



HS2 Formal Environmental Statement Consultation – TfL/GLA Response

Issue v1.0final

27 February 2014

I. Introduction

- 1.1 The GLA and TfL provided detailed comments in July 2013 on the non-statutory consultation on the Draft Environmental Statement for the proposed HS2 scheme between London and Birmingham (Phase 1). We have reviewed these comments in light of the Formal ES publication and have amended / added to our response accordingly. It should be noted that this is the first time we have been able to comment on the Transport Assessment (the draft ES did not include a separate TA).
- 1.2 We hope that HS2 Ltd take the opportunity to digest important stakeholder feedback and refine any future documentation so that is as comprehensive and robust as is practicably possible.
- 1.3 Since the GLA family's comments on your 2011 consultation, the GLA and TfL are pleased to see that good progress has been made to reduce the impact of the HS2 route through London and ensure that the HS2 designs can better meet increased demand. In particular, the GLA and TfL are glad to see that you are proposing to provide a tunnel along the entire length of the Northolt Corridor which will significantly reduce the impact of HS2, including removing the need to replace 19 bridges, which would disrupt traffic across large parts of west London for years to come.
- 1.4 However, the GLA and TfL's support for HS2 has always been conditional upon a number of changes to the project, required by the Mayor, for which the current scheme only partially meets. A common theme across these objectives is to ensure that HS2 is a catalyst in transforming the UK in a sustainable manner as identified by the remit for the HS2 Growth Task Force. However, in order to unlock HS2's full potential, the project needs to consider the wider benefits and impacts inherent in any major transport project which we believe has not always been successfully realised by the HS2 Hybrid Bill proposals. The most critical issues which require urgent attention are as follows:
- A. **Lack of connectivity at Old Oak Common (OOC).** The HS2 Hybrid Bill proposals for the OOC interchange must include an Overground station and provision for a Crossrail 1 connection on to the West Coast Main Line. Your Transport Assessment clearly demonstrates the direct benefits to HS2 of these schemes by reducing pressure at Euston and improving connections to HS2 for over 250,000 people and 100,000 jobs. Providing the Overground and Crossrail 1 WCML link proposals could generate over £.5bn in increased tax income over 30 years in additional development compared to the current HS2 Hybrid Bill proposals. In addition, having a single point of access onto Old Oak Common Lane is forecast in the HS2 ES to add over 400 vehicles per hour unacceptable pressure to the A40 junctions which are already operating close to capacity. Further access points are required to help distribute the HS2 traffic associated with Old Oak Common across the highway



network. It is therefore considered essential that an alternative road access should be provided from the east at Scrubs Lane. This link would also act as a catalyst for regeneration by providing a direct connection to 35 hectares of land to the north of the Grand Union Canal; which can also help unlock regeneration.

- B. **The current proposal to link HS2 to HS1 is inadequate.** It would be highly disruptive to construct and once operational will constrain capacity on the North London Line impacting freight and London Overground services where demand where demand has tripled since 2007 and is forecast to grow by a further 70% by 2021. I want to see a better HS2 to HS1 link which would be in tunnel to not only minimise the negative impacts of the current proposal but also to better meet the longer term needs have sufficient capacity and flexibility to meet the longer term needs of the UK, including non central London domestic trips and any recommendations from the Davies Commission on future airport strategy. I will continue to press the DfT to postpone the current proposals until Phase 2, with provision made in the first phase of the project for a segregated, tunnelled link.
- C. **Value from regeneration and oversite development needs to be maximised.** Changes to the Hybrid Bill design at Euston and OOC are required to unlock the regeneration of the wider area as demonstrated in the recent HS2 Ltd led study on Euston. I was disappointed that the January 2012 Euston station design was not further progressed and have consistently made the point that the current station design is 'sub-optimal' and that the plans do not have sufficient regard to the potential for regeneration and development around the station as set out in the draft Euston Area Plan. Further work is needed to develop station designs demonstrate how the designs for Euston and OOC stations that can be better integrated with the longer term development plans and be a catalyst for regeneration including improved access to Wormwood Scrubs. If done properly, the economic uplift is likely to be significant at over 3,000 homes, and 13,000 jobs and £950m of Gross Value Added per annum (GVA) at Euston (compared to less than 3,000 homes, 7,000 jobs and £270m GVA in the current HS2 proposals). At OOC, the opportunity of a properly integrated HS2 plan is even greater with over and 20,000 homes and 50,000 jobs at Old Oak Common, generating billions in additional development value ;
- D. **The HS2 construction proposals at both Euston and Old Oak Common require further work.** Work underway jointly with HS2 Ltd, NR and the TOCs urgently needs to identify changes to the phasing of works to the station works, LU station and existing NR concourse and highway works at Euston and to the GWML works and interchange station at Old Oak Common. This can help minimise the adverse impacts by reducing congestion as well as bring forward benefits; and
- E. **The impact to Crossrail 1 operations requires further work.** It is essential to ensure that disruption to Crossrail 1 services is avoided and that access to the Crossrail 1 depot is maintained at all times to allow the Crossrail service to operate. As with Euston, a delivery group made up of HS2 Ltd, NR and TfL is urgently required to develop robust plans and identify works that can be completed before Crossrail 1 services commence. It is important to stress that without the necessary changes to the current HS2 proposals to address these



concerns, TfL will have to raise objections to such aspects of the HS2 plans through petitioning the HS2 Hybrid Bill. Whilst we are optimistic that we can find solutions to these issues, there is a limited amount of time in which to do so as TfL will need to be assured that they have all been addressed prior to the HS2 Hybrid Bill Second Reading.

F. Property Considerations. Should any part of the scheme encroach on TfL assets or infrastructure which is unacceptable to TfL, this will need to be reviewed and resolved before the Second Reading due later this year.

1.5 In addition, further work is required to unlock the regeneration opportunities at both Euston and Old Oak Common to be realised. For example, both stations need to provide significantly improved permeability by offering links to the surrounding areas. At Euston, re-establishing Drummond and Euston Streets as pedestrian links through the station, reducing the severance of Euston Road as well as adding a new east west link road are critical to re-integrating Euston with the surrounding community. At Old Oak Common, we are disappointed that the Formal ES does not recommend the inclusion of a new eastern link road, despite clear benefits to the local highway network.

Structure of response

1.6 For this response to your Formal Environmental Statement consultation, the GLA and TfL have reviewed the relevant documentation and provided comments on the following reports:

- [CFA report 1: Euston station and approach](#)
- [CFA report 2: Camden and HS1 link](#)
- [CFA report 3: Primrose Hill to Kilburn](#)
- [CFA report 4: Kilburn to OOC](#)
- [CFA report 5: Northolt corridor](#)
- [CFA report 6: South Ruislip to Ickenham](#)
- [CFA report 7: Colne Valley](#)
- [Route Wide impacts](#)
- [Code of Construction Practice](#)

We have also provided comments on the Transport Assessment in a separate document entitled "HS2 Environmental Statement Consultation – Transport Assessment response".

1.7 For each document the GLA and TfL have provided detailed comments, structured under each sub-section where possible¹. A list representing the key issues from all sections is provided in chapter 2. It is expected that these issues will be treated as a priority by HS2 Ltd so that they are adequately addressed as the project progresses. The GLA and TfL expect HS2 Ltd to work closely with TfL to progress the scheme design and agree key inputs.

In chapter 3 of this response, the GLA and TfL have also reviewed earlier responses to previous HS2 consultations and highlighted the key issues raised. Following on from this,

¹ Comments on Land Quality have not been provided as this is regarded as matter for local boroughs to lead on.



chapter 4 compares the current ES with that proposed in 2013 and highlights how key environmental issues have been addressed in the Formal ES.

2. **Key issues**

- 2.1 Outlined below are the key issues identified by the GLA and TfL following a review of the various Formal ES documents relating to London. Here, the GLA and TfL have tried to provide guidance on what both organisations would expect to see clearly addressed. The GLA and TfL are ready to work with HS2 Ltd on addressing all of these issues as the project develops.
- 2.2 **General**
- 2.2.1 Impacts: The GLA and TfL expect HS2 Ltd to clearly assess the scale of the likely impacts (both during construction and once fully operational) and benefits of the scheme. The documents would also benefit from clearly defining the impact ratings used in the Draft ES (such as Significant Impact vs Minor Impact) in order to better reflect the true nature of the impact.
 - 2.2.2 Wider Impacts: The GLA and TfL expect HS2 Ltd to show fully the wider positive and negative impacts associated with the proposed scheme, and not be limited to the HS2 incremental contribution (e.g. to passenger arrivals at Euston).
 - 2.2.3 Mitigations/Interventions: Few mitigation measures are proposed for the impacts identified by HS2. While this is justified given the need to update the demand forecasts and construction methodology workstreams, it is disappointing that options are not identified given that the scale of the impacts are already well known and unlikely to significantly change. The GLA and TfL expect HS2 Ltd to provide much more detail on mitigation measures and must demonstrate how HS2 Ltd's proposed mitigation measures are better than alternative measures considered. A strong evidence base is essential.
 - 2.2.4 Performance: HS2 Ltd have stated that they will assess impacts on the basis of the pure incremental increase in flows driven by HS2. However, the performance impact of the network is likely to be more severe given that most transport links are near or at capacity regardless of HS2. We also expect HS2 Ltd to highlight critical environmental areas as well as critical parts of the transport network where the impacts of HS2 mean a 'tipping point' is passed in terms of network performance and environmental limits.
 - 2.2.5 Integration: the GLA and TfL expect to see a statement from HS2 Ltd committing to an integrated transport solution for the stations and surface modes to meet the expected demand and safe onward journeys.
 - 2.2.6 Modelling: While the assessment of the environmental impacts (be that air quality, noise, land use or emissions) requires a robust set of demand outputs and construction plans, it is disappointing that HS2 Ltd have not outlined the likely conclusions, nor shared the modelling that has been undertaken with TfL or GLA officials. The GLA and TfL would expect HS2 Ltd to provide a clear set of assumptions (agreed with TfL) in establishing the 'with' and 'without' HS2 baseline demand scenarios, along with a discrete number of sensitivities to test a range of reasonable future outcomes.



- 2.2.7 Methodology: The methodology for determining the impacts is not clear and the assertions made in the documentation will need to be clearly demonstrated that HS2 Ltd can effectively mitigate the impacts with clear evidence.
- 2.2.8 Construction: The GLA and TfL expect HS2 Ltd to clearly state construction impacts and propose worksites that minimise impacts on the surrounding communities. In particular, worksites should avoid if at all possible the use of public spaces and residential sites.
- 2.2.9 Complementary Schemes: HS2 Ltd state that TfL will need to bring forward some of its proposed (but as yet uncommitted) major upgrades and schemes. The GLA and TfL expect that HS2 Ltd will clearly identify these schemes and agree with TfL how these schemes will be delivered and funded. For example, HS2 Ltd should ensure that plans have to take into account TfL's emerging options for improving Euston Road being developed by TfL.
- 2.2.10 Consistency: The GLA and TfL expect HS2 Ltd to ensure that consistent standards and approach are applied across all Community Forum Areas.
- 2.2.11 Compensation: The GLA and TfL expect HS2 Ltd to state that the future compensation consultation will identify adequate compensation measures for those affected by the project.
- 2.2.12 Regeneration: The scope; spatial limit and timeframe of the regeneration or development compulsory purchase powers (clause 47 of the Hybrid Bill) need to be clarified and the potential adverse impacts e.g. on the operation of Crossrail I should be assessed.

2.3 Traffic & Transport

- 2.3.1 Detailed comments on the Transport Assessment are provided in the separate document "HS2 Environmental Statement Consultation – Transport Assessment response". However, they issues are highlighted below:

– General :

- There remains no clear strategy to mitigate the impacts of HS2 on the transport network;
- The impacts of the HS2 scheme on the transport network are under played. Phrases such as "minor impact" are used without justification throughout the assessment;
- While the assessment includes a comprehensive assessment of highway and LU impacts, the assessment of the impacts to rail modes is inadequate;
- No station impacts are presented or validated. TfL would expect to see full pedestrian model analysis at both Euston and Old Oak Common in the TA. Without this, there is no demonstration that the stations are suitably sized;
- Facilitating regeneration: TfL believe that further links are required in order to allow large scale regeneration to take place, particularly at Old Oak Common. We hope the Growth Task Force recommendations will go some way to addressing this;



- A number of sensitivity tests are included within the TA, suggesting that the mitigation measures TfL are proposing would have a hugely beneficial impact on the HS2 scheme. An example of this is the Old Oak Common Overground station, which would relieve pressure at Euston. TfL urge the DfT to better link Old Oak Common station to the rail network;
 - HS2 Ltd has undertaken a comprehensive strategic highway assessment within the TA but there is insufficient detail provided regarding local junction impacts. HS2 Ltd must work closely with TfL to understand these impacts comprehensively;
 - The highway analysis provided in the TA does not give TfL sufficient comfort that the HS2 proposals can be accommodated on the TfL network. Until this analysis is substantially enhanced through the sharing of local junction models, TfL cannot support the proposals for highway access, particularly to Old Oak Common.
 - Base year models do not reflect observed data at key junctions. HS2 Ltd should sense check key junctions to ensure that critical junctions are well represented in the highway models;
 - Without the inclusion of an east-west through link at OOC, highway impacts on the A40 are likely to be unacceptable (e.g. major adverse impacts are identified at Savoy Circus – but no mitigation identified).
- **Construction assessment:**
- The proposed LU closures during construction at Euston are unacceptable to TfL. New construction phasing plans are required;
 - The proposed lane reductions on Euston Road are unacceptable to TfL without a comprehensive study into all construction and traffic management options
 - Adverse impacts on the Crossrail I depot (during its construction and operation) are not clearly or adequately defined including nature, timing and extent of works. As a result, TfL has concerns about the impact in the OOC Crossrail depot throat area and the large extent of LLAU. More detail is required upon which to make our assessment.
 - In addition, TfL is concerned about the proposed enabling works to divert a sewer across the Crossrail I depot site. HS2 Bill proposals are insufficiently robust for TfL to assess the impacts.
 - Note that, in April 2014, the Old Oak Common site transfers to Crossrail's Rolling Stock and Depot Service Provider (SP). TfL can confirm that it has made provision in this contract, see extract below:

"6.5 HS2 Without prejudice to the obligations of the Parties pursuant to the Change Procedure in relation to a Major Depot Change, throughout the Concession Period the SP shall (at its own cost) co-operate in all respects and in a timely manner with HS2, TfL and any of its or their respective representatives in relation to the facilitation of the HS2 Project. Such co-operation by the SP with



HS2, TfL and any of its or their representatives shall include, as appropriate, the provision of reasonable access at the OOC Depot and the provision of all reasonable assistance, relevant documents and information.“

- HS2 Ltd have assumed all construction traffic goes by road – HS2 Ltd should investigate how to maximise the potential to utilise the rail / canal networks.
- The disruption to the bus network is unacceptable – tunnelling the HS1 link would avoid the majority of these impacts.

2.4 Environmental

Key issues

- 2.4.1 HS2 Ltd has kindly provided a commentary on each of the key issues raised in the draft ES submission (see Appendix A). However, there are a number of residual impacts to consider, as outlined below:

- **General:**

- The GLA and TfL expect HS2 Ltd to provide more detail on environmental mitigation measures and should show how the proposed mitigation measures are better than alternative measures considered.

- **Air Quality:**

- There is no consideration of Air Quality Neutral (required by Policy 7 of the Mayor's Air Quality Strategy 2010 and in the London Plan) and whether HS2 Ltd is of the view that the scheme is Air Quality Neutral;
 - For Euston Road, additional consideration must be given to how air pollution impacts will be mitigated, as this is a high risk site. Any air quality assessment should be aligned with emerging Mayoral policies in particular the Ultra Low Emission Zone (ULEZ).

- **Community:**

- No alternatives for Euston play space have been identified during construction; re-provision of the facilities will occur following completion of construction;
 - The ES does not outline timescales for when community mitigation measures will be implemented. It would be expected that these would be in place prior to the impacting construction work;
 - HS2 Ltd must be accountable for reinstating or improving the local character of Camden Market and the surrounding area as this area is a key tourist attraction within London.
 - The GLA and TfL expect a comprehensive plan of mitigation to be included for affected residents and businesses in all the London Community Forum Areas. This would, for example, prevent the Wells House Road community from being isolated by the Old Oak Common works.



- **Socio-economic**

- It is expected that the ES should include more detail on the socio-economic impacts of the project and how these will impact on existing and emerging policies/strategies such as those in the London Plan
- All socio-economic impacts should be included in the quantified socio-economic assessment of the scheme. TfL feel that various socio-economic impacts have been omitted from the economic case, particularly construction impacts

- **Noise & visual:**

- In line with our previous comments, GLA and TfL expect the ES to aim for the highest practicable noise standards to minimise adverse impacts and ensure an acceptable living and working environment, by identifying a comprehensive programme of mitigation measures fully funded by HS2 Ltd. It is unclear what standards HS2 are using to define the Environmental Minimum Requirements (EMR);
- Despite the clear benefits of running through the Northolt corridor in tunnel, 400 residential properties are forecast to experience noise levels higher than the noise insulation trigger levels (as defined in the draft CoCP). TfL expect these properties to be compensated accordingly.

- **Landscape:**

- It is concerning that the ES states that there will be a loss of trees within Euston Square Gardens and St James's Gardens. HS2 Ltd must demonstrate that the loss of trees is absolutely necessary, particularly if it is to make way for construction sites. Mitigation through replanting and urban greening must also be set out clearly.

- **Habitat:**

- It is expected that HS2 Ltd will state whether replacement habitat will be provided on a like for like basis or whether alternative habitats are being restored or created which are considered to be of higher ecological value. An overall balance sheet would be helpful in this respect which sets out the total amount of habitat lost (and whether it is temporary and permanent) and the relevant mitigation or compensation being provided in terms of habitat restored, habitat enhanced or habitat created. In this respect we suggest that you consider the recent piloting of a 'biodiversity off-setting' scheme by Thameslink.
- An important bat roost is identified within CFA 3 - we would expect HS2 to work with Natural England to ensure that an appropriate mitigation package is agreed and implemented;
- Temporary sites are required for habitat loss during construction for example at Adelaide Road we would expect a suitable alternative site is provided by HS2 Ltd.



- **Carbon Emissions:**
 - The GLA and TfL expect HS2 Ltd to demonstrate clearly the scheme's contribution to the Mayor's objective of 60% reduction in carbon emissions in London. For example, will HS2 result in reduced numbers of private car trips to/from London?
- **Heritage:**
 - Further detail is required to understand the likely significant impacts on ALL heritage assets during construction in terms of noise, subsidence, visual intrusion, and reduction in property values
- **Vibration:**
 - Settlement of the Crossrail I depot caused by HS2's proposed works is a serious concern for TfL. Crossrail's depot has not been designed to withstand the settlement expected as a result of HS2. No provision has been made within Crossrail's designs to take account of HS2. HS2 needs to suggest an appropriate way forward to mitigate these likely impacts.
 - We appreciate that the route has been adjusted to mitigate our concerns about the sensitivity of the Grand Union Canal wall, however, we have residual concerns about this sensitive asset and its proximity to the Crossrail depot and will expect this to be picked up in the Protective Provisions Agreement.



3. Summary of previous consultation responses from the GLA & TFL

2011 response – key issues raised

- 3.1 Set out below are the key issues raised by the Mayor in response to the 2011 HS2 scheme consultation.
- i) Onward dispersal at Euston: The Mayor highlighted the serious issue of dispersing the large amount of passengers resulting from HS2 at Euston. LU line capacity at this part of the network will be severely stretched once HS2 phase 2 is open – analysis suggests that Crossrail 2 is likely to be required. This is of particular concern once Phase 2 is operational which is expected to more than double the number of passengers arriving at Euston in the morning peak compared to today
 - ii) OOC Connectivity: The Mayor highlighted the potential for a new hub at Old Oak Common and stated the need to realise the full benefits of the scheme at here. The Mayor sought a commitment for enhanced connectivity and complimentary rail measures and other transport enhancements to be included in the HS2 scheme at Old Oak Common. Providing interchange with London Overground and extending Crossrail to the West Coast Mainline will provide clear benefits not only to London's transport network but also to HS2 in reducing crowding at Euston. Furthermore, not providing these links through the HS2 project will significantly increase the difficulty of delivering these projects separately thereby potentially undermining the future redevelopment of the surrounding area;
 - iii) HS2-HS1 Link: The Mayor stated that no support could be given to proposals that will have significant construction impacts and longer term operational impacts on Overground services.
 - iv) Impact on property and people: The Mayor stated that the environmental impacts along the route through London must be addressed with appropriate mitigation measures. Impacts that were emphasised included the following::
 - Property impact - >200 residential dwellings required to make way for expanded Euston station
 - Noise Impacts – 700 properties affected by noise
 - Impacts on biodiversity, particularly in Colne Valley
 - Impacts of ventilation shafts on local green space
 - Severance of natural features (green corridors etc)
 - Land take associated with Mid-Colne Valley SSSI
 - Major Diversion of River Colne at a length of 275 m
 - Urban structure in rural/semirural landscape
 - Residual risk of bird strike



2012 EIA consultation – key issues raised

- 3.2 The issues raised by TfL in its response to the 2012 EIA methodology consultation focused on clarity and transparency going forward, and learning from other projects, including HS1 and Crossrail. Indeed, some of the standards HS2 Ltd was intending to adopt were not consistent with those used in the Crossrail project.
- 3.3 TfL also stated the importance of fully capturing the impacts of regeneration at Euston and Old Oak Common, both from an environmental and transport perspective.
- 3.4 TfL stated that the HS2 project also needs to be very mindful of London's heritage, as well as climate change adaption.

2013 Compensation response – key issues raised

- 3.5 Set out below are the relevant comments that the GLA and TfL made to the HS2 Compensation Consultation at the beginning of 2013.

Rural voluntary purchase scheme: The GLA and TfL agreed the principle of differentiation between rural and urban areas and agreed that the impacts of construction and operation will be relatively greater in rural areas since they tend to attenuate more quickly in urban areas as a result of being masked by other structures and buildings.

- 3.6 However, The GLA and TfL do not believe that the M25 is the appropriate boundary for this scheme and believe that the rural area is defined by the Metropolitan Green Belt which extends east of the M25 to West Ruislip

Blight legislation: The GLA and TfL requested an explanation for the proposal to not include small businesses in the blight legislation

Restoring confidence in properties above tunnels: Landowners value the assurance that a deed provides even though it does not add to the commitment given in a Parliamentary undertaking. HS2 Ltd should consider whether it is more appropriate to impose an obligation in the Bill on the nominated undertaker to assess the impact of ground movement on properties within the settlement trough, mitigate its effects and compensate affected owners where damage occurs.

- 3.7 The arrangements for the acquisition of subsoil are a matter of law as stated in the consultation paper.



4. Comparison of draft and formal ES – how key environmental issues have been addressed

The environmental impacts in West London

4.1 The GLA and TfL welcome the scheme design changes over the last two years that have reduced the schemes environmental impact through west London. The main changes resulting in a lower environmental impact are listed below:

- Tunnelling of the Northolt Section (from Old Oak Common to West Ruislip).
- Realignment of the Colne Valley Viaduct (although this has moved the alignment closer to the residents of Denham)
- Reduction in the diversion of the River Colne
- Moving the Adelaide Road headhouse so that it falls outside the Local Nature Reserve

4.2 However, the GLA and TfL must stress that further mitigation should be included where it is beneficial and cost effective. In particular, it is still not clear how residents in Camden will be adequately compensated for the loss of >200 local authority owned properties.

Air Quality

4.3 It is difficult to have confidence in the stepwise approach adopted to modelling roads and in the results. The roads should have been modelled using dispersion modelling only, with appropriately chosen background concentrations and appropriately determined local verification factors for particulate matter (PM10 and PM2.5) as well as NOX.

4.4 There is no consideration of Air Quality Neutral (required by Policy 7 of the Mayor's Air Quality Strategy 2010 and in the London Plan) and whether the applicant is of the view that the scheme is Air Quality Neutral. Specifically, at high risk sites such as Euston (which borders the Marylebone Road/Euston Road corridor which is amongst the most polluted in London) additional consideration must be given to how air pollution impacts of construction and operation (including through increased journeys and activity in the area) will be mitigated. We strongly believe that this is a unique opportunity for combining improved urban realm designed to reduce exposure, new infrastructure and planning-based policy levers to help deliver Mayoral policies (e.g. zero emission capable taxis) and ensure compliance with relevant EU limit values for air pollutants (PM10 and NO2). Further work is required if their opportunity is to be fully seized.

4.5 There seems to be no mention of Non Road Mobile Machinery (NRMM), which was part of our response to the draft ES consultation and is a key concern for the Mayor. It follows that cumulative impacts due to construction traffic plus NRMM have not been considered.

4.6 The mitigation for construction traffic emissions is described only briefly (Chapter 9.13 of Volume 1, Introduction to the Environmental Statement and the Proposed Scheme, November 2013, ES 3.1.0, Chapter 9.13) and is overwhelming focused on the construction phase: workforce travel plans and traffic management, as well as an upcoming "over-arching framework travel plan". There is nothing responding to our request, for instance, for provision and support of electric vehicles through additional infrastructure or



restrictions. There are no exemplary practices described in regard to mitigation of vehicle exhausts.

- 4.7 Mitigation of construction dust is to be addressed by the Code of Construction Practice.
- 4.8 The London Councils guidance² for determining significance of changes in ambient air quality should have been referenced and properly used.

Climate Change

- 4.9 Additional planting in green spaces near to rail corridor (in addition to proposed mitigation for loss of habitat from identified ecological sites): The GLA and TfL do not feel that this recommendation has been incorporated. Due to the locally significant incremental loss of trees and other vegetation along the route during the construction period, it is important to provide supplementary planting and enhancement of local green spaces in the vicinity of construction sites to compensate for temporal loss of habitat and amenity.
- 4.10 Integrate strict guidelines for the level of GHG emissions, both direct and indirect during construction and operation: The Draft ES, and the previous Appraisal of Sustainability, addresses Greenhouse Gas emissions to a certain extent. The Draft ES refers to the need for the Formal ES to update and further refine the GHG assessment with the latest design, operation and economic case information available at the time. The GLA and TfL will need to be party to this further assessment to ensure it addresses the issues first raised in 2011.
- 4.11 The Draft ES also refers to continuing work which is exploring methods to reduce the operational footprint and sustainable construction options including the use of materials with lower embedded carbon. It states that the latter may help identify potential savings in construction related GHG emissions. Again, the GLA and TfL need to be kept informed of the emerging results of the assessment.
- 4.12 Recognition and realisation of opportunities supporting the Mayor's target of 60% reduction in CO2 emissions by 2025: It is expected that HS2 Ltd will demonstrate how the scheme design has recognised these opportunities. However, within the Environmental Statement there is limited commitment to urban greening principles to aid in the reduction of CO2 emissions within London. Each structure should aim to be carbon neutral.

Biodiversity

- 4.13 Extension of tunnelling to edge of GLA boundary: Tunnelling has been extended to West Ruislip where it emerges from tunnel in order to incline over the viaduct. In line with our previous comments, the GLA and TfL welcomed this design revision. Tunnelling to the Colne Valley would avoid visual and biodiversity impacts in this area; noise impacts would also be reduced. However the GLA and TfL understand that, for engineering and geological reasons, this is not possible. In line with our previous comments, it is expected that HS2 Ltd will thoroughly demonstrate why this is the case.

² London Councils 2007. Air Quality and Planning Guidance – Revised Guidance July 2007



Comments on HS2 impact on water bodies

- 4.14 Consultants working from HS2 Limited have undertaken a Habitats Regulations Assessment (HRA) to determine the likely impact of the proposed high speed rail line on the special interest of the South West London Water-bodies Special Protection Area (SPA). The need to undertake the HRA was on the basis that the water-bodies in the Colne Valley may provide supplementary habitat for the wintering population of shoveler and gadwall.

Comments

- 4.15 The consultants have undertaken additional surveys of wintering wildfowl in the affected Colne Valley water-bodies and have compared these with previous winter wildfowl surveys'. They have also assessed the suitability of these water-bodies for shoveler and gadwall. This provides a sufficient evidence base to determine the importance of the affected water bodies for wintering shoveler and gadwall.
- 4.16 The surveys, and assessment of habitat quality, indicate that the affected water-bodies are not particularly suitable for shoveler or gadwall. This is a reasonable conclusion.
- 4.17 The surveys indicate that there is already a degree of disturbance on the affected water-bodies resulting from recreational activity and light aircraft and helicopter flights from a nearby airfield. The surveys indicate that shoveler and gadwall are not unduly affected by this level of disturbance and, consequently, would not be likely to be seriously disturbed by activities related to construction of operation of the high speed line, provided reasonable measures are implemented to minimise erratic noise and human movements. This is consistent with data from other sites which indicate that wildfowl often become habituate to such disturbance.
- 4.18 The HRA concludes that there would be no likely significant effect on the South West London water-bodies SPA. This is a reasonable conclusion based on the evidence that the affected water-bodies do not support large numbers of shoveler or gadwall and that those birds that are present would likely tolerate the low levels of additional disturbance resulting from the construction and operation of the high-speed line.

Visual Impacts

- 4.19 *It is unlikely that visual impacts of the Colne Valley viaduct can be mitigated so compensatory measures would be required:* Due to the realignment of the viaduct to reduce the adverse ecological impacts, the viaduct is now situated 60m closer to Denham than previous proposals. The possible significant residual impacts on sensitive receptors during construction and operation are likely to have increased from 2011 due to this change. However, the area has a number of roads crossing through the valley as well as the Chiltern Mainline located to the south. The M25 is also situated a short distance to the west. Nevertheless, the viaduct will add an additional element of infrastructure, therefore HS2 Ltd should set out how the visual impacts will be mitigated through design and materials.
- 4.20 *Number of properties at Colne Valley impacted upon visually:* The GLA and TfL believe early community involvement is encouraged to ensure that the local residents are involved in the design process.



Green Space

- 4.21 The Ecology, Landscape and Visual chapters of the Draft ES include the consideration of All London Green Grid (ALGG) supplementary planning guidance and ALGG Area Frameworks. It is expected that the detailed route design will be considered in light of ALGG projects identified within proximity of the route, and the opportunities for construction of HS2 to support or facilitate their delivery.

Noise

- 4.22 Noise barriers should be used along all areas of the route where there are sensitive receptors and especially along the Colne Valley viaduct. Lessons learnt from HS1 should be taken account of with technological advances incorporated.
- 4.23 Further information such as speed mapping would be useful in order to determine the appropriate mitigation for noise.

Property Take

- 4.24 There is evidence of joint working along the route within the Euston and London metropolitan area of the scheme. The Draft ES clearly sets out the work that has been undertaken and that which is ongoing with Local Authorities and the DCLG with regards to re-homing social housing tenants. The GLA and TfL expect HS2 Ltd to state that the future compensation consultation will identify adequate compensation measures for those affected by the project.
- 4.25 The GLA and TfL previously commented that lessons learnt from HS1 should be taken account of with technological advances incorporated; and noise barriers should be used along all areas of the route where there are sensitive receptors and especially along the Colne Valley viaduct. The ES reports the use of tall screening at construction sites, and tall noise barriers on the viaduct over the Colne Valley. Likely significant residual impacts will need to be fully addressed.



Detailed Review of the Environmental Statement Documentation

CFA reports

5. Euston station and approach – CFA I

Comments on Overview of proposals in the CFA

- 5.1 It is expected that the ES should demonstrate the rationale for using the historic Euston Square Gardens (protected by the London Squares Act) as a construction site/compound, what the estimated impacts are and how HS2 Ltd propose to mitigate the impacts (including finding nearby alternative sites for use as open space during construction)
- 5.2 The overview of CFAI in the Formal ES should state that the HS2 platforms will involve the demolition of Melton Street, lengths of Drummond Street and Euston Street (including several historic buildings) and the loss of a large part of St James' Gardens.
- 5.3 It is expected that HS2 Ltd will work with LBC and other stakeholders to re-provide demolished community infrastructure/facilities and re-provide lost open space. Where the word 'reduced' is used it is important to state what it is reduced from.
- 5.4 Section 2.7 'Route section main alternatives' is not adequate in its rationale for the discounting of alternative Station options. In particular, paragraph 2.7.20 states that 'The January 2012 announced scheme was rejected principally because, on further evaluation, it was found not to meet cost and completion date targets, as well as causing further disruption to the local communities'. The final design of Euston Station needs substantial further work to ensure that it can be a catalyst for regeneration and transformational in its nature.

Air quality

- 5.5 Euston station is located alongside Euston Road. The Mayor's statutory Air Quality Strategy identified Marylebone Road/Euston Road as one of the locations in London with the highest concentration of both PM10 and NO2 together with high levels of human exposure. This analysis has been reconfirmed by the latest version of the London Atmospheric Emissions Inventory. Euston Road is one of the locations most at risk of exceeding EU daily limit values for PM10 and is currently exceeding limit values (both hourly and annual) for NO2.
- 5.6 The construction of HS2, unless carefully managed, has the potential to significantly impact local air quality, exacerbating existing exceedences of EU limit values for NO2 and causing new exceedences of the EU daily limit value for PM10 which could trigger fines to the UK Government from the European Commission.
- 5.7 The ongoing operation of HS2, would have smaller impacts (for example, emissions relating to HS2-related travel to/from Euston Station via taxi or car) but these too would have the potential to exacerbate existing exceedence of EU limit values, especially for NO2. These exceedences would be particularly problematic given the current high level of human exposure along Euston Road and given that HS2 itself is likely to be a significant trip attractor, increasing the overall level of potential exposure.



- 5.8 These potential negative impacts will need to be considered in the ES, with appropriate mitigation identified or, if this is not possible, off-set. Particular attention will need to be focused on:
- understanding potential air quality impacts of additional HS2-related travel to/from Euston Station
 - understanding potential air quality impacts from the construction phase
 - identifying suitable and effective mitigation measures for any air quality impacts identified

It is also expected that HS2 Ltd will set out how servicing management plans and construction & logistic plans will address air quality in the Euston Area.

- 5.9 More generally, HS2 should see the delivery of the scheme as an opportunity through the use of green infrastructure, improved road layout and optimised building/urban design at sensitive sites such as Euston to minimise human exposure and potential health impacts of air pollution. This would help contribute to the broader benefits and wider business case for HS2. The provision for **electric vehicles** needs to be accommodated within the station design to account for the requirements for zero emission taxis.
- 5.10 Dispersion modelling should have been used to predict concentrations due to the oil and gas fired boilers; the cumulative effective of the boilers and operational traffic; and the impact on receptors at height.
- 5.11 Any air quality assessment should be aligned with emerging Mayoral policies in particular the Ultra Low Emission Zone (ULEZ).

Community

- 5.12 This section outlines the loss of the following:

- Residential properties
- Community facilities
- Open space
- Restaurants and retail
- Hotels
- Offices
- Education facilities

- 5.13 All of this is regretted and contrary to the London Plan (2011) and Draft Further Alterations to the London Plan (January 2014). In particular, the loss of the affordable housing and small businesses is significant and no relocation sites identified.

- 5.14 The proposed mitigation and compensation measures are at present unresolved and therefore inadequate. This again shows the importance of a comprehensive solution needing to be found for Euston Station and its environs as set out in the Euston Area Plan.



Development above the Station could play a vital role in providing floor space for many of these activities.

- 5.15 There are also many residents and businesses affected on a long term temporary basis and adequate compensation must be found or alternative premises must be found for these too.
- 5.16 It would be valuable if the ES outlined, in quantity terms, the amount of open space to be lost and gained as a result of the development around Euston and give time scales of when the replacement open space/play areas will be provided. Preferably these would be in place before construction work commences.
- 5.17 No alternatives for Euston play space have been identified, re-provision of the facilities will occur following completion of construction (11 yrs). The rational for using Euston Square Gardens as a construction compound has not been demonstrated.
- 5.18 The ES does not outline timescales for when community mitigation measures will be implemented. It would be expected that these would be in place prior to the impacting construction work.
- 5.19 The statement outlines that HS2 Ltd will continue to work closely with Camden Council, the GLA/TfL and other stakeholders, including Network Rail and other landowners, to explore the opportunities for development above and around the station that will arise from the Proposed Scheme. Camden's Euston Area Plan intends to make 'the best use of new space above the station and tracks and opportunities for regeneration in the wider area'. HS2 should provide more detailed information on how Euston Station will serve the local community (as well as passengers). For instance, the provision for car club vehicles is recommended within the station design. The ES outlines that vehicular access to properties within Park Village East will be restricted for up to 12 months during works. There will be continuing discussion with residents HS2 must demonstrate how disabled parking and access will be provided for at Park Village East.

Cultural Heritage

- 5.20 Environmental baseline maps and heritage inventories should also show buildings/other structures of local historic and architectural interest on Camden's draft Local List.
- 5.21 It is expected that HS2 Ltd will refer to London Plan Policy 7.11 London View Management Framework given the strategic views crossing the station site.
- 5.22 HS2 Ltd should take note of the London Borough of Camden's Core Strategy which does not restrict its presumption against demolition solely to listed buildings. The preservation and enhancement of heritage assets includes historic buildings of local importance (soon to be identified in Camden's emerging schedule of Locally Listed Buildings) and buildings/other structures which make a positive contribution to the character and appearance of its conservation areas.
- 5.23 HS2 Ltd should identify locations which would allow for the re-instatement of the Euston Arch in the station design that would satisfy stakeholders such as the Mayor, the Euston Arch Trust, heritage and amenity groups. Indicative perspectives of the reconstructed arch in the identified locations should also be included.



- 5.24 It is expected that the relocation of the listed structures in Euston Square, comprising, the LNWR memorial and the railings, will be discussed with TfL and LB Camden.
- 5.25 The National Temperance Hospital was founded in the 19th century and includes a range of significant Victorian buildings, but it also comprises the notable 1930s Insull Wing so this should be corrected to 19th century and interwar NTH.
- 5.26 The demolition of the historic National Temperance Hospital (recently awarded Local Listed status by LB Camden), whether in part or in whole, would be regrettable and therefore requires further investigation and justification. It is a group of buildings of significant historic and architectural significance. Every effort should therefore be made to preserve and find new uses for the most significant parts of these historic buildings. Options whereby their part retention and reuse would be much more sustainable than their destruction and should therefore be explored.
- 5.27 The demolition of 10 Melton Street would expose the northern flank wall, rather than the façade of the Grade II* listed building, 1-9 Melton Street. An appropriate contextual treatment must be provided to the exposed wall, in keeping with the existing building. This is essential and not optional, as suggested in the Draft ES.
- 5.28 The former Euston underground station building on the corner of Melton Street and Drummond Street is an important heritage asset – it is by a well-known architect, Leslie Green, most of whose underground stations are listed and it has recently been included on the London Borough of Camden's Local List of Historic Buildings. Therefore this building should not be described as having a low value (the rating should be raised to medium) and its disassembly and relocation should be explored.
- 5.29 Euston House is a notable 1930s art deco building built by the London Midland & Scottish Railway - it has recently been included on the London Borough of Camden's Local List in recognition of its architectural and historic significance and should not therefore be rated as having low value – this should be raised to medium.
- 5.30 ES Volume 2 - Euston Station - 6.3.20 (lines 4/5) Euston Fire Station (1902) should be described as 'arts and crafts', not 'art deco', a building style that did not appear for another 20 years, in the 1920s.
- 5.31 ES Volume 2 - Euston Station - 6.3.22 - it is not correct to state there was no further development undertaken on railway infrastructure prior to WWII – the London, Midland & Scottish Railway built a fine new head office building on Eversholt Street in 1935 – Euston House, designed by architects A.V. Heal and W.Hamlyn, recently awarded Local Listing status by LB Camden.
- 5.32 ES Volume 2 - Euston Station - as noted above, the former Euston Underground Station on Melton Street by Leslie Green (1907), recently awarded Local Listing status, should be rated of medium not low value.
- 5.33 ES Volume 2 – Camden Town – it is expected that all references to heritage assets affected by HS2 within LB Camden are cross-checked with the borough's new Local List of Historic Buildings Valued by the Community as this does not seem to have been done, just one example is the entry for Camden Garden Centre in 6.3.5 – its Local Listed status is absent from the report.



- 5.34 ES Volume 2 – Camden Town – the Grade II listed canopy to Camden Road London Overground station is a fundamental part of the heritage significance of this asset – it is the sole surviving platform canopy at this station and is a very good example of London & North Western Railway architecture of the 1870s, particularly its deep perforated-edged valancing. Its partial demolition is therefore regrettable and would constitute a high adverse impact and effect on the heritage asset, not a medium one.

Ecology

- 5.35 It is expected that HS2 Ltd will assess ecology impacts within CFA 1 in the context of the principles set out in London Plan Policy 7.19 Biodiversity and access to nature with respect to making ‘a positive contribution to the protection, enhancement, creation and management of biodiversity’ and ‘improv(ing) access to nature in areas deficient in accessible wildlife sites’.
- 5.36 Within the Euston Station & Approach CFA there will be permanent loss of significant areas of small but locally valuable nature conservation sites and loss of mature trees, green spaces and other features which have nature conservation value (e.g. as roosting sites for bats and nesting sites for birds).
- 5.37 In CFA 1, the Draft ES suggests off-site mitigation involving ‘enhancing existing habitats within non-statutory designated sites within the local area’. HS2 Ltd should clearly set out what is meant by ‘non-designated sites within the local area’. The GLA and TfL also recommend that HS2 Ltd sets out a comprehensive mitigation and compensatory package that seeks to create replacement habitat in areas where it added value to existing similar habitats as well as reduce deficiency in access to nature in areas adjacent to the route,
- 5.38 The proposed mitigation in relation to the loss of local green space and habitats is sufficient, but there may be scope for further tree-planting and urban greening in other nearby amenity green spaces which could be tied into a package of measures to address noise, visual and air quality impacts . In addition, serious consideration should be given to installing green roofs on all or part of the proposed new station building as this will also help to address London Plan policies on climate change adaptation and surface-water flooding, in addition to biodiversity.

Landscape and visual assessment

- 5.39 It is clear that planning policy has been considered and will continue to guide the design of above ground structures around Euston. TfL understands the need for the development and the extension of Euston Station to provide a London transport terminus.
- 5.40 The proposed station design should use the most up-to-date and carbon neutral building and design principles where possible.
- 5.41 The design should be developed in accordance with planning policy and provide sensitivity to the local area and historic environment. It is concerning that the ES states that there will be a loss of trees within Euston Square Gardens and St James’s Gardens. Mitigation through replanting and urban greening should be considered here.
- 5.42 During construction, appropriate and sensitive hoarding should be used in residential and historic environments, amongst other areas.



- 5.43 There does not seem to be modelling of the impact of the development in accordance with the London View Management Framework as set out in the London Plan (2011) and draft Further Alterations to the London Plan (January 2014). In particular, modelling is required of the following 'London Panoramas' – Primrose Hill to Central London; Parliament Hill to Central London; Greenwich Park to Central London; and Blackheath Point to Central London.

Socio-economic impacts

- 5.44 It is unclear what the socio-economic impacts of the project are based on in the ES. It is expected that HS2 Ltd will include more detail on the socio-economic impacts of the project and how these will impact on existing and emerging policies/strategies such as those in the London Plan. In CFA1, in particular, the ES needs to identify how the project aligns with the Euston Area Plan (EAP) principles, including an understanding of how provision for oversite development (OSD) could be made.
- 5.45 Additionally, it is again pointed out that a significant opportunity exists if a comprehensive solution to the redevelopment of Euston Station is undertaken. The area above the Station could provide significant space for displaced businesses. The latest estimate from GVA Property Consultants is that the January 2012 scheme with development above the sunken tracks could create an additional 13,500 jobs and £950 million per annum of Gross Value Added at Euston when complete. This compares to an estimated 7,000 jobs and £270 million per annum per annum of GVA from the current option.
- 5.46 HS2 Ltd should provide a thorough understanding of how HS2 will shape the following in central London:

- Location and number of any jobs created as a direct consequence of HS2
- Understanding how HS2 will transform the London commuter market
- A wider understanding of how HS2 will change trip patterns
- An understanding of how passengers will access HS2 stations, and analysis of any socio-economic impacts this may have

- 5.47 Additionally, it is again pointed out that a significant opportunity exists if a comprehensive solution to the redevelopment of Euston Station is undertaken. The area above the Station could provide significant space for displaced businesses.

Sound, noise and vibration

- 5.48 This section of the proposed route for HS2 comprises Euston station, and a relatively short surface section, leading to and from a tunnel portal. Passenger services have been assumed to operate up to 110kph in this area with speeds reducing towards Euston Station. An overview of sound, noise and vibration for the Proposed Scheme in this CFA is provided in the Non-technical Summary at page 59. It is further described in volume 2 of the ES for this CFA, and in the three volumes of appendices in volume 5 that are provided for the baseline conditions, construction assessment, and operational assessment of noise, sound and vibration.
- 5.49 The ES identifies significant potential adverse noise or vibration impacts arising from both operation and construction, including potentially adverse operational noise on a



community basis on parts of the Regent's Park Estate identified on map SV-05-001, and adverse noise from construction activity affecting residential and non-residential areas. Such impacts, reported at para. 11.4.17-19 and 11.5.23-4 of the CFA Report, will need to be fully addressed. Documents in volume 5 set out the baseline noise levels used in the assessment and describe how they have been determined, together with an assessment of significant construction and operational noise and vibration impacts in both text and map formats.

- 5.50 Volume 2 of the ES reports that reasonably practical measures will be sought to further reduce or avoid significant residual noise impacts and reflect the outcome of this activity in the Environmental Minimum Requirements (see paras. 11.4.20 and 11.5.25 of the volume 2 report for this CFA). How and where the environmental minimum requirements for noise will be reported in the ERM, should be clarified as the scope of, and the documents forming, the EMR, are confirmed (ES volume 1 section 1.4).
- 5.51 The need for further assessment work was recognised in the draft ES of 2013, and was to be reported in the Formal ES. A technical appendix for Sound, Noise and Vibration Construction Assessment for this CFA is provided in volume 5. Whilst combined noise maps setting out the likely operational noise contours arising from HS2 combined with the existing baseline noise are not included, the noise assessments have taken into consideration baseline noise levels and baseline data is reported.
- 5.52 The metrics used for the assessment are detailed in the HS2 Scope and Methodology Report which forms part of volume 5. We previously commented that the assessment criteria were acceptable and consistent with industry accepted practice. Assessment against the proposed criteria is provided in the technical appendix for Sound, Noise and Vibration in volume 5.
- 5.53 Mitigation measures for construction noise and vibration are specified in the draft Code of Construction Practice (CoCP). The ES Non-technical Summary for this CFA reports that a comprehensive set of mitigation measures will be implemented, including those in the draft CoCP, to manage noise and vibration during construction, including the phasing of construction works, the careful planning of construction traffic and deliveries and the use of quiet and low vibration equipment and screening along the edge of the construction worksites. Such management and mitigation of construction noise should be consistent with and improve on other major railway projects, for example Crossrail. In previous comments, estimates were sought by GLA and TfL of the number of properties that may qualify for noise insulation or temporary re-housing under provisions set out in the CoCP. A forecast of the number of residential buildings expected to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP, taking account of the avoidance and mitigation measures set out, is reported in the technical appendix for Sound, Noise and Vibration Construction Assessment at volume 5.
- Summary**
- 5.54 In line with our previous comments, HS2 Ltd should aim for the highest practicable standards to minimise adverse impacts and ensure an acceptable living and working environment, by identifying a comprehensive programme of fully funded mitigation measures.



Traffic and Transport

5.55 Please see comments in response to Transport Assessment, Chapters 7 & 14.

Water resources and flood risk assessment

- 5.56 The CFA for Euston identifies a significant existing flood risk to the proposed scheme in both the construction and operation phases and notes that these risks will increase through the century as the climate changes. The CFA proposes mitigating an 'increase in flood risk' through the design of drainage systems (principally attenuation tanks), but proposes all drainage discharge to the combined sewer.
- 5.57 The GLA and TfL hope that HS2 will set out a commitment for the Euston development to be neutral in its impact on flood risk, and to seek opportunities to actively reduce flood risk, potentially through capturing and using rainwater, increase permeability, seeking opportunities to discharge clean rainwater into local waterways or temporary storage before discharge into the combined sewer. This approach would reduce flood risk (or at least manage it in line with climate change) and offset the use of potable water for non-potable uses.



6. Camden and HS1 link - CFA 2

Overview of proposals in the CFA

- 6.1 TfL object to the current proposal for the HS2-HS1 link because of its impact on the operational railway, local environment and highway network. TfL and the Mayor have stated their position to HS2 Ltd, the DfT and the Secretary of State on a number of occasions. It should be noted that the adverse impacts highlighted below would not occur if the HS2-HS1 link was to be deleted from the scope of the project.
- 6.2 TfL has specifically raised concerns of the current design on the following points:
 1. NR have demonstrated that the proposal will have a detrimental impact on the North London Line (NLL), particularly on performance robustness and constraining future growth
 2. The impact the current design will have on the local environment, highway network and operational railway, particularly during construction when a number of rail bridges will need to be replaced and the viaduct strengthened to increase gauge clearance;
 3. The current proposal does not take account of the emerging aviation strategy for the UK, which will be informed by the outcomes of the Davies Commission, in 2015.
- 6.3 TfL do not believe that the impact of civil engineering and rail systems works that are required on the North London Line are dealt with appropriately. In its current state, the ES gives very little consideration to the impacts on rail both during construction and when completed.
- 6.4 The ES should acknowledge that the North London Line is not a disused formation but a high utilised passenger and freight railway which operates at near-to-capacity. TfL understands the track works required on the North London Line to reinstate the two northern most tracks to be significant work and should not be downplayed. In addition, the rail systems works required on the NLL and on the dedicated High Speed route should be included.

Air quality

- 6.5 It is expected that HS2 Ltd will fully assess the impact of the HS2 scheme on local air quality in Camden, with particular regard to the exacerbation exceeding EU limit values for NO₂ thereby exceeding the EU daily limit value for PM10.

Community

- 6.6 The HS2 proposals are contrary to the London Plan (2011) and Draft Further Alterations to the London Plan (January 2014). The proposed mitigation and compensation measures are at present unresolved and therefore inadequate.



- 6.7 The majority of the community impacts, for instance property take, could be avoided through tunnelling this section of the route. This would also reduce and in some cases prevent all likely ‘in combination impacts’.
 - 6.8 The proposals for an HS2-HS1 link would have enormous impacts on Camden Market. HS2 Ltd must be accountable for reinstating the local character of Camden Market and the surrounding area as this area is a key tourist attraction within London.
 - 6.9 In noting the land uses local to the proposed route for the HS2-HS1 link, Camden Market, an important landmark and tourist attraction, should also be listed. TfL and the GLA would expect to see impacts assessed on a “during” and “after” construction basis. Policy 4.8 of the London Plan recognises the need to support a successful and diverse retail sector and related facilities and services.
 - 6.10 This section outlines the loss of the following:
 - Residential properties
 - Community facilities
 - Open space
 - Restaurants and retail
 - Education facilities
 - 6.11 All of this is regretted and contrary to the London Plan (2011) and Draft Further Alterations to the London Plan (January 2014). In particular, the loss of the housing is significant and no relocation sites identified.
 - 6.12 The proposed mitigation and compensation measures are at present unresolved and therefore inadequate.
- Cultural Heritage**
- 6.13 The fate of both designated and undesignated heritage assets located within the temporary and permanent land-take is unclear in the Draft ES. It is expected that HS2 Ltd will be make the impacts on all heritage features clear. Should these be partially demolished or subject to subsidence, their destruction or adverse impact on their setting should clearly be stated and fully examined.
 - 6.14 It is expected that HS2 Ltd will demonstrate that the construction and operational impacts on the Roundhouse cultural facility cannot be prevented. This is not only a Grade II* listed building of significant heritage value but it is a national venue for musicians and productions. It is also an important educational and development facility. If impacts cannot be avoided, HS2 Ltd must clearly set out what these impacts are, taking into account the use of the building as well as its heritage value. Mitigation measures should also be clearly set out.
 - 6.15 The ES should specifically acknowledge that Camden Road station building is Grade II listed and will require sensitive modifications (listed in 2.2.8) as part of the proposed scheme to increase the gauge clearance of the railway.



- 6.16 The London Borough of Camden will shortly be approving its new register of Locally Listed Buildings. HS2 Ltd should acknowledge this as a new raft of heritage designations to be in place in the medium term.

Ecology

- 6.17 Where the route is in tunnel the impacts are confined to construction sites for stations and shafts. It is unlikely that there will be any significant adverse impacts on ecology and biodiversity, and where impacts do arise they can be mitigated or habitats/features restored post construction.
- 6.18 It is expected that HS2 Ltd will assess ecology impacts within CFA2 in the context of the principles set out in London Plan Policy 7.19 Biodiversity and access to nature with respect to making 'a positive contribution to the protection, enhancement, creation and management of biodiversity' and 'improving) access to nature in areas deficient in accessible wildlife sites'.
- 6.19 Within the Camden and HS1 link CFA there will be permanent loss of significant areas of small but locally valuable nature conservation sites and loss of mature trees, green spaces and other features which have nature conservation value (e.g. as roosting sites for bats and nesting sites for birds).
- 6.20 In CFA2, the Draft ES suggests off-site mitigation involving 'enhancing existing habitats within non-statutory designated sites within the local area'. HS2 Ltd should clearly set out what is meant by 'non-designated sites within the local area'. The GLA and TfL also recommend that HS2 Ltd sets out a comprehensive mitigation and compensatory package that seeks to create replacement habitat in areas where it added value to existing similar habitats as well as reduce deficiency in access to nature in areas adjacent to the route.

Landscape and visual assessment

- 6.21 Landscaping and urban greening principles should be included in the design as this will mitigate the impact on local residents. These principles should also be included at main construction sites and compounds in addition to the replanting of trees and vegetation.
- 6.22 It is recognised that HS2 will restore the current decoration on the bridges over Camden Road and Camden High Street. HS2 must be accountable for reinstating or improving the area's local character as this area is a key tourist attraction within London. The majority of landscape and visual impacts would be avoided if this section of the route was tunnelled.
- 6.23 During construction, appropriate and sensitive hoarding should be used in residential and historic environments.

Socio-economic impacts

- 6.24 A number of businesses will be affected by the proposals for an HS2-HS1 link through Camden. HS2 Ltd should identify the impacts on the local economy resulting from these impacts. A number of bars, cafes and restaurants will suffer from lost trade, and Camden Market will suffer from reduced footfall during the years of construction. HS2 Ltd should identify these economic impacts and discuss their mitigation option.
- 6.25 The social-economic impacts associated with disrupting bus services are not mentioned nor assessed within the ES. Potentially, tens of thousands of bus passengers will be



subject to extensive delays over an extended period. These disbenefits should be captured in HS2's social-economic business case.

- 6.26 The impact on the North London Line is not clearly set out. TfL do not believe the proposals for HS2-HS1 link could be implemented without extensive closure of the North London Line. Passenger growth on this section of the London Overground network is growing at 10% per annum, and currently 55,000 passengers per day pass through Camden Road. TfL expect the socio-economic impacts associated with disruption to these passengers to be fully captured.

Sound, noise and vibration

- 6.27 This section of the proposed route for HS2 extends from York Way (the A5200) in the east to Regent's Park Road Bridge in the west. This section of the proposed route would be on the surface with sections of elevated track until it enters a newly constructed tunnel approximately 100m to the east of the Regent's Park Road Bridge. Three trains per hour in each direction have been assumed during the day between 07:00 and 21:00, and fewer between 05:00 to 07:00 and 21:00 to 24:00; with speeds of up to 65kph. An overview of sound, noise and vibration for the Proposed Scheme in this CFA is provided in the Non-technical Summary at page 63. It is further described in volume 2 of the ES and in the three volumes of appendices in volume 5 that are provided for the baseline conditions, construction assessment, and operational assessment of noise, sound and vibration in this CFA.
- 6.28 The ES identifies potential adverse noise or vibration impacts in the CFA arising from both operation and construction including temporary construction-related impacts on residential communities, and on commercial properties located in Castlefield Road, Baynes Street and Chalk Farm Road; and a potentially adverse operational noise effect of significance on a community basis in the vicinity of Rousden Street, Randolph Street, St. Pancras Way, Wrotham Road, Agar Place, and Agar Grove. Such impacts, identified at para. 11.4.12-13 and 11.5.21 of the CFA Report will need to be fully addressed. Documents in volume 5 set out the baseline noise levels used in the assessment and describe how they have been determined, together with a detailed assessment of significant construction and operational noise and vibration impacts in both text and map formats.
- 6.29 Volume 2 of the ES reports that reasonably practical measures will be sought to further reduce or avoid significant residual noise impacts and reflect the outcome of this activity in the Environmental Minimum Requirements (see paras. 11.4.14 and 11.5.22 of the volume 2 report for this CFA). How and where the environmental minimum requirements for noise will be reported in the ERM, should be clarified as the scope of, and the documents forming, the EMR, are confirmed (ES volume 1 section 1.4).
- 6.30 The ES identifies potential adverse noise impacts arising from both operation and construction, including a potentially significant adverse operational noise effect on the eastern part of the residential block on Juniper Crescent and Park Village East (identified on map SV-01-02), which will need to be fully addressed. For example, the impacts on the Roundhouse should be identified and assessed.
- 6.31 Mitigation measures for construction noise and vibration are specified in the draft Code of Construction Practice (CoCP). The Non-technical Summary explains that measures in the current draft CoCP include the use of quiet and low vibration equipment and screening



along the edge of the construction worksites, including tall screening in a number of locations. Management and mitigation of construction noise and vibration should be consistent with and improve on other major railway projects, for example Crossrail. In previous comments, estimates were sought by GLA and TfL of the number of properties that may qualify for noise insulation or temporary re-housing under provisions set out in the CoCP.

- 6.32 In line with our previous comments, HS2 Ltd should aim for the highest practicable standards to minimise adverse impacts and ensure an acceptable living and working environment, by identifying a comprehensive programme of fully funded mitigation measures.

Traffic and Transport

- 6.33 Comments on the Transport Assessment are provided separately; see Chapter 8.

Water resources and flood risk assessment

- 6.34 The CFA for Camden identifies a significant existing flood risk to the proposed scheme in both the construction and operation phases and notes that these risks will increase through the century as the climate changes. The CFA proposes mitigating an ‘increase in flood risk’ through the design of drainage systems (principally attenuation tanks), but proposes all drainage discharges to the combined sewer.
- 6.35 The GLA and TfL hope that HS2 will set out a commitment for the Camden CFA development to be neutral in its impact on flood risk, and to seek opportunities to actively reduce flood risk, potentially through capturing and using rainwater, increase permeability, seeking opportunities to discharge clean rainwater into local waterways or temporary storage before discharge into the combined sewer. This approach would reduce flood risk (or at least manage it in line with climate change) and offset the use of potable water for non-potable uses.

7. Primrose Hill to Kilburn – CFA 3

Air quality

- 7.1 An Air Quality Management Area (AQMA) is in place. Unless carefully managed, the construction of HS2, has the potential to significantly impact local air quality, exacerbating existing EU limit values for NO₂ and exceeding the EU daily limit value for PM10. This will need to be fully assessed and suitable mitigation identified as appropriate.

Community

- 7.2 The likely residual impacts section should recognise the demolition of the commercial properties.
- 7.3 As the vent shaft and head house at Alexandra place is situated close to a residential area there will be residual visual impacts given the size of the head house. The ES should be clearer about the height of the proposed head house and the impact this would have on the adjacent residential properties.



Cultural Heritage

- 7.4 As with the other Community Forum Areas, it is expected that HS2 Ltd will provide clarity on the treatment to designated assets which fall within the permanent land-take and temporary land-take boundaries. Rather than eight listed buildings that are affected, this should read as 8 entries on the National Heritage List. HS2 Ltd should also provide clarity in the designated assets section as to which of the 530 listed homes and other structures are to be demolished, whether in whole or partially. Assessment of impacts and mitigation need to be further detailed.
- 7.5 Further detail is required to understand the likely significant impacts on ALL heritage assets during construction in terms of noise, subsidence, visual intrusion, reduction in property values, etc. Comments such as 'these assets would experience significant impacts' are far too general.
- 7.6 The elevational treatment of scaling and massing that complements surrounding properties should be emphasised for ALL assets under further mitigation, as this aspect is of critical importance. This issue is addressed to some extent in section 6.5.2 of the Draft ES but should be clearer in 6.4.7 too and included in 6.6.5.

Ecology

- 7.7 Within the Primrose Hill to Kilburn CFA there will be permanent loss of significant areas of locally valuable nature conservation sites and loss of mature trees, green spaces and other features which have nature conservation value (e.g. as roosting sites for bats and nesting sites for birds).
- 7.8 HS2 Ltd should set out a commitment to a degree of advanced greening and tree planting particularly in the proximity of construction sites as a contribution to alleviating the noise/dust impacts.
- 7.9 The GLA and TfL welcome the changes to the proposed scheme which will avoid any direct adverse impact on the Adelaide LNR. We note that HS2 are discussing the long-term management of the site (and the adjacent Site of Borough Importance) with the London Borough of Camden and we would expect this to result in a package that results in net benefit in relation to both ecology and access to nature.
- 7.10 We note that the Up Empty Carriage Tunnel has the potential to be an important bat roost and therefore we would expect HS2 to work with Natural England to ensure that an appropriate mitigation package is agreed and implemented.

Landscape and visual assessment

- 7.11 It is noted that the design has reduced the height and prominence of the vent shafts at Alexandra Place and removed from the LNR at Adelaide Road which will reduce visual impacts of the scheme.
The planting of new trees for screening purposes should be included in addition to any proposed replanting of vegetation.
- 7.12 During construction appropriate and sensitive hoarding should be used in residential and historic environments.



Socio-economic impacts

- 7.13 The ES should acknowledge and capture the substantial socio-economic disbenefits in the Adelaide Road area. These are related to the implementation of the ventilation shaft. The assessment should recognise and capture the impacts of:
- The destruction of 12 commercial unit, resulting in the displacement of 50 jobs
 - The diversion of bus services associated with the vent shaft construction

Sound, noise and vibration

- 7.14 This section of the proposed route for HS2 runs in tunnels between CFA 4 (Old Oak Common) and CFA 1 (Euston Station). The impacts of noise and vibration from the operation of the Proposed Scheme have been assessed based on the highest likely train flows, including the Phase Two services. 18 trains per hour in each direction have been assumed during the day between 07:00 and 21:00 in the main line tunnels and three trains per hour in each direction in the HS1 Link tunnel, with fewer between 05:00 to 07:00 and 21:00 to 24:00. Passenger services have been assumed to operate at up to 230kph in this area, with speeds reducing towards Euston station and the HS1 link portal. An overview of sound, noise and vibration for the Proposed Scheme in this CFA is provided in the Non-technical Summary at page 68. It is further described in volume 2 of the ES for this CFA at p121-131, and in the three volumes of appendices in Volume 5 that are provided for the baseline conditions, construction assessment, and operational assessment.
- 7.15 The Draft ES of 2013 identified potential adverse noise and vibration impacts in the CFA. At that stage it was not anticipated that there would be any potentially significant ground-borne noise or vibration in this area and it was expected that this would be confirmed in the Formal ES. This confirmation is given in the ES CFA3 report; however, construction at ventilation shafts, and construction traffic, are assessed as likely to create significant temporary residual adverse noise impacts. Such impacts, reported at para. 11.3.24-25 of the CFA report and the Non-technical Summary at p.68, will need to be fully addressed. Documents in volume 5 set out the baseline noise levels used in the assessment and describe how they have been determined, together with a detailed assessment of significant construction and operational noise and vibration impacts in both text and map formats.
- 7.16 Volume 2 of the ES reports that reasonably practical measures will be sought to further reduce or avoid significant residual noise impacts and reflect the outcome of this activity in the Environmental Minimum Requirements (see para. 11.3.26 of the CFA report). How and where the environmental minimum requirements for noise will be reported in the ERM, should be clarified as the scope of, and the documents forming, the EMR, are confirmed (ES volume 1 section 1.4).
- 7.17 Mitigation measures for construction noise and vibration are specified in the draft Code of Construction Practice (CoCP). The Non-technical Summary explains that measures in the current draft CoCP include the use of quiet and low vibration equipment and screening along the edge of the construction worksites, including tall screening in a number of locations. A forecast of the number of residential buildings expected to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP, taking account of the avoidance and mitigation measures set out, is included in the technical



appendix for Sound, Noise and Vibration Construction Assessment at volume 5. Management and mitigation of construction noise and vibration should be consistent with and improve on other major railway projects, for example Crossrail.

- 7.18 In line with our previous comments, HS2 Ltd should aim for the highest practicable standards to minimise adverse impacts and ensure an acceptable living and working environment, by identifying a comprehensive programme of fully funded mitigation measures.

Traffic and Transport

- 7.19 Comments are provided in the Transport Assessment response; see chapter 9.

Water resources and flood risk assessment

- 7.20 The CFA proposes that flood risk will be managed during operation via drainage design, including SuDS, but notes that opportunities for these may be limited by the fact that the railway is in a tunnel with only the ventilation shaft above ground. It further states that all drainage will be discharged to the combined sewer. We note there is no mention of inundation risk to the tunneled section and that the proposed scheme.

8. Kilburn to OOC – CFA 4

Overview of proposals in the CFA

- 8.1 TfL feel that the current proposals for an interchange at Old Oak Common will not allow the site to develop to its potential. In order for the site to be connected properly into west London's transport network, a connection to the London Overground network is required.
- 8.2 It is expected that HS2 Ltd will commit to work with TfL to develop a strategy to deliver the works required on or close to the Central line and GWML so that disruption to TfL and other rail services is minimised.
- 8.3 Further consideration needs to be given as to how the civil and rail systems works will be delivered on the GWML. The line should remain operational during the construction phase of HS2 and any closures or blockades that are required should be kept to a minimum and agreed with TfL in advance.
- 8.4 It is important to provide a seamless interchange between HS2 and Crossrail 1 services, to ensure the station meets its aim of dispersing passengers across central London. Otherwise, HS2 passengers will head into the crowded Euston station. It is expected that HS2 Ltd will acknowledge that interchange times between the GWML and HS2 will be slightly longer with an overbridge but that the overbridge will also be more affordable. Whichever option is pursued, there should be provision for a connection from the station to Wormwood Scrubs to the south.
- 8.5 Further, having a single point of access onto Old Oak Common Lane will add unacceptable pressure to the A40 junctions which are already operating close to capacity; further access points are required to help distribute the HS2 traffic associated with Old Oak Common across the highway network. It is therefore considered essential that an alternative access



should be provided into the station from the east and should be assessed. This could be achieved through the provision of a vehicular bridge over the Grand Union Canal HS2 and should be provided as part of the core proposals. An alternative access road to the east would also assist if there is an emergency at the station and evacuation is required.

- 8.6 In addition to relieving pressure on the surrounding network, this bridge would provide a direct connection to 35 hectares of land to the north of the Grand Union Canal which would dramatically improve the viability of development in this area and act as a catalyst for regeneration

Air quality

- 8.7 An Air Quality Management Area (AQMA) is in place. The construction of HS2, unless carefully managed, has the potential to significantly impact local air quality, exacerbating existing EU limit values for NO₂ and exceeding the EU daily limit value for PM₁₀. Onward travel to/from Old Oak Common during the HS2 operational phase may also have a negative impact on air quality. It is expected that this will be fully assessed, with suitable mitigation identified as appropriate.
- 8.8 The cumulative impact of the emission at the railhead and emissions from operational traffic has not been considered.

Community

Old Oak Common Station / Wells House Road

- 8.9 The construction in this area will create the unacceptable isolation of residential properties along Wells House Road from local shops and community facilities including schools and a play area. It is expected that HS2 will continue to work with the local community to provide effective mitigation, including substantial compensation.
- 8.10 More work needs to be carried to identify and then build a replacement play area.

Salisbury Road Car Park

- 8.11 The ES outlines that public toilets will be removed and relocated to provide a vent shaft. The ES does not provide any information on whether there would be any impact to the public car park. The car park is a public car park which supports local businesses and the main shops and services along Salisbury Road and Kilburn Road. Any works within, or removal of the car park could have major adverse community impacts.

Victoria Road

- 8.12 The Environmental Statement outlines that communities in the Victoria Road area (Shaftesbury Gardens and Midland Terrace) will be adversely affected by construction impacts and isolated from community facilities. Road closures and construction traffic along Victoria Road should be mitigated as well as the community's access to services and public transport.

Cultural Heritage

- 8.13 It is expected that HS2 Ltd will provide clarity as to the treatment to designated assets which fall within the permanent land-take and temporary land-take boundaries.



- 8.14 Further detail is required to understand the likely significant impacts on ALL heritage assets during construction in terms of noise, subsidence, visual intrusion, reduction in property values, etc.

Ecology

- 8.15 It is expected that HS2 Ltd will assess ecology impacts within CFA4 in the context of the principles set out in London Plan Policy 7.19 Biodiversity and access to nature with respect to making 'a positive contribution to the protection, enhancement, creation and management of biodiversity' and 'improv(ing) access to nature in areas deficient in accessible wildlife sites'.
- 8.16 Within the Kilburn to OOC CFA there will be permanent loss of significant areas of small but locally valuable nature conservation sites and loss of mature trees, green spaces and other features which have nature conservation value (e.g. as roosting sites for bats and nesting sites for birds).
- 8.17 In CFA4 the Draft ES suggests off-site mitigation involving 'enhancing existing habitats within non-statutory designated sites within the local area'. HS2 Ltd should clearly set out what is meant by 'non-designated sites within the local area'. The GLA and TfL also recommend that HS2 Ltd sets out a comprehensive mitigation and compensatory package that seeks to create replacement habitat in areas where it added value to existing similar habitats as well as reduce deficiency in access to nature in areas adjacent to the route,

- 8.18 Although the route is in tunnel here, and the vent shaft is unlikely to have any direct impact on sites or species of nature conservation value, it would appear that a range of ancillary works, including the construction of the station at Old Oak Common, would result in a temporary loss of range of habitats. The ES suggests that there will be suitable habitat creation post construction to replace the habitats lost during construction. However, the GLA and TfL recommends that consideration should be given to enhancing or creating suitable 'mosaic and transition habitats' off-site prior to and during construction in order to provide a stop gap between habitat loss and habitat restoration . Furthermore, consideration should be given to including biodiverse green roofs on the station and ancillary buildings and structures to create additional 'mosaic and transition habitats' in the longer term.

Landscape and visual assessment

- 8.19 No planting has been proposed to mitigate the visual impact of the head house and vent shaft at Salusbury Road. TfL consider that landscaping and urban greening principles in the design will help to mitigate the impact on local residents.
The planting of new trees for screening purposes should be included in addition to any proposed replanting of vegetation lost to construction.

- 8.20 During construction appropriate and sensitive hoarding should be used in residential and historic environments.

Socio-economic impacts

- 8.21 It is expected that HS2 Ltd will include more detail on the socio-economic impacts to identify how the project aligns with the Old Oak Common OAPF objectives. In particular, HS2 Ltd is not proposing to provide links between the new station and local environs. As a



minimum, the HS2 proposals should be extended to incorporate a new road crossing over the Grand Union Canal, allowing access to the east of Old Oak Common. If such links are not provided, Old Oak Common faces the danger of becoming an island, bounded by railways, which will damage the site's potential for regeneration. 'Old Oak – a Vision for the Future' published by the GLA, TfL, and the London Boroughs of Hammersmith and Fulham; Ealing and Brent identifies the potential for around 19,000 homes and 90,000 jobs.

- 8.22 The socio-economic impact of the following interventions should be assessed:
- Closure of London United bus garage on Atlas Road
 - Any impacts on the Crossrail depot
 - Relocation of Bakerloo line (LU) staff facility at Queens Park
 - Heathrow Express depot relocation to North Pole east
 - The diversion of the 228 bus route resulting from the temporary closure of Old Oak Common Lane (including disbenefit to passengers subject to a 3.5km diversion)
 - The permanent closure of Bethune Road
 - The impact on residents of Wells House Road
- 8.23 HS2 Ltd should work with TfL to provide a thorough understanding of how HS2 will shape the following in west London:
- The CFA report states that the area will possibly lose up to 1,540 jobs – how has this been calculated? Where would these jobs be lost?
 - Local commerce; a number of commercial properties will need to be demolished to make way for Old Oak Common. How and where will this be relocated?
 - Understanding how HS2 will transform the London commuter market
 - A wider understanding of how HS2 will change trip patterns
 - An understanding of how passengers will access HS2 stations, and analysis of any socio-economic impacts this may have

Sound, noise and vibration

- 8.24 This section of the proposed route for HS2 extends from Kilburn High Road in the east to Park Royal Road in the west; it runs in tunnels between Kilburn and Old Oak Common. The impacts of noise and vibration from the operation of the Proposed Scheme have been assessed based on the highest likely train flows, including the Phase Two services. Passenger services have been assumed to operate at up to 230kph in this area, with speeds reducing towards Old Oak Common station and towards Euston and the HS1 link portal. An overview of sound, noise and vibration for the Proposed Scheme in this CFA is provided in the Non-technical Summary (see p.73). It is described further in volume 2 of the ES, at p.163-176, and in the three volumes of appendices in Volume 5 that are provided for baseline conditions, construction assessment, and operational assessment.



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- 8.25 The Draft ES of 2013 identified potential adverse noise or vibration impacts in the CFA. At that stage it was not anticipated that there would be any potentially significant ground-borne noise or vibration in this area. This is confirmed in the ES CFA4 report; however, construction activity and traffic are assessed as being likely to create temporary adverse noise impacts. Documents in volume 5 set out the baseline noise levels used in the assessment and describe how they have been determined, together with a detailed assessment of significant construction and operational noise and vibration impacts in both text and map formats.
 - 8.26 Volume 2 of the ES reports that reasonably practical measures will be sought to further reduce or avoid significant residual construction noise impacts and reflect the outcome of this activity in the Environmental Minimum Requirements (see para 11.3.28 of the report for this CFA). How and where the environmental minimum requirements for noise will be reported in the ERM, should be clarified as the scope of, and the documents forming, the EMR, are confirmed (ES volume 1 section 1.4).
 - 8.27 Mitigation measures for construction noise and vibration are specified in the Draft Code of Construction Practice (CoCP). The ES Non-technical Summary explains that measures in the current draft CoCP include the use of quiet and low vibration equipment and screening along the edge of the construction worksites, including tall screening in a number of locations. A forecast of the number of residential buildings expected to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP, taking account of the avoidance and mitigation measures set out, is included in the technical appendix for Sound, Noise and Vibration Construction Assessment at volume 5. Management and mitigation of construction noise and vibration should be consistent with and improve on other major railway projects, for example Crossrail.
 - 8.28 In line with our previous comments, HS2 Ltd should aim for the highest practicable standards to minimise adverse impacts and ensure an acceptable living and working environment, by identifying a comprehensive, fully funded, programme of mitigation measures. The operational ground-borne noise and vibration should be mitigated at source in so far as is reasonably practicable, including the proposed optimised low vibration slab track and maintenance regime.

Traffic and Transport

- 8.29 An assessment of the Transport Assessment is provided, separately; see Chapters 10 & 15.

Water resources and flood risk assessment

- 8.30 This CFA identifies flood risks to the tunnel and vent shafts during construction and operation phases from heavy rainfall and breaching of the Grand Union Canal (where the tunnel passes under the Canal). The CoCP proposes measures to mitigate these risks, nevertheless as per 2.4.1 Vibration section, TfL has residual concerns and would expect the PPA to cover this aspect.. The CFA does not appear to identify surface water flood risk resulting from heavy rainfall to the Old Oak Common station in either construction or operation phase.
- 8.31 Surface water runoff and drainage systems from permanent infrastructure will be designed to attenuate runoff before being discharged to the Thames Water sewer network to address flood risk. Opportunities to use rainwater from the station roof to supplant



potable water for non-potable uses should be considered. The GLA and TfL welcome the commitment to investigate betterment of flood risk management through integration of the networks managed by Crossrail, HS2 and Network Rail and using Wormwood Scrubs Park for emergency flood storage.

9. Northolt corridor – CFA 5

Overview of proposals in the CFA

- 9.1 The GLA and TfL welcome HS2's decision to construct this section of the route in tunnel. However, there remain some residual impacts to mitigate.

Air quality

- 9.2 An Air Quality Management Area (AQMA) is in place. The construction of HS2, unless carefully managed, has the potential to significantly impact local air quality, exacerbating existing EU limit values for NO₂ and exceeding the EU daily limit value for PM10. HS2 Ltd should set out any additional impacts on the relevant AQMA and clearly describe the mitigation that will be incorporated to minimise these impacts.

Community

- 9.3 The location of the shafts and head houses and associated construction works within this CFA would not impact on community facilities.

Cultural Heritage

- 9.4 It is expected that HS2 Ltd will provide clarity as to the treatment to designated assets which fall within the permanent land take and temporary land take boundaries.
- 9.5 Further detail is required to understand the likely significant impacts on ALL heritage assets during construction in terms of noise, subsidence, visual intrusion, reduction in property values, etc, etc.

Ecology

- 9.6 It is expected that HS2 Ltd will assess ecology impacts within CFA5 in the context of the principles set out in London Plan Policy 7.19 Biodiversity and access to nature with respect to making 'a positive contribution to the protection, enhancement, creation and management of biodiversity' and 'improv(ing) access to nature in areas deficient in accessible wildlife sites'.
- 9.7 Within the Northolt Corridor CFA there will be permanent loss of significant areas of small but locally valuable nature conservation sites and loss of mature trees, green spaces and other features which have nature conservation value (e.g. as roosting sites for bats and nesting sites for birds).
- 9.8 In CFA5 the Draft ES suggests off-site mitigation involving 'enhancing existing habitats within non-statutory designated sites within the local area'. HS2 Ltd should clearly set out what is meant by 'non-designated sites within the local area'. The GLA and TfL also recommend that HS2 Ltd sets out a comprehensive mitigation and compensatory package



that seeks to create replacement habitat in areas where it adds value to existing similar habitats as well as reduce deficiency in access to nature in areas adjacent to the route,

- 9.9 The impact on the ecological resource is similar to that in the CFA 04 Kilburn (Brent) to Old Oak Common. Please refer to our comments above regarding opportunities for additional mitigation and compensation.

Landscape and visual assessment

- 9.10 Principles within the design and planting to provide screening of above ground structures will mitigate the impact on local residents. The planting of new trees for screening purposes should be included in addition to any proposed replanting of vegetation lost to construction.
- 9.11 During construction appropriate and sensitive hoarding or early planting as suggested within the ES should be used in residential and historic environments.

Socio-economic impacts

- 9.12 HS2 Ltd should assess the socio-economic impacts associated with the following impacts:
- Disruption caused at Greenpark Way
 - Congestion of the highway network during construction, to both bus users and general traffic
 - Demolition of residential dwellings on Mandeville Road

Sound, noise and vibration

- 9.13 The proposed scheme, with the exception of three shafts at the surface, is in tunnel throughout this CFA. The Northolt Tunnel will enter the area beneath Park Royal Road and leave to the south of Rabourne Drive in South Ruislip. The impacts of noise and vibration from the operation of the Proposed Scheme have been assessed based on the highest likely train flows, including the Phase Two services. Passenger services are assumed to operate up to 300kph with speeds reducing towards the proposed Old Oak Common station. An overview of sound, noise and vibration for the Proposed Scheme in the Northolt Corridor CFA is provided in the Non-technical Summary (see p.75). It is described further in volume 2 of the ES for this CFA at p.111-120, and in the three volumes of appendices in Volume 5 that are provided for baseline conditions, construction assessment, and operational assessment.

- 9.14 This section of the proposed route forms part of the route west of Old Oak Common that was identified as the major area of concern for noise impacts by the Mayor in his response of July 2011 to HS2 proposals. The Mayor's response to the 2011 consultation identified that further measures should be considered, including tunnelling and noise barriers.
- 9.15 This section of the proposed route, together with a section further west, was identified in the Mayor's response (2011) as having the following noise impacts on properties. To address these previous concerns about operational noise, the Proposed Scheme is now based in a tunnel.



- 9.16 The Draft ES of 2013 identified potential adverse noise or vibration impacts in the CFA. At that stage it was not anticipated that there would be any potentially significant ground-borne noise or vibration in this area. This is confirmed in the ES CFA5 report; however noise from construction has been assessed in the ES CFA report (para. 11.3.19-20) as being likely to result in temporary residual noise impacts. Such impacts will need to be fully addressed. Documents in volume 5 set out the baseline noise levels used in the assessment and describe how they have been determined, together with a detailed assessment of significant construction and operational noise and vibration impacts in both text and map formats.
- 9.17 Volume 2 of the ES reports that reasonably practical measures will be sought to further reduce or avoid significant residual construction noise impacts and reflect the outcome of this activity in the Environmental Minimum Requirements (see para. 11.3.21 of the report for this CFA). How and where the environmental minimum requirements for noise will be reported in the ERM should be clarified as the scope of, and the documents forming, the EMR, are confirmed (ES volume 1 section 1.4).
- 9.18 Mitigation measures for construction noise and vibration are specified in the draft Code of Construction Practice (CoCP). The Non-technical Summary notes that measures in the current draft CoCP include the use of quiet and low vibration equipment and screening along the edge of the construction worksites, including tall screening in a number of locations. A forecast of the number of residential buildings expected to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP, taking account of the avoidance and mitigation measures set out, is included in the technical appendix for Sound, Noise and Vibration Construction Assessment at volume 5. Management and mitigation of construction noise and vibration should be consistent with and improve on other major railway projects, for example Crossrail.
- 9.19 In line with our previous comments, HS2 Ltd should aim for the highest practicable standards to minimise adverse impacts and ensure an acceptable living and working environment, by identifying a comprehensive mitigation measures fully funded by HS2.

Traffic and Transport

- 9.20 Any comments are provided in the separate response to the Transport Assessment; see Chapter 16

Water resources and flood risk assessment

- 9.21 The CFA identifies flood risks from overflows from the sewer system and breaching of the Grand Union Canal and Brent Reservoir, though these are not felt to be significant. The GLA and TfL accepts the mitigation measures proposed by the CoCP.

10. South Ruislip to Ickenham – CFA 6

Overview of proposals in the CFA



- 10.1 The GLA and TfL would urge HS2 Ltd to deliver the earlier implementation of the proposed railhead at West Ruislip in order to mitigate against the environmental impacts during construction as outlined below.

Agriculture, forestry and soils

- 10.2 Avoiding residual impacts on agricultural land can be assured through following the CoCP and consulting Defra to ensure weeds are not spread. The impact to a farmer in relation to weed control can be costly and appropriate communication needs to be established between the landowners and HS2.
- 10.3 Land used as construction and storage sites can be negatively impacted on through soil compaction which affects the soils ability to drain surface water. The ES outlines a commitment for HS2 Ltd to reinstate such land, a good dialogue with landowners is pivotal to achieving this.

Air quality

- 10.4 An Air Quality Management Area (AQMA) is in place. The construction of HS2, unless carefully managed, has the potential to significantly impact local air quality, exacerbating existing EU limit values for NO₂ and exceeding the EU daily limit value for PM10. HS2 Ltd should set out any additional impacts on the relevant AQMA and clearly describe the mitigation that will be incorporated to minimise these impacts.

Community

- 10.5 HS2 Ltd have outlined they are working with the Ruislip Rifle Club to identify a suitable alternative premises. The GLA and TfL support the requirement to have the club relocated before construction begins.
- 10.6 The loss of three holes from the Ruislip Golf Course will result in the golf course no longer being able to function as a competition golf course. The ES outlines that the Golf Club have identified three holes that could be repeated and are able to continue to operate as an eighteen hole course. However, this would not be suitable as a competition course. HS2 should set out how the club will be compensated accordingly if the course cannot be redesigned to accommodate 18 holes.

Cultural Heritage

- 10.7 It is expected that HS2 Ltd will provide clarity as to the treatment to designated assets which fall within the permanent land take and temporary land take boundaries.
- 10.8 Further detail is required to understand the likely significant impacts on ALL heritage assets during construction in terms of noise, subsidence, visual intrusion, reduction in property values, etc

Ecology

- 10.9 The construction impacts here would result in the loss of 8ha of habitat from three sites of nature conservation importance, including the diversion of a section of the Ickenham Stream plus the loss of 30ha of habitat including woodland, railway land, farmland and hedgerows that are not covered by any nature conservation designation but provide potential valuable foraging and breeding areas for a range of species including bats.



10.10 The proposed mitigation includes the creation of a more naturalised section of the Ickenham Stream and relevant habitats associated with new flood storage provision. This is welcome.

10.11 However, other proposed mitigation simply refers to opportunities for the creation of woodland, scrub and grassland habitats within the realigned and existing rail corridors. Due to the extent of habitat loss (which is acknowledged as being of significance at the district/borough level) and the consequent potential impact on bats (which is acknowledged as being of potential significance at a county/metropolitan level), HS2 Ltd needs to set out a more comprehensive mitigation and compensation package which might also need to include off-site habitat creation to adequately address the amount of habitat loss.

10.12 The GLA and TfL welcomes the preparation of a more detailed package of landscape and ecology mitigation and compensation measures that aim to address the loss of a range of habitats (and features such as hedgerows) resulting from the need for relatively extensive land take during the proposed construction works. We note that this will focus on enhancing connectivity between existing sites, which aims to increase long-term ecological viability of the replacement habitats. We expect this package to be further developed and refined to maximise the value of the proposed habitat restoration and creation.

Landscape and visual assessment

10.13 Principles in the design and planting to provide screening of above ground structures will mitigate the impact on local residents. The planting of new trees for screening purposes should be included in addition to any proposed replanting of vegetation lost to construction.

10.14 During construction appropriate and sensitive hoarding, or early planting as suggested within the ES, should be used in residential and historic environments.

Socio-economic impacts

10.15 HS2 Ltd should assess the socio-economic impacts associated with the following impacts:

- A new railhead at West Ruislip (largely beneficial if delivered early in construction phase)
- Additional congestion on the highway network during construction, to both bus users and general traffic

Sound, noise and vibration

10.16 This section of the proposed route for HS2 extends from a point to the south of Rabournmead Drive in the east, to Harvil Road in the west. The ES is based on a 4.4km tunnel in the eastern part of the CFA and a surface section in the west. The tunnel portal would be about 70m west of Ickenham Road. This tunnel entrance is now located slightly further west from Ickenham Road than in the January 2012 scheme. The impacts of noise and vibration from the operation of the Proposed Scheme have been assessed based on the highest likely train flows, including the Phase Two services. Passenger services have been assumed to operate at 320kph in this area. An overview of sound, noise and vibration for the Proposed Scheme in the South Ruislip to Ickenham CFA is provided in the Non-



technical Summary (see p.78). It is described further in volume 2 of the ES, at p.187-201 of the CFA report and in the three volumes of appendices in Volume 5 that are provided for baseline conditions, construction assessment, and operational assessment.

- 10.17 This section of the proposed route forms part of the route west of Old Oak Common that was identified as the major area of concern for noise impacts by the Mayor in his response of July 2011 to HS2 proposals. The Mayor's response to the 2011 consultation identified that further measures should be considered, including tunnelling and noise barriers.
- 10.18 To partly address these previous concerns about operational noise, the Proposed Scheme is now based on a tunnel in the eastern part of the CFA. However, the impacts west of West Ruislip have not been mitigated.
- 10.19 The Draft ES of 2013 identified potential adverse noise or vibration impacts in the CFA, including a potentially significant adverse operational noise effect on the North Western edge of Ickenham. This ES identifies adverse impacts of operational noise or vibration that are significant on a community basis in the vicinity of Ickenham (para. 11.4.19 of the CFA6 report, and on map SV-05-009), and on a non-residential receptor (para. 11.4.22 and on map SV-05-009). These impacts, together with impacts arising from construction, are summarised as likely significant residual impacts at para. 11.3.30-32 and 11.4.26-7. Such impacts will need to be fully addressed.
- 10.20 Volume 2 of the ES reports that reasonably practical measures will be sought to further reduce or avoid significant residual noise impacts and reflect the outcome of this activity in the Environmental Minimum Requirements (see para. 11.3.33 and 11.4.28 of the report for this CFA). How and where the environmental minimum requirements for noise will be reported in the ERM should be clarified as the scope of, and the documents forming, the EMR, are confirmed (ES volume 1 section 1.4).
- 10.21 Mitigation measures for construction noise and vibration are specified in the draft Code of Construction Practice (CoCP). The Non-technical Summary notes that measures in the current draft CoCP include the use of quiet and low vibration equipment and screening along the edge of the construction worksites, including tall screening in a number of locations. A forecast of the number of residential buildings expected to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP, taking account of the avoidance and mitigation measures set out, is included in the technical appendix for Sound, Noise and Vibration Construction Assessment at volume 5. Management and mitigation of construction noise and vibration should be consistent with and improve on other major railway projects, for example Crossrail.
- 10.22 In line with our previous comments, HS2 Ltd should aim for the highest practicable standards to minimise adverse impacts and ensure an acceptable living and working environment, by identifying comprehensive, fully funded, mitigation measures. The operational ground-borne noise and vibration should be mitigated at source in so far as is reasonably practicable, including the proposed optimised low vibration slab track and maintenance regime. A longer tunnel would be the preferred environmental solution. Further consideration should be given to all practicable options and a solution should be identified to minimise the potential impacts.

Traffic and Transport



10.23 Any comments are provided in the separate response to the Transport Assessment; see Chapter 12 & 17

Water resources and flood risk assessment

10.24 This CFA identifies flood risks from the River Pinn, Ruislip Lido, Newyears Green Bourne, various surface water risk areas, overloaded sewers and areas at 'high' and 'very high' susceptibility to groundwater. The CoCP identifies two key measures (embankments in the vicinity of the River Pinn and diversion of the Ickenham Stream) and a potential measure (the diversion of the Newyears Green Bourne). Monitoring of groundwater levels will be developed in consultation with the Environment Agency and Affinity Water. Consultations on mitigation measures needed to avoid adverse impacts on the public water supply are ongoing with Affinity Water and the Environment Agency. We are content for HS2 to continue work with the EA and Affinity Water to support the ongoing scheme design and mitigation.

11. Colne Valley - CFA 7

Overview of proposals outlined in the CFA

11.1 The GLA and TfL believe that the impacts to the area could be further reduced through the earlier introduction of the proposed West Ruislip railhead in CFA6. In addition, HS2 Ltd should properly engage with the local community and other stakeholders in regards to developing an acceptable design for the Colne Valley Viaduct.

Agriculture, forestry and soils

11.2 The ES considers there to be no residual impacts on agricultural land. This can be assured through following the CoCP and consulting Defra to ensure weeds are not spread. The impact to a farmer in relation to weed control can be costly and appropriate communication needs to be established between the landowners and HS2 Ltd.

11.3 Land used as construction and storage sites can be negatively impacted on due to soil compaction which affects the soil's ability to drain surface water. HS2 Ltd needs to maintain a dialogue with landowners to ensure the land is returned to pre-construction quality.

11.4 The area of land permanently removed from agricultural use will be 130.3 hectares. This is a major/moderate adverse residual effect which is significant. Landowners should be compensated accordingly where loss cannot be avoided.

Air quality

11.5 An Air Quality Management Area (AQMA) is in place. The construction of HS2, unless carefully managed, has the potential to significantly impact local air quality, exacerbating existing EU limit values for NO₂ and exceeding the EU daily limit value for PM10. HS2 Ltd should set out any additional impacts on the relevant AQMA and clearly describe the mitigation that will be incorporated to minimise these impacts.



- 11.6 Air quality on Brakespear Road is likely to exceed EU limits during construction of HS2. As it is HS2 that tips the air quality from below the limit to above, it is the responsibility of the project to identify a mitigation strategy for this worsening of air quality.

Community

- 11.7 Land required for both construction operation, as well as changes to amenity, means the Hillingdon Outdoor Activity Centre is unlikely to operate during the five year construction period and would be limited in terms of activities during operation. The centre is an important facility for local residents and London residents alike. If its long term operation will be affected in this location. TFL and the GLA support HOAC's preference to be relocated from their existing location. This is being discussed within the on-going dialogue with HS2 to seek to agree a solution.

- 11.8 Denham Green falls outside the GLA boundary and outside the permanent and temporary land take. However, there could be residual impacts on these residents and it is important that impacts on this community are accurately reported, as these are likely to be cumulative.

Cultural Heritage

- 11.9 It is expected that HS2 Ltd will provide clarity as to the treatment to designated assets which fall within the permanent land take and temporary land take boundaries.

- 11.10 Further detail is required to understand the likely significant impacts on ALL heritage assets during construction in terms of noise, subsidence, visual intrusion, reduction in property values, etc

Ecology

- 11.11 There will be impacts on the several key sites here, some of which are statutory sites (SSSIs) where Natural England will take the lead. There will also be impacts of non-statutory sites including Sites of Metropolitan Importance which London Plan policy indicates should receive 'strong protection'. The most significant impact will be on the landscape character of the Colne Valley. Although this is already compromised by existing road and utility infrastructure a high-speed rail link will result in further deterioration and fragmentation.

- 11.12 Although there is acknowledgement that any concrete pillars required to support Colne Valley viaduct would now be located outside of the River Colne, TfL and the GLA need commitment that a single span structure can be delivered to achieve this objective.

- 11.13 Although the quantum of habitat lost here is relatively small, the adverse ecological impacts in the Colne Valley are significant because of the quality of the habitats present and the relative rarity of the habitat types. The most significant impact will be on the landscape character of the Colne Valley. Although this is already compromised by existing road and utility infrastructure a high-speed rail link will result in further deterioration and fragmentation.

- 11.14 The ES offers ecological mitigation but HS2 Ltd should improve on this and develop it into a package that tries to address both the ecological and landscape impacts in a more integrated way. Furthermore, offsetting the landscape impacts may require additional



habitat creation or habitat restoration over and above that required to mitigate the direct impacts of construction.

- 11.15 The GLA and TfL welcomes the preparation of a more detailed package of landscape and ecology mitigation and compensation measures that aim to address the loss of a range of habitats from sites with high ecological and landscape value. We expect this package to be further developed and refined to minimise any loss or degradation of the most valuable habitats in the Colne Valley, and to maximise the ecological value of the proposed habitat enhancement, restoration and creation.

Landscape and visual assessment

- 11.16 The area has a number of roads crossing through the valley and also the West Coast Mainline to the south. The M25 is situated a short distance to the west. The viaduct will add an additional element of infrastructure to the area. Mitigation of the visual impacts in this area is likely to be difficult, especially where the track is on viaduct.
- 11.17 As outlined within the ES, landscaping and urban greening principles should be included in the design as this will mitigate the impact on local residents. Landscaping should be implemented at the earliest opportunity to allow its growth before the scheme opening year.
- 11.18 During construction appropriate and sensitive hoarding should be used in residential, historic and natural environments. Where possible, urban greening principles should be applied at all long term construction sites.
- 11.19 It is considered that the proposed viaduct through the Colne Valley River would have a major detrimental impact on views and enjoyment of this green belt area. We note the challenges associated with tunnelling through this section and recognise that every effort has been made within the design to limit the impact as much as possible in this highly sensitive location.

Socio-economic impacts

- 11.20 HS2 Ltd should assess the socio-economic impacts associated with the following impacts:
- The temporary closure of the Hillingdon Outdoor Activity Centre (HOAC)
 - Additional congestion on the highway network during construction, to both bus users and general traffic

Sound, noise and vibration

- 11.21 This section of the proposed route for HS2 extends from Harvil Road in the east, over the Colne Valley lakes to the M25. The ES is based on a proposed surface route with viaduct, with passenger services assumed to operate up to 360kph. The impacts of noise and vibration from the operation of the Proposed Scheme have been assessed based on the highest likely train flows, including the Phase Two services. An overview of sound, noise and vibration for the Proposed Scheme in the Colne Valley CFA is provided in the Non-technical Summary (see p.82). It is described further in volume 2 of the ES at p.205-216 of the CFA report, and in the three volumes of appendices in Volume 5 that are provided for noise, sound and vibration.



- 11.22 The parts of this route section that lie within the GLA boundary, form part of the route west of Old Oak Common that was identified as the major area of concern for noise impacts in the Mayor of London's response of July 2011 to HS2 proposals. The ES identifies the locations of likely significant adverse noise impacts arising from operation and construction in the CFA; these are summarised at para 11.4.12-13 and 11.5.28-9 of the CFA report. The Mayor's response to the 2011 consultation identified that further measures should be considered. Documents in volume 5 set out the baseline noise levels used in the assessment and describe how they have been determined, together with a detailed assessment of significant construction and operational noise and vibration impacts in both text and map formats. For the Proposed Scheme further consideration should be given to all practicable options.
- 11.23 The ES reports that reasonably practical measures will be sought to further reduce or avoid significant residual noise impacts and reflect the outcome of this activity in the Environmental Minimum Requirements (see para. 11.4.14 and 11.5.30 of the report for this CFA). How and where the environmental minimum requirements for noise will be reported in the ERM should be clarified, as the scope of, and the documents forming, the EMR, are confirmed (ES volume 1 section 1.4).
- 11.24 The need for further assessment work was recognised in the previous draft ES report, and was to be reported in the Formal ES which would present baseline levels, forecasts for the Proposed Scheme and the change in sound levels brought about by the Proposed Scheme as impact plans and tables. A technical appendix for Sound, Noise and Vibration Construction Assessment for this CFA is provided in volume 5. Whilst combined noise maps setting out the likely operational noise contours arising from HS2 combined with the existing baseline noise are not included, the noise assessments have taken into consideration baseline noise levels and baseline data is reported.
- 11.25 Mitigation measures for construction noise and vibration are specified in the draft Code of Construction Practice (CoCP). The Non-technical Summary notes that measures in the current draft CoCP include the use of quiet and low vibration equipment and screening along the edge of the construction worksites. A forecast of the number of residential buildings expected to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP, taking account of the avoidance and mitigation measures set out, is included in the technical appendix for Sound, Noise and Vibration Construction Assessment at volume 5. Management and mitigation of construction noise and vibration should be consistent with and improve on other major railway projects, for example Crossrail.
- 11.26 In line with our previous comments, HS2 Ltd should aim for the highest practicable standards to minimise adverse impacts and ensure an acceptable living and working environment, by identifying a comprehensive, fully funded, programme of mitigation measures.

Traffic and Transport

- 11.27 Any comments are provided in the separate response to the Transport Assessment; see Chapter 13 & 18.



Water resources and flood risk assessment

11.28 The CFA identifies flood risks from groundwater, surface water, rivers and an overtopping of the Grand Union Canal (very low probability). The railway is elevated on a viaduct within this CFA so any flooding would have limited impact on the railway, but may impact on ground-level infrastructure. The detailed design of the realignments of watercourses during construction will be completed in consultation with the Environment Agency. HS2 Ltd will also agree a management strategy with the Environment Agency and Affinity Water to cover physical mitigation, the scale and nature of monitoring and the thresholds at which actions are invoked. We are content for HS2 to continue work with the EA and Affinity Water to support the ongoing scheme design and mitigation.

12. Route wide effects

- 12.1 It is noted that Old Oak Common is forecast to generate 100 full time staff once the scheme is operational. TfL would like a breakdown of this figure.
- 12.2 It is noted that Euston is forecast to generate 500 full time staff once the scheme is operational. TfL would like a breakdown of this figure.

Socio-economic impacts

- 12.3 HS2 Ltd needs to include an assessment of how HS2 will impact on UK economic growth and how it impacts on key sectors of the economy such as education, science, technology, culture etc.
- 12.4 HS2 Ltd should provide a thorough assessment of the socio-economic impacts associated with HS2 as it affects London. Many of these issues will have been addressed in earlier sections of the ES, notably the CFA chapters on Socio-economic impacts, Community and Traffic & Transport.
- 12.5 HS2 Ltd should provide a thorough understanding of how HS2 will shape the UK economy, including the following:
- Location and number of any jobs created as a direct consequence of HS2
 - Understanding of how HS2 will transform the London commuter market
 - A wider understanding of how HS2 will change trip patterns, not just on passengers using the WCML but also on passengers using the wider intercity rail network
 - An understanding of how HS2 will help to shift people from domestic flights and cars onto the railway network
 - How HS2 will be powered, and how much energy it will use
 - An understanding of how passengers will access HS2 stations, and analysis of any socio-economic impacts this may have
- 12.6 Any further comments are provided in the separate response to the Transport Assessment; see Chapter 13 & 18.



Air quality

- 12.7 The route wide effects report focuses on emissions from the operation of HS2 and the construction.
- 12.8 Construction activity, including non-road mobile machinery, accounts for around 15% of air pollutant emissions in London. All boroughs in London have declared an air quality management area covering at least part of their borough, and AQMAs cover the vast majority of the city. In addition, large areas of the road network exceed EU limit values for NO₂. While these impacts may not affect the route as a whole, nearly all construction activity within London (a significant proportion of the entire route) may have significant negative local impacts, either contributing to or - in some borderline locations - causing areas previously meeting EU limit values for NO₂ to exceed. The utmost care must be taken, therefore, to properly understand construction impacts, to mitigate them where appropriate and (where this is not possible) to off-set their impact. Further comments regarding this are made on the draft code of construction practice (CoCP).
- 12.9 With respect to the operation of the scheme, at some locations such as Euston Road even small changes, e.g. in the number of taxi or car journeys, may have a small but significant negative effect on air quality, exacerbating existing NO₂ limit values and increasing the overall level of human exposure. In addition to assessing these in the ES, HS2 Ltd should see the delivery of the scheme as an opportunity through the use of green infrastructure, improved road layout of an optimised building/ urban design at sensitive sites such as Euston to minimise human exposure and potential health impacts of air pollution. This would help in contributing towards the broader benefits and wider business case for HS2.

13. Transport Assessment

- 13.1 Detailed comments are provided in a separate document, entitled "HS2 Environmental Statement Consultation – Transport Assessment response".



14. Code of Construction Practice

- 14.1 The current draft CoCP is a very high level document which seems to aim at covering most topics that the GLA and TfL would expect to be included. The GLA and TfL welcome the fact that it acknowledges that construction works around the existing railway are "special" (i.e. working hours are different).
- 14.2 In general, the Mayor would expect HS2 Ltd to set out a clear consultation strategy to ensure that Londoners are kept informed of the proposals in the run up to the construction phase. Any traffic management plans to be adopted should be discussed on a borough by borough basis before implementation.
- 14.3 TfL and the GLA would expect the CoCP to be consistent with various Mayoral strategies, including:
- Mayor's Health strategy
 - Mayor's Economic development
 - Mayor's Energy management strategy
 - Mayor's Transport Strategy
 - Mayor's Waste Strategy
 - Mayor's Air Quality Strategy
- 14.4 The mechanism for agreeing TfL site or location specific constraints will be covered in the TfL Protective Provisions Agreement.
- 14.5 Many of the principles expressed within the Code of Construction Practice (CoCP) are sound, in particular chapter 14.2, which suggests some consideration has been given to the timing of vehicle movements and trip generation.
- 14.6 However, there are a number of additional measures which should be committed to in this document, for further detailed consideration later in the proposed LEMPs or other plans for each site. These would help improve safety (particularly of vulnerable road users) and environmental sustainability – fuel use, carbon emissions and local air pollutants.
- 14.7 The comments expressed below focus primarily on reducing the safety and environmental impact of construction within urban areas but may be applicable in less-densely populated areas.
- 14.8 Given the proximity of HS2 to the existing classic rail and inland waterway network, consideration should be given to whether alternative modes, namely rail or barges, could be used to transport construction materials or take spoil away. Whilst the COCP discusses traffic management, a focus on road traffic demand management should be included. Crossrail highlights some of the measures which have recently been used in London.
- 14.9 Switching modes from road to rail or water for all or part of the journey to / from site would help reduce the Carbon footprint of the scheme (in keeping with the Sustainability policy). Over longer distances or for bulkier / indivisible loads, inter-modal operations with road for the first/last delivery stages can be efficient and economical where there no wharf



or railhead is available locally. HS2 Ltd should explore such opportunities with TfL and other stakeholders

- 14.10 This would also be in keeping with the Standard for construction logistics: Managing work related road risk (WRRR) section 3.4.6 Control of site traffic, particularly at peak hours. We would urge a commitment along the lines of:

HS2 Ltd will seek to use rail and/or water to transport construction materials and spoil wherever practicable. Options will be explored with Network Rail, the Canal and Rivers Trust and other parties to achieve this.

- 14.11 In keeping with sections 3.4.4 and 3.4.6 of the WRRR Standards, a commitment to: 'reduce construction vehicle movements at peak times, in accordance with local traffic conditions' should be set out by HS2 Ltd. This recognises that there is likely to be variation according to local economic / land uses.

- 14.12 Section 5.2 considers local noise pollution issues in making recommendations for an extension to working hours where there is a practical need to do so. However, subject to local mitigation solutions, consideration should be given to seeking to extend working hours to reduce peak-time construction logistics traffic as well.

- 14.13 Other major projects have made use of consolidation centre approaches to help reduce the number of deliveries to site. A commitment to 'explore the use of consolidation centres or similar approaches' for construction logistics would be welcome.

- 14.14 Similarly HS2 Ltd should explore the use of vehicle holding areas to help improve the timing of site arrivals which will, in turn, help to avoid queuing or driving in peak-time traffic where conflicts with other road users may be greatest.

- 14.15 Where safe to do so (i.e. consistent with any regulations around hazardous materials), use of on-site storage facilities for the import of materials / export of waste can help reduce the time pressure on deliveries and collections. Whilst there is a need to be as efficient as possible with land-take, consideration should be given to whether increasing storage areas could reduce the number of daily vehicle movements..

- 14.16 TfL expects HS2 Ltd to state that it will meet the requirements set out in the 'Control of Dust and Emissions during Construction and Demolition SPG', due to be adopted early 2014.

- 14.17 HS2 Ltd needs to ensure that designated assets include Locally Listed Buildings and Tree Preservation Orders. Trees could be construed as assets of the natural environment and so Tree Preservation Orders should be included in the Historic Landscapes and Gardens section of the CoCP document. Specific reference should be made to the local authority in question when referring to consultation with English Heritage and the local authority, for the avoidance of doubt. When the authority in question is London Borough of Camden, please also reference the London's strategic authority and the Greater London Authority who should also be consulted. This should also be clarified in the Written scheme of investigation section of the Cultural Heritage section.

- 14.18 In the Traffic and Transport sub-section, reference to Construction Logistic Plans must also be made in addition to workforce travel plans in order to encourage sustainable modes of transport and reduce the impact of the work-force on the highway network.



- 14.19 The Traffic and Transport sub-section should set out a commitment to follow TfL's latest Construction Logistic Plan guidance.
- 14.20 Reference to Construction Logistic Plans should be made in site specific measures, too. Contractors should ensure the maintenance of records of vehicular movement, vehicle safety measures and driving standards.
- 14.21 HS2 Ltd to adopt and ensure compliance with the 'Standard for Construction Logistics: Managing Work Related Road Risk (WRRR)' requirements (and any forthcoming relevant revisions to the standard and requirements as applicable relating to the timescales of the HS2 project).
- 14.22 The 'Standard for construction logistics: Managing WRRR' includes information on how the requirements shall or may be demonstrated. However, TfL recommends the following in relation to specific requirements being met by HS2 Ltd:
- Principal contractors shall ensure that all sub-contractors adhere to the same contractual clauses (2.1).
 - Contractors and sub-contractors shall attain bronze FORS accreditation or equivalent and maintain bronze or higher for the duration of the contract (3.1.1)
 - Drivers complete 'Safe Urban Driving' (Driver Certificate of Professional Competence module) and complete the FORS e-learning safety module in order to fulfil the driver training requirement (3.3.1).
 - All drivers will have initial driving license checks with the DVLA (3.3.2)
- 14.23 Reference to Construction and Logistic Plans should be made in the Waste and Materials sub section under Waste Management – general provisions.
- 14.24 Committed core measures related to road safety must be included in the Traffic management measures section rather than just measures that 'may' be included.
- 14.25 TfL's "Improving road safety through procurement guidance" must be referenced in the CoCP. It provides information on how to write WRRR requirements (such as those within the 'Standard for construction logistics') into contracts.

Noise

- 14.26 The ES provides forecasts of the number of residential buildings expected to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP, and the mitigation proposed for direct impacts on individual buildings; other likely impacts, and the mitigation proposed, are also described. Where likely significant residual impacts remain, these will need to be fully addressed.

15. Sustainability

- 15.1 Please see previous comments on the sustainability policy, as identified in the draft ES.