RSPB comments on the draft Environmental Statement for phase 1 of High Speed 2

July 2013

The RSPB welcomes the opportunity to comment on the draft Environmental Statement (draft ES) for High Speed 2, phase 1. The RSPB is the country's largest nature conservation charity, inspiring everyone to give nature a home. Together with our partners, we protect threatened birds and wildlife so our towns, coast and countryside will teem with life once again. We play a leading role in BirdLife International, a worldwide partnership of nature conservation organisations.

We are prepared in principle to support high speed rail (HSR) over alternatives such as further motorway expansion or increasing aviation capacity because of the climate change implications. Other strategic transport options would be significantly worse than HSR for the UK's greenhouse gas emissions, and would also have major impacts in their own right on wildlife, landscapes and communities. However, we still have serious concerns about the HS2 proposal, especially about the damage likely to be caused to nationally important Sites of Special Scientific Interest (SSSIs) and local wildlife sites.

In line with UK legislation and national planning policy, we expect HS2 to avoid harm to all wildlife sites and semi-natural habitats wherever possible. Mitigation measures are then required to reduce any residual direct and indirect effects. Where damage to habitats and species cannot be avoided or reduced through appropriate mitigation, compensation must be provided before damage occurs. Beyond this, all opportunities for enhancing biodiversity must be taken.

We are also concerned that HS2, as designed, will not fulfil its potential to reduce emissions because it has clearly not been designed with this aspect in mind or brought forward as part of a coherent integrated UK transport strategy for long distance travel.

The main points of our response:

1) The formal Environmental Statement (formal ES) must distinguish more clearly between mitigation, compensation, and enhancement. It must appraise the ecological impacts of HS2 objectively in light of the correct definitions and the "hierarchical approach" set out in the National Planning Policy Framework and in guidance on environmental assessment.

2) The process of compiling the environmental statement for HS2 phase 1 has been unnecessarily rushed and the timescale for consultation is too short. Coupled with the short

period between the close of consultation and publication of the Hybrid Bill, we believe that the consultation process has not been adequate.

3) The Government must show how the scheme has met key tests in the National Planning Policy Framework, in particular how the need for HS2 clearly outweighs the damage it will cause to biodiversity, including statutory protected sites of national importance.

4) The formal ES must clarify the standard and level of ecological assessment being followed, with reference to the European Environmental Impact Assessment criteria and the IEEM standards. Where the approach varies, this must be fully explained and justified.

5) The formal ES must commit to the principle of securing a net gain for biodiversity through the development of the scheme.

6) The formal ES must clarify the approach used to Biodiversity Offsetting and the outcomes of that approach, to demonstrate that the scheme will ensure no net loss of biodiversity. Where the approach varies from the Defra scheme, this must be fully explained and justified.

7) The formal ES must apply the precautionary principle, especially where ecological data and evidence is weak or incomplete. There are instances where the principle clearly is not being applied at present.

8) The formal ES must provide evidence to substantiate the claims made for the significance and permanence of effects.

9) The formal ES must provide evidence to support claims made for the ecological performance of mitigation and compensation measures, including maturation timescales of newly created habitats.

10) Volume 2 (CFA reports) of the formal ES must provide all details of the proposed scheme, associated infrastructure, ancillary development, mitigation and compensation measures necessary to allow proper assessment of the ecological effects.

11) Volume 2 of the formal ES must properly address cumulative and indirect impacts, including on species and habitats in the wider (undesignated) countryside and on protected sites.

12) The formal ES must provide details of monitoring ecological effects and the performance of mitigation and compensation throughout the project life-span.

13) Volume 2 of the formal ES must set out how HS2 can deliver on its potential to reduce greenhouse gas emissions including through sustainable planning and construction, modifying top speed, and factoring in optimal use of the existing rail network. It should also state the policies that Government will need to put in place to enable HS2 to be considered a low carbon transport option such as incentivising modal shift to rail.

Following on from these 13 main points, our response includes comments on selected Community Forum Area (CFA) reports, especially those where Sites of Special Scientific Interest (SSSI) are affected by the route.

We are very aware that the start of formal consultation on the HS2 Phase 2 preferred route is imminent. HS2 Ltd and the Government should not only seek to address the concerns raised here in relation to Phase 1, but also look on the responses received as a clear opportunity to improve the process and practice of delivering Phase 2.

In addition to the comments made here in our own right, we are part of the **HS2 Ecology Technical Group**, formed in May 2013 to provide the means for engagement, consultation and information sharing to achieve the best possible outcome from HS2 for ecology. The Group is focused currently on the draft ES and the Hybrid Bill and is comprised of non-governmental organisations, local authorities and statutory bodies. The RSPB endorses the response submitted separately on behalf of the Group and strongly encourages HS2 Ltd and its consultants to engage with members of the Group as a means to improve the formal ES and ensure adequate consultation is carried out.

Detailed comments:

We understand the draft ES is not complete and that ecological survey work is still under way and will be reported in the formal ES as part of the Hybrid Bill process this autumn. Our comments take this into account.

However, the unrealistically short time available for consultation on the draft ES, its incomplete nature and the sheer scale of the project mean that it is impossible for us to comment comprehensively on every detail or on site-specific issues along the entire route. Instead, our comments are focused around the 13 high-level issues listed above. Where appropriate, we point to supporting evidence drawn from a small number of specific locations along the route. These "case studies" are presented in boxes. **Please note that the case studies used below are simply examples to illustrate more general weaknesses found throughout the draft ES – they are not intended to be an exhaustive list of every location on the route that is of concern to us.**

Most of our comments concern Volumes 1 and 2 taken together: where a comment relates more clearly to either Volume 1 or Volume 2, we have said so.

1) **The formal ES must distinguish more clearly between mitigation, compensation, and enhancement. It must appraise the ecological impacts of HS2 objectively in light of the correct definitions and the "hierarchical approach" set out in the National planning Policy Framework and in guidance on environmental assessment.**

Volume 1, section 6 of the draft ES wrongly extends the definition of mitigation to include compensation and perpetuates this throughout the rest of the draft ES, including the Community Forum Area (CFA) reports that appraise the impacts on protected sites. In such cases, habitats to be created to compensate for unavoidable damage to protected sites are wrongly identified as mitigation and on that basis, the draft ES suggests there are no residual adverse effects on the protected sites (see boxed case study, below). This approach is wrong, and results in a **serious misrepresentation** of the effects of HS2 on biodiversity.

We use the specific example of Helmdon Disused Railway SSSI to illustrate the point – while noting that this is only one of several similar examples involving SSSIs and local wildlife sites in the small sample of CFA reports we have actually examined.

Case study 1: compensation for impacts on Helmdon Disused Railway SSSI

Paragraph 7.5.11 of CFA Report 14 (Newton Purcell to Brackley) details the impacts of HS2 on this SSSI, just north of Brackley, Northamptonshire. The scheme will permanently destroy 1.9 hectares of grassland and scrub designated principally for its botanical interest and scarce butterflies. The draft ES claims that the creation of a much larger new area of grassland adjacent to the larger remaining part of the SSSI would "mitigate" for the loss *and* provide a net increase in the amount of grassland and scrub in the area. New habitat creation is not mitigation for permanent loss of part of the special interest of part of the SSSI, and the draft ES cannot claim (as it does in paragraph 7.5.12) that the residual impact of habitat loss on the SSSI would thereby be reduced to an insignificant level after merely 5-10 years. As a direct result of this mislabelling of compensation as mitigation, CFA report 14 goes on to claim in paragraph 7.5.14 and table 6 that there are no significant residual effects on the SSSI "*taking into account mitigation proposed...*"

Why is this approach to mitigation and compensation wrong?

Paragraph 152 of the National Planning Policy Framework (NPPF) gives a clear indication of the approach to be followed (sometimes known as the "hierarchical approach"):

"Significant adverse impacts on [the environment] should be avoided and, wherever possible, alternative options which reduce or eliminate such impacts should be pursued. Where adverse impacts are unavoidable, measures to mitigate the impact should be considered. Where adequate mitigation measures are not possible, compensatory measures may be appropriate."

Further guidance on the approach that should be followed is found in IEEM guidance on ecological impact assessment relating to terrestrial, freshwater and coastal environments[1] Paragraph 1.16 of that guidance is even clearer than the NPPF about the hierarchical approach to be followed to avoiding, mitigating and compensating for environmental effects.

Using the above case study to illustrate the point, we note that around 11% of the SSSI will be **permanently destroyed**.

Alternative options to **reduce** or **eliminate** this impact might include (for example) elevating the line on a viaduct to pass over the SSSI, or a deep-bored tunnel beneath it. We assume these alternatives have been discounted on grounds such as costs, engineering feasibility or unacceptable impacts on other environmental features and local communities. However, the draft ES should set these reasons out explicitly, in the case of Helmdon Disused Railway SSSI and any other similar examples involving statutory and non-statutory protected sites.

[1] http://www.cieem.net/mitigation-compensation-and-enhancement

At this SSSI, therefore, HS2 Ltd has not been able to **avoid** damage to the SSSI. Mitigation options must be considered.

CFA report 14 does not discuss **mitigation** options aside from (incorrectly) new habitat creation outside the site. We note though that plan SV-01-34 shows proposed noise mitigation (correctly labelled) alongside the line to reduce noise effects on the remaining northern section of the SSSI. Additional mitigation could (for example) include careful working practices during construction to minimise the area of habitat lost but very clearly, these mitigation options do not remove or reduce the permanent loss of habitat.

Where adequate mitigation measures are not possible, **compensation** must be considered. This includes new habitat creation outside the protected site, as is proposed here, but no matter how quickly new habitat matures it cannot avoid or reduce the initial loss of habitat. This needs to be acknowledged properly in the draft ES, in this case in CFA report 14, table 6, but in other appropriate places too.

As we have already seen, the draft ES claims to have been influenced by the NPPF and to be guided by the IEEM methodology. Therefore, in line with the "hierarchical approach", the draft ES must be open and honest about the fact that unavoidable damage to certain ecological assets will occur, and then move on to discuss the merits of the planned compensation in an equally honest way.

Given the ambitious claims made by the scheme's supporters, it seems likely that the Government will argue that the economic benefits of HS2 outweigh the environmental damage it will cause, and will push ahead with the scheme on this basis. But it is wrong to claim that the scheme causes no residual harm to the environment *because compensation will be provided* – that is like claiming a personal accident did not occur in the first place because the victim has received compensation.

2) The process of compiling the environmental statement for HS2 phase 1 has been unnecessarily rushed and the timescale for consultation is too short. Coupled with the short period between the close of consultation and publication of the Hybrid Bill, we believe that the consultation process has not been adequate.

Even allowing for the incomplete nature of the draft ES and the promise that further work is now under way, it is already clear that not all our concerns can be addressed because work on certain impacts has already stopped, and the conclusions drawn (for better or worse).

With barely more than three months between the close of this consultation and the proposed introduction of the Hybrid Bill to Parliament, we question whether the comments received can properly be taken on board. It is difficult to believe that any comment relating to inadequate environmental data *that is not already being addressed by survey work now under way* can possibly be resolved in the time available.

The eight week period given to respond to the draft ES is unrealistically short given the enormous scale and complexity of the project and the amount of information involved. The short

consultation timeframe means the formal ES cannot benefit as much as it could have from the input of consultees. The formal ES will be of poorer quality and the Hybrid Bill is likely to have a more difficult passage through Parliament as a direct result.

The RSPB strongly recommends that more time is allowed to collect, collate and interpret ecological data, especially where consultation responses highlight gaps in data that are not being addressed now. This would necessitate delaying the introduction of the Hybrid Bill but given that the overall timescale for the project spans many years, the only significant impact of this would be to make HS2 a more sustainable project.

3) **The Government must show how the scheme has met key tests in the National Planning Policy Framework, in particular how the need for HS2 clearly outweighs the damage it will cause to biodiversity, including statutory protected sites of national importance.**

The draft ES states that it has been influenced by the principles of the National Planning Policy Framework (NPPF) (Volume 1, paragraphs 2.8.5 to 2.8.8). Paragraph 118 of the NPPF states:

"Proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest" (our emphasis added).

As the four boxed "case studies" contained in our response highlight, HS2 will clearly have an adverse, permanent and direct effect on at least two SSSIs (Mid Colne Valley SSSI and Helmdon Disused Railway SSSI) and potentially, a permanent indirect effect on at least one more at Sheephouse Wood SSSI. Potential indirect effects on other SSSIs are still under investigation.

The Government must therefore provide a statement to be included in the formal ES that explains what HS2's benefits are and how they outweigh the impacts on these SSSIs specifically, and the broader impacts on the national SSSI network in general.

4) **The formal ES must clarify the standard and level of ecological assessment being followed, with reference to the European Environmental Impact Assessment criteria and the IEEM standards. Where the approach varies, this must be fully explained and justified.**

Paragraph 5.7.2 states that the Ecological Impact Assessment (EcIA) "...*has been* ***guided by*** *the methodology advocated by the Institute of Ecology and Environmental Management (IEEM)"* (our emphasis added).

This is welcome in principle but it suggests the EcIA departs from the IEEM methodology in places. The formal ES should state unequivocally that it **"will follow"** (rather than "be guided by") the European Environmental Impact Assessment[2] criteria and the IEEM standards. In particular these should include:

- Guidance on Integrating Climate Change and Biodiversity into EIA (2013)
- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (1999)
- Guidance on EIA (2001)

Failing this, the formal ES must clearly state where it varies in approach from the above standards, and explain why this leads to a better standard of assessment.

5) The formal ES must commit to the principle of securing a net gain for biodiversity through the development of the scheme.

The Sustainability Policy reproduced at p117 of Volume 1 of the draft ES states that HS2 Ltd will commit to "*deliver enhancements as far as practicable to ensure there is no net loss to the natural environment*" (our emphasis). This falls short of current policy to achieve a **net gain** in biodiversity as set out in the Natural Environment White Paper and the National Planning Policy Framework (NPPF). For example, paragraph 5 of the White Paper states, "we *will move from a position of net biodiversity loss to net gain..."* and paragraphs 9 and 109 of the NPPF restate this objective in similar words.

Paragraph 2.8.8 claims that the NPPF has influenced how the significance of environmental impacts and effects has been defined in the draft ES. HS2 Ltd should demonstrate this by making a commitment to secure a net biodiversity gain in the Sustainability Policy, and by ensuring the mitigation measures and habitat creation package set out in the draft ES will lead to it with a high degree of certainty.

6) The formal ES must clarify the approach used to Biodiversity Offsetting and the outcomes of that approach, to demonstrate that the scheme will ensure no net loss of biodiversity. Where the approach varies from the Defra scheme, this must be fully explained and justified.

The draft ES refers only once, indirectly, to Biodiversity Offsetting as a mechanism for helping to secure environmental enhancement (volume 1, paragraph 6.1.1) and even then it is described only as a possibility. However, discussions with HS2 Ltd and their consultants show that Biodiversity Offsetting metrics *are* being applied. The formal ES should be clear on this point, with a full explanation of the approach followed. We understand that the Defra Biodiversity Offsetting pilot approach[3] is being broadly followed, but that there are significant differences in the approach in some cases – the formal ES must explain fully what metrics are being applied, and where these differ from the Defra metrics, give full justification for that variance, explaining how this results in a better outcome for biodiversity than would otherwise be the case. It is also

[2] http://ec.europa.eu/environment/eia/eia-support.htm
[3] https://www.gov.uk/biodiversity-offsetting

important to note that **the Defra biodiversity offsetting approach is not designed to be applied to SSSIs.** Damage to SSSIs requires a bespoke approach to the design of compensation measures.

In addition, the formal ES must:

- Provide clear figures for the areas of habitats lost and habitats to be created, restored or enhanced both along the route as a whole, and broken down by Community Forum Area, to allow clear understanding of whether the scheme will result in a net loss or net gain for biodiversity. Even allowing for the incomplete nature of the draft ES it is currently impossible for anyone to agree that the scheme will result in a net gain (or even no net loss) given the way the information is currently presented. We suggest a single overview table in Volume 1 and a similar table describing local losses and gains for each CFA report.

- Explain the connectivity model or assumptions used to determine the pattern, location, type and amount of habitat creation.

- Account for temporal risk (i.e. the risk that in the time gap between loss of habitat and maturation of any new habitats, the species intended to benefit from the new habitats will have disappeared from the area).

7) The formal ES must apply the precautionary principle, especially where ecological data and evidence is weak or incomplete. There are instances where the principle clearly is not being applied at present.

Volume 1 of the draft ES states that it "presents a precautionary assessment" (paragraph 5.7.7) and "is currently developing … a formalised precautionary approach to assessment which is to be followed in the formal ES" (paragraph 5.7.8). For the sake of clarity and common understanding, the formal ES should adopt the Precautionary Principle[4] as defined in the Communication by the European Commission and justify any departure by explaining how this results in a better formal ES[5].

The Precautionary Principle will need to be applied particularly in cases where ecological data is weak or absent for any reason, including where HS2 Ltd have not been able to gain access to land for survey purposes. The formal ES must include maps showing areas where access has not been gained for ecological surveys, enabling all parties to understand where the evidence gap is greatest. We do not believe, as the draft ES claims, that this would be contrary to the Data Protection Act, because personal details of landowners do not need to be included but an explanation of where data is incomplete must be provided.

[4] http://europa.eu/legislation_summaries/glossary/precautionary_principle_en.htm

[5] See Communication from the Commission on the precautionary principle. COM (2000) 1-final (CEC Brussels, 2.2.2000) http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2000:0001:FIN:EN:PDF

Refer to boxed case studies 2, 3 and 4, and our comments on CFA reports 7, 12, 13 and 14 for some specific examples of where we feel the precautionary approach has not been properly applied.

8) The formal ES must provide evidence to substantiate the claims made for the significance and permanence of effects.

In several places, the draft ES ascribes levels of significance to effects that are not supported by the available scientific evidence. Almost nowhere does the draft ES refer to any evidence to substantiate the claims it makes.

The draft ES also describes effects as "temporary" which we believe are actually permanent, or at the least, very long term (20 to 100 years or more). In doing so, we consider the draft ES **seriously misrepresents** the scale and significance of effects of HS2 on biodiversity (see boxed case study 2, below, and refer to our comments on CFA reports 7, 12 and 13 for other examples)

Case study 2: "temporary" impacts on bats in the Bernwood Forest area

Paragraphs 7.5.2 to 7.5.7 of CFA Report 13 (Calvert etc) discuss mitigation measures such as overbridges and compensation in the form of habitat creation to reduce effects on bats, including Bechstein's bats. Paragraph 7.5.7 concludes there would be a "*temporary adverse effect on the conservation status of Bechstein's bat*" and paragraph 7.5.14 acknowledges a similar effect for other bat species in the area.

The conclusion that these effects are "temporary" and reversible hangs entirely on the assumption that once the new habitat matures (in this case, new trees, hedgerows and woodlands), the bats will still be present in sufficient numbers to recover quickly to their current population levels and the proposed mitigation and compensation (including overbridges) will be fully effective. Paragraph 7.5.12 acknowledges that such habitats might take "at least 20 years" to reach maturity. We comment elsewhere on some of the claims made for habitat maturation timescales but for now note that the Bat Conservation Trust advises woodland managers that an ideal Bechstein's bat woodland is of uneven age, structurally diverse semi-natural or ancient woodland, with a high number of oaks, of a minimum 40-50 hectares, with a dense mixed species understory.[6]

In light of this, the likelihood that bats in the Bernwood Forest area, especially Bechstein's bats, will sustain their population and not suffer a decline that will take a very long time to recover from, during the interim period between construction of the route and maturation of compensatory habitats, seems remote.

The formal ES must take account of the latest research and guidance on matters such as noise and visual disturbance (and habituation to disturbance) and barrier effects, to inform the ecological appraisal. Unsubstantiated claims must be eliminated or, where unavoidable, must

[6] http://www.bats.org.uk/data/files/publications/Bechsteins_bat_woodland_guide_doc_final.pdf

be acknowledged as such. The formal ES must properly reference the evidence used (for examples of a more general flaw running throughout the draft ES, see boxed case studies 3 and 4, below)

Case study 3: disturbance and fragmentation impacts on birds at Mid Colne Valley SSSI

CFA Report 7 (Colne Valley) discusses potential effects on the above SSSI from construction and operation. This part of the draft ES raises several concerns about the way effects have been appraised and the basis for certain conclusions, but again we cite this case as only one example of wider issues with the draft ES.

7.5.7 notes that "*approximately 0.4ha of open water (0.4% of that within the SSSI) would be permanently occupied by the viaduct's concrete piers*" – this may be true, but if HS2 Ltd really is applying a precautionary approach the figure for direct loss should be the area and percentage of the SSSI directly under the viaduct because weed growth in shaded areas will be reduced and very few water birds are likely to feed beneath or very close to a bridge. We note 7.5.8 states shading of open water and marginal vegetation will be fully assessed in the formal ES but given the tendency of the draft ES to downplay many issues, we are not confident that the assessment will be a robust one.

7.5.11 notes the potential for disturbance of breeding woodland birds but describes this as temporary, linked to construction activity. Later on, 7.6.3 bluntly states that "*the operational phase would not have adverse effects on birds as they would become habituated to the presence of trains*". We are not aware of any scientific evidence to support this claim, and it is another example of effects being passed off as temporary with no evidence to support that view. Very little research has been done anywhere on the effects of trains on breeding birds, and none at all on wintering or breeding birds of open water or woodland, to our knowledge. The only useful reference we have found comes from research on the effects of non-high speed railways in the Netherlands on meadow birds, and this suggests that a significant disturbance displacement effect on some species becomes evident at noise levels above around 40-45 dB(A) (Waterman et al, 2004)[7].

7.5.10 notes "*there are numerous lakes in the wider Colne Valley which would be unaffected and would be available for wintering birds during construction*". While this may be true, the draft ES cannot then go on to claim, as it does in 7.5.13, that there would not be any effect on the viability of breeding and wintering bird populations in the SSSI. HS2 Ltd cannot claim that there will be no effect on the features of interest of the SSSI just because there are similar habitats *outside* the SSSI to which birds might be able to move. We have noted that while new woodland habitats are proposed to compensate for loss of woodland in the SSSI, the question of compensation for loss and fragmentation of wetland margins and open water is not mentioned at all – not even to acknowledge that this would be extremely difficult to achieve.

[7] Waterman, E., Tulp, I., Reijnen, R., Krijgsveld, K. & ter Braak, C. (2004) *Noise disturbance of meadow birds by railway noise*. Internoise 2004. The 33rd International Congress and Exposition on Noise Control Engineering. Prague, Czech Republic.

The fragmentation effects on the open water habitats in the SSSI have been completely ignored and apparently there is no intention to consider them in the formal ES, perhaps on the assumption in 7.5.10 that there are plenty of other open water habitats available for displaced water birds to move to. This assumes that there are open water bodies available to receive displaced birds that are free from disturbance, offer the same quality and quantity of food and nest sites, and have "spare capacity" in terms of their own bird populations such that inter- and intra-species competition would not be increased to significant levels. No evidence is provided to support that claim. By our calculations, Korda Lake measures 6.2 hectares (around 6.5% of the open water in the SSSI, not including the River Colne and minor ponds). The viaduct will divide the lake into unequal portions of around 2ha and 2.6ha (depending on the exact width of the viaduct), all of it subject to noise levels of 55-65 decibels. However, the draft ES claims there will be no significant effect on wetland birds once construction ends. Such claims require proper justification.

9) The formal ES must provide evidence to support claims made for the ecological performance of mitigation and compensation measures, including maturation timescales of newly created habitats.

Although we have not examined all the CFA reports, we have noticed that ambitious claims are made for the speed of maturation of many of the habitats to be provided as compensation (for example, refer to boxed case study 4, below). In turn, the draft ES then draws conclusions about the significance of effects on protected sites based on the assumption that these are temporary and short term. Twenty years is cited many times over as the minimum period for new woodland planting to mature, after which time most effects are assumed no longer to be significant.

The formal ES must be more realistic about the time it will take for most newly-created habitats to become ecologically functional replacements for habitat destroyed by HS2. This is especially true of semi-natural habitats like lowland meadows, calcareous grassland, and ancient woodland.

Case study 4: habitat creation adjacent to Helmdon Disused Railway SSSI

Paragraph 7.6.4 of CFA report 14 (Newton Purcell to Brackley) makes some extraordinary claims for the speed with which newly created calcicolous grassland will compensate for irreversible damage to Helmdon Disused Railway SSSI. Equally extraordinary predictions of the effect of this habitat creation on the behaviour of species like butterflies are made.

The available scientific research suggests that calcicolous grassland habitat creation projects take a very long time to approach mature sites in terms of the quality and diversity of their plant communities. For example, Fagan et al (2008)[8] considered the following hypotheses: (i) Are

[8] Fagan, K.C., Pywell, R.F., Bullock, J.M, and Marrs, R.H. (2008) Do restored calcareous grasslands on former arable fields resemble ancient targets? The effect of time, methods and environment on outcomes. Journal of Applied Ecology 45, 1293–1303.

plant communities of restoration sites becoming more like those of mature calcareous grassland? (ii) How long does the restoration process take? (iii) Are there any environmental filters that hinder the process? (iv) Is there a difference in plant attributes between restored and ancient grassland communities, and between restored communities of different ages?

They found that on the whole, plant communities of older restoration sites are more like those of their reference sites than younger restoration sites, although in general, **the process exceeds the 60 years covered by their study**. They also found that on average, phosphorus levels (likely to be a limiting factor in calcicolous grassland establishment) may need around 50 years to return to an "acceptable" level for calcareous grassland to become species rich, following the cessation of arable farming. This makes the CFA report's claim that only 5-10 years will need to pass before the newly created calcicolous grassland adjacent to the SSSI reaches maturation, a highly dubious one.

Furthermore, we do not know on what basis the draft ES can predict that creating the new grassland will modify the behaviour of, for example, butterflies, and "discourage them from crossing the route". The only scenario we can envisage when this would reliably take place is if the southern, smaller section of the original SSSI is allowed to become completely unsuitable for the features of interest for which it is designated, thereby removing the "desire line" across HS2. This in itself would constitute an adverse effect on the SSSI.

10) Volume 2 (CFA reports) of the formal ES must provide all details of the proposed scheme, associated infrastructure, ancillary development, mitigation and compensation measures necessary to allow proper assessment of the ecological effects.

Study of the plans provided in the CFA reports shows that the design of the scheme has not been finalised in all areas yet. In addition, some aspects of the design mentioned in the CFA reports are not yet reflected in the maps, which is not helpful. For example, CFA report 12 (Waddesdon and Quainton) paragraph 7.6.2 refers to "*a screen along the western edge of Sheephouse Wood SSSI (adjacent to the route) to reduce noise effects and bird and bat mortality*" but this is not illustrated on map SV-01-27. There may be other examples.

Also missing from the relevant maps are the locations of overbridges intended to mitigate fragmentation effects and collision risks on wildlife such as barn owls and bats (e.g. CFA report 12). It is very difficult to gain an accurate picture from the CFA report text alone of how effective these might be – the formal ES must show the location and number of all such mitigation measures. Also, as most of these overbridges are apparently planned to be "multifunctional" – some carrying roads as well as rights of way – full details of the design must provided along with sound evidence that their multifunctional nature will not downgrade their effectiveness as ecological mitigation.

To allow accurate assessment of the actual loss of habitats, it will be important that the formal ES clearly defines the working width required for construction, and the operational width of the completed route, at any given point. Linked to this, the exact nature of and differences between

"engineered" and "non-engineered" earthworks shown on the maps is not very clear to us at present.

The formal ES should include method statements relating to the creation of all areas of new habitats, to provide as much certainty as possible that the mitigation and compensation proposed will be effective and timely in delivery.

11) Volume 2 of the formal ES must properly address cumulative and indirect impacts, including on species and habitats in the wider (undesignated) countryside and on protected sites.

Two of the most significant areas that need further work are on cumulative impacts (which could be line-wide as discussed in Volume 2, or could equally arise locally and should be discussed in the relevant CFA report) and indirect impacts especially on ecological assets like SSSIs. The draft ES does acknowledge that further work is to be done on these topics and therefore we reserve judgement until the formal ES is produced.

However, we raise four generic issues linked to cumulative and/or indirect impacts which we feel the formal ES must address:

- **Changes in noise against baseline:** the formal ES should map predicted *changes* in noise levels caused by HS2, compared to the existing baseline. This is additional to the current maps of gross noise emissions provided in the CFA mapbooks. This is important because introducing HS2 noise emissions to an area which is currently quiet (e.g. open countryside) is likely to have a disproportionately greater effect on ecology (not to mention tranquillity, and the amenity of countryside users) than introducing the same noise emissions to an already noisy area, such as parts of the HS2 route alongside major roads.

- **Indirect effects of noise:** the indirect effects of noise on ecological features like species and protected sites are not particularly well considered at present. We refer again to boxed case study 3 above as just one example. If there is no evidence to support claims that wildlife will habituate to noise (or if it does, that there are not more subtle effects on productivity etc) then the formal ES must acknowledge this and apply the Precautionary Principle in providing mitigation (e.g. noise baffles) and compensation (e.g. new habitat creation beyond the most badly affected zone close to HS2).

- **Indirect effects on hydrology:** the indirect effects of HS2 on the hydrology of protected sites and important habitats is an area where further work is required.

- **Cumulative impacts on species and habitats in the wider countryside:** it is very noticeable that each CFA report in turn considers and then largely dismisses as of low value, populations of birds and other wildlife wintering or breeding in the wider countryside. On the scale of individual CFA reports, we agree, in that context, that the scale of impact in any given CFA will indeed be of no more than local/parish level. However, this is not a set of 24 discrete projects, but one big continuous one. It is very important that the line-wide impacts

on populations of dispersed species are properly appraised. HS2 will involve the loss of a large area of farmland and woodlands of various qualities, and install a barrier to movement of a wide range of species such as deer, badgers and other mammals, reptiles and amphibians, some plants and invertebrates, and potentially even some birds. HS2 could have primary effects on the populations, dispersal and distributions of these species, and secondary effects on other species and habitats if the natural distributions of predators or large browsing animals are artificially constrained. For example, the impact of changed deer browsing patterns on woodlands could be significant if HS2 presents a significant obstacle to the movement of deer from one side of the line to the other.

12) The formal ES must provide details of monitoring ecological effects and the performance of mitigation and compensation throughout the project life-span.

The draft ES does not describe the extent of pre-construction, construction, and post-construction monitoring, the monitoring standards that will be applied, and the response mechanisms to be deployed that will ensure any issues detected through monitoring are remedied effectively and efficiently. The monitoring protocol that needs to be drawn up must include testing the effectiveness of mitigation measures (e.g. noise baffles) against predictions and the performance of the habitat creation package in delivering the compensation and enhancement promised.

In doing so, HS2 Ltd has an opportunity to overcome one of the most significant criticisms of HS1 (the Channel Tunnel Rail Link) where, years into the operation of that project it is impossible to say what the long term impacts on wildlife have been or how well the package of mitigation and compensation performed against expectations. That opportunity to learn and improve practice was squandered: here is a new opportunity to inform the future development of high speed rail in the UK.

13) Volume 2 of the formal ES must set out how HS2 can deliver on its potential to reduce greenhouse gas emissions including through sustainable planning and construction, modifying top speed, and factoring in optimal use of the existing rail network. It should also state the policies that Government will need to put in place to enable HS2 to be considered a low carbon transport option such as incentivising modal shift to rail

For HS2 to deliver on the potential to contribute to the greenhouse gas emission reductions committed to in the Climate Change Act 2008, the scheme has to do better than the current proposal. Currently, HS2 is likely to be broadly carbon neutral with the potential to lead to greenhouse gas savings or to lead to increases in emissions. The RSPB believes it is critical that HS2 that delivers on its potential to reduce emissions and is part of a truly sustainable future transport system.

In this context, together with CPRE and the Campaign for Better Transport, we commissioned research[9] to identify objectively the key factors that will determine HS2's contribution to reductions in the UK's carbon emissions and the steps that need to be taken to ensure genuine emissions reductions take place.

This research concluded that, in the design for HS2 and for a wider HSR network, the following would help maximise HS2's sustainability:

- **Reducing the top speed of HS2 where justified, balancing energy consumption and mode shift**. Reducing the top speed of HS2 from 360km/h to 300km/h could reduce energy consumption by 19%. In the early years of HS2 operation, before the electricity supply is substantially decarbonised (say, before the 2030s), the carbon impacts of HS2 would be improved by adopting this lower top operating speed. Then, as electrical power generation is more fully decarbonised and the HSR network is extended, the journey time improvements on HS2 become even more important in delivering mode shift, and so a top speed of 360km/h is more likely to be needed and justified by the carbon savings from reduced air and private car travel;

- **Construction of city centre stations rather than parkway stations where feasible**. City centre stations are estimated to be around 7% more efficient in carbon terms than parkway stations, even when only considering the direct impacts of HSR travel. The effect of local access trips to HSR stations, which can be made more readily by sustainable travel modes to city centre stations, will only increase this benefit. All HS2 stations need to be designed around high modal shares for sustainable access travel modes and supported by planning policies that deliver sustainable patterns of land use;

- **Full use of capacity freed up on the existing rail network**. HS2 Ltd has adopted conservative assumptions on how much West Coast Main Line (WCML) capacity freed by HS2 is re-used for new and improved rail services. We estimate that the HS2 carbon savings could be increased by 8% by fully using spare WCML capacity for enhanced commuter or inter-regional passenger services. Even more benefits could be delivered with policies that ensure greater occupancy of these medium-distance trains. This highlights the value in ensuring that future rail franchises are set up so that they are able to unlock the spin-off benefits of HS2. However, the carbon savings from using the additional unclaimed capacity of three train paths per hour in each direction for freight are considerably larger still, adding 55% to the direct carbon savings from HS2. This is such a strong advantage that it will be worthwhile examining complementary measures to ensure that a major switch from HGV road haulage to railfreight is achieved as a consequence of HS2.

In addition, the RSPB believes it's important that HS2 Ltd seeks to reduce as far as possible the embedded carbon cost of construction through, for example, careful design and alignment of bridges and tunnels to minimise spoil (though not at the expense of maximising the

[9] Greenguage 21 (2012) The carbon impacts of High Speed 2. http://www.greengauge21.net/publications/the-carbon-impacts-of-hs2/

effectiveness of mitigation for the local environment and communities), and by maximising the use of recycled aggregates, steel and other materials.

Although the RSPB acknowledges that the policy framework extends beyond the remit of HS2 Ltd, changes to this will also be necessary to enable HS2 to fulfil its potential as a low carbon transport option and thus fulfil an important aspect of public acceptability. As well as the extension of HS2 further north, the research mentioned above highlighted wider policies that would have the greatest effect in terms of maximising the potential of HS2 to reduce carbon emissions include:

- **Ensuring the rate of electricity decarbonisation set out by the Committee on Climate Change is delivered.** The Committee on Climate Change (CCC) has recommended an ambitious decarbonisation trajectory for the UK's electricity sector which would result in the average HSR carbon emissions per passenger reducing by 92% by 2050. A slower but still relatively ambitious reduction in the carbon intensity of electricity could see the total HS2 carbon savings in the base scenario reduced by nearly one-third. A scenario in which there is a second 'dash for gas' and therefore slower decarbonisation would reduce the HS2 carbon benefits by two-thirds.

- **Management and regulation of the motorway and trunk road network to reflect the external costs of driving.** Policies to manage the capacity and use of the strategic road network, including through pricing mechanisms, could increase the carbon savings of HS2 and would help ensure that the benefits of mode shift to HS2 are sustained. It is not possible to optimise the carbon savings by looking at individual travel modes in isolation; management of their use needs to be considered together.

- **Transport and spatial planning policies to encourage sustainable travel choices.** Ensuring that HS2 serves locations of high demand density and locations where there is high capacity public transport should be a planning aim. The accessibility boost that HSR can provide to cities is a unique quality. It can be used to magnify the carbon benefits of HSR if complementary policies on spatial development seek to foster an intensification of development in urban areas so as to reduce trip distances and the need for private car use.

Further policy changes that the RSPB considers are necessary for HS2 to deliver on its carbon reduction potential are:

- Ensuring significant modal shift from flights from UK airports and road travel onto the high-speed rail network. We see no expansion of existing aviation capacity as an important step. Additional measures will be needed such as:
    - A policy that "retires" aviation slots permanently as they are freed up from journeys switching to rail
    - A general moratorium on new/wider motorways and airport expansion.
    - Prioritising investment in existing public and local transport and ensuring that HSR does not draw funding away from these;

- Using pricing to encourage people to choose rail: lower train fares and increased taxes on short distance internal flights are needed.

Finally, the draft ES references the role that the EU Emissions Trading Scheme (ETS) will play. However, while the EU ETS will indeed theoretically cover HS2 emissions, it is important to note that, due to extremely low carbon prices and flaws in the way the ETS was established, the carbon market is not operating effectively, undermining its efficacy. This needs to be acknowledged and taken into account in all current analysis and until the ETS is operating effectively.

Volume 2: comments on selected CFA reports

The consultation period has been too short to allow time to examine all the CFA reports in detail. We have chosen to look most closely at the sections of the route that have significant and direct effects on Sites of Special Scientific Interest (Mid Colne Valley, Sheephouse Wood and Helmdon Disused Railway SSSIs), the section near to Middleton Lakes RSPB reserve near Tamworth, and a couple of other locally important sites of which we have some specific knowledge.

CFA report 7:

CFA Report 7 (Colne Valley) discusses potential effects on the Mid Colne Valley SSSI. We have significant concerns about the effects have been appraised and the basis for certain conclusions. Refer to boxed case study 3 for additional detail but to summarise our concerns:

The amount of habitat likely to be permanently damaged by the viaduct has been underestimated. If HS2 Ltd really are taking a precautionary approach then all of the open water beneath the viaduct, not just the area occupied by the piers, should be considered permanently lost because water birds are highly unlikely to feed beneath the viaduct, and shading is likely to reduce aquatic plant growth in that area.

The report claims that disturbance to breeding woodland birds will be temporary and linked only to construction activity. We are not aware of any scientific evidence to support this claim. Very little research has been done anywhere on the effects of trains on breeding birds, and none at all on wintering water birds or breeding woodland birds to our knowledge. Again, if HS2 Ltd are taking a precautionary approach, then without sound evidence that high speed rail will <u>not</u> have long term effects on breeding bird diversity or productivity in the SSSI, the assumption must be that it will – and mitigation and compensation must be designed with this in mind.

While new woodland habitats are proposed to compensate for loss of woodland in the SSSI, the question of compensation for loss and fragmentation of wetland margins and open water is not mentioned at all – not even to acknowledge that this would be extremely difficult to achieve. The formal ES must not ignore issues just because they are hard to deal with.

The formal ES cannot claim that there would be no effect on the viability of breeding and wintering bird populations in the SSSI just because there are similar habitats *outside* the SSSI to which birds might be able to move – especially as those habitats are unlikely to receive the

same level of statutory protection and therefore may be vulnerable to damage from other sources. This assumes that there are open water bodies available to receive displaced birds that are free from disturbance, offer the same quality and quantity of food and nest sites, and have "spare capacity" in terms of their own bird populations such that inter- and intra-species competition would not be increased to significant levels. No evidence is provided to support that claim.

CFA reports 12/13:

We deal with these together because Sheephouse Wood SSSI is at the junction of these CFAs, and is mentioned in both reports. The maps accompanying these CFA reports need to show the precise number and location of overbridges as mentioned in paragraphs 7.5.2 to 7.5.7 of CFA report 13. Somewhere in the formal ES, detailed design drawings for these mitigation measures must be provided, along with evidence that the proposed "multifunctional" nature of these measures will not reduce their effectiveness as mitigation for bats, barn owls and other species.

Paragraph 7.6.2 of CFA report 12 refers to "*a screen along the western edge of Sheephouse Wood SSSI (adjacent to the route) to reduce noise effects and bird and bat mortality*". This has been omitted from map SV-01-27 and it is not clear if the noise contours on that map do, or do not take account of the presence of a noise mitigation structure.

Whether or not the noise contours shown on map SV-01-27 take account of noise mitigation, it is clear that a significant part of the SSSI will be subject to quite high levels of noise – for example, nearly 50% of the SSSI will experience daytime noise levels of 60dB(A) or more, in an area which is currently unaffected by traffic noise. As previously discussed, we not aware of any scientific research that shows breeding woodland birds will be unaffected by operational rail noise, and so we have serious concerns that the draft ES effectively disregards this issue. Table 7 of CFA report 12 does not identify, for example, any residual adverse effect on breeding birds in the SSSI. This is probably because HS2 Ltd have once again mislabelled compensation as mitigation, and on that basis concluded, wrongly, that there will be no residual adverse effect on the SSSI. The formal ES must give proper consideration to indirect noise impacts on woodland birds, including in this SSSI. Given the lack of evidence to the contrary, HS2 Ltd have to assume there will be an adverse effect at some level, and provide mitigation and compensation accordingly. The residual adverse effect of noise on breeding birds must be set out in the formal ES and not dismissed from the outset because compensation will be provided (which will in any case take a lot longer than 20 years to mature, so it is hardly a "temporary" effect!)

CFA report 14:

The draft ES claims that the creation of a much larger new area of grassland adjacent to the larger remaining part of the SSSI would "mitigate" for the permanent loss *and* provide a net increase in the amount of grassland and scrub in the area. For reasons explained in the first main point of our response, new habitat creation is not mitigation for permanent damage to a SSSI and the draft ES cannot claim (as it does in paragraph 7.5.12) that the residual impact of habitat loss on the SSSI would thereby be reduced after merely 5-10 years.

Paragraph 7.6.4 makes some extraordinary claims for the speed with which newly created calcicolous grassland will compensate for irreversible damage to the SSSI. Predictions for maturation timescales of compensation habitats, including semi-natural ancient woodland and calcicolous grassland, must be more realistic and have regard to published scientific evidence on the topic, such as Fagan et al (2008)[10].

We do not know how the draft ES can predict that creating the new grassland will "*discourage [butterflies etc] from crossing the route*". We would like to see what evidence HS2 Ltd base this assumption on. The only way we think this would reliably take place is if the southern, smaller section of the original SSSI is allowed to become completely unsuitable for the features of interest for which it was designated, thereby removing the "desire line" across HS2. This in itself would have a major adverse effect on the SSSI and would not be acceptable.

CFA Report 16:

Fox Covert (also known as Glyn Davies Wood nature reserve by the owners, Banbury Ornithological Society (BOS) is identified as secondary woodland in Table 10 (paragraph 7.5.16). The BOS and the RSPB are concerned that the quality of this woodland has been under-estimated. BOS records suggest that there are at least 10 ancient woodland indicator plant species present, as well as several mature oaks, bat colonies, breeding red-listed woodland birds, and at least one pond. We advise you to liaise with the BOS to ensure you take account of their data and potentially, conduct further botanical surveys. The value of Fox Covert should be reappraised using this data and the significance of the impact revised as appropriate.

Drawing no C223-CSI-CV-DPP-030-000001 and Map CT-06-079 show that the realigned "leisure drive" (the road leading to Priors Marston) would significantly increase the loss of woodland at Fox Covert over and above what would be lost due to the railway cutting at that point. While drawing no C223-CSI-CV-DPP-030-000001 shows a small area of "vegetation to be retained", it is difficult to believe that construction in the southern half of Fox Covert can work around the woodland flora and mature oaks in that part of the wood. HS2 Ltd should examine an alternative option for the leisure drive alignment in which an additional bridge carries the road across the railway on a line close to the road's current SSW alignment, joining the new road on the SW side of the railway. Access to the farm SE of Fox Covert can be provided separately and would not need a direct link to the Priors Marston road. The cost of an additional road bridge would be at least partially offset by a reduced overall length of new road required, and by the reduced need to compensate for damage to Fox Covert by new woodland creation. If Fox Covert is reappraised as ancient woodland then the compensation required for loss could be a significant issue.

CFA report 20:

The RSPB owns and manages Middleton Lakes nature reserve. Having scrutinised the draft ES we are satisfied that HS2 will not have a direct effect on the features of interest of the reserve or

[10] Fagan, K.C., Pywell, R.F., Bullock, J.M, and Marrs, R.H. (2008) Do restored calcareous grasslands on former arable fields resemble ancient targets? The effect of time, methods and environment on outcomes. Journal of Applied Ecology 45, 1293–1303.

on visitor amenity, and indirect effects such as noise are not likely to be significant given the distances involved, intervening screening from trees etc, and existing noise sources like the A4091.

We have a permanent easement along the track leading from Bodymoor Heath Road opposite Primrose Cottage, running north towards Coneybury Farm. If the possible realignment of Bodymoor Heath Road shown on drawing no C223-CSI-CV-DPP-030-000009 is taken forward, we will require this easement to be protected and for a new junction to the realigned road to be provided that fully meets highways standards.

The HS2 route crosses Langley Brook, which feeds into Middleton Pool SSSI. We will expect to see full details of mitigation measures designed to prevent dust deposition into the lake, and to prevent an adverse effect on water quality in Langley Brook (and thereby, in the SSSI).

Conclusions

Even allowing for the incomplete nature of the draft ES, the RSPB is concerned that it **seriously misrepresents** the scale and significance of effects of HS2 on biodiversity. We believe it over-estimates the effectiveness of the various mitigation and compensation proposals, and is particularly unrealistic in its estimate of the time new habitats will take to mature. On this basis, impacts currently passed off as “temporary” should properly be counted as permanent or at least, very long term. There are many examples of where the precautionary principle has not been applied despite the general lack of any scientific evidence to support the claims made about the nature of effects of high speed rail on biodiversity.

All this, coupled with the rushed approach to developing the environmental statement, the short time allowed for consultation and the inadequate time now available to address problems before the Hybrid Bill process begins, mean that in our opinion the consultation process is inadequate to the scale and complexity of the project.

The RSPB requests a bilateral meeting with HS2 Ltd and their leading ecological consultants before the Hybrid Bill process starts, to discuss our concerns.

We hope our comments are of assistance to you. If you have any questions please contact one of the following:

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