears to be an assumption that a passing loop will be introduced to enable passenger services to run as now, unaffected by potentially significant numbers of waste trains. This proposal is not included anywhere in the existing ES and consequently has not been subject to any environmental

	assessment. As with traffic proposals south of Aylesbury this needs to be undertaken as part of the ES procedure.
Volume 5: Traffic and transport **Traffic Data and Base Year Forecasting**	
Section	*Comment*
General	Base surveys were undertaken in a number of locations, including counts of traffic volumes, non-motorised users and waterways usage. Existing data was also obtained including traffic accident and traffic count data.
	Base data is not provided with the Transport Assessment, only a summary of the counts is shown on a plan in Baseline Survey Report Vol 3. All baseline data should be provided with the assessment to allow the data to be reviewed in order to ensure that the conditions on Buckinghamshire's transport network are properly reported and considered in a clear and transparent way. Notwithstanding the inability to scrutinise the base data, HS2 has factored the data to the future years using TEMPRO version 6.2. The Transport Assessment states that committed and planned developments and transport schemes were taken into account, as appropriate, where these were of particular relevance to the assessment. There are a number of major appeal sites within and around Aylesbury comprising around 8,000 dwellings that are not included in the TEMPRO forecasts. These should be incorporated into the assessment to ensure the impact of the scheme can be accurately assessed. These appeal sites bring with them material changes to traffic flow and in some cases transport infrastructure which has not been considered. The sites are; • Barwood Land and Estates Limited - Land at Fleet Marston Farm, Aylesbury, HP18 0PZ - APP/J0405/A/12/2181033; • Hampden Fields Consortium - Land at south east Aylesbury, HP21 9DF - APP/J0405/A/12/2189277; • Hallam Land Management Limited - Land adjoining A413 Buckingham Road, Aylesbury - APP/J0405/A/12/2189387; • Hallam Land Management Limited - Site at Land East Of A413, Buckingham Road And Watermead, Aylesbury, HP22 5BU - APP/J0405/A/13/2209320 The TEMPRO factors have been described in Tables 7.1, 7.21 etc. as maximum, minimum and average values, with in some cases a range of values. It is not clear what areas the factors relate to, what time period and what road type they reflect. This should be clarified for each of the segments of the route so that the growth rates can be agreed.
Volume 5: Traffic and transport **Road Safety**	
Section	*Comment*

General	A review of historic accident data was undertaken for the road network under consideration for a three year period. Unless a cluster of nine or more accidents was recorded over the three year period, no further assessment was undertaken. Whilst this provides an indicative indication of existing road safety, it does not account for the severity of accidents, and we consider that a further review should be undertaken of junctions and links where fatalities have occurred, particularly in areas where the proposal will generate additional vehicle trips.
Volume 5: Traffic and transport **Vehicular Trip Generation, Distribution and Assignment**	
Section	*Comment*
Trip Generation and Distribution	For the construction period, main site compounds will be used for project management, commercial and administrative staff, while satellite sub compounds will provide office accommodation for smaller numbers of staff. There will be overnight accommodation at each main compound. The size of the construction workforce at each of the main and satellite compounds has been estimated on the basis of the construction activities being undertaken from the site. The average and peak number of personnel has been considered, as the level of activity at each of the sites will vary throughout the construction period. Table 7.7, 7.27 etc provide an estimate of traffic volume for the average daily combined two-way vehicle flow during the busy period and within the peak month of activity at each compound site. It is not clear how the number of vehicle trips has been derived. For instance, Table 7.6 states that the Chiltern Tunnel main compound will have a peak of 306 workers, while Table 7.7 states that there will be 400-440 average daily two-way vehicle trips generated by the site during busy period and within peak months of activity. This suggests a very low level of car use, and the calculations should be provided. The derivation of peak hour flows from the daily volumes should also be clarified. Paragraph 7.3.64 states that reductions in traffic generation arising from travel plan measures have not been included in the assessment. The number of heavy goods vehicle trips generated by each site is also provided, and the derivation of these figures should also be clarified so that it can be reviewed and agreed. For the operational period it has been assumed that there will be no changes in demand on the infrastructure, with the exception of the Calvert Infrastructure Maintenance Depot and the impact of the Stoke Mandeville bypass.
Assignment	The Transport Assessment has not included any assignment for vehicular trips through Buckinghamshire, but has manually loaded additional trips onto existing routes. This does not take into

	consideration any reassignment of trips as a result of the development proposal and associated infrastructure and is unlikely to reflect the true impacts of the proposal. Buckinghamshire County Council hold a VISUM model for Aylesbury and Wycombe, which should be used to assess the impact of the scheme in these areas. This will redistribute the traffic to reflect the attractiveness or otherwise of the new infrastructure and congested areas. This seems to be a fundamental omission of the assessment and in the absence of its use it cannot be concluded that the impacts of the development are accurately reported or considered. Construction traffic has been assigned to the network onto the proposed lorry routes to each construction compound. Mass haul trips have been assigned to the shortest route via the proposed lorry routes and motorway network, while professional judgement has been used to undertaken a manual reassignment of construction workforce traffic. Plans should be provided of all lorry routes so that their appropriateness can be checked. Further information should be provided on the likely number of mass haul trips associated with each segment of the route, and the likely impact on the road network.
Assessment	The assessments have been undertaken for the peak periods for the following scenarios: • Base 2012 • Future Base 2021, 2026, 2041 • Construction Impact 2021 • Operational Impact 2026, the proposed opening year of the scheme • Operational Impact 2041 (including additional passenger demand from Phase 2 rail link) For the construction period, junctions where there is a base flow of more than 500 vehicles and there is a change in flow of 5% on any one arm have been considered. This approach appears to be reasonable. However, given the queries regarding the trip generation associated with the construction compounds, the number of junctions and links being assessed will need to be reviewed. Link capacities have been derived from DMRB TA 79/99. All links with a one way flow exceeding 1000 vehicles per hour have been highlighted. Whilst this provides an indication of road capacity, it does not take account of on-street factors such as on-street

	parking and therefore links should be considered on an individual basis. The construction impact of the scheme has been assessed for 2021. 2021 does not reflect the peak construction period along the full length of the route through Buckinghamshire. By mid 2021, many of the maintenance compounds will have closed. It is not clear whether the assessments have been undertaken assuming the level of construction traffic likely in 2021, or whether the peak level of construction traffic in each CFA has been applied to base 2021 traffic flows to provide a worst case analysis. This should be clarified, and the peak construction period should be modelled. The highway network has been assessed for the peak hours only. Given that the CoCP will attempt to undertake traffic management measures to reduce peak hour travel, the number of heavy goods vehicles generated by the site is likely to be higher during the off peak period. A review of the off peak traffic implications of the scheme should also be included to ensure that there are no material off peak impacts.
Volume 5: Traffic and Transport **CFA 7 Colne Valley**	
Section	*Comment*
General	CFA7 is the easternmost section of the route, part of which runs through Buckinghamshire. The scheme crosses several roads in the area, the Grand Union Canal and a number of public rights of way. The main proposed infrastructure on this section of the route includes: • Colne Valley Viaduct; • Northolt Tunnel and Earthworks Main Compound; • Colne Valley Viaduct and South Embankment Satellite Compound; • Ickenham Auto-transformer Feeder Station; • Harvil Road Realignment Satellite Compound; • Colne Valley Viaduct Satellite Compound; • Colne Valley Viaduct Storage Satellite Compound; • Colne Valley Viaduct Jetty Storage Satellite Compound; • Colne Valley Viaduct Laydown Satellite Compound; • Colne Valley Viaduct North Embankment Satellite Compound; • Colne Valley Viaduct North Launch Satellite Compound; • A temporary access road will be provided to Denham Park Farm Quarry Site; • Colne Valley Viaduct Main Compound; • Chiltern Tunnel Main Compound; • Chiltern Tunnel South Portal Satellite Compound; • HS2 Substation; • The construction of temporary slip roads to the M25;

	• The construction of an overbridge for Tilehouse Lane; • Chalfont Lane, new temporary link road. In addition, nine footpaths and bridleways will be stopped up or diverted. There will also be stockpiling of materials adjacent to compounds in some locations Whilst not the entire construction infrastructure is located within Buckinghamshire, the scale of the compounds are such that there will be a significant impact on the highway and transport network within Buckinghamshire. The infrastructure proposals for the route are provided in map books at a scale of 1:5,000. This is too small a scale for detailed analysis. Larger scaled drawings of the infrastructure schemes are required for all of the facilities within Buckinghamshire. All proposed new highway layouts should be provided and tested. Road safety audits should also be undertaken of all of the highway proposals. Where appropriate, AutoTRACK analysis should also be undertaken. Both Tilehouse Lane and Chalfont Lane will be subject to temporary closures, which will affect traffic flows. Tilehouse Lane will be closed for up to 18 months while Chalfont Lane will be closed for six months, and then for a further five and a half years. The Transport Assessment states that this will affect around 500 vehicles per day on Tilehouse Lane and 1030 vehicles on Chalfont Lane. In addition it is stated that utilities works will require traffic management measures for up to six months, although the location, type and duration of temporary traffic management is not known at this stage. This statement should be clarified for each of Community Forum Areas within Buckinghamshire. The document states that rail replacement services will be provided when rail possessions are in place on the Marylebone to Aylesbury Line and the Chiltern Main Line. More information is required on the number and length of possessions required to complete the proposal. An assessment of the impact of the scheme on the local road network has been undertaken. However, given our concerns about the construction trip generation rate, growth factors, and the assignment techniques used, we do not consider these provide a robust assessment at this stage. For the operational phase of the scheme, it is not anticipated that there will be any change in vehicular demand as a result of the development, with the exception of a small number of maintenance trips. This is accepted to be the case on this section of the route.

	During the operational phase, five public rights of way will have permanent diversions, resulting in an additional 500m travel distance. It is argued that there will be no additional road safety impact during the operational phase, in comparison with the existing situation. Whilst this may be the case on existing infrastructure, the proposed new highway infrastructure should be subject to a road safety audit to confirm that this is the case.
Volume 5: Traffic and transport **CFA8 The Chalfont's and Amersham**	
Section	*Comment*
General	CFA8 runs from a location between junctions 16 and 17 of the M25, south of Amersham, through as far as the junction with the A413 with Mop End Lane, west of Amersham. The route through CFA8 is entirely tunnelled. The main proposed infrastructure on this section of the route includes: • Chalfont St Peter Vent Shaft; • Chalfont St Giles Vent Shaft and Auto Transformer Station; • Amersham Vent Shaft; • Chilterns Tunnel. Drawings of the infrastructure required to access the proposed vent shafts should be provided at a reasonable scale, including the proposed changes to the junction of the A413 Amersham Road with Bottom House Farm Lane. The drawings should show appropriate visibility splays, all new highways and junctions or junction improvement schemes should be tested, road safety audits should be carried out and where appropriate AutoTRACK analysis should be undertaken. For the construction period, traffic from neighbouring CFA9 and CFA10 to the north has been included in the assessment, however it has been assumed that there would be no construction traffic from the Colne Valley CFA7 areas. Given the large number of construction compounds located in CFA7, particularly at the Chiltern Tunnel entrance directly adjacent to CFA8 it seems extremely unlikely that there would be no construction force trips associated with the site travelling through CFA8. The derivation of these flows should be clarified. As stated above, given our concerns with the trip generation rate, future year growth rates and the assignment methodology, we do not consider that the highway assessment provides a robust result at this stage. As a result of the proposals, Bottom House Farm Lane will be

	diverted for up to six months, while there will be temporary diversions of two public footpaths in Chalfont St Peter for up to two years. A qualitative assessment was undertaken of the A413 with School Lane and the A413 Amersham Bypass with the A404 Whielden Lane. Turning count data was not available and therefore some form of manual analysis was undertaken, concluding that there may be additional delay at these junctions during peak periods. Full manual classified traffic counts should be undertaken at these junctions. Junction tests should be undertaken of these, and any other junctions where there is shown to be a material impact. Potential mitigation measures should be promoted where appropriate. As was the case for CFA7, it is stated that there will be no additional vehicular demand as a result of the proposed scheme during the operational phase, and therefore no material highway impact. One public footpath in Horn Hill will be diverted by around 70 metres during the operational phase. It is not clear whether this will also be a diversion during the construction phase. Similarly it is argued that there will be no additional road safety impact during the operational phase, in comparison with the existing situation. Whilst this may be the case on existing infrastructure, the proposed new highway infrastructure should be subject to a road safety audit to confirm that this is the case.
Volume 5: Traffic and transport **CFA9 Central Chilterns**	
Section	*Comments*
General	The Central Chilterns Community Form Area starts in tunnel underneath the A413/Mop End Land junction west of Amersham, runs south of Hyde Heath, where it comes out of the tunnel and continues in a cutting. To the west of Hyde Lane it runs through the South Heath Green Tunnel, resurfacing at Frith Hill. The route continues west to a point west of Ballinger Common. The main proposed infrastructure on this section of the route includes: • Little Missenden Vent Shaft satellite compound; • Little Missenden Vent Shaft and Auto-transformer station; • Chiltern Tunnel North portal satellite compound and access road; • Footpath overbridge access for Hyde Farm; • South Heath Green tunnel satellite compound; • South Heath Green tunnel south portal and access road; • South Heath Green tunnel north portal satellite compound; • Realignment of B485 Chesham Road over the South Heath

	Green tunnel; • A new roundabout at Kings Lane/B485 Chesham Road; • Realignment of the southern end of King's Lane; • A new road to provide access to either side of South Heath Green tunnel; • A short access road connecting South Heath Green tunnel north portal to Frith Hill; • Three further footpath overbridges in the cutting area; • Leather Lane overbridge providing an off-line replacement of Leather Lane; • Leather Lane overbridge satellite compound. Drawings of the highway infrastructure required should be provided at a reasonable scale. The drawings should show appropriate visibility splays. All new highways, junctions or junction improvement schemes should be tested, road safety audits should be carried out and where appropriate AutoTRACK analysis should be undertaken. The derivation of traffic volumes associated with the phase 1 development in neighbouring Community Forum areas that will affect CFA9 should be clarified. As a result of our concerns with the trip generation rate, future year growth rates and the assignment methodology, we do not consider that the highway assessment provides a robust result at this stage. As a result of the proposals, Hyde Lane and Frith Hill will be diverted for up to one or two years respectively. The diversion route for Hyde Lane will be up to 6km, while the diversion route for Frith Hill will be up to 2.6km. The document states that the diversion of Hyde Lane will affect 120 vehicles per day, while the diversion of Frith Hill will affect 1930 vehicles per day. This will have a significant impact on the local community. The realignment of the B485 Chesham Road, Kings Lane and Leather Lane will be undertaken off line and will require short closures to complete. Fourteen public rights of way will be closed or diverted for different periods during the construction period. It is stated that utilities works will require traffic management measures for up to six months, although the location, type and duration of temporary traffic management is not known at this stage. Roads that will be affected include the A413, B485 Chesham Road and Ballinger Road. Further information is required on the type and duration of the traffic management measures. A number of junctions within the study area have been described

	as meeting the junction assessment criteria and could be impacted by the scheme. For the priority junctions, a review of the main road/side road flow for each peak period has been undertaken and determined that none of the junctions will operate at 85% capacity, and therefore no further analysis is required. This is acceptable for existing junctions, but all new proposed junctions and junction improvement schemes should be modelled. The A413/A4128 link road and the A413/B485 junctions have been modelled. The modelling method should be clarified and the output provided so that it can be reviewed. The proposal will result in the diversion of bus service No 77/177 as a result of the temporary closure of Frith Hill. The diversion route is around 800 metres. 12 public rights of way will be diverted or stopped up for differing periods during the construction phase. It has been assumed that there will be no additional vehicular demand as a result of the proposed scheme during the operational phase, and therefore no material highway impact. 10 of the public rights of way will be diverted resulting in additional walk distances. It is argued that there will be no additional road safety impact during the operational phase, in comparison with the existing situation. Whilst this may be the case on existing infrastructure, the proposed new highway infrastructure should be subject to a road safety audit to confirm that this is the case.
Volume 5: Traffic and transport **CFA10 Dunsmore, Wendover and Halton**	
Section	*Comment*
General	CFA10 starts in a cutting at the Leather Lane overbridge north of Great Missenden, continuing over the Wendover Dean Viaduct and the Small Dean Viaduct which crosses the A413 London Road, running south of Wendover through the Wendover Green Tunnel, continuing west towards the eastern side of Aylesbury. The main proposed infrastructure on this section of the route includes: • Leather Lane overbridge satellite compound; • Overbridge east of Cottage Farm; • Overbridge south of Bowood Lane; • Bowood Lane overbridge Satellite Compound; • Overbridge south of Strawberry Hill Farm replacing Bowood Lane; • South Heath cutting; • Wendover Dean Viaduct;

	• Wendover Auto transformer station; • Wendover Dean Viaduct satellite compound; • Small Dean Viaduct; • Small Dean Viaduct launch satellite compound; • Small Dean Viaduct main compound; • Grove Farm Accommodation underbridge; • Underbridge east of the A413 London Road; • Rocky Lane underbridge; • Rocky Lane Underbridge satellite compound and Wendover Auto-transformer station satellite compound; • Underbridge west of A413 Nash Lee Road; • Green Tunnel Portal; • Wendover Green Tunnel southern portal and access track; • Wendover Green Tunnel northern portal and access track; • Wendover Green Tunnel south satellite compound; • Wendover Green Tunnel north satellite compound; • Balcombe Lane realignment; • Overbridge east of Nash Lee replacing Nash Lee Road; • Diverting Nash Lee Lane to Nash Lee Road; • Overbridge north of Nash Lee Lane; • B4009 Nash Lee Road overbridge satellite compound; • Stoke Grove Auto-transformer station; Drawings of the highway infrastructure required should be provided at a reasonable scale. The drawings should show appropriate visibility splays, all new highways, junctions or junction improvement schemes should be tested, road safety audits should be carried out and where appropriate AutoTRACK analysis should be undertaken. The derivation of traffic volumes associated with the phase 1 development neighbouring Community Forum areas that will affect CFA10 should be clarified. As a result of our concerns with the trip generation rate, future year growth rates and the assignment methodology, we do not consider that the highway assessment provides a robust result at this stage. As a result of the proposals, Bowood Lane overbridge, Small Dean Lane, Bacombe Lane, Ellesborough Road and the A413 London Road will be diverted for differing periods during the construction phase. The longest diversion will be 4.7km from Bowood Lane overbridge for up to one year, although this is very lightly trafficked. There will be a 2.7km diversion of Small Dean Lane for up to nine months. The realignment of Nash Lee Lane, the Rocky Lane underbridge and the B4009 Nash Lee Road will be undertaken off line and will require short closures to complete. Seventeen public rights of way will be closed or diverted for

	different periods during the construction period. It is stated that utilities works will require traffic management measures for up to six months, although the location, type and duration of temporary traffic management is not known at this stage. Roads that will be affected include the A413 London Road/Nash Lee Road, Ellesborough Road, Babcombe Lane and the B4009 Nash Lee Road. Further information is required on the type and duration of the traffic management measures. A number of junctions within the study area have been described as meeting the junction assessment criteria and could be impacted by the scheme. For the priority junctions, a review of the main road/side road flow for each peak period has been undertaken. In this case all three priority junctions operate very close to the 85% threshold and require further assessment. The side road flows are low, however the main road flows are very high, which could result in difficulties for traffic exiting the side roads and a potential safety issue. Further assessment of these junctions should be undertaken. In addition all new and upgraded junctions should be modelled. The A413 London Road/Small Dean Lane junction and the A413 Nash Lee Road roundabout have been modelled. The modelling method should be clarified and the output provided. A qualitative assessment was undertaken of the A4010 Risborough Road with the B4009 Nash Lee Road and the A413 London Road/Nash Lee Road. Turning count data was not available and therefore some form of manual analysis was undertaken, concluding that there may be additional delay and congestion at these junctions during peak periods. Full manual classified traffic counts should be undertaken at these junctions. Junction tests should be undertaken of these, and any other junctions where there is shown to be a material impact. Potential mitigation measures should be promoted where appropriate. 17 public rights of way will be diverted for differing periods during the construction phase, of which six will require diversions of more than 500 metres. It has been assumed that there will be no additional vehicular demand as a result of the proposed scheme during the operational phase, and therefore no material highway impact. Three of the public rights of way will be permanently diverted resulting in additional walk distances, one of which will be more than 500 metres. The old link road between Small Dean Lane and the A413 will be permanently closed. On the day of the survey it had 19 users.
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CFA11 Stoke Mandeville and Aylesbury	
Section	*Comment*
General	CFA11 runs from a location to the west of Nash Lee, running around the southern side of Aylesbury, exiting the CFA area to the east of Waddesdon. The main proposed infrastructure on this section of the route include: • A highway bypass around Stoke Mandeville; • An underbridge west of the A4010 Risborough Road; • An overbridge west of Stoke Mandeville providing a realignment of a farm access; • 2 footways will be stopped up and one will be realigned; • Overbridge west of Stoke Mandeville to carry the Princes Risborough to Aylesbury Line; • Two level crossings of the Princes Risborough to Aylesbury Line; • Five overbridges west of Aylesbury; • A footway overbridge north of Aylesbury Golf Club; • Thame Valley Viaduct; • Thame Valley Viaduct satellite compound; • Overbridge west of Putlowes; • Overbridge west of Fleet Marston; • Princes Risborough to Aylesbury Rail Overbridge Satellite Compound (west); • Princes Risborough to Aylesbury Rail Overbridge Satellite Compound; • Princes Risborough to Aylesbury Rail Overbridge Satellite Compound (east); • A418 Oxford Road Overbridge satellite compound and Sedrup Express Feeder Auto-transformer satellite compound; • A41 Bicester Road Embankment Main Compound; • A41 Bicester Road realignment. Drawings of the highway infrastructure required should be provided at a reasonable scale. The drawings should show appropriate visibility splays, all new highways, junctions or junction improvement schemes should be tested, road safety audits should be carried out and where appropriate AutoTRACK analysis should be undertaken. The derivation of traffic volumes associated with the phase 1 development neighbouring Community Forum areas that will affect CFA11 should be clarified. As a result of our concerns with the trip generation rate, future year growth rates and the assignment methodology, we do not consider that the highway assessment provides a robust result at this stage. The assessment should have made use of the VISUM model particularly as part of this CFA is next to the major Fleet Marston development site.

	The realignment of the A418 Oxford Road, will be undertaken off line and will require short closures to complete. The A4010 Risborough Road, Old Risborough Road and Marsh Lane will be permanently closed once the new bypass road is opened. Twelve public rights of way will be closed or diverted for different periods during the construction period. It is stated that utilities works will require traffic management measures for up to six months, although the location, type and duration of temporary traffic management is not known at this stage. Roads that will be affected include the A4010 Risborough Road, the A418 Oxford Road and the A41 Bicester Road. A number of junctions within the study area have been described as meeting the junction assessment criteria and could be impacted by the scheme. Some form of qualitative assessment has been undertaken as traffic count data is not available. The assessment has shown that there will be increased congestion and delay at all of the 10 junctions assessed. Full manual classified traffic counts should be undertaken at these junctions. Junction tests should be undertaken of these, and any other junctions where there is shown to be a material impact. Potential mitigation measures should be promoted where appropriate. During the operational phase of the scheme the Stoke Mandeville Bypass will be opened. Resulting in closure of the A4010 Risborough Road and Old Risborough Road where they cross the scheme. Marsh Lane will also be closed between the scheme and the bypass. The assignment method used to determine the impact of the Stoke Mandeville Bypass as provided in Table 7.87 and 7.88 is unclear. The provision of a bypass at this location will result in significant reassignment of all local trips. The bypass should be assessed using the VISUM model. A qualitative assessment has been undertaken of the junction of the A4010 Risborough Road with the B4443 Lower Road and A4010 Station Road as traffic count data was not available. A manual classified count should be undertaken and the junction should be tested. Any mitigation measures should be promoted as appropriate. Bus services 300 and 321 will be subject to a 5km diversion as a result of the closure of Risborough Road, extending the journey time by around 8 minutes. Bus Service 112 currently travels along Marsh Lane, and following the implementation of the scheme will divert via the bypass, reducing the total journey time. During the operational phase of the scheme, there will be

	additional walking distance on nine public rights of way, one of which being of more than 500 metres.
Volume 5: Traffic and transport **CFA12 Waddesdon and Quainton**	
Section	*Comment*
General	Community Focus Area 12 runs from a location south of the A41 near Fleet Marston, north of Waddesdon continuing west south of Greatmoor exiting the area south east of Calvert. The main proposed infrastructure on this section of the route includes: • Bicester Road embankment roadhead; • A41 Bicester Road realignment; • A41 Bicester Road overbridge; • Removal of Blackgrove Road; • A41 overbridge and priority junction; • Needles Farm accommodation overbridge; • Closure and realignment of Station Road at Quainton Road and provision of a turning head; • Aylesbury Link overbridge; • Removal and realignment of Fidlers Field Road; • A41 Bicester Road Overbridge satellite compound and roadhead; • Footpath WAD/4 Accommodation overbridge; • Footpath WAD/d Accommodation underbridge; • Needles Farm Accommodation overbridge; • Station Road overbridge satellite compound; • Footpath QUA/26 Accommodation underbridge; • Woodlands Cutting Satellite compound and Quainton Auto-transformer Feeder Station satellite compound; • Edgcott Road Overbridge; • Adams Accommodation underbridge; • Bridleway QUA/36 Accommodation Green Overbridge; • Bridleway GUN/28 Accommodation Green Overbridge; • Footpath CAG/2 underbridge. Drawings of the highway infrastructure required should be provided at a reasonable scale. The drawings should show appropriate visibility splays, all new highways, junctions or junction improvement schemes should be tested, road safety audits should be carried out and where appropriate AutoTRACK analysis should be undertaken. The assessment takes account of the consented Greatmoor Energy from Waste facility, although it is not clear how this was done and what volumes have been included for what period. This should be clarified. The derivation of traffic volumes associated with the phase 1 development neighbouring Community Forum areas that will affect

	CFA12 should be clarified. As a result of our concerns with the trip generation rate, future year growth rates and the assignment methodology, we do not consider that the highway assessment provides a robust result at this stage. The realignment of the A41 Bicester Road, Blackgrove Road, Station Road and Edgcott Road/Lawn Hill will be undertaken off line and will require short closures to complete. Station Road where it crosses the scheme and Waddesdon Hill at the junction with the A41 Bicester Road will be permanently closed as a result of the scheme. Nine public rights of way will be closed or diverted for different periods during the construction period. It is stated that utilities works will require traffic management measures for up to six months, although the location, type and duration of temporary traffic management is not known at this stage. Roads that will be affected include Quainton Road and Station Road. A number of junctions within the study area have been described as meeting the junction assessment criteria and could be impacted by the scheme. For the priority junctions, a review of the main road/side road flow for each peak period has been undertaken. In this case three out of four priority junctions operate near to or over the 85% threshold and require further assessment. Some form of qualitative assessment has been undertaken of two further junctions. The assessment has shown that there will be increased congestion and delay at the junctions. Full manual classified traffic counts should be undertaken at these junctions. Junction tests should be undertaken of these, and any other junctions where there is shown to be a material impact. Potential mitigation measures should be promoted where appropriate. The construction phase of the scheme will require land currently used for car parking by Buckinghamshire Railway Centre. Paragraph 7.8.88 states that this will result in the loss of around 600 parking spaces, while paragraph 7.8.131 states that it will result in the loss of 400 spaces. The proposed scheme includes the introduction of an infrastructure maintenance depot at Calvert, just north of this Community Form Area in CFA 13 and will result in considerable increases in traffic on the local highway network. It is not clear how this has been derived and incorporated into the assessments. During the operational phase of the scheme Station Road will be closed at Quainton where it crosses the scheme and Waddesdon

	Hill will also be closed at the junction of the A41 Bicester Road, resulting in a diversion of up to 2.5km. A number of junctions within the study area have been described as meeting the junction assessment criteria and could be impacted by the scheme. For the priority junctions, a review of the main road/side road flow for each peak period has been undertaken. In this case three out of four priority junctions operate near to or over the 85% threshold and require further assessment. No further analysis has been undertaken as trip generation in these locations is very low. This is acceptable but may need to be revised in view of our comments regarding the trip generation, assignment and traffic growth forecasts. Similarly a qualitative assessment has been undertaken of the junctions of Grendon Road with Edgcott Road, Marsh Gibbon Road and Edgcott Road with Main Street and the Broadway as traffic count data was not available. Manual classified counts should be undertaken and the junctions should be tested accordingly. Any mitigation measures should be promoted as appropriate. Existing bus stops on the A41 Bicester Road will be relocated by 500 metres as a result of the realignment of the route. During the operational phase of the scheme, there will be additional walking distance on 11 public rights of way, one of which being of more than 500 metres. It is argued that there will be no additional road safety impact during the operational phase, in comparison with the existing situation. Whilst this may be the case on existing infrastructure, the proposed new highway infrastructure should be subject to a road safety audit to confirm that this is the case.
Volume 5: Traffic and transport **CFA13 Calvert, Steeple Claydon, Twyford and Chetwode**	
Section	Comment
General	Community Focus Area 13 runs from a location to the east of Calvet, over the Twyford Viaduct, the Godington East Viaduct and the Godington West Viaduct south of Chetwode to a location east of Newton Purcell, near the county boundary with Oxfordshire. The main proposed infrastructure on this section of the route includes: • Infrastructure Maintenance Depot at Calvert; • Realignment of the Aylesbury Link; • Calvert Green overbridge; • Calvert railhead main compound;

	• Infrastructure Maintenance Depot Reception Sidings satellite compound; • West Street overbridge main compound; • West Street overbridge; • Footpath SCL/8 overbridge; • Addison Road overbridge; • School Hill Green overbridge; • School Hill Green overbridge satellite compound; • Aylesbury Link Line satellite compound; • IMD southern access overbridge; • Relocation of a telecommunications mast; • Realignment of the Bicester to Bletchley Line; • Bicester to Bletchley Rail Line satellite compound; • Charndon Lodge underbridge; • Perry Hill realignment; • Perry Hill overbridge; • Addison Road overbridge; • West Street overbridge; • Twyford Viaduct; • Godington East Viaduct; • Godington West Viaduct; • Footpath PBI/5 Accommodation overbridge; • Restricted Byway PBI/5A Accommodation overbridge; • Realignment of The Green; • Footpath CHW/18 Accommodation overbridge; • Chetwode Auto-transformer station satellite compound; • Chedwode Cutting satellite compound; • School End overbridge. Drawings of the highway infrastructure required should be provided at a reasonable scale. The drawings should show appropriate visibility splays. All new highways, junctions and junction improvement schemes should be tested, road safety audits should be carried out and where appropriate AutoTRACK analysis should be undertaken. The assessment takes account of the consented Greatmoor Energy from Waste facility, although it is not clear how this was done and what volumes have been included for what period. This should be clarified. The derivation of traffic volumes associated with the phase 1 development neighbouring Community Forum areas that will affect CFA13 should be clarified. As a result of our concerns with the trip generation rate, future year growth rates and the assignment methodology, we do not consider that the highway assessment provides a robust result at this stage. During the construction phase, School Hill and West Street in Calvert and School End in Chetwode will be closed for up to two

	years, with diversion routes of up to 6.9km. The realignment works for Addison Road, Perry Hill, The Green and The Green access to Manthor Farm will be undertaken off line and will require short closures to complete. 18 public rights of way will be closed or diverted for different periods during the construction period, with eight resulting in a diversion of more than 500 metres. It is stated that utilities works will require traffic management measures for up to six months, although the location, type and duration of temporary traffic management is not known at this stage. Roads that will be affected include School Hill. Five junctions within the study area have been described as meeting the junction assessment criteria and could be impacted by the scheme. For the two priority junctions, a review of the main road/side road flow for each peak period has been undertaken. Both junctions operate well within capacity and no further assessment has been undertaken. Some form of qualitative assessment has been undertaken of three further junctions. Full manual classified traffic counts should be undertaken at these junctions. Junction tests should be undertaken of these, and any other junctions where there is shown to be a material impact. Potential mitigation measures should be promoted where appropriate. Five bus routes will be diverted by the temporary closure of School Hill and West Street, and will result in diversions of up to 3.45 km. The Infrastructure Maintenance Depot will continue to be used during the operational phase of the scheme and will therefore impact on the operation of the local highway network. The future East West Rail Link between East Anglia and Central, Southern and Western England is expected to be operational by 2019 and may impact on traffic flows in the area. It is not clear whether this has been incorporated into the assessments. All junctions that are considered to be affected by the IMD have very low traffic volumes, and with low levels of trip generation are likely to operate within capacity. However the trip generation rates should be reviewed or clarified as they appear to be very low. In addition all new junctions should be tested. During the operational phase of the scheme, there will be additional walking distance on 17 public rights of way, six of which being of more than 500 metres. The proposed new highway infrastructure should be subject to a road safety audit to confirm that there are no potential safety concerns.

Volume 5: Traffic and transport **CFA14 Newton Purcell to Brackley**	
Section	*Comment*
General	Community Focus Area 14 begins at the county boundary east of Chetwode, passing north of Newton Purcell and Mixbury, before crossing the Westbury Viaduct and continuing around the north side of Brackley to a point west of Radstone. The majority of CFA14 lies within Oxfordshire, however some parts are within Buckinghamshire. The main proposed infrastructure on this section of the route includes: • Widmore Farm replacement access; • Westbury Viaduct; • Westbury Viaduct Satellite compound; • Realignment of bridleway 303/5 under Westbury Viaduct; • Downgrading the A43 Oxford Road to a single lane; • A43 overbridge; • Junction with Radstone Road; • A4421 Buckingham Road overbridge; • A4421 Buckingham Road Overbridge satellite compound; • Bridleway 213/4 Accommodation Overbridge; • A421 London Road Overbridge; • A421 London Road Overbridge satellite compound; • Featherbed Lane overbridge; • Featherbed Lane overbridge satellite compound and Tibbets Farm Express Feeder Auto-transformer station satellite compound; • Bridleway 303/4 Overbridge; • A422 Brackley Road overbridge; • A422 Brackley road overbridge satellite compound; • Footpath WBB/17 Accommodation overbridge; • Material processing centres and roadhead; • Turweston Green Overbridge; • Turweston Green Overbridge satellite compound; • Turweston Viaduct; • Whitfield Auto-transformer Station satellite compound; • Brackley South Cutting main compound; • Bridleway AX16 Accommodation overbridge; • Footpath AX15 overbridge; • Radstone Road overbridge satellite compound; • Radstone Road overbridge; • Bridgelway AX18 Accommodation overbridge Drawings of the highway infrastructure required should be provided at a reasonable scale. The drawings should show appropriate visibility splays. All new highways, junctions and junction improvement schemes should be tested, road safety audits should be carried out and where appropriate AutoTRACK analysis should be undertaken.

	The assessment takes account of consented developments at Radstone Fields, Brackley Sawmills Site, Northampton Road, Land North of Turweston, Brackley and Silverstone. It is not clear how this was done and what volumes have been included for what period. This should be clarified. The derivation of traffic volumes associated with the phase 1 development neighbouring Community Forum areas that will affect CFA14 should be clarified. As a result of our concerns with the trip generation rate, future year growth rates and the assignment methodology, we do not consider that the highway assessment provides a robust result at this stage. During the construction phase, Featherbed Lane will be subject to a diversion of around 7.6km. It is currently used by around 310 vehicles per day. The A43 Oxford Road, A4421 Buckingham Road, A421 London Road, A422 Brackley Road and Radstone Road will be realigned off-line and thus the disruption will be minimised. 19 public rights of way will be closed or diverted for different periods during the construction period, with five resulting in a diversion of more than 500 metres. It is stated that utilities works will require traffic management measures for up to six months, although the location, type and duration of temporary traffic management is not known at this stage. Roads that will be affected include the A421 London Road, A43 Oxford Road and Radstone Road. Nine junctions within the study area have been described as meeting the junction assessment criteria and could be impacted by the scheme during the construction phase. For the two priority junctions, a review of the main road/side road flow for each peak period has been undertaken. Both junctions operate well within capacity and no further assessment has been undertaken. Some form of qualitative assessment has been undertaken of the other junctions. Full manual classified traffic counts should be undertaken at those junctions within Buckinghamshire. Junction tests should be undertaken of these, and any other junctions where there is shown to be a material impact. Potential mitigation measures should be promoted where appropriate. During the operational phase of the scheme, one bus stop will be removed from the A4421 Buckingham Road, resulting in an additional 35m walk distance to the next bus stop. There will be additional walking distance on 23 public rights of way

	as a result of diversions, one of which will be more than 500 metres. The proposed new highway infrastructure should be subject to a road safety audit to confirm that there are no potential safety concerns.

18. WASTE

Development Plan Policies	
Section Number	*Comment*
Volume 2, paragraph 2.2.15	In several places the ES refers to the Buckinghamshire Minerals and Waste Core Strategy, adopted in November 2012, but omits to refer to the Buckinghamshire Minerals and Waste Local Plan 2006 and its Saved Policies, which are also part of the Minerals and Waste Development Plan**.** (Although a new Local Development Scheme has not been published to show the Council's Plan making intentions, the existing LDS shows the intention to develop two new Local Plans- a Minerals Local Plan, and a Waste Local Plan- which will identify new sites for mineral working and waste recovery uses.) The Buckinghamshire Minerals and Waste Core Strategy makes no provision for additional landfill capacity. It makes explicit reliance upon backfilling mineral workings with inert material
Minerals Sterilisation	
	Impacts upon mineral resources are considered in the Volume 2 CFA Reports on Land Quality. In addition it is considered in Volume 3: Route-wide effects, Section 9 Land Quality, which states that '*where construction does occur within a Minerals Safeguarding Area (MSA), any pre-extraction of surface minerals, at least under landscaping areas adjacent to the route, will assist in minimising the sterilisation of a local mineral supply…*' On this basis, it then concludes that on a regional or route-wide basis the effects on mineral resources will not be significant.
Volume 2 CFA 7	However, Volume 2 Community Forum Area Report CFA7 Colne Valley, acknowledges that the proposed route will run through a designated MSA for sand and gravel extraction, resulting in a minor adverse impact. The effect is assessed as not significant because the majority of the resource lies outside the land required

	to build the proposed scheme (para 8.4.35). Although the ES seems to imply that within MSAs, pre-extraction could be carried out (but '*limited to landscaped areas adjacent to rather than beneath the track bed as this will require good foundings*'). It does not provide any specifics in relation to such proposals, merely stating instead that, a *plan will be agreed in advance of the construction works'*. It is unclear whether prior extraction is being proposed in Buckinghamshire and whether/how the environmental impacts of such a proposal have been considered. In addition it is unclear whether prior extraction, or its absence, would affect the viability of a larger area for future extraction.
Volume 2 CFA 8: 8.4.27	'*A plan will be discussed and agreed in advance of the construction works with the landowner, the mineral planning departments at Hertfordshire or Buckinghamshire County Councils, and any other interested parties to assist in achieving an effective management of minerals in this location*.' It must be highlighted that the Minerals and Waste Core Strategy policy CS1 states that proposals need to demonstrate that: a) They will not sterilise the resource b) Consideration has been given in consultation with the Mineral Planning Authority to prior extraction of the protected mineral; and c) The need for the proposed development outweighs the economic value of the mineral resource In relation to criterion a, the resource will be partly sterilised. The offer of a 'management plan' does not provide assurances in respect of non-sterilisation or prior extraction. Finally, Buckinghamshire County Council is not accepting the need case for HS2, which relates to the need for the development under criterion c. Overall the impact of HS2 on the Mineral Safeguarding Area is a conflict with Minerals and waste Core Strategy policy CS1. In this case there is a significant impact and the ES is incorrect.
Use of a Natural Resource	
	The ES does not consider the impacts/effects of the use of mineral as a naturally occurring resource. The 'Land Quality' topic area only considers the impacts on mineral resources in terms of potential sterilisation. The 'Waste and Material Resources' sections state that '*Consideration of material resources in this assessment is limited to the beneficial reuse of excavated material arising from the construction of the Proposed Scheme'*.
Existing permitted mineral working sites	
Volume 2 CFA 7	This volume notes the presence of permitted extraction site at Denham Park Farm (which has not yet commenced), although this is not shown on the associated map book (map number LQ-01-012). Denham Park Farm is within a Preferred Area in the Buckinghamshire Minerals and Waste Local Plan (adopted in 2006). Part of the Denham Park Farm site lies within an area proposed for temporary material stockpiles.

8.4.34	Para 8.4.34 notes that '…*the eastern side of the proposed quarry area at Denham Park Farm is located under an area designated as a temporary earthworks stockpile. Depending on the timescales for these it could temporarily sterilise the resource which will be a temporary adverse effect, although not considered to be significant. A plan will be discussed and agreed in advance…to assist in achieving an effective management of minerals at this location*.' The area in question would cover a significant portion of the permitted extraction site. Although the ES correctly states that mineral extraction is not currently occurring at the Denham Park Farm Site, it should be noted that the current planning permission requires that extraction commence prior to the 11th August 2014, and therefore it is reasonable to anticipate that extraction would likely be occurring at the site during the construction period for HS2. Restoration of the site is required by 31st August 2031. The ES needs to consider the possibility that this land may not be available for temporary stockpiles, and should also consider the cumulative impacts of both the mineral extraction operations and the construction operations associated with the proposed rail scheme occurring simultaneously. Contact with the quarry operator is therefore vital. The permitted mineral reserves at the Denham Park Farm Site currently contribute towards the County's landbank of sand and gravel. Any sterilisation of this resource, even on a temporary basis, will have implications for BCC as MPA in its role to provide a steady supply of aggregate under paragraph 145 of the NPPF.
Impacts on existing landfill sites	
Volume 2 CFA 8	Volume 2 CFA 8 considers impact on two existing landfill sites; Warren Farm and Round Dell Wood. Para 16.1.4 of the Scoping Methodology Report states, '*The likely significant environmental impacts and effects from the use of materials (e.g. aggregate, concrete, brick and steel) for the construction of the Proposed Scheme will not be addressed in the EIA*', but does not provide reasons why such impacts will not be addressed. Environmental Impact Assessment embraces ALL impacts and cannot rule out impacts as being irrelevant. It is unclear why consideration of material resources does not extend to the consideration of the impacts/effects of the use of mineral resources. The scheme will require the use of substantial amounts of naturally occurring mineral in its construction, as well as specialist aggregates, such as stone for ballast, concrete, and cement. Only bulk fill materials can be sourced from surplus excavated materials. While concrete and cement may be available from local quarries in Buckinghamshire and Hertfordshire, rock for track ballast is only available in Leicestershire, Gloucestershire/Somerset/former area of Avon, and will need to be imported over considerable distance.

	The means of transport of these materials is not described, and the impact off those traffic movements is not assessed for its magnitude and significance. Consideration should also be given to the implications of additional demand at a local and national level. A reference to movement of materials is contained at 13.3.3, '*Rail movements of bulk material will use spare train paths on the rail network and the balance of how to handle this between road and rail movements has been developed taking into account likely availability of train paths. As a result, the movement of materials by rail will be planned so that it can be accommodated within available capacity and not have significant transport impacts or effects*. While some crushed rock is moved by rail at night in the UK, it is notoriously difficult to agree with Network Rail for the use of capacity at night times for the transport of waste. Perhaps HS2 Ltd will have more cooperation from Network Rail and therefore more success in being able to transport surplus excavated material by rail. In addition, the ES contains no references to the long distance transport of specialist construction materials, such as crushed aggregates for railway beds and ballast. These will have to originate from Somerset/ Gloucestershire or Leicestershire. An ES for any construction project will need to consider the *quantities and sources of primary mineral* but this detail is absent. Many construction projects such as new roads and motorways source their material from *temporary mineral workings* alongside the route; these are called borrow pits. Where mineral is to be sourced from borrow pits along the route of the rail line then potential locations should be identified, the potential impacts of extraction at these sites considered and appropriate restoration schemes put forward. If this information is not present or not brought forward in later revisions then the Environmental Statement is deficient. The Environmental Statement Circular 02/99 directs that the emphasis should be on the 'main' or 'significant' environmental effects to which a development is likely to give rise and also directs that, *'impacts of little or no significance for the particular development in question will only need very brief treatment to indicate that their possible relevance has been considered'*. On this basis the ES should, at the very least, demonstrate that the possible relevance of direct and indirect effects of the use of mineral resources has been considered appropriately, even if it then comes to the conclusion that such impacts are negligible.
Waste	
Volume 5: waste 8.2.6	*'Sustainable placement of inert surplus excavated material will be used where the material cannot be reused beneficially along or locally beyond the route and where it cannot be removed by either rail or along the construction corridor'*

	However the impacts, such as noise of the traffic movements associated with the movement of excavated materials, are not assessed.
	Under the Waste Framework Directive 2008, consideration is to be given to minimising the demand for primary aggregate through the use within the project of CDEW arisings. This should include seeking to maximise the beneficial reuse of excavated materials and seeking to use recycled aggregates where possible. The ES applies recycling rates, which are assumptions often taken without explanation, from consultation stages of the now adopted Minerals and Waste Core Strategy. To achieve these high rates of recycling/diversion from landfill relies entirely upon the draft Code of Construction Practice. This Construction, Demolition and Excavation waste will need to be selected so as to avoid contaminated materials and for its suitability as constructional fill. How this selection of materials is to be achieved is not made clear. CDE waste is not homogeneous.
Draft CoCP	In respect of how surplus exceed material is to be disposed of the ES relies upon assertions concerning being able to achieve a high a level of diversion from landfill. This is dependent upon implementation of the draft Construction Code of Practice, which contains generalities, and unspecific measures in respect of how wastes will be managed, nor any means to ensure the beneficial use of surplus excavated materials. Suggested measures are often heavily caveated or vague in nature.
	Despite a considerable amount of good quality information having been provided to HS2 consultants previously, concerning permitted sites for the disposal of inert material, there is a still a strong reliance on 'Sustainable Placement' and no arrangements made by which the available mineral working voidspace can be utilised to dispose of part or all of this material. There is no need to rely upon the concept of the 'sustainable placement' of surplus excavated material, as there are many mineral working voids available in Buckinghamshire in need of this material as fill. The 'backfilling of mineral voids' is a recovery operation, and is beneficial, since it enables the reclamation of a quarry void to an appropriate afteruse. This is 'Other Recovery' in the Waste Hierarchy set out in the Waste Framework Directive 2008, one level above 'Disposal', and therefore preferred. There are many existing operational mineral workings in Buckinghamshire which are becoming delayed in their reclamation due to the low availability of fill material to backfill them, and consequently large volumes of inert waste materials becoming available from the construction of HS2, is highly beneficial. The ES correctly distinguishes between inert, non-hazardous and hazardous wastes. However it makes assumptions about the availability of future landfill voidspace for wastes arising during either the construction or operational phases. For example,

	paragraph 14.5.34 Volume 3 states, '*Projected landfill capacity is based on the average percentage change in permitted landfill capacity for the years 2004 – 2011 (for inert and non-hazardous waste landfills) and for the years 2006-2011 (for hazardous waste landfill) as reported by the Environment Agency.*' This is not a suitable basis upon which to project future landfill capacity, since the factors that could influence available capacity are highly varied. Changes in planning policy, environmental permitting and taxation may substantially influence the availability of landfill voidspace, and of landfilling in practice. Voidspace for inert waste is created in the majority of cases, by sand and gravel extraction, while void space for non-hazardous waste is limited to locations where the underlying strata are highly impermeable. This usually means former clay workings, which are becoming highly scarce.
Volume 3 Para 14.6.11 and Table 22	This states that, '*91% of excavated material generated by the Proposed Scheme will be used to satisfy the necessary engineering and environmental mitigation earthworks quantities required on a route-wide basis'.* However, there is no evidence provided to support this assertion. Waste arisings are shown in Appendix 5 by type and location. It is not demonstrated that 90% of these equate to materials required for the project, or that these will occur in the right locations, or can be transported to locations where they are needed. Information is given on how waste arising in one location will be transported to a 'Sustainable Placement' location in: Volume 5 Waste; *8.2.6 'Sustainable placement of inert surplus excavated material will be used where the material cannot be reused beneficially along or locally beyond the route and where it cannot be removed by either rail or along the construction corridor*'
Volume 3Para 14.6.23	This states that, '*the quantity of demolition material that will be diverted from landfill via reuse, recycling and recovery is based on a landfill diversion rate of 90%. This rate has been selected based on a review of industry good practice and landfill diversion rates of other large scale infrastructure projects in the UK (e.g. Crossrail, London 2012 Olympics and HS1*)'. The worst case scenario presented is that the remaining 10% of demolition material will be disposed of off-site to landfill. However no third party verified data is provided to back up this assertion and HS2 is a unique project. Consequently it is highly questionable as to whether this diversion rate will be achieved. The other major infrastructure schemes referred to are significantly different in terms of scale and geographic spread. The ES should acknowledge that these rates may not be achievable, and therefore consider the impacts of a worst case scenario where these rates are not achieved.
Sustainable Placement	
	The ES consistently refers to the use of 'Sustainable Placement Areas' to minimise the amount of surplus excavated materials (waste) sent to offsite disposal facilities. However, the placement of surplus excavated materials onto 'Sustainable Placement Areas' **is** the on-site disposal of waste through land raising. Disposal is the least preferable and lowest ranking option in the

14.2.7	Waste Hierarchy within the Waste Framework Directive**.** Since the ES mentions that: This states, *'a proportion of the excavated material in the Calvert, Steeple Clayton, Twyford and Chetwode area is likely to be unacceptable for use within the engineering works due to the presence of contaminated materials (i.e. unacceptable material Class U1B) or the hazardous properties of the material (i.e. unacceptable material Class U2). As a worst case scenario it has been assumed that this material will be disposed of to landfill.'* Consequently there will need to be separation and sorting of excavated materials. Surplus uncontaminated excavated materials could then be taken off site for reuse in local infrastructure projects, and/or backfilling mineral working voids, while contaminated material will have to be sent to a landfill able to receive them. The contaminated waste excavated materials or demolition wastes that are hazardous will need to be disposed of in a hazardous waste landfill site. Existing permitted landfill sites able to receive hazardous wastes are already scarce and have limited void space. However the means of selection of suitable material for reuse, (for sustainable placement or for off-site disposal) is not set out within the ES. The identification and handling of contaminated materials is particularly important.
Volume 2, CFA 13, 2.2.9	Two 'Sustainable Placement Areas' are proposed within Buckinghamshire (at South Heath and at Calvert), which will receive 1.928 million tonnes and 2.044 million tonnes of waste materials respectively. A significant amount of this material can be utilised in backfilling existing mineral working voids and assist in their reclamation to a beneficial use. (The existing available voidspace at these permitted sites cannot be stated with any degree of accuracy). By contrast, it is stated, *'A sustainable placement area will be used to permanently deposit approximately 1,000,000m3 of surplus excavated materials. The area, which will be up to 800m long, up to 600m wide and up to 5m in height, will be located to the east of the Proposed Scheme, north of Calvert.'* It is unclear which figure is correct since cubic metres measure volume and tonnes measure weight. In addition there is no assessment of the noise impact of creating this Sustainable Placement Area.
	The table shows the permitted mineral working sites and their distances from the line of HS2. Site | Distance to closest point of HS2 route

Meadhams Farm Brickworks, Blackwell Hall Lane, Ley Hill, Chesham, HP5 1UN	4.5km	
Springfield Farm, Broad Lane, Beaconsfield, Buckinghamshire, HP9 1XD	8.1km	
Wapseys Wood, Oxford Road, Gerrards Cross, SL9 8TE	5.5km	
All Souls Farm, Wexham Park Lane, George Green, Wexham, SL3 6LX	8.4km	
Park Lodge Farm, Pinewood Road, Iver Heath, SL0 0NE	5.6km	
Calvert Landfill site, Brackley Lane, Calvert, MK18 2HF	0.4km	
Westhorpe Lake, Westhorpe House, Little Marlow	14.1km	
Denham Park Farm, Denham Green, UB9 5DL	0.9km	
New Denham, Denham Road, Uxbridge, UB9 4EH	3.3km	
East Burnham Quarry/Beechwood Nurseries, Farnham Lane, SL2 2AS	10.6km	

Although surplus excavated waste materials arise in different CFA areas, there are only three areas which have a 'Sustainable Placement Area'. No information is provided as to how the volumes of wastes have been calculated, to show shortfalls and excesses. There is only an assertion that 6.85 million tonnes of surplus excavated materials will be placed in 'Sustainable placement Areas'. An alternative would be to despatch waste materials to available appropriate landfill space within close proximity to the point at which it arises along the line. However, no assessment has been made between these alternative means of handling this material, and the relative benefits of each option. This is a significant deficiency in the ES.

Selection of material for, and sites for sustainable placement	
Volume 3 Para 14.1.22	This states that, '*sites for sustainable placement have been selected on the basis of their suitability for the disposal of surplus excavated material*,' however the ES does not appear to provide any detail of how such suitability was determined, the criteria against which prospective sites were assessed, and the alternatives that were considered. It goes on to say that sustainable placement will '…*avoid causing environmental effects (e.g. transport) that would otherwise be associated with off-site disposal of the material'.* However, the ES does not provide any information as to how such potential effects were considered and why therefore, on balance, the sustainable placement route was deemed to be most beneficial/least harm. One disbenefit or 'harm' would be the continuing injury to amenity caused by mineral working voids remaining unreclaimed due to a lack of fill material.

	However the relative merit of different options for disposal of surplus excavated material has not been openly and explicitly stated in the ES. There are surely disbenefits arising from 'Sustainable Placement' of this material on agricultural land. There are no descriptions of how the locations for Sustainable Placement have been chosen. Since 'Sustainable Placement' is disposal to landfill outside of an existing landfill site and a mineral working site then if Buckinghamshire County Council were the determining authority these proposals would conflict with policy CS15.
Baseline Data/Assumption	
	There are numerous errors and inaccuracies with their use of baseline data, and flaws as a result of relying on local information published prior to the adoption of the Minerals and Waste Core Strategy.
Construction and Demolition waste	
Volume 5: Waste	This considers separately various waste streams assumed to arise during construction and operation. For example, the Jacobs Task B document which was part of the Evidence Base for the Core Strategy at paragraph A3.19 shows that available survey data was **too poor** to anticipate specific growth rate in C and D waste. The HS2 Environmental Statement assumes a *recycling rate* of *50% in 2013, and 70% by 2020*. It quotes, '*consequently, a landfill diversion rate of 70% (equivalent to 70% recycling) has been assumed to apply to annual CDEW arisings in Buckinghamshire through the future baseline period of 2017 to 2025.'* This is incorrect since the recycling rate only applies from 2020, not from 2017.
Para 3.1.4	The Table of CDEW arisings indicates that Buckinghamshire has a likely 50% diversion rate and 516,000 tonnes to dispose of to landfill. The next table is 'Future Baseline: 2017 to 2025' and indicates over that period a likely disposal to landfill of 30% (2,786,400 tonnes). It is not apparent why the diversion rate has changed.
Volume 5: Waste	'…..*as described in pre-Submission Advice on Minerals and Waste Core Strategy Preferred Options: Task B Verification of the Plan Provision33 and confirmed within Buckinghamshire County Council's Minerals and Waste Development Framework Annual Monitoring Report 2010/2011*' The ES believes that the Preferred Options Core Strategy assumes no increase in CDEW arisings between 2013 and 2025. The Annual Monitoring Report for 2010/2011 indicates a 50% recycling rate for CDEW. They assume a 70% target rate of recycling for the rest of the period to 2025. The ES continues to rely on these outdated documents, rather than the final Minerals and Waste Core Strategy, adopted in 2012.
	Any proposals for new waste facilities will be considered against the policies of the MWCS and the Saved Policies of the Minerals

	and Waste Local Plan 2006. Any predecessor evidence paper is not the most relevant, and all figures quoted by HS2 and their derivations, are highly questionable.
Volume 5: Waste Paragraphs 3.1.42 to 3.1.46	**Volume 5 Appendix:** Refers consistently to an Annual Monitoring Report (AMR) from 2010/11, whereas the Minerals and Waste Core Strategy was subject to Hearings in 2012 February, and Modifications were consulted upon in May-July 2012. The MWCS was then adopted in November 2012. For the HS2 to rely upon the AMR from 2010/11 is therefore incorrect, and using an inappropriate source of data. These paragraphs are based on erroneous assumptions concerning the baseline recovery rates for C/I waste from 2013. Both present and future baseline assumptions are incorrect and are based upon assertions rather than policy documents and their supporting evidence. - The 19% additional recovery by 2026 has no obvious basis - The 51% recovery baseline for 2013 has no apparent basis - In addition, they refer to 2025, and not to 2026 as it does in the MWCS.
Volume 5: waste Paragraph 14.2.6	This shows that waste will be imported from within the London area of the scheme to meet any 'shortfall'. Since there is no agreed landform to be created surely there is no need to bring in additional material. Excess excavated material that is not able to be reused for engineering purposes can be utilised in the backfilling of mineral working voids locally.
The Draft Code of Construction Practice	
	This is full of generalities and makes no specific commitments to where, and how, waste arisings are to be managed.
Paragraph 7.2.8	This refers to crushing rock for use as aggregate. However there are no references to imported minerals for construction anywhere else in the ES.
Scope and Methodology	
Pages 179-180	The Scoping Methodology Report sets criteria for determining the significance of potential impacts. These criteria are not justified nor are they reasonable.
Para 16.1.4	This paragraph states, '*The likely significant environmental impacts and effects from the use of materials (e.g. aggregate, concrete, brick and steel) for the construction of the Proposed Scheme will not be addressed in the EIA.*' This is a key failing of the ES, in that it does not consider openly and specifically the materials to be brought into the site and the impacts of transporting and utilising these construction materials. In particular sand, gravel and crushed rock. Importantly, crushed rock is not available to be worked within Buckinghamshire and needs to be brought in from Somerset, Gloucestershire or Leicestershire. The line of HS2 runs through part of the Mineral Safeguarding Area identified in the Buckinghamshire Minerals and Waste Core Strategy, but there are no specific proposals for the prior

	extraction of this mineral. There is only a reference in Volume 3 to: *14.6.17, 'opportunities may arise at the time of construction to provide inert surplus excavated material for off-site reuse in other local construction projects, thereby increasing diversion of this material from landfill'.* In the absence of detailed safeguards concerning the mineral resource affected by the line of HS2 and its construction, then the proposed HS2 development conflicts with Minerals and Waste Core Strategy policy CS1. The Denham Park Farm mineral working site has a planning permission until August 2031 and will be impinged upon by the storage of '*temporary earthworks stockpiles'*. If the ability of this site to be worked and provide sand and gravel is detrimentally affected by HS2, then this has implications for the County's aggregates landbank, which should have been discussed and quantified, but have not been.
Waste summary	
	Assumptions and data concerning arisings and recycling rates have been incorrectly sourced from documents which predate the Minerals and Waste Core Strategy and incorrectly applied. Good information concerning the availability of void space for disposal of CDEW and Commercial and Industrial waste was previously provided to HS2, but there are no firm arrangements made in the ES for the use or disposal of this waste material. The ES relies upon assertions of being able to achieve a high rate of diversion from landfill but these are reliant upon the draft Code of Construction Practice. However, the draft Code of Construction Practice is a vague statement of generalities and does not make specific commitments. Other major infrastructure schemes are cited (HS1, Crossrail and Olympic Park) but there is no third party verified evidence of what degree of recycling/recovery of aggregates was achieved on those schemes. Assertion and reality may be different in practice. Management of construction materials and wastes rely upon the implementation and adherence to the draft Code of Construction Practice. In addition, there is reference to Local Environmental Management Plans (LEMPs) to be produced during the Parliamentary process and the detailed design stage, in consultation with relevant stakeholders. Without sight of these details at this stage, then Buckinghamshire councils cannot be assured that the impacts of handling these materials will be adequately controlled and mitigated. The communities along the line of HS2 will similarly receive no comfort from the full detail of these measures that may only be agreed during the period in which the hybrid bill goes through Parliament.

	The ES proposes the 'Sustainable Placement' of surplus excavated material but neither the means employed for selection of material for Sustainable Placement, nor the selection of locations for 'Sustainable Placement', are set out, as well as the results of this selection process. 'Sustainable Placement' may not be necessary as stated since there are several permitted mineral working sites needing suitable CDEW material to backfill them and enable their reclamation to a beneficial use, many of which are within close distances to the line of HS2. Due to the lower level of economic activity in recent years several of these sites are delayed in their reclamation and would benefit from receiving surplus excavated material from HS2. However the Environmental Statement does not make this clear, and only refers to, '*Suitable projects or other opportunities for reuse of excavated material may be identified as the detailed construction planning of the Proposed Scheme progresses'.* The availability of inert wastes arising from this scheme can be beneficial in enabling the reclamation of quarry voids within Buckinghamshire.
	Summary of Minerals and Waste The Minerals and Waste Development Plan consists of the Minerals and Waste Core Strategy adopted in 2012 as well as the Saved Policies from the Minerals and Waste Local Plan adopted in 2006. These together comprise the Minerals and Waste Development Plan. In addition, the usage of Policies within the ES is severely flawed because of this blindness to the Saved Policies, as well as the lack of provision for new landfill capacity except for reclamation of mineral workings by filling with inert waste, expressed in policy CS15. Moreover the ES is not an appropriate place to discuss planning policy, since an ES is intended to consider and quantify the impacts of the development over various timescales, and their interactions. Planning Policy is out with the Environmental Assessment process. The most up-to-date information about arisings and recycling rates are contained in the Evidence Base to the Minerals and Waste Core Strategy adopted in 2012. HS2 Ltd has not utilised this information.

19. WATER RESOURCES AND FLOOD RISK ASSESSMENT

Volume 3: Route Wide Effects	
Section Number	*Comment*
15.3.3	A variety of SuDS is stated however only balancing ponds are being shown in the plans. There appears to be no description of what other SuDS are proposed.
15.4.3	"Will be mitigated locally wherever possible" No mitigation measures have been suggested.
15.4.5	"Implementation of measures set out in the draft CoCP" No reference as to where this document can be found.
15.4.9	"Until such monitoring and necessary agreed measures have been carried out, a likely significant temporary adverse effect is reported on the groundwater resources". This is not acceptable; a full mitigation plan should be in place to prevent the effects to groundwater.
15.5.11	Long culverts restrict the flow of watercourses and can easily be blocked by debris causing large flooding events. Blockages can be difficult and costly to clear. There is no reference to who will maintain and own these culverts. It is not clear what alternative options been explored. There is no rationale for needing these culverts.
15.5.28	"All practicable measures to mitigate adverse impacts on surface water bodies and groundwater have been identified, and those measures will continue to be reviewed". The County Council would like to be involved with this review as the Lead Local Flood Authority for Buckinghamshire.
Volume 5: Technical Appendices **Water resources assessment** **CFA 7 Colne Valley – WR-002-007**	
Section Number	*Comment*
4.2.5	"Mitigation will be incorporated to avoid major impacts during construction due to a temporary decrease in water quality." This statement contradicts what is said in section 4.2.4.
4.2.18	There appears to be no evidence that SuDS been considered/explored to treat the surface water before it enters the lakes or watercourses.
Volume 5: Technical Appendices **Water resources assessment** **CFA8 The Chalfont's and Amersham – WR-002-008**	
Section Number	*Comment*
4.2.3	If, as stated, a closed faced TBM reduces the likelihood of environmental impacts, then this method should definitely be selected.
4.2.11	There is no explanation of how this will affect the River Misbourne characteristics, overall appearance and quality.
5.2.1	The River Misbourne is locally fed by groundwater. A reduction in

	the upward flow of groundwater will considerably affect the natural state of the river.
5.2.10	I find it hard to believe that there will be negligible impact on groundwater quality during the construction phase and therefore there should be mitigation in place.
Volume 5: Technical Appendices **Water resources assessment** **CFA9 Central Chilterns – WR-002-009**	
Section	*Comments*
4.2.4	There is no evidence that the necessary infiltration test been done to prove that this is possible.
4.2.6	There is no consideration to the reduction in water quality given that the River Misbourne is a chalk river which is a sensitive ecological environment.
5.2.1	There has been no extensive groundwater modelling to prove that there will be a negligible impact on groundwater flow or quality in the chalk aquifer.
Volume 5: Technical Appendices **Water resources assessment** **CFA10 Dunsmore, Wendover and Halton – WR-002-010**	
Section	*Comment*
4.2.2	North of Wendover, on the Community Forum Boundary with CFA11 Stoke Mandeville and Aylesbury the line is on an embankment over a watercourse. There is no rationale for using an embankment at this point nor is there an explanation of how the surface/watercourse flow past. A viaduct would be more appropriate to cross the watercourse and associated floodplain.
5.2.6	There is no explanation of the mitigation for the potential impact on water quality and groundwater flow.
5.2.21	The disruption caused by the route and construction of the route cannot be classed as negligible when long term affects have not been explored nor have the effects further downstream.
Volume 5: Technical Appendices **Water resources assessment** **CFA11 Stoke Mandeville and Aylesbury – WR-002-011**	
Section	*Comment*
4.2.6	Where the construction of culverts for ordinary watercourses are being discussed with the Environment Agency, they should also be discussed with the Lead Local Flood Authority, Buckinghamshire County Council in this case.
4.2.11	There is no rationale for culverting the Stoke Brook. There appears to be no evidence that other options have been explored. For all culverts proposed, a technical assessment is needed to assess the location, length and size of each one.
5.2.24	There is no evidence that a ground contamination test will be undertaken to unsure all that is deposited is natural uncontaminated material.

Volume 5: Technical Appendices **Water resources assessment** **CFA12 Waddesdon and Quainton – WR-002-012**	
Section	*Comment*
4.2.1	There appears to be no justification for culverting all watercourses in the section. The Marston Brook and River Ray are main watercourses
4.2.6	Where the construction of culverts for ordinary watercourses are being discussed with the Environment Agency, they should also be discussed with the Lead Local Flood Authority, Buckinghamshire County Council in this case.
Volume 5: Technical Appendices **Water resources assessment** **CFA13 Calvert, Steeple Claydon, Twyford and Chetwode – WR-002-013**	
Section	*Comment*
3.2.3	(Table 1: Surface water features within 1km of the route in the study area) For the section relating to Grebe Lake, the connectivity between Grebe Lake and Calvert Jubilee LWS Lake should be explored further as local knowledge suggests the two lakes are connected via a culvert.
4.2.5	Currently these watercourses are not culverted therefore there will be an impact, cutting them off from the natural environment, changing their morphology and reducing their capacity.
4.2.13	Promise should be made to remove and rehabilitate the culvert under the construction railhead once operational.
4.2.22	Siphons are not recognised as good practice for drainage, alternative options should be explored. If a blockage occurred there would be severe impacts upstream.
4.2.23	This point states there “will be no impact on water levels in the Calvert Jubilee LWS”, however in 4.2.20 it states “the capacity of the culvert may limit downstream flows to the north-east of the existing railway” these are contradicting points.
4.2.28	The permanent effect of all three crossings (SWC-CFA13-13, SWC-CFA13-01 and SWC-CFA13-14) on the water levels in the Calvert Jubilee LWS Lake and Grebe Lake should be explored in greater detail.
Volume 5: Technical Appendices **Water resources assessment** **CFA14 Newton Purcell to Brackley – WR-002-014**	
Section	*Comment*
5	General concerns on groundwater effects at the cutting including quality.
Volume 5: Technical Appendices **Flood risk assessment** **CFA7 Colne Valley – WR-003-007**	
Section	*Comments*
7.1.5	There is no evidence of the mentioned modelled floodplains. There is no evidence that the River Colne been modelled to understand

	how it will change when it is realigned.
7.1.6	Raising the height of the jetty would be least damaging to the river environment. There is no explanation of measure or combination of measures will be used.
7.2.1	There is no justification for using culverts. There is no explanation of the impact on minor watercourses and their environment
8.2.19	There is no explanation about how the Blackford pumping station be managed and mitigated during risk of flooding.
8.2.30	There is no explanation about how the 1,026m cubed of water be displaced initially in the construction process nor is there an explanation about how the potential flood risk will be managed.
8.2.34	There is no explanation about how the temporary significant effect on the risk of flood at the Weybeards Cottage pumping station be mitigated.
Volume 5: Technical Appendices **Flood risk assessment** **CFA8 The Chalfont's and Amersham – WR-003-008**	
Section Number	*Comment*
7.3.2	There is appears to be no explanation of how the vents are to be dewatered. Also, there is not provision in place in case the pump fails.
8.4.4	There is no explanation about how the increased risk of flooding to Mill Lane properties will be managed.
Volume 5: Technical Appendices **Flood risk assessment** **CFA9 Central Chilterns – WR-003-009**	
Section Number	*Comment*
8.3.6	There is no rationale for why the culvert should be 1350mm in diameter. Full calculations should be conducted to ensure that all culverts, balancing ponds and SuDS are design to the correct size.
Volume 5: Technical Appendices **Flood risk assessment** **CFA10 Dunsmore, Wendover and Halton – WR-003-010**	
Section Number	*Comment*
8.3.4	There is no rationale for why the culvert should be 1350mm in diameter. Full calculations should be conducted to ensure that all culverts, balancing ponds and SuDS are design to the correct size.
Volume 5: Technical Appendices **Flood risk assessment** **CFA11 Stoke Mandeville and Aylesbury – WR-003-011**	
Section Number	*Comment*
7.2.2	Although culverts are being design to convey the 1 in 100 years flow, there is no explanation why are culverts being used for the Stoke Brook. The map WR-01-014 clearly shows that in times of flood the Stoke Brook has a substantial area of flood zone and surface water flooding, surely it would be beneficial to provide a viaduct for the section of rail which crosses the Stoke Brook, as this

	will still not produce any flood risk to the rail but it will also reduce the flood risk of the surrounding area.
8.2.7	There is no rationale for why this design has been chosen given that it will affect flood flows at Lower Thorpe.
8.2.8	There is no rationale for why it was decided that an embankment and culverts were a better option that a viaduct for the Stoke Brook. The combination of Brook diversions and culverts will only cause a larger flood risk to the surrounding area which already experiences floods in heavy and prolonged rainfall.
8.2.9	It is stated that the proposed scheme will result in the loss of 150m of the mill channel, 500m of the natural channel and 16,500m^2 of floodplain. This will have a significant effect on the Stoke Brook, but this issue has not been expanded upon.
8.2.23	There is no confirmation that the size of the culverts also take in to consideration the extensive surface water flooding in this area. There is no clarification if there will in fact only be one culvert for the Sedrup Ditch nor an explanation if there will there be any more culverts to convey the surface water in this area.
8.2.25	There will only be 2 culverts for the 2 main channels, and no consideration to the tributaries. There is no rationale for choosing an embankment and culverts over a viaduct.
8.2.33	It has been stated that the viaduct will lead to increases in surrounding flood water levels, but has not been discussed further. There is no explanation of the effect of this, nor how it will be mitigated.
8.2.38	There is no explanation of the modelling conducted.
8.3.6	There is no rationale for the use of culverts here in this location
Volume 5: Technical Appendices **Flood risk assessment** **CFA12 Waddesdon and Quainton – WR-003-012**	
Section Number	*Comment*
8.2	Only details of the River Ray and Muxwell Brook is included in this section. Missing is a detailed assessment of: Techwick Brook and Doddershall Brook
8.2.2	There is no explanation of how the runoff from both railway embankments will be managed
8.2.6	There is no explanation for why there was no hydraulic modelling conducted for the River Ray.
8.2.17	There is no explanation for why there was no hydraulic modelling conducted for the Muxwell Brook.
8.2.18	If the culvert was completely submerged when it was not in a flooded state then it seems logical that a viaduct would be a better option.
8.3	All balancing ponds and culverts must be designed using an appropriate method and all calculations should be provided to ensure that the method was accurate and the capacity of both balancing ponds and culverts are adequate.
Volume 5: Technical Appendices **Flood risk assessment**	

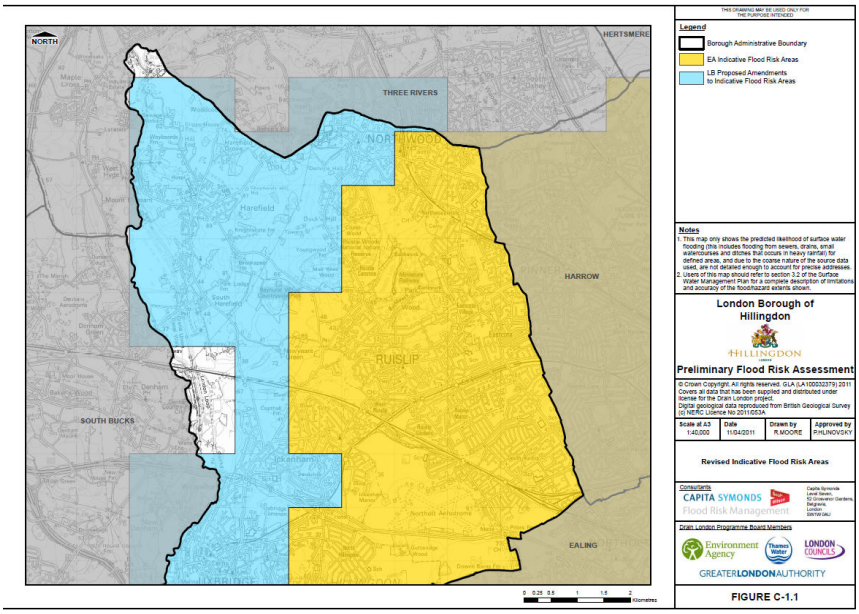
CFA13 Calvert, Steeple Claydon, Twyford and Chetwode – WR-003-013	
Section Number	*Comment*
8.2.4	These are extremely long culverts and there is no explanation for how these will be maintained to ensure that not blockages occur.
8.2.9	There is no consideration given to the effect on the 'sustainable placement' have on the watercourses quality. There is no confirmation of the type of soils being using for 'sustainable placement'. If they are contaminated soils then there is no consideration to the mitigation for leaching in to the watercourses.
8.2.10	The position and layout of the noise barriers and landscaping bunds will need to be so that they do not affect the flow of the watercourses or the flow or surface water.
8.2.12	It is stated that the proposed scheme will lead to increased extent of flooding upstream, however there is no mitigation provided.
8.2.18	Thought should be given to the capacity of the combined channel under the viaduct.
Volume 5: Technical Appendices **Flood risk assessment** **CFA14 Newton Purcell to Brackley – WR-003-014**	
Section Number	*Comment*
General	Most of this area is within other Counties. The Councils comments apply to the Wesbury and Tingemere area within Buckinghamshire and are generically the same as all of the above and below general comments in relation to watercourse crossings, proposed culverting, management of surface water and flood storage compensation areas.
Volume 5: Technical Appendices **CFA11 Stoke Mandeville and Aylesbury** **Stoke Brook modelling report – WR-004-003**	
Section Number	*Comment*
General	This modelling work refines the baseline flood risk from the Stoke Brook which is useful for design purposes, however it would have been beneficial to see hydraulic modelling of the impact the scheme will have on the Stoke Brooke flood risk.
Volume 2: Community Forum Area Report **CFA7 Colne Valley**	
Section Number	*Comment*
13.1.3	This paragraph highlights some major risks and activities that could lead to catastrophic impacts on groundwater quality as a result of construction activities associated with tunnelling, piling and retaining walls; impacts on groundwater flow towards public water supplies (PWS) located close to the route due to the piles to be constructed in the aquifer to support the viaduct; potential impacts on the risk of river flooding and potential impacts on the risk of surface water flooding. Realignment of the River Colne and Newyears Green Bourne; construction of a viaduct pier in the existing River Colne and a

	number of piers through some of the lakes within the Mid Colne Valley, including Harefield No. 2 Lake, Savay Lake, Korda Lake and Long Pond; river flooding at the crossings of the floodplain of the River Colne and Newyears Green Bourne; and surface water flooding at the dry valley close to Old Shire Lane. HS2 have not adequately considered these risks or provided enough evidence that mitigation will be effective.
13.1.8	"Discussions have been undertaken and *will continue*, with the Environment Agency and Affinity Water, with regard to the PWS abstractions and the water resources management plan within this and the adjacent areas (CFA6 and CFA8)". This suggests that there remain uncertainties about risk and ensuring that damage does not occur. The Councils would ask to be involved in the further planning that is essential to safeguard these water resources.
13.2.2	"Professional judgement has been used in selecting the appropriate limit to the extension in spatial scope required". However the councils are unable to find reference to the scope determined to be appropriate as part of this CFA. This is then linked to a "study area", which again is not obvious from the material provided.
13.2.5	The Councils agree that the 2001 baseline is sensible to use as a worst case. However, this only represents a worse case until now. Climate change projections indicate that there will be more frequent, higher intensity rainfall events in the future, which can alter the pattern, timing and flow rates.
13.3.15	"Groundwater flow in the Chalk is usually dominated by flow in fissures. Desk studies suggest that the depths of major fissures bands under the floor of the valley include a zone around 20 to 30m below ground level (m bgl) and another zone around 45m bgl". The Councils can see no scientific or quantified evaluation of vulnerability such as use of the DRASTIC (Aller et al. 1987) methodology. This may include natural recharge rates, aquifer media, soil media, vadose zone impacts and conductivity. Whilst such methods do have shortcomings it would provide a useful basis for discussion. Whilst some further details are provided in Volume 5: Appendix WR-002-007, the Councils cannot find evidence or details of relevant hydraulic modelling. In addition, the Councils are also unable to locate a copy of the referenced "Halcrow Group (2010), Upper Colne SFRM Study (TH013 and TH031) Hydraulic Modelling and Mapping Final Technical Report".
13.3.24	"Therefore in places the Chalk aquifer is vulnerable to contamination from the gravels and lakes due to the potential hydraulic continuity that is present" .The preferential flow characteristics and high fissure hydraulic conductivity relating to chalk is well established but underplayed by HS2. This is one of the Councils major concerns regarding potential impacts to water resources.
13.3.29	The residential dwelling at Dew's Farm is identified as being a high value receptor by HS2 however under the Proposed Scheme it will be demolished and thus will not be assessed further. Although in

	the London Borough of Hillingdon, this is a Two storey farmhouse with a possibly 15th C core and is on the Local List of Buildings of Architectural or Historic Importance
13.3.32	There are a number of receptors that will have the potential to be affected by the Proposed Scheme across the Colne valley including electricity substations (very high value receptors), leisure facilities (moderate value receptors) and pumping stations (low value receptors)". Again, the Councils do not consider that mitigation has been adequately considered for these receptors (with the exception of electricity substations that will be afforded additional flood protection).
13.3.41	The LBH Strategic Flood Risk Assessment128 (SFRA) identifies a potential flood risk from overtopping of the Grand Union Canal (see Map WR-01-008, Volume 5, Water resources and flood risk assessment Map Book, reference SWC-CFA7-03) during flood conditions within the River Colne. However this is then discounted as a risk by HS2 based on floodplain mapping.
13.3.45	The Buckinghamshire PFRA and the Hertfordshire PFRA show that there are areas that have a susceptibility to groundwater flooding within the study area, such as the valley of the River Colne and the dry valleys close to Old Shire Lane. No reference is made to whether this will be made worse or indeed mitigation plans.
13.4.9	The Councils have particular concern with deep piling and the risk to groundwater. The nature of the geology makes this extremely difficult to achieve without creating pathways.
13.4.18	"Pro-active management practices will ensure that, should a pollution incident occur, the impact is minimised, controlled and reported to relevant parties and remediated in accordance with Section 5 of the draft CoCP." Whilst it is critical to have plans in place for dealing with an emergency, pollution incidents involving liquids are difficult to control and normally impact on water quality, habitats and species if allowed to happen.
13.4.21	The naturally fractured nature of the Chalk may provide preferential pathways to the groundwater table for any spillages. There may, therefore be issues relating to groundwater quality resulting from turbidity or release of fluids from construction equipment. This therefore needs to be extremely well managed by HS2 to avoid this.
13.4.22	Specific monitoring to determine the potential impact to PWS (Affinity Water) and private abstractions *will be* undertaken. The Councils would wish to be involved in such discussion;
13.4.23	"Options include minimising the penetration into the gravels or cutting off the piles above the lake bed and leaving them in situ after construction". The Final ES should provide a recommended option that does not risk water resources.
13.4.30	"The potential impacts on water quality in some individual lakes could lead to a risk of a significant adverse effect."
13.4.31	Tunnelling, piling and retaining wall construction could have the potential to impact on groundwater quality due to the migration of fluids or suspended bedrock particles giving rise to raised turbidity. At the scale of the classified Mid Chilterns Chalk groundwater body any turbid groundwater will be attenuated within the Chalk and

	diluted in regional flow and the overall impact on the groundwater body as a whole is deemed to be negligible which for this high value receptor would be a neutral effect and therefore not significant. In common with many themes, the basis on which HS2 remove the 'significance' of an issue is not robustly demonstrated. The Councils consider that these remain real risks to the local water resources and environment.
13.4.32	"the impact of any change in groundwater quality in the wider groundwater body on surface water and water dependent habitats will be negligible". However there is no definition of what negligible actually means in this context.
13.4.33	Although effects on wider water body receptors are considered to be neutral, if fissures connect the working area of the Proposed Scheme directly to very high value receptors such as PWS, the impact of even low levels of turbidity could cause the closure of a source due to the high quality required to be met for potable use. The Councils consider that the use of high resolution surface geophysical surveys should be used to locate flow paths and lateral flow routes.
13.4.34	In addition, there is potential to impact groundwater quality at high value receptors such as PWS in this study area that may result from construction of the Proposed Scheme in the neighbouring CFA8, such as the Chiltern tunnel. This is because the direction of groundwater flow is from west to east and south-east from CFA8 into this area. As such, there is a risk that there could be an adverse effect on the PWS in this study area resulting from tunnelling activities in CFA8. Specific mitigation should be provided by HS2 on how it will protect this PWS.
13.4.36	The source protected by SPZ TH171 (see Map WR-02-007, Volume 5, Water resources and flood risk assessment Map Book) is much closer to and directly down gradient of the Proposed Scheme (Chiltern tunnel) in CFA8 than TH027 and TH177. As a result of this proximity the risk of turbid water entering this abstraction point is greater than for those protected by SPZ TH027 and TH177 and hence would result in a major impact that would be a significant effect. Once again, specific mitigation should be provided by HS2 on how it will be protected.
13.4.43	The groundwater table at this location is close to surface. The foundation piling is likely to disrupt groundwater flow. If significant flow horizons within the Chalk are obstructed this could lead to a reduction in flow to PWS abstractions that are particularly close to the route. The source protected by TH177 (see Map WR-02-007, Volume 5, Water resources and flood risk assessment Map Book) is located approximately 25m north-east of the route. It is predicted that the drawdown of groundwater levels at the source is likely to increase or there could be a reduction in yield by the same proportion. This potential additional drawdown or decline in yield could give rise to a major impact on the operation of this very high value receptor, particularly during times of drought. The Councils are extremely concerned with the number of unknown

	and unquantified elements relating impacts to high value receptors in the water chapter. This paragraph correctly identifies that this would be “a very large and significant effect”. It also demonstrates that the flow horizons and flow characteristics within the chalk are not clearly identified or understood for this project and additional research is required. It is not satisfactory to risk such receptors without additional planning. Once impacted it is almost impossible to implement corrective actions.
13.4.49	The private abstraction at Tilehouse Lane may be used for drinking water and further mitigation is likely to comprise the provision of an alternative water supply or other appropriate compensation for loss of the borehole. The Councils would expect feasibility options to be considered at the earliest opportunity.
13.4.54	The Councils consider that insufficient investigation has been undertaken to avoid the following situations from occurring: “Piling for the viaduct piers could disturb the groundwater flow regime to the Affinity Water groundwater abstraction protected by source protections zones. Flow horizons to the abstraction are likely to be penetrated and obstructed and as a result there could be a permanent reduction in yield at the source, resulting in a very large and significant effect which could occur during construction works”.
13.4.55	It is clear that assessment of the impacts on water has not been completed by the following statement: “Until a management strategy is agreed with the Environment Agency in consultation with Affinity Water, one potentially significant temporary residual effect and one potentially permanent adverse effect on the Affinity Water groundwater abstractions remain”. **This therefore remains of major concern to the Councils and should not be rushed to meet HS2 schedules.**
13.4.56	Until design of the temporary jetty is complete and the site specific flood risk management plan is agreed with the Environment Agency, HS2 identify a potentially significant temporary residual effect on the risk of fluvial flooding remains. The presence of a temporary jetty across the River Colne will reduce flood conveyance capacity, resulting in a moderate impact on very high value receptors and a large and significant effect. **This therefore remains of major concern to the Councils and alleviation measures should be developed as a priority.**

Hillingdon flood map	
	http://www.hillingdon.gov.uk/media.jsp?mediaid=27764&filetype=pdf

Volume 2: Community Forum Area Report CFA8 Chalfont's & Amersham	
Section Number	*Comment*
13.1.3	This paragraph highlights some major risks and activities that could lead to impacts on groundwater quality as a result of construction activities associated with tunnelling, and impacts on groundwater flow towards public water supplies (PWS). The potential for an increase in flow losses from the River Misbourne and Shardeloes Lake to the Chalk aquifer as a result of settlement due to tunnelling activities; the impact of dewatering during vent shaft construction on localised groundwater flows, and surface water levels and flows in the River Misbourne and Shardeloes Lake; and potential impact on the risk of surface water flooding in dry valleys at the Chalfont St Giles vent shaft and the Amersham vent shaft.
13.1.4	The Councils do not consider that enough stakeholder engagement has been done with regard to impact on water resources.
13.1.8	There is no evidence showing the outcomes from discussions mentioned in the footnote.
13.2.2	"Professional judgement has been used in selecting the appropriate limit to the extension in spatial scope required". However the council is unable to find reference to the scope determined to be appropriate as part of this CFA. This is then linked to a "study area", which again is not obvious from the material provided.
13.2.5	The Councils agree that the 2001 baseline is sensible to use as a worst case. However, this only represents a worse case until now. Climate change projections indicate that there will be more frequent, higher intensity rainfall events in the future, which can alter the pattern, timing and flow rates.
13.3.3	Chalk streams or winterbournes such as the River Misbourne frequently dry out and disappear during the summer due to a

	lowering of the water table and/or seepage into the underlying chalk strata. This has been a significant problem over the years and the Councils and its partners would expect HS2 to ensure the situation is not made worse (and indeed try to help improve this situation if possible)
13.3.15	"The tunnel elevation along the route in this area will be, of between 37.6m AOD near Chalfont St Peter, 59.8m AOD near Amersham and 78.1m AOD near Little Missenden, along the route in this area. This suggests that peak groundwater levels will be approximately 20-30m above the tunnel elevation". The consequence of this however in terms of design and mitigation is absent from the Final ES.
13.3.24	"Information available indicates that groundwater levels will often be at or above the base of Shardeloes Lake, particularly following periods of rainfall and high groundwater levels. The recorded water levels in the area also suggest groundwater levels are rising in response to a reduction in licensed groundwater abstraction. This is expected to have changed the surface water–groundwater interaction in recent years". The Councils therefore would expect to see HS2 consider in detail such interactions and have a good understanding of the hydrology. However, on reading this section of the Final ES, this required understanding is absent and no further comments provided.
13.3.25	HS2 highlight the fact that groundwater flow within the chalk is predominantly through fractures and can be rapid making the chalk vulnerable to contamination, particularly where there are PWS. The Councils therefore expect HS2 to fully understand the significance of such geology and the potential for greater impacts in this part of the line.
13.3.35	"Dry valleys that are shown to be at risk of surface water flooding are located close to the Chalfont St Giles vent shaft and the Amersham vent shaft". However, HS2 fail to present mitigation options or further work to be undertaken in this area.
13.3.41	The Environment Agency Reservoir Inundation Map shows that there is a residual risk of flooding due to the failure of the embankment forming the Shardeloes Lake to the west of Amersham. This will be important to monitor during construction of the tunnel and to ensure no significant vibration impacts occur.
13.3.45	Flooding from groundwater occurred within the Chilterns in the winter of 2000/01 and the Chiltern SFRA notes that there have been flooding incidents recorded in Old Amersham due to rising groundwater levels. Rising groundwater levels in the district have directly caused, or exacerbated, flooding in basements within Amersham Old Town, and at the foot of Gravel Hill in Chalfont St Peter. No reference is made to whether this will be made worse or indeed mitigation plans.
13.3.46	Both the Chalfont St Giles and Amersham vent shafts will be located within areas identified as susceptible to groundwater flooding by the Councils PFRA. HS2 therefore should be presenting consideration and an options appraisal for reducing risk in these areas in the documentation.
13.4.9	"As a precaution in the event that a technical constraint is identified

	in detailed design, provision has been made to transfer some discharge from dewatering by pipeline into the River Misbourne near each shaft". The Councils expect that this should only be undertaken in an absolute emergency situation and alternative options should be identified.
13.4.11	Surface water runoff from permanent infrastructure at the Chalfont St Peter, Chalfont St Giles and Amersham vent shafts and access roads will be collected in swales allowing infiltration of the surface water back into the ground at a controlled rate in accordance with the necessary approvals. However, there appears to be no location provided for the swales.
13.4.16	Baseline monitoring of river flows, and monitoring during construction, immediately upstream and downstream of crossing points will be undertaken *where this is viable and appropriate*, by installation of suitable flow gauging equipment. The Councils would expect that it is indeed viable and appropriate for HS2 to install such equipment in these areas.
13.4.18	"Pro-active management practices will ensure that, should a pollution incident occur, the impact is minimised, controlled and reported to relevant parties and remediated in accordance with Section 5 of the draft CoCP." Whilst it is critical to have plans in place for dealing with an emergency, pollution incidents involving liquids are difficult to control and normally impact on water quality, habitats and species if allowed to happen.
13.4.21	"The monitoring of ground settlement will be undertaken in the areas where the route passes beneath the River Misbourne and Shardeloes Lake, and for a suitable distance up and downstream" however there is no explanation of the suitable distance.
13.4.30	Tunnelling and piling/diaphragm wall construction has the potential to impact on groundwater quality due to the migration of fluids or suspended bedrock particles giving rise to increased turbidity. Dilution should however not be relied upon by HS2 to permit a reduction in water quality at any point.
13.4.31	The Councils do not agree that that reliance upon natural attenuation to reduce the impacts on surface water should be the standard mitigation offered by HS2. Creating turbid groundwater should be avoided in the first instance.
13.4.32	The sources protected by SPZ TH011, TH171 and TH181 are much closer to the route, and as a result of this proximity the risk of turbid water entering these abstraction points is greater, and would result in major impacts that would be a significant effect. The Councils consider that this would be unacceptable and as identified by HS2 would create significant effects.
13.4.38	HS2 identify that where the tunnels pass under the River Misbourne there could be the potential for ground settlement to occur during or soon after construction. HS2 however fail to provide details as to how the tunnelling methodology will try to prevent this occurrence.
13.4.41	The predicted settlement contours at the downstream crossing indicate no more than 260m of the River Misbourne could be at risk of fractures being activated. At the crossing upstream of Shardeloes Lake the potential length of river and lake that might be affected by settlement is about 540m (including a small area of the upstream

	parts of Shardeloes Lake). Both impacts have in the opinion of the Councils not been adequately considered or linked to the overall impact on river flow.
13.4.47	The practicalities of remedial action such as sealing fractures in the bed of the river which connect to the underlying strata remain of concern to the Councils and would question where else this has been undertaken and its effectiveness in the longer term?
13.4.52	It is clear that assessment of the impacts on water has not been completed by the following statement: "Until a management strategy is agreed with the Environment Agency in consultation with Affinity Water, one potentially significant temporary residual effect and one potentially permanent adverse effect on the Affinity Water groundwater abstractions remain". **This therefore remains of major concern to the Councils and should not be rushed to meet HS2 schedules.**
13.5.4 / 13.5.5	There are considered to be no likely significant adverse effects to surface water, groundwater or flood risk arising from operation of the Proposed Scheme. This cannot be the case. There are considered to be no further measures required to mitigate adverse effects to surface water resources, groundwater resources or flood risk; this cannot be the case.
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13.1.3	This paragraph highlights some major risks and activities that could lead to impacts on groundwater flow as a result of construction activities associated with tunnelling, impact on the risk of surface water flooding at the Little Missenden vent shaft and in the dry valley crossings at Mantle's Wood and Farthings Wood. HS2 have not adequately considered these risks or provided enough evidence that mitigation will be effective.
13.1.9	"Discussions have been undertaken and *will continue*, with the Environment Agency and Affinity Water, with regard to the PWS abstractions and the water resources management plan within this and the adjacent areas (CFA8)". This suggests that there remain uncertainties about risk and ensuring that damage does not occur. The Councils would ask to be involved in the further planning that is essential to safeguard these water resources.
13.2.2	"Professional judgement has been used in selecting the appropriate limit to the extension in spatial scope required". However the councils are unable to find reference to the scope determined to be appropriate as part of this CFA. This is then linked to a "study area", which again is not obvious from the material provided.
13.3.18	HS2 state that "There are no springs, issues or seepages shown on Ordnance Survey maps within the study area". Whilst this may be correct, many small examples will not be shown on OS maps and require other methods of assessment.
13.3.20	"Groundwater flow within the Chalk is predominantly through fractures and can be rapid making the Chalk vulnerable to

	contamination particularly where there are PWS or private abstractions for potable use". The preferential flow characteristics and high fissure hydraulic conductivity relating to chalk is well established but underplayed by HS2. This is one of the Councils major concerns regarding potential impacts to water resources.
13.4.11	HS2 correctly identify that; "the method of piling will be selected to avoid creating hydraulic pathways, such as cracks and cavities between the construction and the natural rock that might establish pathways between the aquifer and shallower surface water and groundwater. This is particularly important for deep piles penetrating the Chalk and areas where contamination may exist". This therefore needs to be extremely well managed by HS2 to avoid this and the Councils are not convinced that enough is understood about preferential pathways in such an environment.
13.4.21	HS2 identify the need to develop suitable quality criteria prior to material being placed to ensure that the existing groundwater quality is not adversely affected by the quality of the placement material; however this is yet to be developed. The Councils would wish to be involved in the setting of such criteria.
13.4.24	Temporary material stockpiles will potentially be located within the area at risk of surface water flooding at the Little Missenden vent shaft and adjacent to the Proposed Scheme near to Hyde Farm. HS2 must set out how they will protect stockpiles from potential flooding before they are put in place.
13.4.31	"At the scale of the classified Mid Chilterns Chalk groundwater body any turbid groundwater will be attenuated within the Chalk and diluted in regional flow and the overall impact on the groundwater body as a whole is deemed to be negligible which for this high value receptor would be a neutral effect and therefore not significant". In common with many themes, the basis on which HS2 remove the 'significance' of an issue is not robustly demonstrated. The Councils consider that these remain real risks to the local water resources and environment.
13.4.32	Although effects on wider water body receptors are considered to be neutral, if fissures connect the working area of the Proposed Scheme directly to very high value receptors such as PWS, the impact of even low levels of turbidity could cause the closure of a source due to the high quality required to be met for potable use. The Councils consider that the use of high resolution surface geophysical surveys should be used to locate flow paths and lateral flow routes.
13.4.41	HS2 worryingly identify that; "The Proposed Scheme could give rise to a significant adverse effect on water supplies that depend on the groundwater". The Councils are extremely concerned with this prospect. It also demonstrates that the flow horizons and flow characteristics within the chalk are not clearly identified or understood for this project and additional research is required. It is not satisfactory to risk such receptors without additional planning. Once impacted it is almost impossible to implement

	corrective actions.
13.4.45	It is clear that assessment of the impacts on water has not been completed by the following statement: “Until a management strategy is agreed with the Environment Agency in consultation with Affinity Water, one potentially significant temporary residual effect and one potentially permanent adverse effect on the Affinity Water groundwater abstractions remain”. **This therefore remains of major concern to the Councils and should not be rushed to meet HS2 schedules.**

20. HEALTH AND EQUALITY

20.1.1 It is unacceptable that the Health Impact Assessment and the Equality Impact Assessment were deemed outside of the scope of the Environmental Consultation.

20.1.2

[Insert comments on health and equality – however please confirm detail not required as it is outside the scope of the consultation]

21. CONCLUSION

21.1.1 HS2 Ltd states that the ES includes the likely significant environmental impacts along the route and the measures to manage and reduce these impacts. The Buckinghamshire Councils rejects that this has been completed due to the number of errors, omissions and assertions.

21.1.2 It is our intention that petitions on behalf of Buckinghamshire councils will be deposited against the Bill, and that our response to the ES is without prejudice to anything that may be said in the petition, and that additional points relating to the ES may be raised in the petition and at other stages.

APPENDIX 1: BUCKINGHAMSHIRE MITIGATION AND COMPENSATION BLUEPRINT VERSION 2

[Insert when finalised]