National Trust Response to:
High Speed Rail: Investing in Britain’s Future
Consultation on the route from the West Midlands to Manchester, Leeds and beyond

January 2014
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1 EXECUTIVE SUMMARY

1.1 The National Trust welcomes the opportunity to respond to the consultation on the route of Phase 2 of HS2. We are neither for nor against the principle of high speed rail, but do believe that should it be built, it should be to the highest possible standards. We are committed to engaging with HS2 Ltd in order to deliver the best possible outcomes in terms of mitigation for the impacts of the train line.

1.2 We believe that the route proposed for Phase 2 of HS2 will impact adversely on the conservation of special places which we are charged under statute to conserve for the nation, and on the operation of those places, affecting both the experience of our visitors and the lives and livelihoods of our agricultural and residential tenants.

1.3 The summary below provides an overview of our assessment of the impact of Phase 2 of HS2 on National Trust properties. Our comments relate to properties which we own, care for, or of which we share the management. The complete document provides an in-depth assessment of the impact at each property, together with a commentary on the HS2 Ltd consultation document. Appendices provide detailed information on affected properties together with technical reports.

1.4 The National Trust expects to be consulted further and invited to discuss mitigation proposals as the project goes forward, in particular when the environmental impact assessment process is underway. The National Trust reserves its right to add to or alter the views set out in this document during that process and onwards into the formal project authorisation stage.

Eastern leg of phase 2, from Birmingham to Leeds:

1.5 At Hardwick Hall, where the route proposed hugs the M1 and would require extensive land take from our estate, our assessment is that there will be substantial harmful impacts upon the significances of our inalienable property, including the settings of heritage assets. There will also be substantial harmful impacts on our agricultural and residential tenancies within the wider Hardwick Estate. Considerable mitigation will be required to address those impacts, and without that mitigation we would object to the route.

1.6 The alignment of HS2 alongside the M1 emphasises the obviously man-made linearity of the transport corridor in the valley, compounded by the visibility of the sides of cuttings and embankments.

1.7 We also believe there is considerable opportunity for wider mitigation and compensation for damaging residual impacts in the Doe Lea corridor, connected as we are with other significant heritage assets at Bolsover Castle and Sutton Scarsdale Hall. HS2 Ltd has the opportunity to be the catalyst to restore a degraded landscape, re-presenting historic sites, providing connectivity and access for people, and restoring and connecting wildlife habitats that are or will be degraded or isolated. The National Trust is keen to play a part in work which could ultimately deliver benefits to the area, through a positive, proactive approach to engaging with key partners and communities.

1.8 We are concerned about the potential impacts of the proposed rolling stock depot, located close to Nostell Priory, and are disappointed by the limited details.
on how this will be built and used. We require additional information about the construction and operation of this depot, and will expect appropriate mitigation measures for any potential impacts. We anticipate that the train line itself is not close enough to Nostell Priory to give us significant cause for concern, although we will engage closely with the process to ensure that is indeed the case, and that there is no worsening of impact.

1.9 There appear to be limited direct impacts of the route on our land at Calke Abbey and Staunton Harold Church, although at both properties the proposed route will have some impact on the setting of the properties. We remain concerned about potential impacts to the visitor experience at these places during the construction phase of HS2.

**Western leg of phase 2, from Birmingham to Manchester**

1.10 At Dunham Massey, although no direct land take is currently indicated, the potential impacts on our inalienable registered park and garden require considerable mitigation, without which we would object to the route. We also have strong concerns about the impact of the route at the South West corner of the Dunham Massey estate, where the line comes in close proximity to the estate at an elevation and will have severe visual and noise impacts for our tenants. It is also likely to have a detrimental financial impact on the estate due to loss of rental income. We are concerned that HS2 adds to the cumulative impact of other development pressures close to Dunham and in its setting, including the new A556 road.

1.11 The impacts as we currently understand them at Tatton Park do not cause us significant concern. However, this is on the basis that there are no changes to the current landscaping proposals, including woodland cover and cuttings, which we believe would effectively screen the line. We are concerned about the potential impacts of construction in such close proximity to Tatton Park and at the narrow pinchpoint at Rostherne Mere. We would also seek reassurance that there will be further investigation of the nature conservation impact of the line at Rostherne Mere and that it will not have a connected impact on the other meres in that ecosystem.

1.12 At Shugborough there appears to be limited direct impact on the park and gardens although our assessment is that the train line may be visible from areas of the Park and Hall, and will need mitigation. We also remain concerned about potential impacts to the visitor experience at Shugborough during the construction phase of HS2.

1.13 Where we do not consider the anticipated impacts on our properties to be substantial, we will continue to monitor the position and will expect HS2 Limited to engage with us, and we will continue to seek appropriate mitigation and ensure anticipated impacts do not become worse.

**Route-wide**

1.14 The National Trust is a considerable contributor to tourism and the local economy, as outlined in this response. We have major concerns about the impacts of construction on access to our properties, with roads required as construction routes, and while ancillary infrastructure requires temporary road closures.
1.15 In general, we maintain that it is inaccurate to assert that where a listed building or its setting has already been compromised by existing development, this limits the potential impact of the HS2 proposals, for example where the route hugs the M1 corridor through the Hardwick estate. The current Planning Practice Guidance for the NPPF states that where the significance and appreciation of an asset have been compromised by inappropriate changes to its setting in the past, it may be possible to enhance the setting by reversing those changes. A place is not ‘compromised’ or ‘not compromised’, it is ‘more’ or ‘less compromised’, and HS2 would make it more compromised.

1.16 The NPPF also highlights the desirability of sustaining and enhancing the significance of heritage assets. English Heritage Guidance on The Setting of Heritage Assets (October 2011) makes the point that, additional change to an existing and unsympathetic development that affects setting, requires consideration to whether additional change will further detract from or enhance the significance of the asset.

1.17 While we see the sense in taking a pragmatic approach to ‘keeping the harm in one corridor’, alongside existing transport infrastructure, it cannot be claimed that HS2 will not have significant impacts just because it is next to the M1. Cumulative impacts of HS2 and the M1 must be acknowledged and addressed.

1.18 To this end, it is imperative that HS2 Ltd and the Highways Agency work in proactive partnership to deliver the best possible mitigation for cumulative impacts of transport infrastructure corridors where they are proximate.

1.19 While we do not ask for the route’s horizontal alignment to be changed, we are conscious that other consultation responses may make such suggestions. We would wish to be consulted immediately if HS2 Ltd is considering any route changes which may have consequent impacts on National Trust properties and their settings.

1.20 Described as an ‘Engine for Growth’, HS2 is heralded as an exemplar infrastructure project, and as such, it should adopt the highest possible design standards. While we understand that detailed design work does not begin until later in the process, we would encourage a more explicit commitment to achieving the most positive outcomes. The National Trust is fully supportive of establishing a national Design Panel for HS2 at the earliest stage, and would seek to be involved. Its set-up must enable HS2 to reflect local and regional landscape character, species and habitats, and cultural heritage.

1.21 The collections in our care at all properties affected by phase 2 of HS2 are very special, and require specialist attention to maintain and conserve. We are concerned about the impacts of dust and other pollutants, both during construction and operation of the train line. We urge HS2 Ltd to engage with us closely to establish baseline monitoring now, and into the future to minimise any potential impacts. We are keen to share with HS2 Ltd the expertise to which we have access so that other affected properties may also benefit.

1.22 The potential for buried archaeological remains within the HS2 corridor is as yet unknown. Further survey work is required to assess this. Such work should form a part of the process informing the EIA and we require assurances from HS2 Ltd that the National Trust would have direct input into the scope and content of the brief for such work.
1.23 While there is almost no published work on the effects of railways on wildlife, there is extensive evidence that roads and comparable linear infrastructure have significant impacts. We believe this evidence should be used to inform mitigation. Firstly their construction and ancillary structures destroy habitat directly, and secondly, the resulting road network fragments the landscape, restricting animal movements. This divides and isolates populations, and restricts access between feeding and breeding areas either side of the line, both of which can affect the resilience and viability of populations.

1.24 Existing railways may have less impact than roads, as they are narrower, train passings are infrequent relative to traffic on major roads, and noise and light pollution are generally lower. However, the fences which will line HS2 will be a significant barrier to wildlife, and the frequency of trains will be much higher than on existing lines. There is a risk that the very high speeds of the trains will increase the risk of direct strikes on wildlife. Where the line runs beside existing motorways components such as the fences could exacerbate the barrier effect for some species.

1.25 Because HS2 will be a long, continuous linear structure, it could disrupt wildlife at the landscape scale, so it is important to look at its effects not only on specific protected sites, but on the landscape as a whole. The Government has recognised the importance of landscape-scale networks of wildlife habitats, but this project is a major challenge to these principles. The landscape-scale impacts need to be more clearly acknowledged by HS2 Ltd and explicitly addressed in its biodiversity strategy and compensation.

1.26 The published HS2 consultation document assesses impact superficially, deferring to the detailed EIA work to follow. We are concerned that it contains almost no details about how impact was assessed, what mitigation and compensation measures will be carried out, and nothing about how success or failure will be determined. Despite acknowledging the preliminary nature of the appraisal, and the almost total lack of evidence to support current mitigation strategies, many of the assessments assume mitigation will be successful. The success of mitigation measures, for example crossing points for animals, is largely unproven, and we are concerned that HS2 Ltd is over-confident of the impacts that can be mitigated. The document concludes that there will be no significant residual impact, but since at this stage this is unsubstantiated by evidence and proposals we believe this claim is unjustified, misleading and premature.

1.27 We have been disappointed by the lack of engagement with us and others with detailed knowledge in the process of assessing precisely what habitat might be lost, and how that loss can be effectively avoided, mitigated or compensated. We would expect a detailed, categorised assessment of the existing wildlife, so that the principle of no net loss of diversity can be met through mitigation and compensation. Ensuring that compensatory habitats are as good as the assets lost is very challenging and successful examples are rare. Given such concerns, and the likelihood of offsetting required, we are therefore concerned and disappointed by the almost total lack of information on how equivalence will be ensured and compensation will be provided for the many impacts on both species and habitats.

1.28 We are supportive of submissions made by English Heritage, and Derbyshire County Council, particularly relating to the heritage assets at Hardwick, Bolsover and Sutton Scarsdale.
2 THE NATIONAL TRUST

2.1 The National Trust is a charity, established in 1895 to promote a core purpose of conservation and public access, promoting the preservation “for the benefit of the nation” of places on account of their historic interest, natural beauty or wildlife. This purpose is translated into contemporary language as ‘Caring for special places, for ever, for everyone’.

2.2 Today the National Trust protects through ownership 742 miles of coast, 250,000 hectares of countryside and more than 300 properties as well as tenanted properties, including historic and rural communities and managed estates. Currently it has a membership in excess of 4 million people.

2.3 National Trust legislation confers special powers to protect its places, including declarations of inalienability (1907 Act), which means that land cannot be mortgaged or sold, or subject to compulsory purchase other than with the approval of Parliament. Although the Trust is primarily focused on the special places in its ownership, its role extends to places it does not own (1937 Act) and to covenanted land (1937 Act).

2.4 It is within the remit of the National Trust to comment where development proposals affect our land or property, or other special places. The National Trust is therefore neither ‘for’ nor ‘against’ the principle of high speed rail or indeed extensions of the ‘classic’ (i.e. conventional speed) network.

2.5 The National Trust has formed a view on the HS2 proposals, informed by its ownership and interests, as well as local engagement, recognising that a scheme of this scale has wide-ranging impacts and taking the opportunity to establish shared goals for mitigation among our neighbouring communities.

2.6 As a conservation charity, the National Trust also has a wider perspective than just the places we own. Our wider conservation remit means we care about all special places, including nationally designated landscapes, and we have thus taken a view on the route-wide impacts of the line.
3 IMPACTS ON NATIONAL TRUST PROPERTIES

3.1 Calke Abbey

Built between 1701 and 1704 for Sir John Harpur, Calke Abbey in Ticknall, near Derby is a Grade I baroque mansion that sits in 600 acres of Grade II* listed ancient parkland. The parkland is a designated National Nature Reserve in recognition of its wood pasture, with trees over 1000 years old. The house also has three walled gardens, a recently restored orangery and extensive outbuildings, together with a unique Auricula theatre. Calke Abbey has been in the Trust’s care since 1985 and tells the story of the dramatic decline of a country house estate; the house and stables are little restored, with many abandoned areas vividly portraying a period in the 20th century when numerous country houses did not survive to tell their story. The Harpur Crewe family lived at Calke from the reign of James 1 and were known for their reclusiveness, passion for collecting and absorbing fascination with natural history; the house still contains their spectacular natural history collection. Calke Abbey attracts approximately 276,000 visitors each year to the house, garden and parkland. The route of HS2 is 2.5km from the Calke Estate.

3.1.1 Commercial/tourism operation
In 2012-13 Calke Abbey welcomed nearly 276,000 visitors, with the Calke Estate generating an annual income of nearly £2.6million. The Trust has invested around £2million in developing the facilities at Calke over the past three years, with a further spend of over £1million planned for the next five year period. The estate employs 98 permanent and seasonal staff supported by 330 volunteers.

3.1.2 Landscape and visual impact
The direct impacts of HS2 (visual and noise) on Calke Abbey are unlikely to be substantial. However Calke remains a secret and private place that relies on its location and context, in part, to maintain this atmosphere. The impacts from HS2 during its construction and when in full operation need to be carefully and thoroughly considered in this light. The sequence of arrival from the surrounding countryside could be affected by being close to or crossed by the new rail route.

3.1.3 Cultural heritage
We do not anticipate any direct impact on archaeology and built heritage within the Trust’s estate at Calke. We remain concerned about indirect impacts of noise during construction and full operation.

3.1.4 Biodiversity and wildlife
We anticipate that it is unlikely there will be significant direct biodiversity impact.

3.1.5 Water resources and flood risk
We do not anticipate any direct impacts on the Trust’s estate at Calke.

3.2 Staunton Harold Church
Grade I listed Staunton Harold Church is one of the few churches built between the outbreak of the English Civil War and the Restoration period. It is 1.9km from the route of HS2.

### 3.2.1 Noise and vibration

The main consultation document [3.2.28] concludes that the impact on Staunton Harold Estate would be negligible, although within 500m of the line of HS2. However, the methodology relevant to noise and vibration [Appendix E6, para 4.4.1] establishes a study area of 3km. Staunton Harold Church would be within this area. English Heritage policy guidance on setting of historic assets includes noise as a key factor within the consideration of setting. Added to the fact that noise has not been addressed quantitatively in this study, we submit that the impact of noise on Staunton Harold Church is a matter for more detail and reserved judgement, ahead of further work.

### 3.2.2 Landscape and visual impact

At Staunton Harold Church, the direct impacts are currently anticipated as unlikely to be substantial but the impacts on local roads and landscape context during construction need to be considered.

### 3.3 Hardwick Hall and Park

Designed by Robert Smythson, the leading architect of the day, Hardwick New Hall is believed to be the finest example of this style of Elizabethan architecture, mixing the English tradition of medieval building with new Renaissance detail, and is probably the least changed great house of the period. The Grade I listed Hall contains some of the most important Elizabethan interiors to have survived, such as the Entrance Hall, one of the earliest examples of a cross-hall and the Long Gallery, the largest such Elizabethan gallery to have survived. The contents of the Hall form a nationally important collection, with the late 16th- and early 17th- century tapestries, embroidery and needlework rivalling those in national collections and the important examples of Elizabethan furniture. Bess of Hardwick, for whom Hardwick Hall was built, was an important figure in Elizabethan history and a rare example of a woman achiever in a man's world.

Hardwick Old Hall, a Scheduled Ancient Monument and Grade I listed building, is a 16th century great house comprising four and five storeys over a basement, now derelict, owned by the National Trust and managed by English Heritage. The Old Hall includes revolutionary plan elements, such as the placement of the hall across the house at right angles to the façade and includes two full scale great chambers and substantial surviving decorative interior plasterwork by Abraham Smith.

Hardwick Hall and Old Hall, as well as the Grade II* listed Stableyard outbuildings, are set in Grade I Registered Park and Garden. On the edge this is Grade II listed Stainsby Mill, a fully operation watermill giving a vivid evocation of the workplace of a 19th-century miller.

The route of HS2 bisects the wider Hardwick Estate. The wider Estate encompasses several villages that contain other Trust owned Listed Buildings and are situated within designated Conservation Areas at Astwith, Hardstoft and Stainsby.

Hardwick Park and Garden, 111m to the east of HS2, are Registered Grade I (whilst the garden is laid out in a very formal style the wider parkland is an uncommon
example of a landscape that has not been made picturesque by 'improvers' such as a Repton or Capability Brown) while the main historic complex at Hardwick is within the Hardwick and Rowthorne Conservation Area.

3.3.1 Commercial/tourism operation
In 2012-13 Hardwick Hall welcomed just over 234,000 visitors making it the most visited visitor attraction in the Bolsover District. In 2013-4 projected visitor numbers are 238,000. We estimate that an additional 100,000 people visit the wider estate each year.

Hardwick Hall is the most visited House in the National Trust and second only to Chatsworth for stately home visits in Derbyshire. A majority of our visitors are Day Visitors who are known to bring almost £70m to the local economy (STEAM report for BDC 2011).

In 2011 the National Trust invested £6.2m in improvements which included a new road and car park, Visitor Reception Building, two shops and a 140 seat restaurant. This opened in March 2012 and income generated in the first year of the new development exceeded £2m and created 45 new jobs and 100 new volunteer opportunities.

At present the National Trust employs 61 regular staff, approximately 60 seasonal staff and 600 volunteers at the property.

Hardwick is preparing for its next stage of development, having completed a master planning process and looking to develop a paths network across the property with the aim of linking up with the greenway paths across the District.

We are developing new exhibitions and interpretation around the property to include an improved Below Stairs experience which gives the National Trust the opportunity to develop further its education programme. At present there are more than 3000 formal school visits to the property.

3.3.2 Access and construction
As presently proposed HS2 will involve a total land take of National Trust land of 13.7ha with a total length of HS2 across National Trust land of 2097m and severance of National Trust land between M1 and HS2 comprising 22.14 ha. The combined width of the HS2 and M1 transport corridor within National Trust ownership would be a minimum of 73m and a maximum of 300m. At its closest point (at Astwith Lane) HS2 will pass within 111m of the Grade I Registered Park and Garden and at a distance of 1184m from the New Hall.

3.3.3 Landscape and visual impacts
The HS2 proposal appears to cut off the existing approach to Hardwick via Blingsby Gate, which is the existing main entrance for almost all visitors. This drive was added in the early 19th century and takes advantage of the topography and oblique views of the Hall. It is one of the most exciting approaches to a country house that exists and an integral part of the visitor experience.

Cutting off Blingsby Gate would also prevent running the existing one way visitor flow through the park. This is important, not just for vehicle management, but because it means the drives can be kept single track and that visitors do not need to encounter vehicles in the opposite direction, which would detract from the experience of feeling
like a special visitor and enjoying privileged views. It would also cut off visitors exiting the property from the currently signed and best route back to the M1. This would cause inconvenience both to visitors make their return journeys, and to local residents from impacts of visitor traffic.

The alignment of HS2 alongside the M1 further emphasises the obviously man-made linearity of the transport corridor in the valley, and is compounded by visibility of the sides of cuttings and embankments.

There is a severe impact on the setting and access to Stainsby Village. The proposal cuts off the existing east west access between Stainsby and Ault Hucknall along Hodmire Lane.

The proposed re-routing of Mill Lane to Deep Lane would not fit the grain of the landscape and would be an inadequate approach to the Hall.

While we understand that the current consultation deals purely with the line of the route, and consideration of mitigation comes much later in the process, we are very keen to be closely involved as mitigation proposals are developed.

3.3.4 Cultural heritage

The impacts of HS2 on cultural heritage and archaeology at Hardwick are widespread and significant. We submit that there will be substantial direct adverse impacts to the Grade I Registered Park and Garden, substantial direct adverse impacts on National Trust land and access to Hardwick, substantial indirect adverse impacts on the setting of Grade 1 listed Hardwick Hall and further impact on other significance of the heritage assets, including:

3.3.4.1 Impact on the Scheduled site of Stainsby Manorial Complex and site of chapel: The greatest physical impact will be felt here (excluding Halls, Gardens and Parkland). Although the details of the HS2 infrastructure are to a certain extent unknown, the proposed route would truncate a portion of the field pattern that radiates out from the Manor site. The integrity of the medieval landscape at this location would therefore be reduced. The field patterns date back to at least the late medieval period and are significant to the manorial setting. We would dispute HS2’s assertion that the earthworks at Stainsby are poor and therefore of low significance.

3.3.4.2 Vernacular Buildings at Stainsby: Although not listed, it would appear that several of the buildings at Stainsby have evidence of earlier fabric and further study should be undertaken of the buildings to determine their significance and inform mitigation.

3.3.4.3 Stainsby Mill: Documentary sources indicate that there has been a mill in this location from at least the 13th century. The plans, as currently proposed, suggest that HS2 is not likely to be visible from the Mill. It should be noted that although the Mill is Grade II Listed there is some suggestion that it may be the best and most complete surviving example of a water driven mill. We would require assurances that the engineering works would not adversely impact on the hydrology of the site.

3.3.4.4 Lower Parkland: We require assurances that the engineering works would not adversely impact upon the hydrology associated with features such as the Duck Decoy and the Ponds.
The potential for buried archaeological remains within the HS2 corridor at Hardwick is as yet unknown. Further survey work is required to assess this. Such work should form a part of the process informing the EIA and we require assurances from HS2 Ltd that National Trust would have direct input into the scope and content of the brief for such work.

3.3.5 Biodiversity and wildlife
There are four non-statutory designated nature conservation sites (ie Local Wildlife Sites/potential Local Wildlife Sites) within the area affected by HS2. There are historical records of grass snake, bat roosts and water voles from within this area.

Notable habitats within the area include semi-natural broad-leaved woodland, species-rich hedgerows, mature broad-leaved trees, orchards, watercourses and waterbodies.

Evidence of badger has been noted within the area and birds such as kingfisher, woodcock and skylark, as well as brown hare have been observed. The affected area also provides potential habitat for amphibians (including great crested newts), bats, birds, reptiles, water voles and otters.

The route will cut through centre of the Hardwick estate, alongside the existing M1. Together they will create a formidable barrier to wildlife and are a major source of habitat degradation (noise, light and chemical pollution) and wildlife mortality. Their effects will be additive - it cannot be argued that the damage has already been done by the M1 and will not be increased significantly by HS2. The challenges to wildlife of the fences and cuttings of HS2 are different to those posed by the open, busy and noisy environment of the M1. Crossing points for wildlife are likely to be too few and it has yet to be demonstrated that wildlife uses either over or under the road structures in sufficient numbers to protect populations effectively. Widely-spaced, small underpasses are unlikely to be effective at making HS2 permeable to wildlife.

3.3.6 Water resources and flood risk
We are concerned about potential impacts on hydrology affecting the water supply to the historic mill at Stainsby and to water features in the Lower Park at Hardwick. We require assurances that there will be no adverse impacts to these important water resources. Water quality in these areas and in the Doe Lea Valley in general is poor due to the adverse effects of pollution from past industrial activity and from the M1 Motorway. HS2 Ltd has the opportunity to implement state of the art mitigation measures to improve water quality in these areas and we would wish to work with HS2 to determine the most appropriate measures.

3.3.7 Land use resources
The proposed route of HS2 will have a significant impact on the Trust’s substantial agricultural and residential tenancies which form part of the wider Hardwick Estate. The route crosses land belonging to Stainsby Farm causing further severance to compound that already caused by the M1 and passing within 100m of the farmhouse. In addition there will be some severance of land belonging to Yew Tree Farm in the vicinity of Deep Lane. We anticipate that a number of our residential tenancies will be affected by noise and visual intrusion both during construction and from the completed scheme. We wish to work with HS2 Ltd to mitigate these impacts and to ensure the minimum adverse effects on our tenants.
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3.4 Nostell Priory

Grade I listed Nostell Priory and its Grade II* listed Parkland has been home of the Winn Family for over 350 years. It has been in the care of the National Trust since 1954 and today it annually welcomes over 120,000 visitors. Nostell is unique amongst the houses of West Yorkshire in having most of its historic collections intact dating back to the 18th century. The house is surrounded by gardens and 340 acres of parkland. In 2012, the former Robert Adam designed stables underwent a £5.2m investment to repair the fabric of the building and to create a new visitor welcome point with café and shop.

The route of HS2 is 3.1km from the estate, but the proposed New Crofton rolling stock depot is 0.8km away.

3.4.1 Commercial/tourism operation
In 2013-14 we project that Nostell will welcome over 121,500 visitors, generating an annual income in excess of £1.1million. Over £15million has been invested in developing the facilities and securing important chattels for Nostell over the past 12 years. The estate employs 47 permanent and seasonal staff supported by 250 volunteers.

3.4.2 Access and construction
The current road infrastructure leading to the proposed site of the depot is made up of third class roads, meeting at a junction on the A638 (Wakefield to Doncaster Road) opposite the historic property main entrance. This gateway, Wragby Lodge (1777) is listed Grade II and comprises two Robert Adam designed gate houses separated double main gates and single side gates.

The current vehicle entrance is 150m east of the road junction.

The A638 crosses Nostell Road Bridge (1761) listed Grade II* which is an important historic visual landmark from within the Nostell gardens.

It appears inevitable that the proposed access route will be from the A638 to Swine Lane via Garmil Lane although clarification from HS2 Limited will be sought. Whilst Garmil Lane is classed as a ‘B’ road (B6273), Swine Lane is an unclassified narrow country lane. The A638 meets the A1(M) approximately ten miles east and the M1 approximately nine miles west of Nostell with the M62 approximately seven miles north-east. Our concern is that the HGVs servicing the depot site, during construction and operation, will be numerous and will affect the enjoyment of visitors to Nostell, and impact on access to and from the property. Depot traffic may act as a deterrent to visitors thus affecting the trading business of the estate.

The size of the depot creates concern about the volume of construction traffic and in use the extent of noise and light pollution. We would like to understand from HS2 Limited their rationale for the size and how it will be operated.

3.4.3 Noise and vibration and air quality
Nostell is the most important National Trust house in Yorkshire and with its outstanding ensemble of contents is one of the most important nationally. The collection includes paintings by Breughel, Hogarth, Kauffmann and Lockey. One of these, *The Procession to Calvary by Pieter Brueghel the Younger (1602)* was
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recently saved for the nation by a fundraising appeal which raised just under £2.5m in six months (£680,000 came from individual donations). Nostell contains over 100 pieces made specifically for the house by Thomas Chippendale, arguably Britain’s greatest cabinet maker. These items, identified from the surviving archive, together with important furniture acquired in the 19th century, some of it by Gillows, makes Nostell arguably the single most important furniture collection cared for by the National Trust.

We are concerned that the dust and vibration created by the traffic to and from the depot, the construction of the depot and its operation once complete will be wind-blown on to the estate adversely affecting both this unique collection, the trading business of the National Trust and the enjoyment of our visitors.

In view of the significance of the Collection (Furniture, paintings, books, etc.) and the interiors themselves there is concern that during construction there will be increased levels of dust particle pollution. This may continue, to a lesser extent, during operation.

We need to understand the impact of disruption and pollution on the house, landscape, water quality and surrounding communities during construction and operation.

Once further details are known, we would need to be consulted on any mitigating actions with HS2 Ltd regarding the size and use of the depot (which leads to the volume of construction traffic, dust, pollution, vibration and in use the extent of noise and light pollution).

3.4.4 Landscape and visual impacts
The proposed HS2 New Crofton Rolling Stock Depot will be less than a mile from the house and park. The location may not be visible during the day but there will potentially be light spill at night, affecting what is currently a remarkably tranquil prospect for this part of Yorkshire. This is an issue of concern for the surrounding community as well as the estate.

3.4.5 Cultural heritage
Listings published by HS2 Ltd contain errors: Nostell Stables, Mansion and Church are shown as Grade II listings, when they are in fact Grade I.

Recent work on visitor facilities at Nostell Priory led to the discovery and excavation of considerable Roman archaeological remains within the estate. Appendix 3 contains further details of archaeological remains at Nostell.

3.4.6 Biodiversity and wildlife
Based on our current knowledge we anticipate that the rolling stock depot, within 1km of Nostell Priory, will have limited impact, although there may be some disturbance from noise and light pollution. In particular we would wish to understand the impact on the local bat population.

3.4.7 Water resources and flood risk
We do not at this stage anticipate any direct impacts on water resources on the Trust’s estate at Nostell.
3.5 Shugborough

Shugborough Park is an exceptional designed landscape located in the heart of Staffordshire, registered at Grade I on the English Heritage Register of Parks and Gardens. It lies six miles east of Stafford at the confluence of the Rivers Trent and Sow, comprising some 364 hectares. The park represents a unique combination of Grade I Listed mansion house, parkland architecture, restored servants quarters, county museum collection, working farm, garden and landscape park.

The park was donated to the National Trust in the 1960s by the Earl of Lichfield as part of the holding of the Shugborough Estate, and is now leased to Staffordshire County Council.

The proposed route of HS2 is 1km from the estate.

3.5.1 Commercial/tourism operation
The Shugborough Estate is at present entirely operated by Staffordshire County Council.

3.5.2 Access issues, including construction concerns
We are concerned about potential adverse impacts on local transport routes and countryside during construction, including adverse impacts on the adjacent Cannock Chase AONB.

3.5.3 Noise and vibration
HS2 is on an embankment for part of its route near Shugborough and we are concerned about the potential for noise impact on the Grade I listed Park and Gardens.

3.5.4 Landscape and visual impacts
Views from key locations within the Park are a key part of the experience of visiting Shugborough. One of the most important prospects is that from the Grade I listed Triumphal Arch across the park and beyond. There is potential for HS2 to be visible in the middle distance of this important view. If this is the case we would look for appropriate mitigation to reduce visual intrusion on this view.

3.5.5 Cultural heritage
We do not anticipate any direct impacts on cultural heritage and archaeology on the Trust’s estate at Shugborough, other than to its setting. We remain concerned about the potential visual impact of the proposed line and of the impact of noise during construction and full operation.

3.5.6 Biodiversity and wildlife
HS2 does not directly affect land in National Trust ownership and therefore we have no specific grounds for concern for wildlife and biodiversity on our land.

3.5.7 Water resources and flood risk
We do not anticipate any direct impact on water resources within the Trust’s estate at Shugborough.
3.6 Tatton Park

Tatton Park is one of the UK’s most complete historic estates. It is home to a Grade I Tudor Old Hall, Neo-Classical Mansion, 50 acres of landscaped gardens, a rare-breed farm and 1,000 acres of deer park. The speciality shops, restaurant, adventure playground, events and educational programmes (run by Cheshire East Council) combine to make Tatton one of the most popular family days out in the North West. The Old Hall was the estate manor house until the late 17th century, when work commenced on a new house. The Neo Classical Mansion is celebrated for its Gillows furniture and collection of ceramics, paintings and books. The library collection is considered one of the finest in the National Trust. Fifty acres of beautiful gardens reflect over 250 years of garden design. The gardens are renowned for their remarkable glasshouses, the Japanese Garden, considered the finest in Europe, and the extensive Kitchen Gardens. The working rare-breed farm contains rare breed cattle, horses, sheep, pigs, goats, poultry and donkeys. Herds of Red and Fallow deer roam freely in 1,000 acres of parkland. The meres, woodlands and rough grassland provide a perfect habitat for wildlife. For nearly 400 years the estate was the property of the Egerton family until it was bequeathed to the National Trust in 1958. It is let to Cheshire East Council.

The proposed route of HS2 is 0.93km from the estate.

3.6.1 Commercial/tourism operation

Owned by the National Trust and operated by Cheshire East Council, Tatton Park is one of the most popular attractions in the North West, it received almost 800,000 pay for entry visitors in 2012/13, with the same number anticipated for 2013/14, and growth of up to 1 million paying visitors anticipated by 2016/17. Millions more enjoy the park for free as a popular green space close to a number of urban centres. The Council is investing in the attraction, aiming to improve financial sustainability, including planned new retail and catering facilities, an improved farm attraction, Bewilderwood family attraction, and new additions to the calendar of major annual events which includes the RHS Flower Show, Car and Wedding Shows, Food Festivals and Concerts in the Park.

80 people are employed at Tatton Park, and a further 120 people volunteer there.

3.6.2 Access issues, including construction concerns

There may be impact on surrounding access roads and countryside during construction. There may also be noise and visual impact during construction.

3.6.3 Landscape and visual impact

Although the line that crosses north of Tatton passes close to the Registered Park and Garden (around 1.3km away at its closest point), the downward slope of the terrain from the core of the Park to the north and the woodland that is in front of the proposed line is likely to screen it from the key visitor viewpoints. Its distance from the core of the park (at least 3km north of the Old Hall) also means that after construction it is unlikely to cause significant noise impacts.

We would wish to engage with HS2 Ltd to ensure that design or landscaping works fit with Tatton’s setting and ensure the long term integrity of the visual screen provided by existing woodland.
3.6.4 Cultural heritage
We do not believe that there will be significant direct impacts on the built heritage or archaeology at Tatton but we would expect HS2 Ltd to monitor of the possible effects of construction, such as dust.

3.6.5 Biodiversity and wildlife
There is a narrow pinchpoint on the route between Rostherne Mere (Ramsar site and National Nature Reserve, owned by Natural England) and the M56. The Sustainability Statement by HS2 indicates that ‘Careful design would ensure that impacts on this internationally significant habitat are avoided; further measures to minimise the risk of bird disturbance could be integrated through landscaping in the area.’ Further investigation should look at the potential wider impacts on the Cheshire mere ecosystem which includes the Mere at Tatton.

HS2 will pass very close to both Tatton Park and Dunham Massey. It will therefore isolate each from the other and both from the surrounding landscape, contributing to the fragmentation already caused by the M6, M56, A556 and associated developments. The effects on both estates are likely to be hard to quantify. However, HS2 presents an opportunity to secure improved ecological links between the two estates and with/between other important wildlife sites in the area.

3.6.6 Water resources and flood risk
We do not anticipate any direct impact on water resources within the Trust’s estate at Tatton. We require assurance that the HS2 proposals will not affect the hydrology of the biologically important meres.

3.7 Dunham Massey
The Dunham Massey estate comprises a Grade I listed House sited within The Old Park, a Registered Grade II* Historic Park and Garden.

The present house and park reflect the taste of each generation of two families associated with it, important for their wealth, patronage and position, especially that of the Second Earl of Warrington (18th century) and the Ninth Earl of Stamford (early 20th century). Both with regard to its architectural style and decoration it is a solid rather than showy house where attention to detail is of particular importance. The collection is highly important and spans three distinct generations over three hundred years. The silver collection is recognised as being the finest in the possession of the National Trust. The Grade II* listed Old Park contains a herd of fallow deer which form an essential part of the landscape and help maintain the parkland habitat. The Park is designated as SSSI because of its outstanding deadwood invertebrate fauna which is indicative of a long history of ancient trees on the site. The New Park, first mentioned in 1434, was re-landscaped by Lady Mary Booth, Countess of Stamford in the 1760s and is believed to be the work of Capability Brown. Set as it is between the sprawl of Greater Manchester and rural Cheshire, Dunham affords the first substantial green space travelling south from the urban conurbation.

The National Trust’s ownership at Dunham includes not only have the main group of historic buildings and the related Parkland but also the wider Dunham Estate that has been associated with the Hall for many centuries. The overall estate covers an area of 3,135 acres and contains 16 working farms and 105 cottages let to private tenants.
3.7.1 Commercial/tourism operation

Sitting on the edge of the Greater Manchester conurbation and easily accessible by road, Dunham provides a vital green lung and access to the outdoors for a large urban population. In 2012/13 it was in the top ten most visited attractions in Greater Manchester.

It is estimated that over 500,000 people visit the Park and wider estate each year, including 215,000 paying to visit the house and garden. A programme of investment, including an almost completed visitor reception building and recently opened rose garden as well as new visitor experiences in development, means that visitor numbers are projected to increase to over 275,000 paying visitors by 2017. A strategy is being prepared for the wider estate, including investment in tenanted properties, some of which may be affected by HS2.

The Dunham Massey estate generated £2.997 million in income in the last financial year, from visitor admissions, retail and catering operations, and let estate. The aim is to reach an income of £3.29m by 2016, as a return on recent investment.

Dunham directly employs 64 permanent staff, 36 seasonal recruits, and is also supported by 537 volunteers.

3.7.2 Access issues, including construction concerns

There would be potentially significant disturbance to the agricultural community and to all users of local roads, including visitors to Dunham, during construction.

3.7.3 Noise and vibration

We are very concerned about noise at Agden Bridge and possibly other parts of the estate which are indicated on HS2’s noise maps. This is a sensitive landscape and the conventional form of using highly visible screens to reduce noise impact is likely to be inappropriate in this flat, open landscape. More detail is required from HS2 to understand the extent of possible noise impacts and mitigation options.

3.7.4 Landscape and visual impact

The integrity of this important estate lies in its completeness and unchanged character in this peri-urban context. The route of HS2 would have some direct impact on the designed core and would have significant impact on the agricultural landscape to the west. The route crosses over the listed Eighteenth Century Bridgewater Canal (a popular walking route) and, where it rises to cross the Manchester Ship Canal, would be visible from a considerable distance.

There are two sections of the route that impact on Dunham Massey. HS2’s sustainability assessment states ‘The alignment northwards was carefully selected to avoid impacts on the historic parkland and setting of Dunham Massey.’ While we welcome the intention, we do not agree that the proposals would avoid impacts upon the setting of Dunham.

- The line passes south of Dunham taking trains into and out of Manchester. At its closest point it is between 1km and 1.4km from the Grade II* historic parkland and just under 2km from the Grade I listed house. This part of the line is largely in cutting. However, we believe that parts of the route would still be visible from the registered park along key historic vistas and viewpoints.
- The line then heads north close to Agden Bridge and over the Bridgewater Canal. It does not physically cross National Trust land but it comes in close
proximity. At Woolstencroft Farm at the Bridgewater Canal the line is just 122m away from the National Trust tenanted farmland, on a high embankment forming a highly visible intrusion into this rural landscape setting. It then heads across countryside towards the Manchester Ship Canal where it needs to rise to 30m in order to maintain navigability.

The proposed route of HS2 must also be seen in relation to the proposed changes to the A556 between Bowdon roundabout and Junction 19 of the M6. These works will include a ‘new’ A556 route parallel to the existing road and will also enable vehicles to join and leave the M56 without having to negotiate any roundabouts or other junctions. That proposal is currently with the Planning Inspectorate for formal examination (commenced during December 2013 and continuing during January 2014). The National Trust’s position in relation to these road proposals is that it is not objecting to the proposal in principle but through negotiation is seeking to secure improved (and satisfactory) mitigation in terms of lessening potential visual impacts and securing appropriate landscaping.

Our analysis of the impacts of HS2 proposals at Dunham indicates that there will be visual impacts on the setting and views from the Registered Park and Garden – particularly the Old Park to the south and east of the House. We conclude that from locations within the Old Park including from the main south avenue and perimeter paths there are medium distance views out to the south and west. From certain locations it is likely that there will be views to HS2, at least to construction elements and possibly to areas of cutting/embankment. These will be at a distance of at least 1.5 km. While it can be established with reasonable certainty that there are likely to be views to HS2, taken as whole, and given the limited locations and the extensive areas of the parkland that are not affected we do not believe that there will be substantial harm to the heritage assets at Dunham Massey. Nevertheless, the importance of the wider landscape and the rural setting to Dunham Massey are key to understanding the place and there will be adverse impacts. We are keen to engage with HS2 Ltd to seek additional mitigation of these impacts.

The most adverse visual impact will be on the tenanted farmland and cottages at Agden Bridge. It is very difficult to see how this visual impact could be mitigated as the line needs to go over the Bridgewater Canal. Careful landscaping and high quality design will be essential to reduce the impact of a piece of infrastructure of this scale and prominence.

3.7.5 Cultural heritage
We are not aware of any impact on archaeology in the Dunham estate but would want to work with HS2 to ensure that this is the case.

3.7.6 Biodiversity and wildlife - see Tatton Park
Dunham park is a SSSI due to its invertebrate habitats. We do not believe this would be affected by HS2 but would seek reassurance that HS2 Ltd will monitor construction and operational impacts to ensure that this is the case.

3.7.7 Water resources and flood risk
We are not aware of any direct impact water resources in the Dunham estate but would want to work with HS2 to ensure that this is the case.
3.7.8 Land use resources
Dunham Massey has an estate of around 3,135 acres. This includes 105 cottage and
16 farm tenants, some of whom will be directly affected by HS2 either because of the
proximity of the line to their house or because of impacts on their farmland.

The property team has been working on an Estate Plan due to be completed in 2015.
The main aims are to link the wider estate with the current visitor experience on offer
in the house and garden/park and facilitate improved public access to the farmland
and countryside on the estate, all of which would enhance the experience of visitors
and tenants.

The tenanted estate is critical to Dunham, being self-financing, and it is predicted that
HS2 will impact on the lettings of some cottages within the estate, making them less
attractive. The Trust would seek to work with its tenants and HS2 Ltd to ensure that
appropriate support and mitigation is put in place to reduce as far as possible the
impacts. The Estate Plan will also address the importance of wildlife in the park with
actions to enhance habitats and improve connectivity with other green infrastructure.
4 COMMENTARY ON THE SUSTAINABILITY STATEMENT (VOLUME 1)

The exact status of the document with respect to European or National legislation (for example the SEA and EIA Regulations) is not known. It is therefore not clear what reference point the Sustainability Statement should be judged against.

Our assessment of the impacts, as is required in any sustainability assessment, has been guided by legislation and policy in the EIA/SEA policy arena. From a review of the current sustainability statement, it is not readily apparent which environmental methodology is being employed. Our previous commentary on design mitigation and the Environmental Impact Assessment process has been influenced by experience of the HS2 Phase One Appraisal of Sustainability (February 2011) and in particular the HS2 Scoping Methodology for Environmental Statements (March 2011). EIA methodology, as set out in the Statutory Instrument refers to both characteristics of potential impact as described in paragraph 3 of Schedule 3 of SI 2011/1824 (i.e. extent, magnitude, probability, duration) and the assessment of likely significant effects which deals with direct, indirect, secondary, cumulative, short – medium – long term and permanent – temporary, positive – negative, considerations as described in paragraph 4 of Part 1 to Schedule 4.

Paragraph 3 of Part 1 to Schedule 4 information for inclusion in environmental statements, dealing with a description of the aspects of the environment likely to be significantly affected (population, fauna, flora, soil, water, air, climatic factors, material assets including architectural and archaeological heritage, landscape) and the inter-relationship between these factors. We have reasonably assumed that this is the ‘benchmark’ for the current consultation.

Paragraph 5 of Part 1 to Schedule 4 deals with a description of measures envisaged to prevent reduce and where possible offset any significant adverse effect on the environment. Again, we have assumed that the details of these measures follow in the Environmental Statement.

Thus key words here as they affect the decision-maker are:

Findings of substantial harm in assessment of historic buildings and Grade I and II* Registered Parks and Gardens.

Anything significantly affected must be covered in the menu of matters covered in the environmental statement.

Anything causing a significantly adverse effect requires explanation and measures in place to secure avoidance, reduction or remedy. The National Trust appreciates that the consideration of wider mitigation strategy is a matter for later in the process, at Environmental Statement stage, but we wish to make the point now that a finding of ‘moderate or significant effect’ or ‘moderate or significant adverse effect’ has to be addressed in this process and will, by inference, require either avoidance or mitigation of impact. The Government’s Command Paper of January 2013, when Phase Two was introduced, talked about ‘adverse impacts’ on the Registered Park and Garden at Hardwick. We have assumed that the determination as to whether this effect is ‘moderately adverse’ or ‘significantly adverse’, is still to be made yet we would like to comment of the evaluation of impacts in the January 2014 consultation, as appropriate. Also, more work and greater definition is required in respect of ‘temporary adverse’ effects. This point appears accepted in the development of the Phase One Environmental Statement.
In respect of the approach taken by SI 2011/1824 the National Trust submits that a finding of a less than significant effect or a less than significant adverse effect would not mean that mitigation is unnecessary.

Looking, in particular at matters of Cultural Heritage, using the tests in the NPPF anything less than substantial harm to a Registered Park and Garden (RP&G) avoids the wholly exceptional test in paragraph 132 of the NPPF. Policy in respect of the historic environment does not suggest that harm is acceptable, so long as it is less than substantial. National Trust has approached the Statement of Sustainability in a similar fashion to the Assessment of Sustainability in Phase One, namely that harm to a cultural heritage assets would be unacceptable and that the guidance in NPPF at paragraph 132 is very pertinent, as anything other than ‘less than substantial harm’ is unacceptable when measured against national planning policy objectives. We are very much aware of the continuing dialogue on design refinements and commitment to public engagement, as undertaken by HS2. This is stated in Volume One of the Sustainability Statement and at paragraph 5.3, where ‘refinements to the scheme design are likely to be proposed during the course of this consultation and may be adopted where appropriate, subject to further AoS work and other considerations’.

We feel it beneficial for all affected third parties that HS2 produce a summary methodology, by topic, as to how terms like substantial harm, significant adverse, significantly affected, adverse or moderately adverse are defined by each topic area of land use planning, cultural heritage, ecology, archaeology, hydrology, noise and vibration and socio economic and community.

4.1 HS2 and sustainability [1.3]

Section 1.3 of the Main report sets out the seven themes of the HS2 Sustainability policy. One of these themes relates to Environmental Change. It states:

“Environmental change – Seek to avoid significant adverse effects on communities, business and the natural historic and built environment. Minimise impacts where they occur and deliver enhancements as far as practicable to ensure there is no net loss to the natural environment.”

There is a clear objective to avoid significant impacts on heritage assets and minimise impacts where they occur. There are likely to be significant impacts on some of the National Trust’s properties, in particular Hardwick Hall and therefore we reiterate the importance of avoiding and minimising impacts on these important heritage assets.

4.2 Post consultation: developing the preferred scheme [3.9]

Section 3.9 of the report states that:

“On the basis of feedback during consultation, a number of possible refinements to the scheme proposals are likely to be put forward. These would then be subject to further appraisal in order that the relative advantages and disadvantages can be determined and given full consideration. Where a decision is made by the Government to adopt a change, based on advice from HS2 Ltd then this will be taken into the design and would then form part of the preferred scheme that will be the subject of EIA.”
We note that the purpose of EIA is to take account of the potential environmental impacts of a proposal and iteratively revise the design in the light of any impacts. We seek confirmation that this will be the case at the EIA stage. The Sustainability Statement only provides a very limited assessment of the potential impacts of the proposal (as it acknowledges itself) and therefore the full extent of any impacts will not become evident until the EIA stage. Some flexibility to accommodate substantial changes to the route (if required) must therefore be factored in at the EIA stage and we seek reassurance that this will indeed be the case.

4.3 Planning and development [4.3]

Appendices 1-6 of this document consider local planning policy as related to National Trust properties affected by HS2.

4.4 Access issues [4.6]

Section 4.6.4 of the report states that potential impacts from the loss of recreational access were appraised in terms of length of route crossing National Trust land, Open Access land and Country Parks. It then states that the impacts are described in sections 5.5 and 6.5.

No reference to the crossing of National Trust land or Open Access land is made in these sections (or anywhere in the report) or the accompanying Appendix E8 Access. The report only summarises the number of public rights of way crossings and the number of Country Parks that will be crossed by the proposed route.

4.5 Noise and vibration [4.7, 5.6, 6.6]

To comment fully on these draft statements we require access to the Sound Contour Maps that are mentioned in the report.

It is not presently clear how the ongoing approach to noise control will be assessed. Measured background noise levels, if taken, should include night time levels. The background noise levels presented appear to arrive at an arbitrary night-time level by subtracting 10dB from the recorded daytime measurement.

No improved definition of the train noise used in the draft assessment is given, and therefore we have continued to use the level of 95 dB(A) at 25m from the track.

The main HS2 Consultation Document contains minimal reference to Noise and Vibration [9.1.5].

The document makes a general statement that “Noticeable Impact”, has been based upon a noise level increase over ambient of 3dB resulting in a level exceeding 50 dB(A) in daytime, and 40dB(A) at night. This is in line with the WHO (World Health Organisation) Guidelines, but would not cover for example, an instance where the daytime background was 40 dB(A), and was increased by up to 6dB, to 46 dB(A), and still not be classed as “Noticeable Impact.” The standard definition of daytime is 07:00 to 23:00hrs. Night time is 23:00 to 07:00 hrs. HS2 operational period is from 05:00 to midnight, and so for occupied premises we need to be working on appropriate background noise levels.

Actual measured background levels will need to be provided before the impact of
HS2 noise at each location can be properly assessed.

In section [4.7.4] operational hours appear to have reduced to 18 hrs, Item 3, again states the general noise assessment process, mentioned in 9.1.5 above. This does not seem to address areas of low background noise levels, *(we have measured daytime levels as low as 30dB LAeq in some rural areas).*

In section [4.7.8] the use of barriers will need to be carefully assessed, as for example, for a given barrier height, the acoustical performance of the barrier could vary by 3dB or more, between the up and down railway line. Distance from track, height, and absorption to inner faces, are also critical parameters that require detailed consideration which is presently lacking.

In section [4.7.12] it is stated that the additional effect of road aircraft and local industry have not been taken into account in the analysis. However, it is expected that taking these sources into account will finally lower the number of noise impacts. This is dependent on the eventual assessment of noise in terms of character. For example Motorway noise is very consistent and becomes almost a stable background, whereas HS2 noise will be intermittent and a Leq assessment could be called into question. BS4142 for instance, would add 5dB for intermittent noise sources.

In section [5.6.5] it is stated that noise from Stations and Depots will be of a different character to the High Speed track sections, and local mitigation by appropriate building design, and general good industrial practice.

### 4.6 Air quality [4.8]

See review of Technical Report [E12]

### 4.7 Landscape and visual impacts [4.11, 5.9, 6.9]

The core sustainability objectives in relation to landscape and townscape established at the outset are:

- To maintain or where possible enhance existing landscape character; and
- To maintain or where possible enhance existing townscape character.

While this report contains the key findings contained in Appendix E, we note that the significant impacts on the landscape and visual receptors at Hardwick Hall are not carried through into this document.

In particular we note that:

**Western leg**

- there will be wider visual and landscape character effects of the Manchester Ship Canal viaduct on historic estate lands associated with Dunham Massey than those suggested.
- There should be greater attention to potential character and visual impacts in relation to the National Trust land holding at Dunham Massey.
Eastern leg

- The visual and landscape character effects for the section of the route at Hardwick Hall and environs will be major and that there must be recognition of the wider landscape setting function and intrinsic interest of the Doe Lea Valley and the potential impact of the route on these.

4.8 Biodiversity and wildlife [4.13]

Appendix 9 contains a detailed review of biodiversity and wildlife issues undertaken for National Trust by by Professor John Altringham.

4.9 Water resources and flood risk [4.14]

Appendix 10 contains a report undertaken by Mike Briggs of HR Wallingford. In summary:

- HS2 Ltd’s assessment of water-related environmental issues has so far been at a high level. While probably adequate at this stage it should only be considered a very initial review.
- Large-scale issues have only been reviewed superficially. There is a need for far more detailed studies.
- Many local / small scale issues are yet to be identified. These will also require detailed assessments and mitigation measures.
- Substantial surveys / data collection / modelling / assessment is required.
- These requirements are generally recognised in HS2 Ltd’s documents.
- HS2 Ltd states that it will assess all water bodies that are crossed by the route under the Water Framework Directive. However, this should be extended to cover nearby water bodies as well.

4.10 Selection of the Preferred Route [7.7]

Section 7.7 of the main report summarises the combined impacts of HS2 Phase 1 and Phase 2 but this is in terms of total number of impacts ie the number of people affected by noise, number of scheduled monuments affected, number of ancient woodlands affected etc. It gives an indication of the quantitative number of impacts but not the scale of the impacts or how the different route options for Phase 2 compared.

Table B1.1 in Appendix B sets out the sustainability objective and evaluation criteria that were used to assess the various route options. Section 4 of this table sets out the criteria in relation to Townscape and Built Heritage (but also appears to include archaeology). The criteria relate to the proximity of the proposed HS2 development to each type of heritage asset – using the prescribed buffers as outlined in the discussions above.

We suggest that there is a lack of information about how the assessment of impacts determined which route was selected as the preferred route. It is not clear what weighting was applied to the criteria and how the various route options compared in relation to these criteria.

For the reasons outlined above, there is a concern that the criteria outlined in Table B1.1 may have significantly underestimated the potential impacts on key assets,
such as listed buildings, which fall beyond the specified buffer distances. The appraisal also does not consider cumulative or collective impacts. The process may therefore have led to the preferred route being chosen based on an inadequate assessment of the potential impacts at key points, most notably around Hardwick Hall.
5 COMMENTARY ON THE TECHNICAL REPORTS [APPENDIX E]

5.1 Landscape [E1]

This document provides a technical appendix and summarises the method for the Landscape, Townscape and Visual Appraisal and findings to inform the Sustainability Statement (the main report). It contains all the findings of the appraisal plus an overview and summary. The key impacts are then taken forward into the Sustainability Statement.

The method follows appropriate guidance to devise a bespoke approach for a strategic level assessment of HS2. We note the fact that it is a broad brush strategic level appraisal and is not to be confused with a full and detailed environmental impact assessment and our comments are framed accordingly. Unlike some other topic areas it focuses on qualitative evidence-based descriptions and analysis of impacts; this is appropriate since impacts are not easily measured or quantified. All landscape, townscape and visual amenity impacts are assessed as negative at this stage in the design process, although it is noted that further mitigation measure will reduce these. Impacts are described based on a scheme design without additional mitigation included – this ‘worst case scenario’ is appropriate.

The appraisal methodology comprises four stages:

1. Review the baseline
2. Consider the degree of change that would result
3. Describe and appraise the impacts
4. Produce an evaluation of impacts for each route section

The method goes on to provide detail under all these sections. We agree with the approach generally, although some specific comments are provided below:

**Baseline:** It would be useful to have some GIS mapping of the baseline as part of this report to allow easier cross referencing between the baseline and route sections (for example the local authority landscape character assessments). We note the GIS mapping of key sites that contribute to enjoyment of landscape and visual amenity along the route. While this does include Registered Parks and Gardens we consider that specific reference to National Trust properties would also be useful here, particularly where National Trust ownership and interests extend beyond designations.

It would be useful to have some further information on how sensitivity, importance and value of the baseline is judged since these are the factors that contribute to the overall evaluation of impacts (2.3.11).

**Degree of change:** Direct impacts are assumed to occur within 50 m either side of the proposed route, and indirect impacts up to 2km. We consider that these are very narrow limits and in some cases, particularly where there may be direct impacts on setting, these may need to be wider. We note that no mapping of the zone of theoretical visibility of the route has been undertaken at this stage. While we recognise that this is not a full ES, we consider that visibility mapping may have been useful, for example, for structures such as the high viaduct over the Manchester Ship Canal where impacts are likely to extend well beyond the immediate landscape character area.
Findings – Western Leg

Winterbottom – Warburton [HMS12]

Winterbottom to Agden Bridge: We agree that impacts would be significant and the cumulative impacts identified at Rostherne.

Agden Bridge to Warburton: and Bridgewater Canal: It would be useful to note here potential landscape and visual impacts in relation to Dunham Massey and National Trust estate land notably the impacts of the embankments and viaducts as the land dips to the Bollin Valley. We agree that impacts will be significant arguably they would be more than moderate given the historic estate character of this landscape.

Warburton to Lowton [HSM21]

The embankment and viaduct at the Manchester Ship Canal will clearly have a visual impact. A ZTV would be useful here and it would be useful to see possible interactions with other surrounding landscapes, not just the area it is located in, for example in relation to landscape and visual receptors at Dunham Massey National Trust estate. We agree that impacts here are major. We consider the impacts here may occur across a wider area than identified in the appraisal.

Winterbottom to Rostherne [HSM28A]

We agree with the description of this landscape as intact and unspoilt with a historic field and valued Mere. This area with Dunham Massey and Tatton, forms an important green buffer on the edge of the conurbation.

Rostherene to Agden Bridge [HSM30]

This is part of the connecting route into Manchester. We note the potential here of views out from the deer park at Dunham Massey. We suggest moderate effects on landscape and visual, rather than minor.

Findings – Eastern Leg

Trowell to Killamarsh [HSL13]

Huthwaite to Staveley: We agree with the assessment that HS2 would affect the sensitive landscape around Hardwick Hall. We do not agree that this effect would be mitigated by the fact that the route runs in a cutting outside the park boundary and west of the M1. The significance of Hardwick Hall relates specifically to its views out across this valley, beyond the designated park. The route is within National Trust estate land with a strong functional and visual relationship to the Hall. The fact that the route is partially in cutting will not mitigate its visual impact here and there is potential for the cutting faces to form a scar when looking across this sloping valley landscape from the halls and associated park. Furthermore we do not consider that the alignment in association with the M1 corridor offers any mitigation since the two linear infrastructure corridors will result in considerable worsening of the severance of the land. In our opinion impacts on landscape character and setting will be major (not moderate) in this location. We would wish to see further cross referencing to the cultural heritage section and the collective importance of this valley as the landscape setting for the range of heritage assets. We do not agree with the conclusions that visual impact would be limited at Hardwick Hall as the route would be in a cutting and enclosed by trees. The cutting is likely to be highly visible in the views from the Halls and their surroundings.
National Trust Response to:
High Speed Rail: Investing in Britain’s Future
Consultation on the route from the West Midlands to Manchester, Leeds and beyond

We agree with comments relating to the New Crofton Depot that this structure will not have an impact on the setting of Nostell Priory.

5.2 Built Heritage [E2]

5.2.1 Scope of Heritage Assets Assessed
The methodology states that direct physical impacts would be experienced by an asset if it is within 50m of the route or station footprint. Impacts on the setting of heritage assets are considered if the asset lies within 350m of the proposed route for Grade 1 and Grade II* Listed Buildings. Grade II Listed buildings were considered at risk of an indirect impact if they lie within 350m of a line of route but for those close to a station, the zone of potential impact was much narrower. There was assumed to be an impact on the setting of an RPG if any part of it lies within 1km of the proposed route. The methodology goes on to state that for the proposed route, the specialists adopted a more flexible approach and considered each site according to its unique situation, although the defined buffers remained the initial area of consideration.

It is also noted that there are a number of key designated sites that lie further away but for which there is an important line of sight or distant view which would be affected by the proposals and these were therefore considered.

We are concerned about how this approach has been applied as the methodology clearly acknowledges there are some key designated sites which lie beyond 350m whose setting may be affected by the proposals. These properties do not appear to have been considered in Appendix E2. Limiting the appraisal to heritage assets lying solely within 350m of the lines of route is therefore inadequate. With regard to Hardwick Hall, the impact on the Grade 1 Registered Park and Garden is considered in Appendix E2 but the potential impacts on the Grade I listed Hardwick Hall and other listed properties (such as Hardwick Old Hall (Grade I), Stainsby Mill (Grade II)) are not.

The main Sustainability Statement does briefly note in paragraph 6.10.7 that the Scheduled Hardwick Hall and the Grade I Listed Hardwick Hall are already affected by views and noise from the M1 and the proposed route would not exacerbate this to any great degree. A detailed explanation of how this conclusion was reached is not however provided in the report and as outlined above, no reference to these listed properties is mentioned in Appendix E2.

There is no reference to Dunham Massey Registered Park and Garden in Appendix E2. It is referred to in the main Sustainability Statement Para 5.10.7 where it states that there would be "no impacts on the important Registered Parks and Gardens at Dunham Massey and Tatton Park, aside from possibly minor impacts on the setting of the latter on its northern edge" but again no explanation of how this conclusion has been reached is included in Appendix E2. This is despite the fact that the technical report states that Appendix E2 "summarises all the conclusions relating to the Built Heritage appraisal."

With the lack of inclusion of these key properties in Appendix E2, there is concern that they haven't been taken into account in the Appraisal of Sustainability (AoS) process where the various route options were assessed. The AoS process may therefore have significantly underestimated the potential impacts of the preferred route in certain areas – eg around Hardwick Hall.
5.2.2 Criteria used for Assessment of Impacts
The methodology set out in Appendix E2 states [2.4.1] that a “set of guiding principles were supplied to the project team to inform the appraisal of major, moderate, minor and negligible significance of impacts, by classes of asset, not for individual assets.”

These guiding principles do not appear to be set out Appendix E2 or the main Sustainability Statement. This lack of transparency makes it very difficult to establish how the conclusions regarding the degree of impact on the various assets have been reached.

Initial studies indicate that the assessment approach has significantly underestimated the potential impacts to the heritage significance of some of these assets, in particular around Hardwick Hall.

5.2.3 Assets where Setting has been compromised
In relation to listed buildings, there appears to be a general assumption made in the commentary in Appendix E2 that if a listed building or its setting has already been compromised by existing development, then that limits the potential impact of the HS2 proposals.

We note that PPS 5 Historic Environment Planning Practice Guide which remains the current historic environment guidance for the NPPF states that where the significance and appreciation of an asset have been compromised by inappropriate changes within its setting in the past, it may be possible to enhance the setting by reversing those changes. The NPPF also highlights in paragraphs 131 and 137 the desirability of sustaining and enhancing the significance of the heritage assets. There should not therefore be a presumption that because a heritage asset has been compromised in the past, then that in some way diminishes the need to protect the asset in the future.

5.2.4 Cumulative and Collective Impacts
We note that there is no indication provided in the methodology or Appendix E2 as to how cumulative impacts have been taken into account e.g. from other developments (such as the Managed Motorway proposals for the M1) or the combined effect of individual impacts (e.g. noise, vibration, visual intrusion).

It is also not clear if the collective value of heritage assets has been taken into account (i.e where there is a grouping of a number of heritage assets in one place). At Hardwick Hall for example, the main Sustainability Statement notes in paragraph 6.10.7 that the route will pass through a landscape with a mix of historic assets including the Hardwick Hall complex (comprising a Grade I House, Grade II* Registered Park and Garden¹ and the Scheduled Old Hall), several Conservation Areas (with numerous Listed Buildings) and two further Scheduled Monuments. It is not clear if and how this was taken into account in the consideration of the route options.

It is also noted that there are potential impacts on the combined setting for Hardwick Hall, Sutton Scarsdale and Bolsover Castle. It is acknowledged in Appendix E3 that the latter will need to be considered “as a block” but it is not clear what this means or when this assessment will be undertaken – ie will this be at the EIA stage when the route alignment is already fixed?

¹ Assume reference to it as a Grade II* is in error as it is Grade I Registered.
5.3 Archaeology [E3]

5.3.1 Criteria used for Assessment of Impacts
The methodology used for the appraisal of archaeology is set out in Appendix E3. The assessment only covered the potential impacts on Scheduled Monuments and Registered Historic Battlefields. The table in Para 2.2.6 outlines the criteria used to assess the severity of the impacts. These criteria relate to the proximity of the asset to the proposed route and the degree to which HS2 will be visible from the asset.

We note that, as noted in the English Heritage Guidance, Setting of Heritage Assets (2011), impacts affecting the setting of a heritage asset can derive from the combination of different environmental impacts such as visual intrusion, noise, dust and vibration. It would appear that the assessment criteria used have only focussed on visual intrusion and omitted noise and vibration impacts which may potentially be of equal significance.

The reliance of the assessment on the degree to which the asset is visible is also of concern as if a heritage asset is partially screened from the proposed development, it does not equate that the impact on the asset will be lower, as there may be key views from the asset which are impacted. There are also potential impacts upon visitor appreciation of the asset as their journey/arrival experience is compromised by impacts both upon the routing itself and upon what is seen along the revised route.

There is also concern that the criteria which have been used to assess the severity of the impact do not take account of the extent to which the significance of the heritage asset will be affected. In line with the NPPF and recent case law this is the key test that needs to be considered.

5.4 Biodiversity [E4]
Appendix 9 contains a detailed review for National Trust by Professor John Altringham.

5.5 Water [E5]
See appendix 10 for a detailed review by Mike Briggs of HR Wallingford for National Trust.

5.6 Noise and vibration [E6]
See appendix 8 for review by Alan Nethersole of Sound Analysis for National Trust

[1.1.2] We assume that the Environmental Impact Assessment will presumably provide more detail of background noise levels and more accurate assessment of impact.

[2.1.1] Although LAeq is commonly in use for the assessment of industrial noise nuisance, the most used standard is: BS4142 Method for rating industrial noise affecting mixed residential and industrial areas.” This document has a particular correction for tonal or intermittent sound. The standard states that if the noise that is being assessed for nuisance is tonal or intermittent, then the design level should be lowered by 5dB.
There is no mention of such a correction in any of the appraisal statements. The character of HS2 noise is intermittent, and regular, and annoyance created can be by noise level, and predictability of regular occurrence, resulting in the auditor, listening for the noise, rather than hearing the offending noise.

[2.2.8] The DfT document “Transport Analysis Guidance”, Noise Sub-objective TAG 3.3.2, is primarily intended to give a method for assessing the financial compensation levels, for properties experiencing noise level increases. However certain statements within the document are useful to note, and are shown in Appendix B.

[6.2.1] The noise appraisal to date would appear to have been carried out to a nominal background level of 50dB LAeq, not measured noise levels, and this will be the primary issue when resolving noise levels at particular properties such as National Trust properties.

In the National Trust properties, presumably we will be working to daytime levels in some locations, and night time levels in others.

5.7 Air Quality [E12]

From the Sustainability Statement Appendix E12 Air Quality, it can be seen that there is a risk of pollution (NO2) and dust effects (PM10 and PM2.5) during demolition, construction and vehicle movements. However, Temple-ERM is unable yet to predict the potential levels of traffic generated in connection with the proposed scheme. The statement simply assumes that the construction of stations and depots is unlikely to generate traffic or dust air quality effects nearby, because the air quality is currently better than that experienced in Air Quality Management Areas. This assumes that exchanging healthy air quality for more unhealthy air quality is not a problem, unless and until it reaches the limits for AQMA designation.

We would recommend the prevention of significant detriment and that there should be no diminution in air quality for anyone, regardless of whether they are or are not currently living and/or working in an AQMA, and especially not in the vicinity of cultural and natural heritage sites.

Chemical deterioration caused by gaseous pollutants can take place at remarkably different rates. In many cases the rates of deterioration is slow and may not cause any noticeable change. But a sudden exposure to high concentrations of a harmful gas can cause rapid deterioration. The presence of particulates is also critical: dust and dirt, even when inert, can trap harmful gases, so increasing deterioration at points where they collect on a surface.

Sulphur dioxide causes embrittlement of paper and parchment, ‘red rot’ of certain leathers, weakening of textiles, damages plaster and calcareous stone and, in the presence of moisture, corrosion of metals.

Nitrogen oxides cause fading of pigment and dyes, weakening of textiles, breakdown of early plastics and fading and embrittlement of film and photographic materials.

Ozone attacks many materials, causing fading of dyes and pigments, fading and embrittlement of photographic materials and cracking of rubber and plastics.

Sulphides (hydrogen sulphide and carbonyl sulphide) are the main agents for tarnishing silver. They can also fading and yellowing of photographs.
Volatile organic compounds corrode metals, particularly lead and its alloys, and react with calcareous materials to form powdery crystals.

Organic-solvent vapour can damage many solvent-based organic substances in historic materials such as varnishes and lacquers, often present on furniture, paintings, lacquerware or metals, as well as plastics, films and modern adhesives. They may cause opacity, but depending on their interaction and concentration, can also cause surfaces to become dull, tacky or crazed.

We feel it beneficial that HS2 Ltd work closely with the National Trust at the properties mentioned in this response as well as at other heritage assets along the proposed route to measure current levels of gaseous pollutants, monitor their presence throughout construction and prevent detrimental levels of gaseous pollutants.

We have particular concerns for Hardwick Hall within which are contained internationally significant 17th Century textiles, and the Chippendale furniture and 18th Century textile furnishings within Nostell Priory, both collections are vulnerable to NO2 emissions.
6 CONTRIBUTORS

In responding to this consultation, the National Trust has called upon internal expertise, as well as advice from external consultants:

6.1 National Trust:

Stuart Alcock, General Manager, Calke Abbey and Staunton Harold Church
Andrew Barber, Curator, Midlands
Harry Bowell, Assistant Director Operations, Midlands
Keith Challis, HS2 Lead, Midlands
Tracy Clements, General Manager, Shugborough
Kevin Dessoy, General Manager, Nostell Priory
Denise Edwards, General Manager, Hardwick Estate
Steve Field, Project Officer
Nicky Grace, Assistant Director Operations, Yorkshire and North East
Claire Graves, Senior Project and Stakeholder Manager
Rachael Hall, Archaeologist, Midlands
Carl Hawke, Wildlife and Countryside Adviser, Midlands
Alan Hubbard, Land Use Planning Adviser
Helen Lloyd, Preventive Conservation Adviser
Mark Newman, Archaeologist, Yorkshire and North East
Dr Simon Pryor, Natural Environment Director
Jo Pugh, External Affairs Consultant, North West
Dr Ingrid Samuel, Historic Environment Director
Dr Michael Stubbs, Land Use Planning Adviser
Gail Widdowson, Rural Surveyor, Hardwick Estate

6.2 Consultants:

Kate Ahern, Land Use Planning Consultant, LUC
Professor John Altringham, University of Leeds
Mike Briggs, Hydrologist, HR Wallingford
Dominic Cole, Landscape Architect, DCLA
Jon Grantham, Principal Environmental Planner, LUC
Helen Kent, Associate Environmental Planner, LUC
Alan Nethersole, Acoustic Consultant, Sound Analysis
Richard Spoors, High Speed Rail Engineering Consultant
APPENDIX 1: CALKE ABBEY

Calke Abbey Property Profile

Calke Abbey is a fantastic baroque mansion built 1701-1704 and, combined with its park, largely untouched in the past 100 years but itself the products of centuries of development, is an example of an aesthetic rural idyll that is now rare in this country. It has been captured in its twilight years somewhere between romantic decline and depredation. In the eighteenth century the Harpur family was second only in wealth and land holdings to the Cavendishes at Chatsworth. By the time the National Trust took on the property in 1985 the house and gardens had remained unchanged for one hundred years and we are, today, able to retreat from the real world into a time capsule: the family were collectors and hoarders, building up a significant treasure trove and strata of tastes, customs and practical aspects of country house life. Through the nineteenth century succeeding generations of the family lived on in a slowly fossilising environment apparently bereft of the energy, enthusiasm or will to change things.

Outside is the magnificent range of service buildings including the carpenters shop, brewery and so forth that enabled the estate to function independently from the world around it. The estate made money from some good marriages, farming and natural resources including lime (used to improve agricultural land and for making lime mortar) and clay for brick making and pottery.

The beautiful deer park was originally carved out of the primeval wildwood that covered much of the Trent Valley and is designated as a National Nature Reserve (NNR) and Site of Special Scientific Interest (SSSI) for the insects, spiders and butterflies that are attracted to the deadwood and wood pasture associated with a magnificent collection of veteran trees - mostly characterful oak and sweet chestnut, distinguished by their wildly twisting bark. As well as deer, sheep and cattle were grazed in the park: the Harpur family favoured old English varieties that were bred for meat, English Longhorns that have splendid projecting horns and dappled colours (distinctive in many eighteenth century landscape paintings) and Portland sheep, introduced in the 18th century from Dorset and are also horned - the male's horns often curling twice. Although small they can lamb any time of year and their fine wool was favoured for hosiery (leg wear and socks). The family were keen horsemen, including training and running racehorses during the eighteenth century - this is reflected in the splendid stable block, riding school and plethora of horse paintings throughout the house.

A short walk from the house is the shrubbery which conceals the 1770s walled garden that has further ranges of associated working garden buildings. The Harpurs invested heavily in technology to support their gardening ambitions and the garden buildings include rare surviving examples of highly innovative contemporary heating systems for hot houses. An especially notable feature of the gardens is the Auricula Theatre. Auriculas look like a very artfully made up primula (primrose) - they are bred for scent and colour combinations including soft bronze, sage green and deep crimson. They generally have a pale centre and are noted for the powdery white coating that softens and accentuates the beauty of the flowers, known as 'farinaceous ' (from the Latin for flour). The plants are smaller than a geranium and one way of displaying them was in the Auricula Theatre, usually like a bookshelf but raked so each plant was seen at its best. The whole thing was covered to protect the flowers from rain. The family latterly were keen naturalists and botanists and the family name lives on in two garden plants: Erysimum Harpur Crewe- a yellow wallflower and Doronicum Harpur Crewe, an early yellow herbaceous daisy.
The Harpur family acquired the estate in 1622 - Sir Henry Harpur's family built up land and wealth in Staffordshire and at Swarkestone near Derby. There the Harpurs had commissioned the architect John Smythson, son of the renowned Robert Smythson, to design a unique banqueting house overlooking the Cock fighting yard.

The earliest building at Calke, remnants of which survive in the foundations, was a Tudor period great house (it was not named Abbey until the nineteenth century) The founder in 1115 of the priory, from which Calke takes its name, was Richard d'Avranches who had inherited huge sums from his wealthy land owning father, ‘Hugh the Fat’. Richard is known to have jointly led an Anglo Norman campaign to Wales which never came to battle because the Welsh eventually pledged allegiance to the King. He and his family perished on 'The White Ship' in 1120 - also on board was the legitimate son and heir to Henry 1st of England who also died, leading to a crisis in the country.

The priory was dissolved in 1537 and converted to a Tudor country house. There were a number of owners until the Harpur family in 1622. After dissolution the estate was outside control of a diocese which was a good thing for one 'Extreme Protestant' owner in late 1500s because he could worship as a Puritan without interference. St Giles Church, in the grounds, remains 'A Peculiar': exempt from diocesan control and was the family's private place of worship.

The park itself contains numerous relict of the pre-parkland medieval landscape and there is a rich industrial archaeology heritage within the wider Calke estate including limeyards and an early Tramway. The Ticknall Limeyards and Tramway in particular are a nationally early example of the integration of primary industry with a transport system.

Calke now is a very private place, available for us to discover and retains a unique atmosphere of times past.

**Commentary on Sustainability Statement**

*One Appendix D Policy Drivers.*

The distance to Calke Abbey is set at 2.29km and the National Trust accepts that, at that distance, the proposed railway in unlikely to have any affect, as could be measured by an EIA / SEA process, that would be incorporated within a visual or noise related impact on setting.

**Local Planning context**

| Calke Abbey is a Grade I Building transferred to the NT in 1985 and sits within 890 hectares of Park and agricultural land. The Park comprising gardens, pleasure grounds and kitchen garden, together with a wider arable estate, is a Grade II* Registered Park and Garden. |
|---|---|
| South Derbyshire DC Local Plan (consultation until November 2013) | Draft Policy 8.3 Cultural Heritage Policy BNL2 Heritage Assets |
| Development that affects South Derbyshire’s heritage assets will be expected to protect, conserve and enhance the assets and their settings in accordance |
with national guidance and supplementary planning documents which the authority may produce from time to time. These assets include: Conservation Areas, Scheduled Monuments, Listed buildings, Registered historic parks and gardens, Undesignated heritage assets on the local list

Particular attention will be paid to (2 of 3)

The complementary relationship that exists in many cases between estate parklands and villages. Often they are integral parts of a conservation area, or form part of a conservation area setting. The management and care of these landscaped grounds is material to the character of the adjacent villages.
APPENDIX 2: STAUNTON HAROLD CHURCH

Staunton Harold Church Property Profile

Staunton Harold Church and the Hall next to it nestle into an exquisite wooded valley with meandering lakes. The great architectural commentator Pevsner considered that when viewed from across the lake the view is: “unsurpassed in the country - certainly as far as Englishness is concerned”.

The composition is held together within the eighteenth century designed parkland, with the Palladian fronted red brick hall and ‘Survival Gothic’ stone church. This quintessentially English scene reflects the strongly traditionalist views of the Shirley family and, in particular, the man who commissioned the building of the church in 1653 - Sir Robert Shirley, fourth Baronet (1630-1656). The church is also known as The Chapel of The Holy Trinity and, by committing to building, Shirley was demonstrating his right to stand up for his belief in the High Anglican Church and the God given right of the Monarchy to rule. This is significant because Shirley was publicly recognised as a Royalist during the Interregnum (between Reigns), also known as The Commonwealth under the Protectorate Parliament set up by Oliver Cromwell. The Commonwealth existed from 1649 to 1660 and divided the country, particularly the gentry, into Royalists and Parliamentarians.

Shirley was active in his protests against the Commonwealth and there are a number of accounts of actions that made him unpopular with the parliamentarians: one occasion found him in a drunken verbal brawl with garrisoned soldiers at Ashby Castle; another, as a signatory to a petition denouncing the parliament. As a result of his various actions he was imprisoned in the Tower of London in 1655 and his lands were confiscated. He began an active defence of himself and was rigorously polite in his letters and petitions - he requested that his finances be made good because, he argued, with no income he could not keep his family or honour his debtors - most of whom he inherited from his father. He was released within six months but returned to the Tower in 1656 and died suddenly from smallpox aged only twenty six.

Shirley made bad choices and had bad luck but the beautiful Chapel is his legacy. The inscription over the entrance reads; "In the year 1653; when all things Sacred were throughout ye nation; Either demolisht or profaned; Sir Robert Shirley, Barronet; Founded this Church; Whose singular praise it is; to have done the best things in ye worst times; and; hoped them in the most callamitous; The righteous shall be had in everlasting remembrance."

The interior is Jacobean with wooden fittings by local joiner William Smith: panelling, box pews and chancel screen, but the surprise is the extraordinary painted ceiling by Leicestershire brothers Zachary & Samuel Kyrk in 1655. It is described as 'The Creation out of Chaos ' and covers the whole ceiling and creeps down part of the walls with dark clouds billowing from a firmament. There are one or two glimpses of a bright heaven, almost pin pricks, of a shining world beyond our own.

Next to the church is the eccentric ‘Gate to Nowhere’, dated 1681 and probably moved here from another part of the garden.

Commentary on Sustainability Statement

For the eastern leg, the preferred option consultation (in Investing in Britain’s Future: Consultation on the Route from the West Midlands to Manchester, Leeds and Beyond) identifies Staunton Harold Church, which is noted as 500 metres away at the nearest point, with ‘The route section passes within 1km of the asset for 1/69'
km. This has parkland to the north east of the hall and the rest is fields. There is a tree-lined driveway extending south-east to the road. Only this narrow strip which extends from the south east corner of the main park would be near to the proposed route and then on the opposite side of the A42. The impact on this park would be negligible’. (paragraph 3.2.28 of Investing in Britain’s Future).

We understand the point made but do note that in the methodology relevant to noise and vibration (Sustainability Statement Volume One: Appendix E6 Noise and Vibration at paragraph 4.4.1), that a noise study area of 3 km is advanced. Staunton Harold would be within this threshold and we know that English Heritage policy guidance on setting of historic assets includes noise as a key factor within the consideration of setting. Further, we understand that not all noise has been addressed quantitatively in the study, due to the strategic nature of this appraisal (paragraph 6.1.1 of Appendix E6 Noise and Vibration). On this basis we would submit that the impact of noise on Staunton Harold Hall is a matter for more detail and reserved judgement, ahead of further work. Noise policy for England is given due weight and attention at Paragraph 1.9.2 of the Sustainability Statement Volume.

Local Planning context

Staunton Harold Church, The Church of the Holy Trinity (1653 – 65), is a Listed Building and National Monument, and given to the National Trust in 1954. It is situated within a 210ha Grade II* Registered Historic Park and Garden.
APPENDIX 3: HARDWICK ESTATE

Hardwick Estate Property Profile

Hardwick Hall is the best preserved example of an Elizabethan prodigy house in the country, built on a large scale to impress, to be noticed and even to accommodate royalty. The visual relationship between Hardwick and the other nearby Cavendish family seat at Bolsover and the great baroque house at Sutton Scarsdale is a significant factor in its impact today.

Comprising both the now ruined Old Hall and the spectacular and innovative New Hall, William Camden's 1610 description of Hardwick is still a relevant and concise summary:

“...two goodly houses joining in a maner one to the other, which by reason of their lofty situation shew themselves, a farre off to be seen, and yeeld a very goodly prospect.”

Bess of Hardwick, who conceived the New Hall is a towering figure in history with great vision and ambition. In her time she was the second wealthiest woman in England after Queen Elizabeth. She acquired her wealth through a series of good marriages. The houses she created at Hardwick and furnishings within are so special that successive generations sought to preserve both intact. Because the later Cavendishes used Chatsworth as their principal residence, there was no need to modernise Hardwick. Hardwick was built and furnished to impress and was meant to be seen as a demonstration of personal importance and success. The richness of the 16th and 17th century textiles, together with a highly important group of late 16th century pieces of furniture, make the contents and interiors of Hardwick some of the most important to survive from that period in England.

There was a working landscape around the old Hall - a medieval deer park with trees and grazing, which also provided a ready-made setting for the New Hall. Early accounts by visitors to the Old Hall also refer to the spectacular views out towards the Peak District. The overall setting of the buildings on a spectacular hilltop site mean that less emphasis needed to be placed on creating a designed landscape in the immediate vicinity of the Hall. The park had to be productive too. Historical records describe a great variety of uses, including: stew ponds providing fish; furze for fodder and fuel; holly for fodder; coppice for fodder, making enclosures and building works; deer and cattle grazing; carthorses; orchards, growing oats and barley; brickworks and coal mining. The park was a practical place and did not need to aspire to beauty, relying on the natural beauty of the topography and making use of long views out beyond the Park.

The family did not always use Hardwick as a permanent residence and the gardens would periodically get neglected: in 1658 hemp was laid down in the garden quarters “to kill and destroye the weeds wch abounded there and otherwise could not be overcome to make a platt fit for a garden.” However the park continued to be managed productively - timber being constantly harvested and cattle and deer grazing - latterly 'joist cattle' that were bought in for fattening, rather than being raised in the park - provided steady income from the grazing.

Both inside and next to the park the landscape holds records of earlier activities: ridge and furrow cultivation; field patterns towards Hardstoft and around Stainsby reflect earlier strip cultivation; earthworks and archaeological finds including medieval settlement remains at Stainsby Manor and Blingsbygate village and rare evidence of prehistoric activity evidenced by lithic and other finds from within the park.
Setting and Context

Hardwick Hall and Old Hall are set prominently on a natural ridge and were designed to take best advantage of this setting and prospect. Views in all directions are a deliberate feature, and to the west take in the distant hills of the Peak District. This panoramic view is noted from the earliest accounts, including being a key feature in the principal room of the Old Hall in the early 1600s. The concept of deliberately using natural landscape as the setting of a residential building at this date is rare and innovative.

A key part of visiting Hardwick Hall is that the visitor is tricked by the design of the interior: what appears almost humble on the lower floors gives nothing away as to what comes next as you ascend through the house, as one room after another reveals spectacular design and decoration. The ultimate experience continues on the roof - The Leads are meant to be visited and lead to a sky-top Banqueting House which takes in 180 degree views across the countryside and, especially, to the west.

It is this western panorama that is affected by the presence and sound of the M1. The addition of HS2 will further impact on the view and affect the ancient field patterns and tracks in the outlying farms.

Commentary on Sustainability Statement

HS2 Phase Two Initial Preferred Scheme – Sustainability Summary (published as guidance by Temple ERM Group January 2013) (the ‘initial preferred scheme sustainability statement’) in its sustainability summary accepts that more design work is needed to refine options (page 7), that no Registered Park and Garden is crossed (page 9) and that the route passes notable historic sites north of Tibshelf, including Hardwick Hall, Sutton Scarsdale and Bolsover Castle (page 9). We appreciate some assessment work is at an early stage (for example, at paragraph 5.81 of the Sustainability Summary, where it reports that site inspections are to take place at a later stage, although some site visits have been undertaken with English Heritage (no specific locations identified). We are also aware that many route options were considered and a draft Environmental Statement will have to be produced (paragraph 2.1.1 of Sustainability Statement – non technical summary) but that at this stage in the process the ‘Phase Two Assessment of Sustainability has concentrated on the potential long term and permanent effects of the proposed scheme, resulting from landtake and operation of the railway and its infrastructure’. (Paragraph 6.1.2 of the sustainability statement – non technical summary). It is also acknowledged that the proposals around Hardwick have been ‘extensively reworked to ensure the proposed scheme’s close association with the landform and the M1 motorway’. (9.3.3 of the sustainability statement – non technical summary).

It is accepted that, at Hardwick, the sensitivity of the landscape is high, where stated that ‘….the route which would closely follow the M1 was selected when compared with other options. However the sensitivity of the landscape in this area is high and adverse impacts on its landscape character would occur. There would be some impact on views from Sutton Scarsdale, although the route would be seen in conjunction with the motorway’ (paragraph 7.7.8 of the sustainability statement, non-technical summary). There is an acknowledgement in the papers of a potential cumulative impact arising at Hardwick (in the High Speed Rail: Consultation on the route from the West Midlands to Manchester, Leeds and beyond, July 2013), where at paragraph 8.4.4 it is stated that ‘The proposed route would then pass through the
National Trust land associated with Hardwick Hall, south of Bolsover. The land is extensive, spanning a mile or more either side of the motorway. To avoid passing through this area would result in a significant increase in cost, disruption and potential sustainability impact. The proposed route would, therefore, run as close as is practicable to the M1 along its west side between Tibshelf and Heath, sitting low in the landscape past the Hall as far as Junction 29 at Heath so as to minimise impacts through this sensitive area, which, in addition to Hardwick Hall, includes Sutton Scarsdale and Bolsover Castle. Paragraph 9.2.2 of the same document reinforces the priority given by HS2 to protection of the historic environment.

This is further elaborated in the next section, where it is fully acknowledged that Hardwick Hall is ‘one of the most significant Elizabethan country houses in England’ and that, ‘the railway would be seen from the house and within the Registered Park and Garden’, and that ‘the wider landscape, which provides the setting for the house and grounds, would be affected by the scheme’. (all in paragraph 7.8.6 of the Initial Preferred Scheme – Sustainability Summary). It is accepted in the sustainability statement – non technical summary that this is an area of sensitivity to change and will exert an impact and this is a ‘loss of character to the Registered Parkland around Hardwick Hall and setting of Hardwick Old Hall’ (9.3.3 of non- technical summary). Being that the eastern leg has been selected so that it would have few impacts on designated heritage assets (paragraph 10.9.1 on cultural heritage in the non-technical summary), then the impacts at Hardwick and around Tibshelf are of clear material importance. Appendix E (Built Environment) of Volume One of the sustainability statement, deals with significance here, stating that (at Hardwick), ‘the significance of the setting lies in the very open views across the valley, including views to other heritage assets, which may be adversely affected by additional transport infrastructure. The route section passes within 1km of the asset for 2.8km. The proposed route would lie close to the M1 motorway and much of it would lie in cutting.

It would be visible from many parts of the west side of the park, but the association with the motorway would reduce potential impact. The west side of the park has a significant amount of woodland. It rises eastwards and the two halls, new and old (a scheduled monument), lie on higher ground. There are open views to the east, but to the west the views are principally of the opposite side of the valley. This impact would be generally minor, but moderate from higher locations, particularly in winter.’ A cumulative impact is acknowledged, if not in these words, where it is accepted at paragraph 3.2.25 of Volume One Appendix E on Built Heritage that Hardwick Hall, Sutton Scarsdale and Bolsover Castle will need to be considered as a group. Weight is clearly attributed to setting. Use of language such as moderate (for example, where landscape character is affected at Hardwick (Source: Volume One: Appendix E on Visual Impact at 2.3.8), or minor / moderate for higher ground (Source: Appendix E on Built Heritage at 3.2.14) or moderate cumulative impact on setting of Hardwick Old Hall, Stainsby Manor, Scarsdale Hall and Bolsover Castle (Volume One Appendix E5 Archaeology at Paragraph 4.1.2), is, we accept, a formal part of the necessary Environmental Impact Methodology, but we will argue that these conclusions are (at best) tentative and require a full and detailed attribution of significance before they can be arrived at conclusively. Volume One: Appendices confirms that some appraisal work has been desk based and not as a part of a formal EIA process (Paragraph 2.2.5 of Volume One: Appendix E on visual impacts). Further and to reinforce the point, Volume One Appendix E on Archaeology at paragraph 2.2.5 makes the point that ‘in reality defining the setting of an asset is not objective, or conducive to metric thresholds, so a degree of latitude / professional judgement was implemented during the appraisal’. Our central point is that the sensitivity of historic assets must be given weight and that weight must be
commensurate with the significance of the asset, consistent with guidance in the National Planning Policy Framework (NPPF) at its paragraph 132.

Archaeology at Volume One: Appendix E3 makes an additional and allied point on setting, in which the Old Hall is viewed as being defined by a wall and the lodge building and the ‘whole creates a distinct space that can be appreciated and understood without constant reference to its wider setting’ (paragraph 3.2.8 of Volume One: Appendix E3). To contend if this is a valid point or not, requires an appreciation of the significance of the asset (consistent with English Heritage Conservation principles 2008), in which the evidential / historical / aesthetic and communal values are understood and from which such judgements must be based (see EH Conservation Principles 2008 pages 27 to 31).

It is preferable to start from significance and setting before reaching conclusions, no matter how interim they may be. Our own work on significance denotes a number of key features and principally including (i) that Hardwick Hall and Old Hall are set prominently on a natural ridge and (ii) that fact is no accident because they were designed to take best advantage of this setting and prospect, with principal views to the west. (iii) The New Hall being principally designed to show off and be seen from its surrounding landscape, (iv) that this western panorama is affected by the presence and sound of the M1 and the addition of HS2 will further impact on the view and affect the ancient field patterns and tracks in the landscape. Further that (v) the preferred options route appears to cut off the existing approach via Blingsby Gate, which is not only the principal visitor route but also was added in the early 19th Century to take advantage of the topography and oblique views of the Hall. The loss of a one-way entrance route would detract from feeling like a special visitor and enjoying privileged views. (vi) A severe impact on the setting and access to Stainsby Village and (vii) The proposed re-routing of Mill Lane to Deep Lane would not fit with the grain of the landscape and would be an inadequate approach to the Hall.

Finally, we do not agree with the statement in Appendix E3 of the Sustainability Statement at 3.2.5 that the earthworks at Stainsby Mill “are not well preserved and difficult to interpret from the ground” and that there will be only a moderate impact on their setting. The earthworks form part of a Scheduled Ancient Monument (not noted in the Sustainability Statement) and although there has undoubtedly been some erosion of the earthworks they are not ‘of poor quality’. The earthworks are set within a wider landscape of field-systems that are preserved in hedgerows/field boundaries that would be affected by the proposed route of HS2 and we therefore suggest that a major negative impact would be made on the Scheduled remains at Stainsby Mill by the construction of HS2.

In closing we suggest that a more definitive conclusion requires an evaluation of both cultural heritage, together with visual impacts, which is a point accepted in Volume One of the Statement of Sustainability: Appendix E (Landscape, Townscape and Visual Impacts), where it cites the European Landscape Convention in which landscape…’reflects the interplay of the physical, natural and cultural elements of our surroundings and the way that people perceive these interactions. Different combinations of these elements create the distinctive character of landscapes in different places’. (Quoted at Volume One: Appendix E, paragraph 2.1.2).
### Local Planning context

724 ha of Park (RP&G Grade I) and farmland. Formerly property of the Dukes of Devonshire and transferred to the NT (1959). Also of importance Stainsby Mill (19th C), Hardstoft School, Hardwick Inn, Manor Farm and Stainsby Farm.

Hardwick Hall (I) & Old Hall (I and SAM), Stables II* and host of other listed buildings (6), including garden walls, piers, steps and railings…….‘the supreme triumph of Elizabethan architecture’


RP&G list entry notes that:

*There are three main entrances. On the north-west side of the site an entrance called Blingsby Gate leads to an avenue planted with platoons which runs south before curving to the east and to the south again. An entrance with a lodge (c 1825, listed grade II) called Rowthorne Gate on the north-east side of the site leads to a drive which runs south-west and is also planted with platoons. This drive joins with that from Blingsby Gate and continues south-west to a gateway leading to a courtyard on the west side of the Hall. The drives were laid out 1822-4, and the platoons planted c 1825. An entrance on the south side of the site immediately to the north of the Hardwick Inn (listed grade II) has gates from which a drive runs north-east and then curves round to the north and enters the courtyard beside the Hall. Views of Hardwick Old Hall are available from this approach, which is shown on the 1610 map.*

Hardwick Old Hall list entry notes that:

*The plan of the Old Hall is significant in its revolutionary placing of the hall across the house, at a right angle to the façade. The house had two full scale great chambers and there are substantial remains of decorative plasterwork by Abraham Smith.*

<table>
<thead>
<tr>
<th>The Bolsover District Local Plan (February 2000).</th>
<th>Text at 8.1 deals with diversity and depth of cultural heritage here, ‘The plan area has a remarkable diversity and depth of historic, cultural and industrial remains which have played a significant role in shaping the environment. The physical remains of these activities survive in a variety of forms. Archaeological sites include the internationally important remains at Creswell Crags, whilst Hardwick Hall, Barlborough Hall and Bolsover Castle represent architectural and design achievements of the highest order. Planned landscapes are similarly well-represented in the district. Such developments have helped to produce urban and rural settlements of considerable architectural and historic character and interest’.</th>
</tr>
</thead>
</table>

| Development Plan policy dealing with the setting of a Historic Park and Garden. | CON 10 DEVELOPMENT AFFECTING THE SETTING OF LISTED BUILDINGS

DEVELOPMENT WHICH AFFECTS THE SETTING OF A LISTED BUILDING SHALL PRESERVE OR ENHANCE THAT SETTING. PROPOSALS WHICH WOULD HAVE A DETRIMENTAL EFFECT ON THE SETTING WILL NOT BE GRANTED PLANNING PERMISSION. |
| --- | --- |

| Policy text dealing with the importance of Hardwick Hall as a ‘fine example’. | Text at 8.41 deals with planned landscapes, ‘England has made a particularly significant contribution to European achievement in the design of parks and gardens, both private and public. The plan area has fine examples of this tradition, most notably the parks at Hardwick Hall and Barlborough Hall and the garden at Bolsover Castle, but also includes planned landscapes |
Continues at 8.43, ‘English Heritage has compiled a Register of Parks and Gardens of Historic Interest which includes the most important examples. Hardwick Hall, Bolsover Castle and Barlborough Hall appear on the register, graded I, II* and II respectively. Although entry in the register does not of itself confer any extra statutory controls, it is an important recognition of the historic importance of a site and a significant material consideration in determining planning applications and appeals (continues).

Text at 8.44 deals with component elements and states that ‘In considering the character or setting of a historic park or garden attention will be given to those elements, either built or planted, which contribute to the design, structure or definition of the park or garden. Such features as boundary walls, gates and gateways, fences, hedges, ha-has, driveways, steps and paved areas are of particular importance. The effect of development on historic parks, gardens, graveyards and cemeteries or their setting is seen as a material consideration when determining planning applications. Development will only be permitted if it will protect or enhance the character or appearance of the historic ground. Development which would improve the use of a historic ground for public enjoyment, in a manner sympathetic to its particular historic character, may be acceptable. Conditions may be imposed on any planning permission to require preparation of a documentary archive of the historic ground in the manner described in policy CON 11.

Development Plan policy dealing with settings and the methods to assess impact.

CON 12 HISTORIC PARKS, GARDENS, GRAVEYARDS AND CEMETERIES

PLANNING PERMISSION WILL BE GRANTED FOR DEVELOPMENT:

1) WITHIN HISTORIC GROUNDS* INCLUDED IN ENGLISH HERITAGE’S REGISTER OF PARKS AND GARDENS OF HISTORIC INTEREST, ONLY IF IT WILL PRESERVE OR ENHANCE THE CHARACTER OR APPEARANCE OF THE SITE OR ITS SETTING.

2) WITHIN HISTORIC GROUNDS* OF LOCAL IMPORTANCE (AS IDENTIFIED IN THE DERBYSHIRE COUNTY SITES AND MONUMENTS REGISTER) ONLY IF IT WILL NOT HAVE A MATERIALLY HARMFUL IMPACT UPON THE CHARACTER OR APPEARANCE OF THE SITE OR ITS SETTING.

THE LOCAL PLANNING AUTHORITY WILL:

A) REQUIRE AN APPROPRIATE INVESTIGATION AND ANALYSIS OF THE HISTORIC GROUNDS AND AN IMPACT ASSESSMENT TO BE SUBMITTED AS PART OF THE PLANNING APPLICATION TO ALLOW PROPER ACCOUNT TO BE TAKEN OF THE HISTORIC AND/OR ARCHAEOLOGICAL
SIGNIFICANCE OF THE GROUNDS;

AND

B) IMPOSE CONDITIONS ON ANY PLANNING PERMISSION AND/OR SEEK TO NEGOTIATE A PLANNING OBLIGATION UNDER SECTION 106 OF THE TOWN AND COUNTRY PLANNING ACT 1990 FOR THE REPAIR, RESTORATION OR ENHANCEMENT, AND MANAGEMENT OF THE GROUNDS WHICH ARE NEEDED AS A CONSEQUENCE OF DEVELOPMENT.

* "Historic grounds" for the purpose of this policy refers to historic parks, gardens, graveyards and cemeteries.

Text at 8.51 mentions Hardwick Old Hall in context of a SAM, ‘The most important archaeological monuments are those designated as Scheduled Ancient Monuments, which receive the protection afforded by the Ancient Monuments and Archaeological Areas Act 1979. There is a presumption towards the preservation in situ of such sites and, therefore, against any development which would disturb such remains. Scheduled monument consent must be sought from the Secretary of State for Culture, Media and Sport for any proposed works which will affect Scheduled Ancient Monuments. At present there are 11 Scheduled Ancient Monuments in the council’s area: Pinxton Castle; Hardwick Old Hall; Langwith Cave; Bolsover Intrenchments; Bolsover Conduit Houses; Bolsover Castle; Creswell Gorge; Clowne Market Cross; Markland Grips promontory fort; Ash Tree Cave, Whitwell; Barlborough Cross’

Two SAMs are recorded at:

Hardwick Old Hall

Stainsby defended manorial complex including site of chapel

CON 13 ARCHAEOLOGICAL SITES AND ANCIENT MONUMENTS


Policy Text at 1.3 ‘In the central area of the district are a number of villages composed of farm-based settlements, developed as part of the historic estate of Hardwick Hall (now owned by the National Trust and Chatsworth Estate)’.
| Major estates. | Text at 2.3 | ‘There are at present 28 conservation areas within the district (see separate list). In addition to these conservation areas, additional controls have been added in the form of Article 4 Directions to control development within Whitwell, **Hardwick** and Rowthorne, the land west of Bolsover Castle and Creswell model village’. |
| **Conservation Area.** | Text at 2.5 | ‘The landscape of the district is best characterised by its two main historic industries, farming and coal mining. Farming is dominated by the estate holdings of major landowners; the Sitwell and (former) Rodes estates in the north and the Welbeck, Chatsworth and **National Trust (Hardwick)** estates in the central area’. |
| | Text at 2.47 | ‘English Heritage maintains a register of parks and gardens of special historic interest. They are graded Grade I (exceptional interest), Grade II* (great interest) and GII (special interest). **Hardwick Hall**, Bolsover Castle and Barlborough Hall appear on the register, graded I, II* and II respectively. Although inclusion on the register does not confer any extra statutory controls the effect of proposed development on a registered park or garden or its setting is a material consideration in determining a planning application. **The Hardwick Conservation Area** |
| | Text at 2.48 | ‘Conservation Area designations encompass diverse forms of development ranging from historic urban centres and traditional rural villages to great historic estates. For each of them, the combination of a variety of historic features gives added significance. One of the nation’s prime examples of a great historic estate is situated in the southern part of Bolsover District – the **Hardwick Estate**’. |
| | Text at 2.49 | ‘The Conservation Area encompasses not only two great houses and their historic park and garden, but also a variety of other important and contemporary buildings and structures, areas of historic woodland, formal gardens, ponds and the estate quarry. Individually each of these aspects of the historic environment is of significance, but this is magnified by the associations between the different elements and their aesthetic and functional interrelationships’. |
| | Text at 2.50 | ‘In particular the Registered Historic Park and Garden is not merely a backdrop to **Hardwick Hall** – that extends well beyond to encompass the wider agricultural estate and further afield. Neither is it simply the approach to the Hall – that commences with the long distance views of the Hall on its escarpment as seen from several kilometres away. Rather, beyond its own undoubted aesthetic qualities, its strength lies in being integral to life at Hardwick. The garden has produced vegetables and fruit for centuries, as well as providing a place for relaxation and contemplation for many generations. The parkland has been used as a deer reserve and for the grazing of cattle since the sixteenth century and its man-made features, such as...’ |
The Row Ponds, Great Pond, Miller’s Pond, ice house, rare Victorian “duck decoy” and the buildings of the Estate and Stable Yards emphasise the functional nature of the estate, serving and supporting the hall, as well as linking it with the surrounding landscape and communities. Unlike many historic parks, Hardwick’s was never completely re-designed by a landscape ‘improver’ such as Humphrey Repton or Lancelot ‘Capability’ Brown. Instead the changes, utilitarian and aesthetic, wrought by each generation survive in a rare layered parkland landscape which boasts features dating from the 16th to the 20th centuries’.

**Text at 2.51** ‘The Registered Historic Park and Garden and its surroundings are an important feature of the Conservation Area, but their uniqueness is demonstrated by the relationship with the combination of elements of the historic environment to be found at Hardwick and their wider overall setting’.

<table>
<thead>
<tr>
<th>Escarpment beyond.</th>
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<tbody>
<tr>
<td><strong>Combination of elements, including historic landscape and wider overall setting.</strong></td>
</tr>
<tr>
<td>the Row Ponds, Great Pond, Miller’s Pond, ice house, rare Victorian “duck decoy” and the buildings of the Estate and Stable Yards emphasise the functional nature of the estate, serving and supporting the hall, as well as linking it with the surrounding landscape and communities. Unlike many historic parks, Hardwick’s was never completely re-designed by a landscape ‘improver’ such as Humphrey Repton or Lancelot ‘Capability’ Brown. Instead the changes, utilitarian and aesthetic, wrought by each generation survive in a rare layered parkland landscape which boasts features dating from the 16th to the 20th centuries’.</td>
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</table>

| Bolsover Historic Environment Supplementary Planning Document approved 1st March 2006 (note subject to public consultation). |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
| Deals with designed landscapes and includes at 1.13 Historic estates and their parkland landscape quality are recognised with the designation of conservation areas for Hardwick Hall, Carnfield Hall, Southgate House and Barlborough Hall. Parkland and tree cover associated with these conservation areas is high in ecological value. The long retention of these parks in single ownership has led to the survival of many archaeological and designed landscape features |

| Bolsover District Local Plan Strategy Proposed submission (2013) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
| Includes policies of relevance. Text at 3.12 states that 3.12 Throughout all this significant change, the District’s natural and built heritage will be treasured, protected and enhanced. The District’s many conservation areas and wildlife sites will be improved through a combination of protection from harmful development and active management. Great care will be taken to avoid any significant adverse development impact on the flagship sites of Hardwick Hall, Bolsover Castle and Creswell Crags and the potential of the District’s green infrastructure to provide a fitting context for internationally important sites whilst enhancing daily life will be realised. |

Part of the Spatial Strategy (at point L) includes:

‘To protect and enhance the District’s heritage and natural assets’. Policy LP11 and Text at 7.10 deals with tourism generation and mentions Hardwick in this context. Policy LP13 deals with landscape character and LP16 Principles of Historic Environment, which includes policy that ’Development should conserve and enhance the heritage of the District with particular regard to buildings, landscapes and areas of archaeological, architectural, artistic or historic interest and their settings, including conservation areas, scheduled monuments, historic parks and gardens, archaeological sites, listed buildings and other locally significant sites and features. In addition, the District Council will seek to protect and enhance the wider landscape setting of Bolsover Castle, Creswell Crags, and Hardwick Hall and to protect these assets and their wider settings from development
which would significantly diminish the ability to fully appreciate them. The core areas of each asset’s setting will be defined in the Local Plan Allocations and Policies document.

The Council will also work with adjacent local planning authorities to achieve this objective and to protect the wider setting of other important heritage assets in the area'.

<table>
<thead>
<tr>
<th>NORTHEAST DERBYSHIRE LOCAL PLAN 2011-2031</th>
<th>NE2 Special Landscape Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Plan Policy dealing with defined special landscape areas.</td>
<td>Within Special Landscape Areas as defined on the Proposal Maps, development will be permitted where:</td>
</tr>
<tr>
<td></td>
<td>(a) it would not materially detract from the surrounding landscape, nor adversely affect the setting of any heritage or wildlife resources; and</td>
</tr>
<tr>
<td></td>
<td>(b) the siting, scale, design, landscape treatment and the use and colour of materials in any building or engineering works are in keeping with the special character of the area; and</td>
</tr>
<tr>
<td></td>
<td>(c) it would not unduly disturb or detract from the visual amenity of an area by the attraction of large numbers of people or excessive traffic</td>
</tr>
</tbody>
</table>

NE Derbyshire is pursuing a Local Plan emerging local strategy that has been the subject of consultation to September 2012. This includes a strategic vision that involves ‘Protecting the best historic assets, landscapes and green areas’.

Development Plan Policy on Historic Parks and Gardens

The concept of ‘integrity’ is dealt with in Development Plan policy BE 13

3.40 English Heritage has compiled a Register of Parks and Gardens of Special Historic Interest to which entries may be added in the future. The Register includes Renishaw Hall which is listed Grade II* and is shown on the Proposals Map. The setting of Historic Parks and Gardens may fall across District boundaries and adequate protection needed in more than one development plan. This is the case with Hardwick Hall where the District Council is involved, on a joint working basis, in the identification of the area of the setting of Hardwick Hall.

BE13 Historic Parks and Gardens

Proposals for development likely to affect historic parks and gardens will only be permitted if:

(a) The proposals do not adversely affect any nationally registered historic park or garden; and

(b) The proposals do not detract from the character and setting, including views and vistas, or otherwise affect the integrity of other Historic Parks or Gardens.

Chesterfield Borough Council

We acknowledge that IMD is to the north of the Hardwick landscape and the policy environment here would not be of
National Trust Response to:
High Speed Rail: Investing in Britain’s Future
Consultation on the route from the West Midlands to Manchester, Leeds and beyond

<table>
<thead>
<tr>
<th><strong>Core Strategy to 2011-2031</strong></th>
<th>relevance to that particular issue.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DERBYSHIRE COUNTY COUNCIL LANDSCAPE CHARACTER APPRAISAL</strong></td>
<td>Hardwick fits in within Estate Farmlands and where:</td>
</tr>
<tr>
<td>Derbyshire County Council Landscape Character Assessment</td>
<td>The Estate Farmlands landscape character type is a broad, gently undulating and industrial landscape. The soils have traditionally supported a mixed farming system but owing to the gently rolling landform, arable farming has dominated. A distinct lack of hedgerow trees, allied to the gentle relief has created an open landscape with long distance views only interrupted by landform. Being an intensively managed landscape it has little ecological value. Blocks of woodland occur locally, but often only contain coniferous species. Red brick former mining terraces are a distinctive attribute of many villages. Essentially rural in character, the Estate Farmlands have in the past been severely impacted upon by industrialization such as open casting for coal, development of major transport routes and expansion of villages. Since the decline of the coal industry the area is still under pressure from new development and this is likely to continue to impact on the rural character of the landscape.</td>
</tr>
<tr>
<td></td>
<td>Hardwick itself sits within the Southern magnesium Limestone Character Area 30, in which comprises A gently rolling agricultural plateau punctuated by large woodlands, nucleated villages and incised river valleys</td>
</tr>
<tr>
<td></td>
<td>Hardwick Hall sits on a ridge of magnesium limestone (at the southern end of what is a narrow belt of elevated land). And notes......</td>
</tr>
<tr>
<td></td>
<td>Wealthy landowners have had a notable influence on the area by developing estates centered on great houses set in parkland. The best surviving example is <strong>Hardwick Hall</strong>. The park at Hardwick has escaped the intensive arable farming common over much of the Limestone Farmlands and preserves historic landscape features absent elsewhere.</td>
</tr>
<tr>
<td><strong>Ashfield District (Notts)</strong></td>
<td>Part of the Registered Park and Garden lies within Ashfield District (Notts) but we accept is not affected by the HS2 proposal.</td>
</tr>
</tbody>
</table>
Appendix 4: Nostell Priory

Nostell Priory Property Profile

Nostell Priory is the National Trust’s most important historic house in Yorkshire and is nationally important particularly for its architecture, interiors, paintings and collection of Chippendale furniture designed for the house. In West Yorkshire Nostell is unique in having most of its historic contents intact dating back to the 18th century. Nostell’s parkland is essentially early nineteenth century, based on designs from the 18th century. It is the family home of the Winns – originally textile merchants from London (one a draper to Queen Elizabeth I) who acquired the property in 1654. The title is Lord St Oswald and the family are still very much part of the property.

The house was designed by Colonel James Moyser c. 1730, influenced by Palladio's Villa Mocenigo. Building work was supervised by architect James Paine (who went on to design grand houses himself, including Kedleston, New Wardour Castle and the impressively grand stables at Chatsworth). Paine is rather eclipsed at Nostell by Robert Adam who also designed the Obelisk lodge and several other lodges. The house was not completed and is still lopsided, missing the left hand wing. However the quality of what was built is spectacular and the scale of the setting does justice to this set piece.

The pre dissolution C12th Priory has left significant archaeological remains south of the house. There are references to the working landscape of the Priory, such as two water mills. The estate also has archaeological riches from the Roman period.

The topography is not particularly dramatic except for the precipituous drop to the middle lake but the extent of the designed landscape and the use of what features there were has resulted in a unified park that makes grand use of water and the gently rolling landscape. There are two tantalising landscape designs for the park, neither of which was executed, however some ideas appear to have been transferred to the landscape we see today.

One plan is by Joseph Perfect, from a family of nurserymen in Pontefract; the other is by Stephen Switzer - the great rival to Charles Bridgeman. Switzer, from Hampshire, was garden boy to top London nurserymen and garden designers London and Wise and worked at castle Howard, Blenheim Palace, Cirencester Park and Grimsthorpe.

The string of three lakes provide beautiful views and light effects and there are particularly good views of the bridge between the upper and middle lakes from the house. This was designed by a local squire, George Savile (who got in before the bullish Robert Adam could claim all the design commissions). The bridge carries the Wakefield to Doncaster main road and is, itself, built on top of the dam that holds the upper lake.

On the other side of the middle lake the House looks across towards the Ladies Garden - an enclosed space that began as a quarry, was converted to a menagerie (traces of the enclosures remain) and, in the nineteenth century, was converted as a tea pavilion by Robert Adam.

In 1853 the new railway passed just under a mile south of the house, serving Nostell colliery & injecting finance in to the estate. It also provided a convenient new way for guests to arrive.

Robert Adam worked alongside some outstanding craftsmen, the most famous of whom was undoubtedly Thomas Chippendale. Over 100 pieces, identified from the
surviving archive, remain. They are of particular interest for their diversity in both quality and style, ranging from the grandest sophisticated furniture to simple utility pieces. These, together with important furniture acquired later, some of it by Gillows, makes Nostell arguably the single most important furniture collection cared for by the National Trust.

Nostell’s library is recognised as a nationally significant collection, one of the ten most important in the National Trust. Other elements of the collection include iconic pieces: the Lockey painting of Sir Thomas More and his family; the 18th century dolls’ house; a long-case clock by John Harrison, of “Longitude” fame; Angelica Kauffman’s famous self-portrait; the Chippendale desk and its depiction in the conversation piece of the 5th Baronet and his wife; the Brueghel “Road to Calvary”...

They are integral parts of a broader collection, reflecting so intimately the Winn’s interests and fortunes, especially collecting on the grand tour (which did so much to inspire the creation of the house) and Charles Winn’s antiquarianism.

**Commentary on Sustainability Statement**

The proposed line as a preferred route option is at distance of 1.93m from National Trust ownership at Nostell Priory. Our initial assessment is that impacts here will be indirect but could be significant and potentially fall within the ‘residual’ category of assessment within the EIA methodology and the assessment of cumulative effects. The Command Paper (High Speed Rail: Investing in Britain’s Future – Phase Two, The Route to Leeds, Manchester and Beyond) in its chapter 7 deals with initial preferences for an infrastructure and rolling stock depot. We understand that each leg of the ‘Y’ will require its own infrastructure maintenance depot and rolling stock maintenance depot and that the location at New Crofton (paragraph 7.10 of the Command Paper) is on a disused coal disposal plant and one identified as a Regeneration Priority Area. Sustainability Statement Volume One Appendix E1 on Landscape, Townscape and Visual impacts reports that the New Crofton Depot has a minor or moderate impact on landscape character. It concludes that the depots will not significantly affect the southern setting of Crofton, nor the southern setting of Nostell Priory, noted as Grade II* Registered Park and Garden.

The National Trust would, at Nostell, promote a consideration of residual and cumulative effects. In this category we would have concerns about the potential residual impacts here, covering operational matters such as lighting and security (with consequences for the landscape, visual and townscape assessments) and the construction impacts and with exposure and emanation of coal dust, a major cause for our concern. That concern and any residual or cumulative assessment require a detailed examination of construction related consequences of linked to building a railway across a former coal mine. The EIA Regulations in 2011/1824 do not readily fit with such an assessment but we deem it of considerable importance in its implications for Nostell and for the communities affected.

Thus, we would promote the elevation of a sub-section specifically on cumulative and/or residual impacts, to address these issues. We would submit that these issues are of considerable importance to the National Trust, where a fragile interior collection requires protection. We know and welcome the fact that HS2 are committed to work with key environmental and heritage organisations (paragraph 13.5 of the Command paper) and control of dust and the sensitivity of our historic asset, means that this is a matter which cannot be deferred to consideration within the Code of Construction Practice or similar document).
Local Planning context

Grade II* Registered Park and Garden and EH Register reports that, ‘A priory was founded on the site during the 12th century and some of its buildings were converted to a house following the Dissolution. Ownership passed through several hands until it was acquired by the Winn family in 1650. In 1729 the fourth baronet, Sir Rowland Winn, decided to abandon the monastic buildings, but ruins were still visible in 1765. No visible remains of the priory survive today apart from a building called the Monks’ Refectory which has been incorporated into the home farm (see below). The park remains (1997) in private ownership and the house and gardens belong to the National Trust (1997) which received them as a gift from the Winn family in 1953.

A further gift of contents and collection in 1986.

The contents and collection are a key part of the significance and follow from the English Heritage assessment of heritage values as constituting evidential, communal, and aesthetic.

Note: Significant changes since the register was compiled; Parkland, Stables and substantial part of the collection transferred to National Trust ownership (in 2002 with HLF funding and further acquisitions, notably the Brueghel in 2009 with NHMF support)


<table>
<thead>
<tr>
<th>Policy D 18 Development Affecting Historic Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development within or likely to affect the district’s Historic Parks &amp; Gardens, Historic Landscapes, Conservation Areas and Sites of Historic Battles will only be permitted where there is no adverse impact on:</td>
</tr>
<tr>
<td>a. open spaces, views, landmarks and landscape that contribute to their character, appearance or setting;</td>
</tr>
<tr>
<td>b. the character of any buildings or structures having regard to local scale, proportion, details and materials;</td>
</tr>
<tr>
<td>c. the preservation of features of architectural, archaeological and historic interest.</td>
</tr>
<tr>
<td>The Council will require that plans for development clearly illustrate the impact of the proposal on any features of architectural, archaeological and historic interest of the area. Such applications must also be supported with full details of the proposal.</td>
</tr>
</tbody>
</table>
Archaeology

The archaeological impacts of the proposal in large part fall outside direct National Trust ownership and have been clearly identified by the West Yorkshire Archaeological Advisory Service. The line is sufficiently far removed from the property to preclude any direct physical influence on its archaeological resources: its impacts are unlikely to affect hydrology (and therefore physical conservation conditions on either known or unknown archaeological sites) while vibration is unlikely to have adverse impact on surviving remains. Dust will not have any foreseeable impact.

The impacts that do stand to occur are more indirect and concern the broader, (currently surviving) physical integrity between the key archaeological resources inside the estate’s boundaries and their external context. The key remains concern the Priory and Roman occupation.

As regards the Priory, there is potential that the route may intersect the broader Priory estate and its wider land interests such as water supply routes (which are known to have been preserved to serve the post-dissolution house). The HS2 line stands to have some negative impact on this broader context for the Priory’s archaeology, but the impact is minor, especially given the extent to which the landscape has been changed since the Dissolution (not least by the creation of Nostell Colliery and indeed the designed landscape setting for the mansion).

The impact on the context for the Roman remains is greater. It is clear that both phases of occupation – the governmental or military presence in the first to early second centuries and the rural settlement that replaced it, lasting into the fourth century – were not restricted to the estate’s boundaries. They existed in much, much, broader landscape contexts and are likely to be reflected by both known and currently unknown archaeological remains.

In the case of the military/governmental establishment, this was entirely unknown until 2009. Excavations to date have only dealt with the periphery of the establishment, whose other boundaries are unknown. These are perhaps unlikely to extend as far as the proposed HS2 line, but such is not impossible if one looks, for example, to the extent of the military site further north at Catterick. More certain to be impacted is the line of the now (apparently) confirmed Roman Road now reflected by the A638. It is not known if the Roman road followed exactly the same route or indeed whether physical remains of it survive, but its line cannot but be cut by the HS2 route.

The military/governmental presence was certainly unique and can easily be argued to be of National significance. The supplanting rural occupation is less unusual, but distinctive and important, at Regional level of significance. The Roman (and indeed pre-Roman) use of this countryside seems to have been systematic and extensive, although to date its archaeological “visibility” tends to be more of a patchwork. The archaeological potential is described thus by WYAAS

“The route of HS2 to the east of Wakefield crosses a landscape that is characterised by cropmark evidence of extensive late prehistoric or Romano British field systems, enclosure and lanes. Numerous archaeological investigations which have been carried out in the recent past adjacent to the proposed route of HS2 have identified surviving below ground remains of these sites, including dating material in the form of pottery, which has securely dated these sites to the Late Prehistoric or Romano British period. Further afield, important Roman remains have been excavated at Castleford and Nostell Priory and the projected line of a Roman Road may be
impacted by the scheme to the west of Crofton. The scheme will directly impact upon a number of these cropmark landscapes, some of which are considered by WYAAS to be of regional importance.

Every part of this Roman rural landscape is a unique, and unrepeated part of the map of Roman Britain, recorded in no other source than its physical archaeology. Any loss of those remain is utterly irreplaceable, emphasising the need for full and detailed recording before loss. Failure to do so tears pages from our country’s history that can never be replaced.
APPENDIX 5: SHUGBOROUGH

Shugborough Estate Property Profile

Shugborough Hall and Park have evolved via numerous changes in the family fortunes, tastes and aspirations. Post dissolution the Hall started as a late C17th manor house surrounded by low lying pasture and arable lands from the former religious estate. The building and landscape went through a huge change to create the Arcadian park that survives. It is the family seat of the Anson family (Earls of Lichfield) since the C17th and was transferred to the National Trust in the 1960s. The Trust leases it to Staffordshire County Council. It is now the most important surviving great house in Staffordshire.

The site is dramatic in its topography and natural features. The main approach from Milford village curves around a steep embankment with the drive cut in to form a level shelf through the woods and with the River Sow below. On the other side of the park the Sow empties into one of England's great Rivers, the Trent, nearby the Essex bridge - built in 1550 and one of the last surviving packhorse bridges in England.

Shugborough lies on important trade routes joining north and south parts of the country so the ability to cross the river was significant and the estate later capitalised on this strategic location. The lower lying park is dominated by the dramatic escarpment of Great Haywood Bank that was drawn in to the designed landscape as one of the encircling carriage rides, from which visitors could enjoy sweeping panoramic views, including the rising ground that provides a prominent setting for the Triumphal Arch.

This site combines the highest aesthetics with a practical working landscape. The Model Farm, kitchen garden, dairy and brewery are testament to this being a productive estate nearly as important as Holkham, which is connected to the estate through marriage. Dotted through the park and gardens is a remarkable set of classical garden buildings and structures, inspired by classical buildings of ancient Greece. Each structure had meaning to the family, although some of those meanings are now lost on us. Others are more prosaic - the Cat's Monument celebrates Admiral Anson's cat Kouli-Khun. The other structures, some relating to an earlier formal garden, include:

- The Tower of the Winds (relating to an earlier garden and once sited on an island in a huge lake which is no longer there)
- The Chinese House (remembering Admiral Anson’s circumnavigation of the globe and encounters in China)
- The Triumphal Arch (dedicated to a happy marriage)
- The Doric Temple
- The Shepherds Monument (with carving by Peter Scheemakers, the Flemish sculptor best known for the carving of William Shakespeare at Poets corner in Westminster Abbey). On another monument 'The Lanthorn of Demothenes' (The Dark Lantern) he carved an inscription that remains one of the world’s top un-cracked cipher texts that defeated even the code crackers at Bletchley Park. This is probably one of the most obscure garden monuments in the country, making it difficult to relate to.

These structures were all designed by James 'Athenian' Stuart - the English architect who pioneered Neo Classicism. From an early age he had shown promise as an artist and was apprenticed to a fan painter but his prodigious talent would see him travel to Italy, team up with fellow students to make measured drawings of some of
best classical buildings of ancient Greece and to publish these in 1762 as: ‘The Antiquities of Athens and other Monuments of Greece’ - which was to fuel the Greek Revival style in European architecture.

He made alterations to the Hall at Shugborough and at other great Houses including Hagley Hall and Spencer House and became Surveyor to the Royal Naval Hospital at Greenwich. Later in life an inheritance left him very wealthy and his energies turned to enjoying drinking at the pub opposite his house in Leicester Square and, aged sixty seven, he married his twenty year old maid servant and fathered five children.

The wealth to create this new neo classical theme park came from Admiral George Anson sailing around the world in the 1740s when England was at war with the Spanish. The voyage itself was somewhat ill conceived from the start - some two hundred of the small crew were press ganged from Chelsea Hospital and many were taken on board on stretchers. The ships crashed into one another in the Channel and, later, two thirds of the crew died from scurvy and sickness. However during the voyage bullion was amassed from encounters with Spanish ships and part of the fortune given to Anson, enabling him to start the huge programme of modernising and improving. One of the earlier alterations to the house was by architect, astronomer and mathematician Thomas Wright, known as 'the Wizard of Durham'. He taught maths and agronomy to aristocratic families and was often commissioned to work on their estates - sometimes with eccentric results - a small example survives at the end of the garden (some part designed by William Andrews Nesfield) by the river Sow where he designed an assemblage of arches, natural rock and sculpture, probably referencing ancient Greece - but resembling the sorts of roadside shrines that house the Blessed Virgin Mary. A book of his designs survives and shows a range of imaginative garden structures (some of which he did get built) including a tall observation tower topped with a martini cocktail umbrella.

The next generation of Ansons married in to the Coke family - the agricultural improvers from Holkham Hall in Norfolk. Thomas Coke, known as 'Coke of Holkham', inherited aged twenty two, his father having died from constipation. Young Thomas was persuaded by a great aunt to avoid university, which she regarded as a den of vice, and gave him five hundred pounds to go on the Grand Tour. Although he was a politician he was not so interested in politics as he was in improving his park and wider estate. Humphry Repton advised on enlarging the lake but it is really for his agricultural innovations Coke is remembered and it is this legacy that probably influenced the agricultural improvements at Shugborough via his daughter's marriage to Anson. The land at Holkham was so poor that one observer said: "the thin sandy soil must be ploughed by rabbits yoked to a pocket knife." Maybe this fuelled his determination to make the estate work harder for him. His improvements included: converting open fields to enclosure; implementing his neighbour 'Turnip Townsend's' method of crop rotation; adding marl (mineral acting as fertiliser) to pasture to improve yield; Cross breeding to produce the most suitable animal for a particular location (in this case 'the Norfolk Breed') and using harnessed oxen to plough instead of yoked oxen or horses.

Shugborough Park is unusual in having three transport routes running directly through it - other great estates fought to ensure no such modern atrocities would impact their secure idyll. However there was an upside in that the estate could make substantial amounts of money by 'allowing' the companies to run the route through estate land. Indeed there are plenty of examples where the estate owner is also a director of one of the companies - Shugborough is no exception with Major General George Anson being on the Board of Directors of the London North Western Railway in 1852 - the company that developed the two lines running through the Park. He
ensured that the railway had minimal impact with one line being in cutting and tunnel. Also in the Park is the Trent and Mersey Canal, running along the base of Great Haywood Bank and animating the scene with its colourful barges.

Commentary on Sustainability Statement

The Sustainability Statement non-technical summary, at its paragraph 7.1.1 on Shugborough states that ‘The alignment was devised to avoid impacts on the European protected Pasturefields Salt Marsh Site of Special Scientific Interest (SSI) and Special Area of Conservation (SAC) as well as on Hopton Battlefield and the Cannock Chase Area of Outstanding Natural Beauty’. It is reported that the western leg would have no direct impacts on nationally designated landscapes such as Cannock Chase AONB and that considerable parts of the route would have slight landscape or visual impacts, successfully avoiding important landscape, including Registered Parks and Gardens and visual amenity resources. (Paragraph 8.8.1 of the non-technical summary).

The Statement of Sustainability Volume One: Appendix E on Built Heritage reports that Shugborough Hall is around 910 metres from the line of route near Great Haywood. This reports that the ‘significance of the setting of the park is in the views to and from features within it, and these may be adversely affected by the addition of the route in more distant prospects. The park is now owned by the National Trust and is open to the public. It was home of the Earls of Lichfield who developed the park in the 18th and 19th centuries. The proposed route would lie to its north. The Rivers Sow and Trent and the Trent and Mersey Canal run between the park and the route, with an existing railway line on the east of the River Trent. The topography and vegetation shield the park. The impact would be negligible, possibly minor in winter.’ (Paragraph 3.1.18 of Volume One Appendix E on Built Heritage).

We know that the Sustainability Statement Volume One Appendix E1 on Landscape, Townscape and Visual is, understandably, desk based at this stage (paragraph 2.2.8 of this document) and not a formal part of the EIA process. Paragraph 2.3.8 of this document deals with the visibility of the route and deals with a threshold distance of 500m from footpaths and heritage sites as a parameter or boundary and within which an impact upon a future EIA assessment would be likely to register an impact. As we reported at a similar stage in the Phase One Assessment of Sustainability consultation and EIA Scope and Methodology consultation, the distances of assessment for visual impact should be set within the frame of LVIA methodology. A threshold distance of 500 metres from footpaths and heritage sites is, we submit, at variance with this approach and we would ask that to refine the necessary assessment of sustainability here (as HS2 will themselves seek) requires an application of LVIA methodology, similar to that employed in phase one. For Shugborough, we would seek an LVIA assessment from, in particular, the north elevation of the Hall and northern extent of the Registered Park, but, in any event, an assessment is made in this location, consistent with LVIA methodology as would be consistent with Phase One Assessment of Sustainability and Scoping and Methodology.
**Local Planning context**

Landscape Descriptions Stafford Borough (adopted 2001).  
Volume 3 deals with Landscape Descriptions((Specific to Stafford Borough | Deals with Cannock Chase and Cankwood  
Supplementary planning guidance on visual Character notes,  
**Visual character**  
This is an intensively farmed arable landscape of large regular fields. The landform is gently undulating and this, coupled with the scarcity of hedgerow trees, results in wide expansive views through the landscape into the distance. Views are framed by intensively managed plantation woodlands and game coverts in some areas and in others the horizon is formed by scarcely treed undulations, often a mile or so distant. The fields are often delineated more by crop changes than by any closely cropped hedgerows. The degree to which structural landscape features have been removed varies from cereal and vegetable growing prairies through to pastoral areas where hedges, although becoming gappy and sculpted, are very much in evidence and remain as a major feature.  
**Characteristic landscape features**  
Flat to gently undulating landform; intensive arable farmland; broadleaved and mixed woodlands; plantations and game coverts; parkland; hedged field pattern.  
**Incongruous landscape features**  
Large modern farm buildings; power lines; recent housing development; busy main roads; railways; poorly designed game coverts; wire fencing.

Property comprising 364 hectares, given in 1966 and leased to Staffordshire County Council.

Both Hall and Park are Grade I.
The grounds contain a further 26 II and II* Listed Buildings.

The RP&G details note that

*The park, extended to the east following the enclosure of 1000 acres (c 416ha) of manorial waste on the slopes of Cannock Chase and the diversion of the Stafford to Rugeley road to its present line, was treated as a ferme ornée, with white cattle and Corsican goats.*

*Passing from east to west through the southern part of the park is the Stafford to Tamworth railway line, planned in 1845. This however is carried under the main part of the landscaped grounds in a 750m long tunnel and is largely invisible there. The tunnel entrances (listed grade II), most notably that of 1847 to the west, are more ornamental than is usual. Some 350m north-west of the Lichfield Lodge the drive to the Hall is carried over the railway by an elegant stone bridge (listed grade II) of 1847.*
Sandstone Hills and Heaths: Parklands.

The parklands of Canwell, Beaudesert, Shugborough and Hatherton fall within the parkland variant of the general landscape type. Each parkland is a unique product of its original design and its evolution over time. Consequently, any proposals for development or land use change which would affect such a landscape should be informed by a detailed historic landscape appraisal.

Cannock Chase AONB Management Plan 2009 to 2014 (page 23), deals specifically with Designed Parklands, including Shugborough.

Special Qualities are identified as:
Unique design and history
Landscape quality
Landmark historic buildings

Landscape Character Description includes:
The parklands of Shugborough, Beaudesert, Tixall, Wolseley and Hatherton all fall within Cannock Chase AONB.

The supplementary guidance notes that each parkland is a unique product of its original design and its evolution over time and these landscapes are locally and individually sensitive to the impacts of development and land use change. The important hall, gardens and parkland of Shugborough have remained largely intact and it is included on the Register of Parks and Gardens maintained by English Heritage as a Grade 1 site.

Cannock Chase AONB Management Plan.

In the section entitled ‘people’ an interesting point is made that:
‘There is a “sense of place” and ownership of the AONB within its surrounding communities’

Of the Management Plan Higher Level Objectives (i.e. strategic policies), HLO 2 applies the Countryside and Rights of Way (CROW Act) section 85 Duty and as ……to ‘Conserve and enhance the distinctive and nationally important landscapes of Cannock Chase AONB and the locally nationally and internationally important biodiversity it supports’.

Recreation policy RP 10 states that ‘Where development does take place, mitigation will be sought as necessary to protect the AONB’.

Policy LA 22 on Landscape Policy has the central objective to ‘Seek protection of the AONB and its setting in accordance with the agreed Planning Protocol’.
**National Trust Response to:**
**High Speed Rail: Investing in Britain’s Future**
**Consultation on the route from the West Midlands to Manchester, Leeds and beyond**

| LA 26 | Landscape Policy contains an additional objective to ‘Develop and implement management practices that maintain peace and tranquillity’ |
| Stafford Borough Local Plan 2001 | Development Plan POLICY E & D2 on CONSIDERATION OF LANDSCAPE OR TOWNSCAPE SETTING requires that, Proposals for new development will subject to other policies be acceptable where the proposal pays due regard to the existing landscape and/or townscape framework and the individual elements of the landscape. These would include:- (i) trees and hedgerows; (ii) skylines and views; (iii) open areas, especially those important to the landscape or which form a setting; (iv) historic features. |
|  | Development Plan POLICY E & D5 on NOISE ATTENUATION REQUIREMENTS requires that: New development likely to generate or be subject to an unacceptable level of noise will be required to provide adequate noise attenuation measures. Where attenuation measures cannot satisfactorily minimise the potential for noise nuisance, the proposed development will be refused. |
|  | Development Plan POLICY E&D28 on LANDSCAPE CONSERVATION Planning permission will not be granted for development that will have detrimental effect on the landscape unless adequate mitigating measures are undertaken. The impact assessment of new development proposals on the landscape will be based on the following factors; (a) physical factors e.g. relief/landform, land use, vegetation, ecological habitats, archaeology, buildings and structures; (b) visual factors, but also including the other senses; (c) the significance of the landscape with respect to the historical and cultural associations of the area; (d) the area’s value relative to other areas i.e. nationally rare, regionally rare or typical to an area; (e) evaluation of the area’s character. (f) The degree of public accessibility to the site and surrounding the site, either directly i.e. by vehicle, bicycle, horse or foot, or indirectly i.e. visual. |
|  | In supporting text, 2.4.34 A landscape evaluation undertaken by the Council in 1972 confirmed the value of Cannock Chase and formed a basis for the identification of local important landscapes. The assessment was narrower than that now advocated by the Countryside Commission in that it concentrated on an objective assessment of landscape elements, two of which were regarded as primary landscape elements - landform and land use. These were valued to determine whether they would contribute or detract from the landscape. |
Development Plan POLICY E & D29 AREAS OF DESIGNATED LANDSCAPE VALUE
Planning permission will only be granted for proposals within areas of designated landscape value, (Cannock Chase A.O.N.B., designated Special Landscape Areas, historic landscapes, historic parks and gardens), where the proposals impact on the landscape is minimal and the proposed landscaping treatment will conserve and enhance the character of the local landscape.

Development Plan POLICY E&D35 HISTORIC PARKS AND GARDENS
Proposals within or likely to affect historic parks and gardens will be accompanied by a detailed historical evaluation of the park and a survey of the existing landscape. Proposals should take account of that evaluation and:

i. safeguard the historic park or garden and its landscape setting;

ii. retain, manage and, where appropriate, restore the surrounding gardens or parkland, boundary features and surroundings;

iii. conserve any other facets of interest in the area e.g. archaeological, architectural, nature conservation”.

Development proposals which would damage the character, setting or appearance of a park or garden of historic interest will not be granted planning permission.
APPENDIX 6: TATTON PARK

Tatton Park Property Profile

Tatton Hall and Park are in Cheshire, just south of Manchester and the M56. The estate of 2000 acres lies in countryside that is not dramatic but the park is very ancient and carries this ancient feel to the present. The atmosphere is real - there are ancient, ‘veteran’ trees, deer grazed turf that has never been ploughed and a timber framed Manor House from around 1520. The structure and elements of the designed landscape visible today largely date from the late eighteenth/early nineteenth century. The estate was bought by the Egerton family in 1598 (Sir Thomas Egerton was Lord Chancellor at the time) and remained in the family until 1958 when it was passed to the National Trust. It was leased to Cheshire County Council (now Cheshire East Council) which now manages and finances the estate.

The topography is not spectacular, and successive designers have used the natural features to best effect, maintaining the feel of a medieval deer park with a very diverse sward, old trees and several water bodies, called 'meres' - these are natural lakes and are found in the area. Rostherne Mere is just to the north of the park and is a natural glacial lake of great importance for wildlife.

By the mid eighteenth century the family wealth had dissipated but an inheritance in 1758 revived the fortunes of the estate and injected a new wave of ‘improvement’: the Hall was originally built in the early eighteenth century and was altered in the neo-classical style by architect Samuel Wyatt, a member of the dynasty of architects in one family. Samuel was both architect and engineer and was surveyor to Trinity House and designed their Head Quarters on Tower Hill in London and several lighthouses, including Flamborough Head. Early on he worked as a carpenter, gaining the nickname "Chip" and was then clerk of works for Robert Adam at Kedleston. He designed Albion Flour Mills at Blackfriars in London (the first in the world to use steam) which is thought to be the inspiration for Blake's 'Dark satanic mills' in 'Jerusalem' as the poet lived nearby. He specialised in practical buildings and lesser country houses and worked on the kitchen garden at Holkham Hall in Norfolk and an extension to the hall at Shugborough. At Tatton his work was completed by his nephew Lewis.

Furniture for the mansion was designed and made by Robert Gillow. As an apprentice he travelled to the West Indies as ships carpenter and is thought to be the first to import and use Mahogany in England. He founded the firm of Gillow in Lancashire in 1730, specialising in luxury furniture and by 1764 had a shop on Oxford Street in London. In 1903 the surviving firm merged to become Waring and Gillow.

For the Park two eighteenth century 'greats ' were consulted: Capability Brown and William Emes - their schemes were not executed but they may have influenced the thinking about the layout. Humphry Repton was consulted in 1791 and Joseph Paxton designed the fernery and may have made suggestions for the kitchen garden (which was recently restored and is run as a productive garden with enthusiastic volunteers).

In the Italianate formal gardens is the ‘Choragic’ monument of Lysicrates. This is inspired by James 'Athenian' Stuart who had made measured drawings in Athens of a monument form ancient Greece. The subject is a tribute the leader of a Greek Chorus - the group of performers who comment collectively on the action in the play. There are several other monuments in the UK - most famously at Calton Hill in
Edinburgh. The monument at Tatton celebrates the Grand Tour of Wilbraham Edgerton c.1830.

There is a Japanese Garden, built in the early twentieth century and recently restored.

During the Second World War Tatton became home to the Number One Parachute Training School - eventually training some 10,000 Special Operations Executives. S.O.E. was established by Minister Hugh Dalton in 1940 and disbanded in 1946. Their aim was espionage, sabotage and reconnaissance in occupied Europe and because of their covert operation had various nicknames: “The Baker Street Irregulars” (after their HQ in London); “Churchills Secret Army” and the “Ministry of Ungentlemanly Warfare”. After the war Dalton proposed a revolutionary plan to remember those who fought and died - rather than statues or stone memorials he proposed a fund be established to buy beautiful tracts of countryside that would be available for anyone to visit. Although his plan faltered the idea emerged later as the National Heritage Memorial Fund and the establishment of National Parks.

Tatton Park hosts one of the Royal Horticultural Society’s Annual Shows, car shows, concerts, antique fairs and food festivals. The Hall can be hired for weddings and conferences.
Local Planning context

3km north of Knutsford. Managed by Cheshire East Council, on behalf of National Trust.

845 hectares, including 20 Listed Buildings and Structures, with Hall at Grade I and Palm House at Grade II*.

Park and Garden is Grade II* and C18 and later gardens and an extensive landscape park associated with a country house; designers who worked here included Humphry Repton, John Webb, Lewis Wyatt and Joseph Paxton.

<table>
<thead>
<tr>
<th>Cheshire East Core Strategy is in preparation, at Pre-Submission Core Strategy (consultation runs 5/11/2013 to 16/12/2013)</th>
<th>SE 7 on The Historic Environment,</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The character, quality and diversity of Cheshire East's historic environment will be conserved and enhanced. All new development should seek to make a positive contribution to the character of Cheshire East's historic and built environment, include the setting of assets and where appropriate, the wider historic environment.</td>
<td></td>
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<tr>
<td>• Proposals for development shall be assessed and the historic built environment actively managed in order to contribute to heritage values and local distinctiveness. Where a development proposal is likely to affect a designated heritage asset (including its setting) the significance of the heritage asset, including any contribution made by its setting, must be described and reported as part of the application.</td>
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Reasoned text in 13.58 Key assets include Macclesfield's silk and industrial heritage, Little Moreton Hall, Crewe's railway heritage, Tatton Park, Lyme Park, Quarry Bank Mill, Tegg's Nose Country Park, the canal network, historic towns and parts of the Peak District National Park, amongst others. Specific unique attractions include a wealth of Historic Parks and Gardens and the Lovell Telescope at Jodrell Bank.

NT has made submissions to the pre-submission consultation and seek revisions to Policy SE7.
APPENDIX 7: DUNHAM MASSEY

Dunham Massey Property Profile

Dunham Massey Hall and Park sit at the heart of an estate of some 3,135 acres on the edge of the Manchester conurbation with Altrincham immediately on its doorstep. It is essentially an eighteenth century composition but has elements and stories that date much earlier. The wider estate is agricultural, comprising 16 working farms and including 105 houses and cottages. The Manor of Dunham is recorded in the Domesday Book of 1086.

The medieval estate was given to a French family in recognition for their part fighting at the Battle of Hastings - the De Masci family being the origin of the name Massey. Masci is a village near Mont Saint Michel in Normandy. Cheshire was the last county in England to fall to the Norman invaders who used the Roman Road to cross the Pennines from York to Chester, passing along the edge of Dunham Park. William the Conqueror, Duke of Normandy awarded Dunham to Hamo de Masci along with land in North Wales, Buckinghamshire, Hampshire and Wiltshire. Hamo established three castles, one of which survives in archaeology at Dunham - the rest were in other places. The De Masci line ended in 1409 when the Booth family inherited and the estate remained in the family until 1976 when it was given to the National Trust. A watermill is first recorded mid 1300s and there is other evidence of a busy, working, rural medieval estate - the early history is well documented.

The designed Park and hall we see today originate in the 17th century and are mainly an eighteenth and early nineteenth century imprint. The Hall of 1616 was built on the moated site of the old Manor and was magnificent Jacobean red brick building with corner turrets and is recorded on a panoramic aerial landscape painting dated 1696 by Adrian van Diest. The Park today holds the largest concentration of veteran trees in the north west of England, many of which date from this phase of improvement. The formal gardens included a productive fruit and vegetable garden and a formal snail shaped mount with a summer house on the top and a Dutch style drawbridge over the moat.

The house was remodelled in 1723 (mostly what is seen today) and the park included five avenues radiating from the west front (the Patte D'Oie or goose foot pattern), focussing on distant church towers, outside the Park, or features within. A two mile long brick wall was built around the park to enclose the deer and this incorporated deer leaps (allowing deer to jump in to the park but not out) and two 'Claire Voies' - literally clear views, which were ornate metalwork screens that allowed a view to pass through the wall and beyond. Other features refer to the enjoyment of the surrounding countryside (The landscape context of the designed park) such as the eighteenth century stone seat that looks out to the south, across the Bollin valley.

The house and park are recorded again in four magnificent panoramic views painted by John Harris the Younger in 1751 that give intricate detail of how the designed landscape worked in the mid eighteenth century. These hang in the Hall. In the formal front court is a sundial borne by a 'black slave' - this was a popular motif, first commissioned by King William III from sculptor John Nost c.1710 for his Privy garden at Hampton Court. At that time the money being made from the slave trade was celebrated, but by the late eighteenth century the abolition of the slave trade gained momentum and "The Kneeling Slave" or "Blackamoor" came to symbolise freedom. There are examples elsewhere, including Wentworth Castle in Yorkshire.
From Hamo de Masci up until the twentieth century there are lively stories of the family and their antics. "Old George", made a Baronet by James Ist, married heiresses to secure the family fortunes and when he died aged 80 left an extensive estate with lands, money and an hereditary title. Another Booth, the family being Low Church, initially supported Cromwell's protectorate Parliament, but later became disillusioned and called for the restoration of the monarchy - (the Booth Rebellion) and was rewarded with a title: Lord Delamere. Booth disapproved of the frivolity of the Restoration Court and innovations of Charles Ist and Archbishop Laud. In the late eighteenth century a family member emigrated to America and founded academies which educated, among others, members of the Washington family. In the nineteenth century the 7th Earl of Stamford’s first wife, Bessy Billage, was the daughter of his college servant at Cambridge. She died young and he then married Kitty Cocks, a circus equestrienne, whose brother had committed grievous bodily harm - although pretty and intelligent she was shunned by Cheshire society. The 8th Earl was a missionary Bishop in South Africa who married his African housekeeper.

The collection inside the house is diverse and extensive - when something became outmoded it was not thrown away, but put into store. There are good paintings, the National Trust’s best collection of silver, an early carving by the well-known wood carver Grinling Gibbons, and what is considered to be one of the best State Beds in the country.

The Old Park with its veteran trees is designated as a Site of Special Scientific Interest (SSSI) for its deadwood habitat which supports a range of Deadwood invertebrate fauna, including worms, snails, centipedes, wood lice, pseudoscorpions, spiders, beetles, and social insects; which, in turn, provide rich pickings for many birds and bats.

The garden continues to evolve and is best known now as a 'plantsmans' garden - the most recent innovations being the Winter Garden and the Rose Garden.

The designed landscape at Dunham Massey has a solid feeling of time and antiquity and is an important green lung on the edge of the built up areas beside it. The farmed estate, mainly to the west provides a rural setting of equal antiquity - remaining largely unaffected by the industrial revolution.

Local planning context
3135 acres of farmland, woodland with cottages and other buildings, 3 miles SW of Altringham off the A56. House originally a 16th Century moated courtyard remodelled in the early 18th Century and with registered landscape including formal deer park.

Overall Estate comprises 49 Listed Buildings including II and II* and Hall is Grade I.

Registered Park and Garden is Grade II*comprising a walled deer park landscaped with avenues, water features and structures of the late C17 to mid C18, and gardens which retain C18 and C19 features. The entry in the English Heritage Register records that The southern part of the park has areas of woodland with a mixture of trees of different ages. A study undertaken in 1991 (Dubois Landscape Survey Group) showed that certain oak, beech, lime and sweet chestnut trees probably survive from the planting scheme illustrated in the 1751 paintings. This accord with items amongst the Dunham Massey Papers which record mature oak, beech and sweet chestnut trees in the park in the late C18 and early C19.

| Trafford MBC Core Strategy as adopted 25th January 2012, | Policy R1.2  
|Developers must demonstrate how the development will complement and enhance the existing features of historic significance including their wider settings, in particular in relation to conservation areas, listed buildings and other identified heritage assets. | Policy R1.6. Heritage Assets  
Accordingly developers will be required, where appropriate, to demonstrate how their development will protect, preserve and enhance the following heritage assets including their wider settings:

- Listed buildings;
- Buildings and structures identified on a local list which make a significant contribution to the townscape by reason of their architectural or historic interest;
- Listed buildings and locally significant historic buildings and structures, identified on a local list, which are at risk;
- Sites included on the English Heritage Register of Parks and Gardens of Special Historic Interest;
- Scheduled Monuments;
- Sites of archaeological significance;
- Other sites of significant historic designed landscapes identified from the Trafford Urban Historic Landscape Characterisation Report on a local list; and
- The character of prominent skylines, particularly those running from Dunham New Park to Oldfield Road, Altrincham and from the A56 through
Bowdon and any other important skylines, identified through the Conservation Appraisals.

In reasoned text, paragraph 21.6 deals with the holistic treatment of heritage and states that,

National guidance sets out a holistic approach to the management of the historic environment and heritage assets through the planning system. It comprises 12 key policies, supported by national guidance. The Guide outlines how government policy requires consideration of how new development contributes positively to the character, distinctiveness and significance of the historic environment.

and 21.12 in similar vein,

Heritage assets in the Borough contribute to the unique character and quality of the historic built environment. These sites and buildings are an irreplaceable record of the Borough, which can contribute to our learning and understanding of the past including its social and economic history, and are also a resource for the future. It is therefore essential that we seek to preserve, protect and where appropriate, enhance these special buildings and sites, in line with national and regional planning policy guidance.

Text in paragraph 21.19, notes that

The prominent skylines, particularly those running from Dunham New Park to Oldfield Road, Altrincham and from the A56 through Bowdon are visible from considerable distances. Development by virtue of its height, scale or inappropriate siting must not affect these important landscape features.
APPENDIX 7A: DUNHAM MASSEY: SIGNIFICANCE AND SETTINGS

Report prepared by LUC for the National Trust.
Bird’s eye view of Dunham Massey from the North, John Harris c1750 [National Trust]

Dunham Massey: Significance and Setting

Prepared by LUC
January 2014
Dunham Massey: Significance and setting

Introduction

1.1 Dunham Massey located on the edge of Greater Manchester (Figure 1) is one of the National Trusts most visited properties.

1.2 Dunham Massey comprises a Grade I listed House, surrounded by gardens to the north, east and south sides and a larger area of enclosed parkland. It is a Grade II* Registered Park and Garden of Special Historic Interest, itself surrounded by a wider agricultural estate managed through tenancies (Figure 2). The NT exerts further influence over the wider landscape through a range of restrictive covenants in adjoining settlements. Dunham Massey is therefore a focus within a much larger managed landscape setting. The rural parkland landscape extends from the south-west edge of the Manchester conurbation c. 1.5km west of Bowdon, dipping gently down to the Bollin valley to the west and south west part of the wider Cheshire Plain and Mersey valley. This report is specifically concerned with the landscape setting of the heritage assets owned by the National Trust. It considers how these will be affected by major infrastructure proposals.

Figure 1: Location of Dunham Massey

Figure 2: Dunham Massey: designated landscape and wider National Trust landholding
Method and approach

Definitions

1.3 National planning policy is set out in the National Planning Policy Framework (NPPF). Section 12 of the NPPF, entitled Conserving and Enhancing the Historic Environment, provides guidance for planning authorities, property owners, developers and others on the conservation and investigation of heritage assets. This study follows the principles and definitions in Annex 2 of the NPPF:

Significance is defined as: The value of a heritage asset to this and future generations because of its heritage interest. This interest may be archaeological, architectural, artistic or historic.

Significance derives not only from a heritage asset’s physical presence, but also from its setting.

Setting is defined as: The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance, or may be neutral.

1.4 English Heritage has provided guidance on the Setting of Heritage Assets. This document sets out guidance on managing change within the setting of heritage assets. It sets out key principles for understanding setting. The guidance notes (2.2) that “Setting does not have a fixed boundary and cannot be definitively and permanently described as a spatially bounded area or as lying within a set distance of a heritage asset. Views on what comprises a heritage asset’s setting may change as the setting and its surroundings evolve, or as the asset becomes better understood.”

1.5 The key principles also confirm that setting does not just relate to visual aspects “although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration; by spatial associations, and by our understanding of the historic relationship between places.”

This report

1.6 In accordance with the EH principles, this report seeks to explain how Dunham Massey is experienced from its surroundings and how this contributes to the significance of the place. It does not attempt to spatially delimit a precise setting boundary.

1.7 It draws on existing information including the Statement of Significance and the Debois Landscape Survey.

1.8 This short report specifically considers the impact of HS2 on the landscape, visual and historic interests of the National Trust property at Dunham Massey. In addition to HS2, the proposed A556 Knutsford to Bowdon Highways Improvements is a nationally significant infrastructure project, accepted by the Planning inspectorate and currently going through the examination process.

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2 NT statement of significance, Adams 2003, Debois Landscape Survey, 2000, Dunham Massey Hall
1.10 Dunham Massey passed by descent from its granting by Hamo de Massey in 1070 until the death, in 1976, of Roger Grey, 10th Earl of Stamford, when it was vested in the National Trust.

1.11 The statement of significance notes that “Dunham Massey is first and foremost coloured by being the seat of a prominent noble family of ancient and illustrious lineage. The conservative and sophisticated taste of the family together with their long held Puritanism have resulted in a place of sobriety and solidity which impresses by these characteristics rather than by grandeur and embellishment.”

The Hall and gardens

1.12 Dunham Massey Hall is located towards the north end of the park on the slightly higher ground. The house is of national importance (Grade 1) both in terms of its association with and development by two important families. A house was constructed on this site on a moated platform in the early part of the C17. It was substantially rebuilt on 1723 to the designs of John Norris and a major refurbishment was undertaken in 1906-7 by J Compton Hall. The house represents the taste of each generation especially that of the second Earl of Warrington (18th Century) and the Ninth Earl of Stamford (early 20th century). The collection is highly important. The house is located centrally within the gardens, parkland and estate which forms its immediate setting. Gardens and pleasure grounds are situated on the north, east and south sides of the Hall. The gardens surrounding the house retain 18th and 19th century features, although much of the historic detail has been lost.

![Diagram: Analysis of Avenues Showing Key Vistas (Debois)](Image)
A diminished, informal Brownian parkland in New Park

The deer park dates from at least 1353

The brick wall around the deer park dates from 1748-51. It incorporates 2 'iron pallisades' and 3 deer leaps

The Setting of Dunham Massey

**Figure 3**

Dunham Massey: Main elements of the designated parkland

Registered Park and Garden

Deer park perimeter wall

Source: English Heritage, ESRI

Map Scale @ A4: 1:16,000
The Park

1.13 The parkland, of medieval origin, was re-designed in the 17th and 18th century and comprises an Old and New Park, extending to approx. 100 ha. The main elements of the parkland include a walled deer park landscaped with avenues, water features and structures of the late 17th to mid-18th century (Old Park) and a, much diminished, informal Brownian parkland (New Park) as depicted on Figure 3. The history of the park is described in the Debois landscape survey, 2000.

1.14 The Old Park is a deer park laid out in the early eighteenth century on mainly level ground to the south side of the house. It was planted by the 2nd Earl of Warrington from the 1690’s. Its design is essentially formal based on a relatively complex geometry forming a series of five avenues emanating from the goosefoot at the south front of the house (Figure 4 Debois Vistas). It is illustrated in four bird’s eyes views painted in c. 1750 by John Harris. The avenues formed walks and vistas’ focussed on features such as Bowdon Church or monuments inside and beyond the park such as the obelisk. To the north the avenue extends terminating at an obelisk in Whiteoaks Wood. The higher land in the north of the park close to the Hall provides some distant views out to hills to the north and north east. The South and North Avenues provide views from and back to the house. The Avenues, as depicted by Harris, also framed views out of the park, illustrating Dunham Massey as the centre of status and fulcrum within a much wider rural landscape (Figure 5 Harris paintings).

![Dunham Massey from the south east](image1)

![Dunham Massey from the North](image2)

![Dunham Massey from the south](image3)

![Dunham Massey from the south west](image4)

**Figure 5: Harris paintings**
In addition to the formal avenues is a path system which provides an alternative sinuous route through the landscape providing incidental, informal views over the Park and out over the park wall to the River Bollin and fields beyond. From the area around Charcoal Lodge there were drives through areas of woodland designed to frame views out to Bowdon Church tower on the skyline. The design also encompassed areas of commercial woodland particularly in the south part of the park, cut through with vistas and paths to form part of the ornamental landscape. The Old Park was planted for profit and beauty and as an expression of power. The integrity and coherence of the eighteenth century layout survives at Dunham Massey Old Park. It is considered to be a rare survivor of national importance. The formal design of the 2nd Earl and depicted by Harris has formed the basis for the NT restoration strategy.

The New Park which lies to the north east was first mentioned in 1434 and developed in the mid and late eighteenth century by Lady Mary Booth, Countess of Stamford. The landscape design exploited the topography of hills and valley to create a different landscape of Brownian character. This is a largely enclosed inward looking landscape compared to the formal Old Park and has been much altered by new building, the reservoir and the golf course.

The estate

The house, garden and deer park is surrounded by a wider area of estate land, owned by the National Trust which is managed through agricultural tenancies (refer to Figure 2). The estate land is essential for the buffering of the hall and park from the encroachment of Manchester and also has its own historic integrity. The wider estate land extends to some 1,274ha and represents the core of what was, for most of its history, a vast and powerful land holding. It is managed through 16 agricultural tenancies with mixed arable and livestock farming and small woodlands. The estate is notable for its little changed traditional built fabric following renovation or rebuilding of the farmhouse and buildings to form model farms in the late 19th and early 20th centuries. The wider rural character of the area is also conserved through restrictive covenants with the NT over much of the adjoining settlements of Hale, Bowdon and Altrincham.

Summary of significance of Dunham Massey and relationship to setting

- The surrounding rural agricultural character is important to an understanding of Dunham Massey. It provides a strong contrast with the developed suburbs of Manchester and is a symbol of the once vast landholding associated with the nobility of Dunham Massey.
- The wider estate land represents the core of what was, for most of its history, a vast and powerful land holding. The estate is notable for its little changed traditional built fabric following renovation or rebuilding of the farmhouse and buildings to form model farms in the late 19th and early 20th centuries.
- The Old Park is a rare survivor of early eighteenth century formal design;
- The eighteenth century parkland includes designed features (avenues forming walks and vistas) with views out terminating at features in the wider landscape – including Bowdon Church to the south west and the obelisk in Whitehouse Wood to the north.
- The designed landscape includes informal perimeter paths along the park wall with views out to the rural agricultural landscape beyond and notably to the sinuous pastoral valley of the River Bollin to the south and west and features including the mill.
- From higher points drives through the woodland were designed to frame views out to Bowdon Church.
- Dunham Massey has long had an important function serving as a green oasis set between the urban edge of Manchester to the east and the rural tranquillity of Cheshire to the west. Today, this is more important than ever, and Dunham Massey provides an important opportunity for recreation and access; it is one the Trust’s most visited properties.
Understanding change and impacts on the setting of Dunham Massey

1.17 Dunham Massey is significant as an oasis of green between Greater Manchester and rural Cheshire. As illustrated above the views out to the wider rural landscape are a key part of its character. This distinctive and special character is however being undermined by new development to the south and west which is encapsulating Dunham Massey aligning it more closely the urban setting of Manchester and at the same time severing links with its rural hinterland. This includes the existing M56 road to the south, the proposed A556 improvement and the proposed route of HS2 Phase 2.

HS2

1.18 The location of the proposed route of HS2 in relation to Dunham Massey as set out in HS2 Phase 2 Preferred Options Consultation is shown on Figure 6. Close to High Leigh and heading northwards, the line splits, with the main branch continuing north to the west of Dunham Massey, coming out of a cutting to the north of the M56 and continuing on an embankment to cross the Bridgewater Canal to the River Bollin floodplain which it crosses on a viaduct. From here the line continues northwards rising to cross the Manchester Ship Canal on a viaduct. The second branch heads east, south of Altrincham and into central Manchester. The linking line between the two branches is largely in cutting and goes under the M56 and A556 emerging to cross the Agden Brook on a viaduct. The two branches meet close to Agden Bridge and join as an embankment over the Bridgewater Canal. They form a triangular network between Dunham Massey and Tatton Park. The line does not physically cross National Trust land although comes in close proximity. At Woolstencroft Farm at the Bridgewater Canal the line is just 122m away from the NT tenanted farmland, on embankment forming a highly visible intrusion into this rural landscape setting. The eastern branch of the line lies approximately 1km from areas of NT tenanted land. At its closest point it is 1km and 1.4km from the Grade II* historic parkland and just under 2km from the Grade I listed house. The part of the line south of the property is largely in cutting, while to the south west it forms a viaduct and embankment.

A556

1.19 The A556 road improvement between Bowdon roundabout and Junction 19 of the M6 is shown on Figure 7. This creates a new A556 alignment parallel to the existing road and new junction layout at the M56. It is, at closest, just under 0.5 km from the avenue of the registered historic parkland, beyond the existing roundabout.

Impact of HS2 on Dunham Massey

The wider NT landholding

1.20 HS2 does not involve any direct impacts on the NT heritage assets at Dunham Massey. It runs in close proximity to the property, just 1km from the NT tenanted land at Woolstencroft. Here, the rail line will be on embankment where it crosses the Bridgewater and form a highly visible intrusive feature within this traditional, open rural agricultural landscape. This land has an important role in protecting the setting of the designated heritage assets at Dunham Massey. A function that it will continue to fulfil with the development of the rail route. There is one listed building at Agden Bridge Farm, the building is not NT owned. Overall it can be concluded that HS2 will have significant adverse landscape and visual (plus noise) impacts at this rural location. From the wider estate there are likely to be views as the route rises to cross the Manchester Ship Canal.

1.21 In terms of impact on the designated heritage assets:

Dunham Massey House (Grade I)

1.22 The house has an enclosed setting, surrounded and protected by gardens and extensive parkland. The house is not located on particularly elevated land and its architectural and historic interest does not rely on views out. There is unlikely to be any intervisiblility between the house and HS2.
The Setting of Dunham Massey

Figure 6
Route of the Proposed A556 Knutsford to Bowdon Highways Improvements

Map Scale @ A4: 1:20,000

Source: Natural England, National Trust

- Registered Park and Garden
- National Trust Ownership
- A556 Road Extension
The Setting of Dunham Massey

Registered Park and Garden
National Trust Ownership

HS2 Route
- At Grade
- Cutting
- Embankment
- Viaduct

Figure 7
Proposed Route of HS2

Map Scale @ A4: 1:50,000
The registered parkland (Grade II*)

1.23 The principal concern is the Old Park which lies to the south and east of the main house. As noted above, the Old Park is a rare surviving formal eighteenth century landscape. The avenue layout was consciously designed to frame vistas, some of which focus on features within the park and others which extend beyond the park. These designed views are complemented by incidental views out from the informal perimeter walks. The formal avenues, vistas and informal walks survive, although the Old Park (deer sanctuary) currently has limited public access. From locations within the Old Park including from the main South Avenue and perimeter paths there are medium distance framed views out to the south and west. From certain locations it is likely that there will be views to HS2, at least to construction elements and possibly to areas of cutting/embankment. These will be at a distance of at least 1.5 km. It can be established with reasonable certainty that there are likely to be some views towards HS2. Noise impacts are not likely to exceed existing impacts from the M56 and A556.

Conclusions

1.24 The wider landscape context and views out to the rural setting of Dunham Massey is critical to the significance and understanding the place. In combination the two branches of HS2, M56 and A556 create a severed and disrupted landscape in the sensitive green wedge that lies between Dunham Massey and Tatton Park to the south. To the west the rising route of HS2 on embankment and viaduct will have a significant impact in this quiet rural agricultural setting. For these reasons there is a strong case for the National Trust to instigate dialogue with HS2 Ltd to seek additional mitigation to minimise impacts on cultural heritage and landscape setting and maximise environmental gains.
Acoustic Consultancy Report

4155-HS2-ATN-1: HS2 – Phase 2, Document Review

Report Prepared for
National Trust
December 2013

Review of:
HS2 Consultation Document
Sustainability Statement – Volume 1
Main Report of the Appraisal of Sustainability Sections 4.7, 5.6 and 6.6
Sustainability Statement – Appendix E6 – Noise and Vibration
Sections 1 to 8

Report Author

Alan Nethersole M.I.O.A
Director
National Trust Response to:
High Speed Rail: Investing in Britain’s Future
Consultation on the route from the West Midlands to Manchester, Leeds and beyond

Summary

Sound Analysis Limited was commissioned to carry out a general review of the following documents.

HS2 Consultation Document

Sustainability Statement – Volume 1

Main Report of the Appraisal of Sustainability Sections 4.7, 5.6 and 6.6

Sustainability Statement – Appendix E6 – Noise and Vibration

Sections 1 to 8

In addition, approximate HS2 noise levels were to be calculated at the following National Trust locations.

Shugborough
Dunham Massey
Staunton Harold Church
Nostell Priory
Calke Abbey
Tatton Park
Hardwick Hall

This data is contained in Appendix A of this report.
1 HS2 Consultation Document

This document contains minimal reference to Noise and Vibration.

Particular comments are:-

9.1.5

Makes a general statement that “Noticeable Impact”, has been based upon a noise level increase over ambient of 3dB resulting in a level exceeding 50 dB(A) in daytime, and 40dB(A) at night.

This is in line with the WHO, (World Health Organisation) Guidelines, but would not cover for example, an instance where the daytime background was 40 dB(A), and was increased by up to 6dB, to 46 dB(A), and still not be classed as “Noticeable Impact”

The standard definition of daytime is 07:00 to 23:00hrs
Night time is 23:00 to 07:00 hrs.

HS2 operational period is from 05:00 to midnight, and so for occupied premises we need to be working on appropriate background noise levels.

Actual measured background levels will need to be provided before the impact of HS2 noise at each location, can be properly assessed.
2. **Sustainability Statement – Volume 1**

**Section 4.7 – Noise and Vibration - General Overview**

Particular comments are:-

4.7.4

Operational hours appear to have reduced to 18 hrs, Item 3, again states the general noise assessment process, mentioned in 9.1.5 above.

This does not seem to address areas of low background noise levels, *(we have measured daytime levels as low as 30dB LAeq in some rural areas)*

4.7.8

The use of barriers will need to be carefully assessed, as for example, for a given barrier height, the acoustical performance of the barrier could vary by 3dB or more, between the UP and DOWN railway line. Distance from track, height, and absorption to inner faces, are also critical parameters.

4.7.12

States that, the additional effect, of road aircraft and local industry, have not been taken into account in the analysis. However it is expected that taking these sources into account will finally lower the number of noise impacts.

This is dependent on the eventual assessment of noise in terms of character. For example Motorway noise is very consistent and becomes almost a stable background, whereas HS2 noise will be intermittent and an Leq assessment could be called into question. BS4142 for instance, would add 5dB for intermittent noise sources.

**Section 5.6 – Noise and Vibration – Western Leg**

Particular comments are:-

5.6.5

Noise from Stations and Depots will be of a different character to the High Speed track sections, and local mitigation by appropriate building design, and general good industrial practice.

**Section 6.6 Noise and Vibration – Eastern Leg**

Particular comments are:-6.6.4

No NT Properties are listed.

Otherwise as per 5.6 above.
3 Sustainability Statement – Appendix E6 – Noise and Vibration

1.1.2
The issue of the Environmental Impact Assessment will presumably provide more detail of background noise levels and more accurate assessment of impact.

2.1.1
Although LAeq is commonly in use for the assessment of industrial noise nuisance, the most used standard is:

BS4142 Method for rating industrial noise affecting mixed residential and industrial areas

This document has a particular correction for tonal or intermittent sound.

The standard states that if the noise that is being assessed for nuisance is tonal or intermittent, then the design level should be lowered by 5dB.

There is no mention of such a correction in any of the appraisal statements.

The character of HS2 noise is intermittent, and regular, and annoyance created can be by noise level, and predictability of regular occurrence, resulting in the auditor, listening for the noise, rather than hearing the offending noise.

2.2.8
The DfT document “Transport Analysis Guidance”, Noise Sub-objective TAG 3.3.2, is primarily intended to give a method for assessing the financial compensation levels, for properties experiencing noise level increases.

However certain statements within the document are useful to note, and are shown in Appendix B

6.2.1
The noise appraisal to date would appear to have been carried out to a nominal background level of 50dB LAeq, not measured noise levels, and this will be the primary issue when resolving noise levels at particular properties such as National Trust properties.

In the National Trust properties, presumably we will be working to daytime levels in some locations, and night time levels in others.
General Comments

To comment fully on these draft statements we would need to see the Sound Contour Maps that are mentioned.

It is not clear how the ongoing approach to noise control will be assessed.

The measured background noise levels, if taken should include night time levels, although at this stage they seem to just take 10dB from a daytime measurement to arrive at an arbitrary night time criteria.

No improved definition of the train noise used in the draft assessment is given, and therefore we have continued to use the level of 95 dB(A) at 25m from the track.

Alan T Nethersole M.I.O.A
Sound Analysis Ltd
Appendix A

Approximate HS2 Noise levels at National Trust Properties.

The noise levels of HS2 operation were calculated based upon the distances that are detailed in the following table, and are estimated from the general data provided.

<table>
<thead>
<tr>
<th>Location</th>
<th>Distance From HS2</th>
<th>HS2 Train Leq</th>
<th>Motor way Leq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardwick Hall</td>
<td>1150</td>
<td>62.6</td>
<td>43</td>
</tr>
<tr>
<td>Shugborough</td>
<td>4500</td>
<td>51.6</td>
<td>37</td>
</tr>
<tr>
<td>Nostell Priory</td>
<td>1100</td>
<td>62.6</td>
<td>43</td>
</tr>
<tr>
<td>Calke Abbey</td>
<td>4000</td>
<td>52.6</td>
<td>37</td>
</tr>
<tr>
<td>Dunham Massey</td>
<td>2500</td>
<td>56.5</td>
<td>39</td>
</tr>
<tr>
<td>Staunton Harold Church</td>
<td>600</td>
<td>37.1</td>
<td>47</td>
</tr>
<tr>
<td>Tatton Park</td>
<td>2800</td>
<td>55.6</td>
<td>39</td>
</tr>
</tbody>
</table>

The Leq levels have been calculated utilising a minimum background LA90 level of 36 dB(A) which was established from an earlier survey at Hartwell House.

We have not measured actual ambient noise levels at the sites stated below.

HS2 Noise level is based upon 95dB(A) at 25m from the track.

In some cases, the HS2 line is in significant cuttings, which on provision of final information could reduce the levels estimated above.

These instances are marked in red.

Further comment on the resultant levels above would need accurate measured data of minimum background levels over the period of HS2 operation, at the relevant sites.
Appendix B

Extracts from Noise Sub-objective TAG Unit 3.3.2

Note the comment that differing sources of same noise level may cause different response.

Even when noise levels are measured using the $L_{A2}$ scale, research indicates people respond differently to the same level of road and rail noise. For example, the Mitchell Committee's report Railway Noise and the Insulation of Dwellings (DoT, 1991) summarises research undertaken up to 1991 on the question of the differential between road and rail noise annoyance response. Although the Committee found no clear consensus, they concluded that at levels of 60 to 70dB(A) most studies found the same degree of annoyance where rail noise exceeded road traffic noise by between 4 and 9dB(A); but for noise levels of 50 to 60dB(A) the differential was very small or zero. In reaching their conclusion on the appropriate criterion for insulation against rail noise, the Committee gave emphasis to UK studies, as it was recognised that social and cultural factors might have a strong influence on the differential response.

Again reinforcing that road and rail noise can illicit different response.

It is also important to be aware that the annoyance response function is uncertain at low noise levels (especially over large distances). Consequently, it is recommended that appraisals are undertaken for noise above a cut-off level below which only a small percentage of the population would be annoyed. Research conducted by the Department suggests a positive willingness to pay to avoid transport related noise from 45dB $L_{A2}$, and this level is used as the cut-off for both annoyance and valuation calculations.

Cut off level proposed at $Leq\ 45dB(A)$

Where the levels of noise from different sources are dissimilar, it may be reasonable to make a simplifying assumption and ignore annoyance from the source giving lower annoyance. However, where there is uncertainty, it is more difficult to make such simplifying assumption and professional judgement will be needed to reduce the risk of double counting populations.

This is relevant where nearby Motorway noise is evident.
APPENDIX 9: EFFECTS OF HS2 ON BIODIVERSITY: COMMENTARY ON PHASE TWO CONSULTATION

Professor John Altringham, University of Leeds

Contents

1. Overview. A brief introduction to the effects of linear infrastructure on biodiversity, including landscape scale effects, and a critical appraisal of the approach taken by HS2 Ltd.

2. Commentary on relevant sections of the main Consultation Document

3. Commentary on relevant sections of the Sustainability Statement

http://assets.hs2.org.uk/sites/default/files/consultation_library/pdf/P2C12d%20Appendix%20E4%20Biodiversity%2020050713.pdf

5. National Trust land: site-specific considerations

6. References
1. OVERVIEW

The effects of linear transport systems on biodiversity

There is almost no published work on the effects of railways on wildlife, so we can only extrapolate from studies on the effects of roads, and our understanding of animal behaviour and ecology. However, evidence for significant impacts of roads on wildlife is extensive. Roads impact on wildlife in several ways. First, building roads and their ancillary structures destroys habitat directly. Secondly, the resulting road network fragments the landscape, restricting animal movements, thereby blocking their access to the remaining habitat. That roads are effective barriers is convincingly demonstrated by studies that show major genetic differences in populations of animals either side of major roads (e.g. voles (Gerlach and Musolf 2000), red deer (Frantz et al. 2012) and carnivores (Riley et al. 2006)). Thirdly, roads are also sources of light, noise and chemical pollution, and so degrade the habitat around them. Finally, fast moving traffic kills animals directly. Broad reviews of the effects of roads on vertebrates include Forman and Alexander (1998), Trombulak and Frissell (2000), Coffin (2007), Fahrig and Rytwinski (2009), Laurance et al. (2009), Benítez-López et al. (2010), and Rytwinski and Fahrig (2012). Roads can affect birds and bats as much as terrestrial vertebrates (e.g. Reijnen et al. 1996, Berthinussen and Altringham 2012a). They may also affect invertebrates and plants through their effects on local wind patterns, hydrology, light (if running on embankments or in cuttings) and local chemical pollution.

There are reasons to believe many existing railways may have less impact than roads, since they are narrower, trains are infrequent relative to the often continuous traffic on major roads, and noise and light pollution are generally lower. However, the high fences that will line either side of the HS2 track will be a significant barrier to wildlife, and the frequency of trains running on HS2 is forecast to be much higher than on existing lines. We do have new data to show that bat activity is lower adjacent to existing mainline railways relative to that in adjacent countryside.

The importance of thinking at the landscape scale

Because road and rail are long, continuous linear structures, they can disrupt wildlife at the landscape scale, so it is important to look not only at their effects on specific protected sites, but on the landscape as a whole. The great majority of our landscape is undesignated ‘agricultural’ land. The ecological health of the sites designated for their biodiversity importance is reliant on the ability of many species to move between higher quality habitat patches, across this lower quality habitat, often along linear features such as hedgerows, treelines and waterways. Linear transport infrastructure represents a barrier to such movements, reducing home ranges and foraging areas, disrupting migration, and preventing the dispersal of new generations of offspring, all of which are essential processes in animal life cycles. Fragmentation will also reduce the ability of many species to move and adapt to environmental change in response to climate change, one of the many reasons put forward in the Lawton Report (Making Space for Nature 2010) when arguing for a landscape scale approach to nature conservation.

It is clear that HS2 could have a significant impact not only on individual protected sites, but also on the biodiversity of the wider landscape. This needs to be more clearly acknowledged by HS2 Ltd and explicitly addressed in their biodiversity strategy.
Weak methodology in the HS2 Consultation

The Consultation assesses impact superficially and refers to other documents for detailed methodology: the Sustainability Statement and the Technical Report on Biodiversity. Neither of these documents actually reveals much more detail – certainly not enough to assess the strengths and weakness of the methods. The documents say almost nothing about how impact was assessed, about mitigation and compensation methods, and nothing on how success or failure will be determined. Despite putting off until later all detailed consideration of mitigation and enhancement, the Consultation nevertheless generally concludes that there will be no significant residual impact. It assumes therefore that mitigation and enhancement will work. This in the context of an almost complete lack of evidence in support of mitigation and the continued loss of the biodiversity which is nominally protected by this system (as assessed by a wide range of reports by NGOs and academics).

Death by a thousand cuts

The assessment made in the Consultation is entirely site-based. There is little ‘in combination’ assessment and very few references to effects on the wider landscape. There is some reference to the wider scale through Natural Area Profiles, but there is nothing substantive in these sections. If HS2 is judged not to affect a designated site it is generally implicit that it will have no effect at all. The Lawton report, *Making Space for Nature* (2010) is not mentioned, yet it is supposed to be guiding environmental policy, e.g. through the recently created Nature Improvement Areas (NIAs) and Local Nature Partnerships (LNPs).

As discussed above, our natural heritage comprises designated natural sites and the landscape in which they sit. Its future depends upon improving the environment for biodiversity by increasing the ecological ‘quality’ of the whole of the landscape, increasing the size of designated areas where possible, and improving the connections between designated areas to give the environment greater resilience to climate change and other anthropogenic pressures. HS2 has the potential to be a major barrier to the movement of a wide range of animals and plants. As such it is a major challenge to these principles, yet this aspect of its impact is not discussed.

The principle of no net loss

There ought to be a detailed, categorised audit of all lost habitat so that the principle of no net loss of diversity can be met through mitigation and compensation. In reality, assessing precisely what might be lost and how loss can be effectively avoided or compensated for are difficult and uncertain tasks, but at this stage the process has not even been engaged with.

I have considerable reservations about how successful biodiversity offsetting (assuming it is adopted) will be in the hands of government and other key players, However, given the likelihood of some form of offsetting being introduced, it is surprising not to see it in these documents in the context of the many habitat losses anticipated.

Implementing mitigation measures – past failures

The consultation reveals a long list of definite and probable impacts. The scale of many of these impacts has yet to be determined and mitigation/compensation measures have yet to be devised. It is nevertheless assumed, optimistically, that
mitigation will work, but there is little or no evidence to support its effectiveness or the likelihood that it will be implemented in full or even in part.

It has been widely assumed (although often only implicitly) that linear transport systems act as barriers to wildlife, so mitigation often attempts to increase permeability through the use of underpasses and overpasses. Despite the presence of tunnels and bridges of various kinds on major roads, the roads still act as barriers – as discussed above, populations of even large and mobile mammals like red deer show evidence of genetic isolation. A major problem may be that existing crossing points are most frequently built to carry human traffic, with little or no provision made for wildlife. They may therefore be avoided by wildlife. Crossing points, primarily in the form of underpasses, are now being made specifically for wildlife (e.g. for badgers, deer, otters, bats, amphibians and reptiles), but their effectiveness remains almost entirely untested. The criterion for success, in most of the few instances where success has been assessed, is that animals use them. This is unacceptably bad science. Success means protecting populations, not individuals, so the use by a few animals is not evidence of success if many more fail to cross safely. The one published study that compared the proportion of animals (in this case bats) making safe use of crossing structures with those crossing unsafely (adjacent to the structure) demonstrated that most structures were failing (Berthinussen and Altringham 2012b). Crossing structures have the potential to work, and some do, but current practice relies almost entirely on guesswork at the design and building stages and faith thereafter.

Beyond the difficulties of developing cost-effective conservation methods, there are major problems with implementation. Tischew et al. (2010) reviewed 57 compensation case studies in Germany and found that 26 had to be excluded from the analysis due to poor goal setting, unclear implementation or failure to carry out the measures. Analysis of the remaining 31, which included 119 compensation sites, found that two thirds of the compensation goals set were only partly met or not met at all, with unsuitable site conditions, improper implementation and deficient management and follow up being major contributors to failure. Compensation measures have also been discussed for road developments in Sweden, but are rarely used or documented (Rundcrantz 2006). A review of 72 road and railway Records of Decision in Spain found that compensation measures are rarely considered in Environmental Impact Assessments (Villarroya & Puig 2012). The situation in the UK is no better (e.g. Altringham 2008, O’Connor et al. 2011). Progress will only come when developers show greater commitment to finding real solutions and the statutory nature conservation organisations take a more evidence-based approach and enforce the law.
2. Consultation document

Artist's impression of HS2 (from page 52 of Consultation), showing the width of the corridor, its open nature and the boundary fence. The precise nature and dimensions of all three features will determine the extent to which HS2 will act as a barrier to wildlife, as will the frequency of passing trains.

Section by section commentary
Boxed text in italics are extracts from the published documents.

9 Sustainability summary

9.03: The overall findings of the AoS are reported in detail in the High Speed Rail: Consultation on the route from the West Midlands to Manchester, Leeds and beyond Sustainability Statement which can be found at www.hs2.org.uk. This describes both beneficial and adverse effects resulting from the proposed scheme’s construction and operation. At a later stage, once the Government has identified its preferred scheme following consultation, a more detailed Environmental Impact Assessment (EIA) would be undertaken.

The findings of the AoS are not reported in adequate detail, as discussed below. The methodology describes only how affected sites were chosen and where the data that allowed them to make this choice were obtained. However, very little is said about the methodology used in the AoS to assess the level of impact of HS2, nor the methods that allowed them to assess the likely effectiveness of any mitigation. I read Appendix B to the Sustainability Statement (AoS Method, Alternatives and Supporting Documents) but this too is only a superficial description of the framework.

As HS2 Ltd. state, detailed environmental impact assessment will be undertaken at a later stage (and presumably the design of mitigation/compensation too), but this initial assessment of impact and mitigation is critical. If it is wrong, then the project goes ahead on unsound foundations – impact may be shown to be greater than anticipated and mitigation impractical. A brief examination of the new Phase One EIA for mitigation methods suggests a superficial treatment in this document too.

Assessment of impact is largely confined to the direct effects of HS2 where it crosses or runs adjacent to designated (International, national or local) sites. The primary concerns are land-take or effects on hydrology and water quality. Some reference is occasionally made to other forms of disturbance, but most frequently only during construction, implying it is unlikely to be important after construction – this assumption is not justified.
National Trust Response to:
High Speed Rail: Investing in Britain’s Future
Consultation on the route from the West Midlands to Manchester, Leeds and beyond

As discussed in the Overview, the assessment is entirely site-based. There is little ‘in combination’ assessment and no reference to effects on the wider landscape. If HS2 is judged not to affect a designated site it is implicit that it will have no effect at all. The Lawton report, *Making Space for Nature* (2010), which is supposed to be guiding environmental policy, is not mentioned. HS2 would compromise out ability to project biodiversity on a landscape scale, but this appears to have been overlooked by HS2 Ltd.

### 9.3 Wildlife and ecology

9.3.1 The design has been responsive to numerous, widespread and diverse areas of protected habitat. There are a number of particularly important, European-protected habitats, particularly along the western leg, where water-bodies have been formed within glacial depressions. HS2 Ltd has worked closely with Natural England and the Environment Agency in its selection of routes and designs that avoid impacts to any of these sites. On the eastern leg, potential impacts on the European-protected River Mease, which would be crossed by viaduct, have also been avoided, although later design development will need to be alert to the sensitivity and vulnerability of this feature.

This and other paragraphs of this section refer explicitly to protected habitat but make no mention of the wider landscape. It is stated that HS2 worked closely with NE and the EA to avoid impact on these sites, but no guiding principles or methodology are given in this document, the Sustainability Statement or the Technical Report E4.

9.3.2 The eastern leg would directly affect one nationally protected Site of Special Scientific Interest (SSSI) at Bogs Farm Quarry. Continued design will seek effective mitigation where practicable, through avoiding landtake and hydrological impacts. No other SSISIs would be directly affected. Risks to other SSISIs that occur near the route should all be mitigable through careful design and use of best practice techniques during construction.

Mitigation design is in the future and will be implemented ‘where practicable’. “Risks to …. should all be mitigable...”. This does not inspire confidence. We are asked to accept a major development on good intentions, guesswork and a considerable amount of faith.

9.3.3 A network of other important habitat is identified by Natural England. HS2 would impact on around 60 of these. Amongst them are 14 woods that are listed on the Ancient Woodland Inventory. A detailed understanding of these impacts within the context of wider regional ecological characteristics will be vital in developing mitigation proposals that seek to ensure no net loss of biodiversity, in line with the HS2 Sustainability Policy.

In other words HS2 will have an impact on a major habitat network that includes many ancient woodlands but HS2 Ltd. has no plan as yet as to how it will protect them, but it is sure it can come up with something.

### 9.7 Next steps in environmental appraisal

9.7.1 Consultation on the scheme may result in proposed refinements. These proposed refinements would each be subject to further sustainability appraisal to ensure a sound understanding of the relative benefits and disadvantages. Any adopted changes would then be included within the Government’s decision on the final scheme. Following a later EIA and the consideration of the likely significant effects of the scheme (as reported in an Environmental Statement), further refinements may be made to mitigate impacts and these will be included in the hybrid Bill submitted to Parliament.

In the absence of an EIA, and therefore mitigation plans, it is nevertheless assumed that there will be achievable and affordable mitigation solutions.
3. Sustainability Statement

4. Describing sustainability impacts

4.1 Scope, method and mitigation

4.1.2. The AoS method was devised to provide a sound basis for both comparing scheme options during the earlier stages of scheme development, and then for reporting the principal impacts of the scheme leading into consultation. A more detailed understanding of environmental effects will be based on the later EIA.

4.1.3. The kinds of mitigation that could be applied at the next stage of design on Phase Two can be seen through the EIA work on Phase One, as directed by HS2’s Sustainability Policy. Rather than replicate these principles in this document, they are set out within Section 6 of Volume 1 of the Phase One draft ES. This describes the range of measures and policies that will be considered as the Phase One EIA proceeds.

The Phase One draft ES provides a very sketchy description of ‘measures and policies’, wholly inadequate as a means of judging the effectiveness of any of the stages in impact assessment and mitigation. We are asked to accept an appraisal based on a poorly documented methodology and a mitigation plan that has yet to be written because the detailed impacts have yet to be assessed. But we are asked to accept it will work.

4.2. Temporary construction impacts and their mitigation

4.2.1. Construction activities will be a source of concern to many people along the route. At this stage, the details on how Phase Two would be built have not been developed. Once a preferred scheme is confirmed following consultation, construction proposals will be defined including, amongst other things, location of construction sites, activities, types of equipment, routes for construction traffic and expected duration of different work elements. The impacts of these proposals will be assessed by the EIA.

4.2.2. The construction period will be the time when many of the scheme’s impacts will be most evident as the proposals result in immediate changes to the environment and to the status quo. At this stage, the main potential temporary adverse impacts expected during construction would be:

- temporary landtake for construction sites;
- noise from construction activity;
- views of construction sites, lighting and equipment;
- additional road traffic, particularly due to lorries;
- dust generated at construction sites and along the trace; and
- pollution to surface and groundwater and other changes to flows.

4.2.3. HS2 Ltd is committed to managing potential construction impacts and reducing disruption to communities, businesses and the environment in ways that reflect the very best practice used by the construction industry. As noted above and in Section 2.6, a CoCP14 has been developed for the Phase One proposals in order to define the principles for mitigating potential impacts from things like noise, dust, lighting, traffic, river crossings, disturbance to wildlife or disruption to buried archaeology. It will form the basis for more detailed local environmental management plans that reflect the needs of specific areas. The CoCP would continue to be used throughout construction of Phase One and will help inform the CoCP that would be developed for Phase Two in the equivalent stage in the process. In this way, HS2 Ltd is confident that many of the impacts that could arise will be effectively controlled.

It is implicit that land take for construction will be fully and rapidly reversible, which is ecologically naive. The impacts describe effects on people. Effects on biodiversity are implicit and sketchy. The draft CoCP referred to describes no more than
principles and has the usual qualifiers, such ‘where reasonably practicable…’ in reference to mitigation. It also refers to best practice, which is largely untested for effectiveness or has been shown to be ineffective – see Overview.

4.13. Biodiversity and wildlife
Statutory designations 4.13.1

Site identification through the various international, national and local designations is appropriate. There is mention of indirect effects through disturbance or hydrological impacts, but no reference to more subtle ecological effects such as increased edge effects and habitat fragmentation/isolation.

Ecology within landscape strategies
4.13.6. A number of strategic landscape management tools integrate ecological matters with wider landscape considerations. For example, Natural Area (NA) profiles, National Character Areas (see Section 4.11.1) and Living Landscape Strategies. NA profiles were devised by English Nature (now Natural England) as a tool for nature conservation planning at the landscape level. They reflect the distribution of wildlife and natural features, underpinned by geology and land use patterns. National Character Areas are currently being updated to include information on landscape character, biodiversity (including an inventory of Habitats of Principal Importance) and ecosystem services and are likely to replace the NA profiles in the future. However, as this has not yet been completed, the AoS has used NA profiles to convey the potential strategic ecological impacts of the proposed scheme.

I could find no information on how the AoS addresses this issue, but it is generally a woolly area, so little of any substance is likely to be found.

4.13.7. At the EIA stage a package of mitigation and enhancement measures will be developed (in consultation with Natural England and other wildlife organisations) to address the impacts on habitats and species. These measures would seek to address both the direct impacts on designated sites, and to reflect the wider strategic ecological priorities of affected Natural Areas, (or the updated National Character Areas). Profiles for these areas contain a series of ecological objectives or opportunities to, for example, reinforce fragmented woodlands, re-establish hedgerows, or restore, create and manage grazing marsh. These objectives will help to shape both mitigation strategies for HS2 and to support, where appropriate, any wider programmes of enhancement or compensation (such as Living Landscape Strategies or Community Forests). They may also be coupled with initiatives on ecosystem services, which could be introduced in the future.

It is implicit in the first sentence that mitigation and enhancement are achievable and affordable, before the EIA has even assessed the impacts. There can be no contingencies if the EIA says otherwise – the route cannot be moved at that stage. As yet, most forms of mitigation and enhancement are unproven and some have failed – see Overview.

5.11. Biodiversity and wildlife - Western Leg
Internationally designated sites

Primarily the wetlands of the Cheshire Plain. ‘Extensive’ consultation with NE and EA with reference to several Screening Reports that I have not been able to find.

Nationally designated sites
5.11.6. The route would pass south of Abram Flashes SSSI and may give rise to impacts on surface water flows and quality, disturbance of birds (mainly during construction), and air
borne pollution both during construction and operation of the Golborne Depot. It is likely that all potential impacts would be substantially mitigated through design and implementation of the CoCP, as well as through sensitive planting to buffer the SSSI.

Selected as one of several places in the document where it is stated that disturbance will be mainly during construction, implying that there is no disturbance after construction and no residual impact. Both of these assumptions are very contentious.

Other important habitats
5.11.7. The scheme would have direct impacts on an estimated 19 Habitats of Principal Importance. It would affect eight woodland habitats, including five Ancient Woodlands, namely Whitmore Wood (near Whitmore), Leonards and Smokers Wood and Winnington Wood (near Lostock Gralam), Coroners Wood (near Partington) and Hancock Bank (north of Rostherne).
5.11.8. Seven areas of coastal floodplain and grazing marsh would be affected, mostly along the southern sections of the proposed scheme. Single areas of lowland meadow and purple moor grass habitat and rush pasture habitat would also be directly affected, as would two areas of traditional orchard.

Indicates widespread impact on important habitats, including ancient woodlands, leading to significant fragmentation at least. The nature of the impact is vague, but the following section implies loss in some cases. There is no discussion of this fragmentation and loss, its consequences, or its mitigation, but see next comment.

Natural areas and opportunities for biodiversity
5.11.10. The proposed route would cross four Natural Areas on the western leg, namely: Needwood and South Derbyshire Claylands; Meres and Mosses; Urban Mersey Basin; and a small part of the Midlands Plateau.
5.11.11. There would be a cumulative impact from the loss of woodland within the Meres and Mosses Natural Area, as these habitats are not well represented within the region. The loss of lowland meadow, purple moor grass rush pasture and fens in the Needwood and South Derbyshire Claylands would also be notable, as these habitats are of limited distribution but a key habitat within the Natural Area.
5.11.12. As stated in Section 4.13, a package of mitigation and enhancement measures will be considered as part of the EIA, which would seek to address both the direct impacts on designated sites, and to reflect the wider strategic ecological priorities of affected areas. They could be coupled with initiatives on ecosystem services, which could be introduced in the future.

This acknowledges the cumulative impact on important natural areas, including locally scarce woodland and fen. Action is a vague statement about seeking to address impacts with an equally vague statement about wider ecological priorities and ecosystem services – at some time in the future. There is nothing in the document that HS2 Ltd. could be held to account on.

6. Eastern Leg: sustainability issues
6.11. Biodiversity and wildlife

This section raises generically similar issues to the last.

Nationally designated sites
6.11.3. The proposed route largely avoids nationally designated nature conservation sites, and only two SSSIs - the River Mease and Bogs Farm Quarry - would be crossed by it. As discussed above, a detailed assessment of the River Mease has already been undertaken due to the river’s European protection. The conclusion that adverse effects to the SAC would be avoided is equally valid for the SSSI.
I have been unable to locate the assessment that supports the conclusion that adverse effects would be avoided.

6.11.4. Bogs Farm Quarry, east of the M1 at Selston, is designated a SSSI for wet, flushed grassland and unimproved species-rich grassland, as well as wet woodland along its northern edge. The narrowest central part of the site, which is largely wooded with secondary woodland, as well as smaller open areas possibly of wet grassland, would be crossed on viaduct. The largest area of species-rich grassland is in the eastern part of the site, away from the proposed viaduct. A potentially major impact would include habitat loss for construction and placement of viaduct piers, pollution during construction (although application of the CoCP should avoid this), shading, and changes in hydrology potentially arising from placement of viaduct piers in groundwater flows feeding flushed grassland. Design work will continue to seek effective mitigation through avoiding landtake and hydrological impacts. As discussed in Section 4.13, opportunities for enhancing habitats within the SSSI will be considered at the EIA stage.

It is stated that habitat loss and other effects 'should' be avoided by an as yet unwritten CoCP and enhancement accomplished by an unwritten EIA.

6.11.5. The proposed scheme would also pass near to a number of other SSSIs. These will be reviewed again once a more detailed design has been developed. However, through consideration of the respective sensitivities of each site, as well as the possible impact pathway from the proposed route, the AoS has identified a risk of ecological impacts to seven of these SSSIs, generally due to potential impacts from HS2 on surface and ground waters that link with the sites. These SSSIs comprise:

- Alvecote Pools SSSI, east of Tamworth;
- Lount Meadows SSSI, north of Ashby-de-la-Zouch;
- Lockington Marshes SSSI, west of Ratcliffe on Soar;
- Sellers Wood SSSI, north of Nuthall;
- Bulwell Wood SSSI, also north of Nuthall;
- Annesley Woodhouse Quarries SSSI, south of Kirkby in Ashfield; and
- Kirkby Wharfe SSSI, north of Church Fenton.

6.11.6. In all cases, it is most probable that the application of the CoCP would effectively mitigate potential construction impacts. Equally, any risk of hydrological impacts, were further investigation to confirm these, would be addressed through careful design to ensure that surface or groundwater flows were maintained. Risks of other impacts will need to be addressed through detailed design and mitigation.

Again, it is assumed an unwritten CoCP will provide effective mitigation.

Other important habitats and designated sites

6.11.7. The scheme would have direct impacts on an estimated 43 Habitats of Principal Importance. It would affect 28 woodlands, some of which are also ancient woodlands. In total, nine ancient woodlands would be directly affected. The majority of these woods are clustered in areas around Hucknall in Nottinghamshire (such as New Farm Wood and Watnall Coppice) and near Chapletown and Worsborough, to the north-east of Sheffield (such as Smitty Wood, Hesley Wood and Wombwell Wood). Woodlands are a key feature of both the Southern Magnesian Limestone Natural Area and the Coal Measures Natural Areas within which these two groups respectively lie.

6.11.8. There would be crossings of five areas of coastal and floodplain grazing marsh habitat and three areas of fen habitat, which would generally be crossed on viaduct or only peripherally affected. Other Habitats of Principal Importance that would be directly affected by the proposed route are quite widely distributed and include lowland meadows (four) and wood pasture and parklands (three).

6.11.9. Three Local Nature Reserves would be affected by the route, namely:
Nottingham Canal, designated for aquatic and associated habitats and crossed at Trowell west of Nottingham;
Norbriggs Flash, designated for its species-rich grassland and wetland habitats and crossed by the route east of Staveley; and
Carlton Marsh, designated for its wetland habitats and crossed along its eastern edge north-west of Cudworth.

6.11.10. Impacts to Nottingham Canal and Carlton Marsh would be minor given the potentially limited and peripheral habitat loss. However, the proposed route would cross the middle of Norbriggs Flash resulting in a more extensive impact.

6.11.11. Based on publicly available information, no county Wildlife Trust reserves would be directly affected by the proposed route.

Again, there will be widespread impact on a range of sites, but there is no explicit discussion of how they will be mitigated or a discussion of the landscape scale effects.

Natural Areas and opportunities for biodiversity
6.11.12. The proposed route would cross four Natural Areas on the eastern leg, namely: Trent Valley and Rises; Midlands Plateau; Coal Measures; and Southern Magnesian Limestone.

6.11.13. There would be a cumulative impact from the loss of woodland and lowland meadows within the Coal Measures Natural Area, as these habitats are characteristic within the region. The loss of wood pasture and parkland and associated habitats would also have a cumulative impact in the Coal Measures as these are a key feature but of limited distribution.

6.11.14. There would also be a cumulative impact of the loss of woodland within the Southern Magnesian Limestone Natural Area as these are characteristic and the primary semi-natural habitat within this intensely farmed landscape.

6.11.15. As stated in Section 4.13, a package of mitigation and enhancement measures will be considered as part of the EIA, which would seek to address both the direct impacts on designated sites, and to reflect the wider strategic ecological priorities of affected areas. They could be coupled with initiatives on ecosystem services, which could be introduced in the future.

As for Western Leg – there is an acknowledgement of cumulative impact on important natural areas. Action is a vague statement about seeking to address impacts with an equally vague statement about wider ecological priorities and ecosystem services – at some time in the future. The wording is identical. The handle is being turned, the boxes ticked.

4. Sustainability Statement Appendix E4 Biodiversity

2.1.5. The purpose of this report is as follows:
- To summarise information on the potential effects on sites of international, and national importance;
- Provide detail on the possible effects on sites of regional importance1 Local Nature Reserves (LNR), Ancient Woodland, UK Habitats of Principal Importance (HPI), and publicly accessible information on Wildlife Trust Reserves; and …..

2.4. Landscape strategies
2.4.1. A number of strategic landscape management tools that integrate ecological matters with wider landscape were considered. For example, Natural Area (NA) Profiles, National Character Areas (NCA) and Living Landscape Strategies (LLS). NA profiles were devised by the former English Nature as a tool for nature conservation planning at the landscape level.
They reflect the distribution of wildlife and natural features, underpinned by geology and land use patterns. NCAs are currently being updated, as such the AoS has used NA Profiles to convey the potential strategic ecological impacts of the proposed scheme.

This is the first explicit reference to landscape scale considerations in any of the documents. However, I have not found evidence for the application of landscape scale assessment of impact or landscape scale approaches to mitigation.

2.4.2. At the EIA stage a package of mitigation and enhancement measures will be considered (in consultation with Natural England (NE) and other wildlife organisations) to address the impacts on habitats and species. These measures would seek to address both the direct impacts on designated sites, and to reflect the wider strategic ecological priorities of affected areas (be these NAs, or the updated NCAs, LLS or similar). Profiles for these areas contain a series of ecological objectives or opportunities to, for example, reinforce fragmented woodlands, re-establish hedgerows, or restore, create and manage grazing marsh. These objectives will help to shape both mitigation strategies and to support, where appropriate, any wider programmes of enhancement or compensation (such as LLS or Community Forests). They may also be coupled with initiatives on ecosystem services, which could be introduced in the future.

Putting off for later all detailed consideration of mitigation and enhancement but still concluding there will be no significant impact. It assumes therefore that mitigation and enhancement will work – a common practice and probably a major factor behind continued biodiversity loss.

2.6. Geographical scope
2.6.1. The appraisal assessed the potential impacts of the proposed scheme on designated sites at varying distances, as follows:
- within 10km international sites;
- within 2km for national sites; and
- Intersection by the proposed route for sites of regional importance, including Ancient Woodland, HPIs, LNR, Wildlife Trust sites, the local hedgerow network and watercourses).

What are the criteria for selecting different distances for sites with different legal status? Status is not a measure of vulnerability.

2.7. Evaluation criteria
2.7.1. The criteria for assessing effects on the sites and habitats described in Paragraph 2.3.1 above reflect the preliminary nature of the appraisal, and its purpose in guiding route selection rather than providing a detailed impact assessment. They were applied at the AoS stage to evaluate the magnitude of effects of specific receptors in a given route section and have not been used to evaluate route-wide effects, which are described in this report.

- Major adverse effects are those that are a high priority (nationally or internationally significant) and of high magnitude, such as those which potentially permanently affect the integrity of a Natura 2000 site or a Ramsar site, and/or the special interest features of NNRs and SSSIs;
- Moderate adverse effects are those, which potentially affect sites of national importance, that can be mitigated through scheme design and/or which are not likely to affect integrity. They also include loss from sites of regional importance considered to be of sufficient extent to undermine the regional resource (as defined within the relevant NA Profiles. Where significant works such as diversions are potentially required to rivers of moderate or good WFD status, effects were assessed as ‘moderate adverse’. Large scale works at more than two locations on rivers of low WFD status were also classed as ‘moderate adverse’;
- Minor adverse effects are those, which potentially affect limited areas, permanently or temporarily, of sites of regional importance consisting of habitats that are widespread in the region. The significance of effects on hedgerows was generally assessed as ‘minor’ where...
well-connected hedgerow network was fragmented and occasionally ‘moderate’ where the hedgerow network provided linkages with Ancient Woodland or other HPI habitats. Minor effects were also recorded where hedges remained in an otherwise intensively arable landscape, and where removal would further compromise an already limited ecological resource; and

Negligible effects are those which potentially affect such small and isolated areas of habitat either permanently or temporarily, that they are unlikely to be significant at the regional level. All river crossings, which may require limited vegetation clearance around viaduct piers, but no impact on the channel was assessed as negligible adverse impact due to the limited effect of shading on marginal vegetation.

Acknowledges the “very preliminary nature of the appraisal” used to guide route selection. Details of the nature and magnitude of impact are entirely absent, so mitigation strategies and costs are as yet unknown.

I question definitions of major, moderate, minor and negligible adverse effects based primarily on the criterion of international, national or local status. On this basis a large number of local sites could be lost or badly damaged and the result described as minor adverse. That the designation is local or that the habitat is widespread is irrelevant –biodiversity is lost. It is government’s stated intent and obligation to halt biodiversity loss. This is not a strategy that will achieve this and no doubt goes some way to explain the well documented, continued losses of biodiversity.

Despite acknowledging the preliminary nature of the appraisal, and the almost total lack of evidence to support current mitigation strategies, many of the assessments assume mitigation will be successful – by implication, successful to the point that the effects are negligible.

I question whether an effect can be “assessed as ‘minor’ where well-connected hedgerow network was fragmented”, or “moderate’ where the hedgerow network provided linkages with Ancient Woodland or other HPI habitats." This seems crude and arbitrary. Both may cause major habitat fragmentation.

Is marginal shading really the only possible effect of a river crossing, as implied?

### 2.8. Reporting potential impacts

2.8.1. A precautionary approach has been adopted for sites of national value and below (which haven’t undergone previous assessment through the HRA). For example, the potential effects on qualifying or special interest features of SSSI’s have generally been considered likely to affect integrity, as there is insufficient information for a more detailed appraisal at this time.

2.8.2. In addition to the potential direct effects of habitat loss, and killing and injury of species, the following have been assessed for potential effects on ecological features:

- Loss of supporting habitat;
- Fragmentation of habitats;
- Water-borne pollution;
- Changes to ground and surface water flows;
- Disturbance of species; and
- Shading

How were these assessed? What were the methods and criteria?

### 2.10. Limitations
Areas of habitat loss had been derived from the preliminary likely extent of earthworks and therefore represent the loss occurring at construction. The final extent of permanent habitat loss is not known at this stage. Temporary landtake for construction would increase the overall scheme footprint and have long term impacts in terms of habitat loss. Habitat re-instatement would be undertaken as part of later mitigation proposals.

Only habitat loss is discussed, no consideration is given to degradation or fragmentation of surrounding habitat or whether mitigation will correct for these. It is also implicit that habitat re-instatement will be restore it to preconstruction conditions – this is unlikely in most cases – hence more loss.

3. FINDINGS – WESTERN LEG

3.1.2. The screening exercise is reported separately, but their conclusions are repeated below. In each case, given the alignment adopted and the impact avoidance measures to be used, no likely significant effects would occur at any of the sites.

I have yet to find the documents reporting the screening.

3.2.3. The proposed route and Golborne depot (HSM22 Lowton to Bamfurlong) comes within close proximity (minimum distance of 98m) of Abram Flashes SSSI. There is potential for changes in ground and surface water availability, disturbance of birds (mainly during construction), and air and waterborne pollution both during construction and operation of the Rolling Stock Maintenance Depot. It is likely that all effects could be partially avoided through design and implementation of the Code of Construction Practice, as well as sensitive planting to buffer the SSSI. Therefore, adverse effects are unlikely exceed moderate.

On what evidence is it assumed that disturbance to birds and other animals will occur only during construction? There is an extensive literature to show that birds are disturbed by operational roads, with significant effects on species diversity, population density and breeding success, up to 3 km away. The last sentence - are HS2 Ltd. saying moderate effects are acceptable?

3.3. Sites of Regional importance:

3.3.1. The proposed route directly affects a number of sites as follows:

- Five Ancient Woodland sites would be directly affected, with notable effects on Whitmore Wood, Leonards & Smokers Wood and Wimminloating Wood (HSM06 Swynnerton to Madeley), Coroner's Wood (HSM21 Warburton to Lowton), Hancock's Bank (HSM28A, Winterbottom to Rostherne).

- Eight HPI woodland sites would be affected. These tend to have limited habitat loss owing to their small size and peripheral nature of the impact.

Individual losses may be small but the area of disturbance and degradation could be much greater, as could the effects of fragmentation. If the sites are small, the zone of disturbance and degradation could encompass the whole site.

3.4. Natural Area Profiles

3.4.1. The cumulative impact from the loss of woodland (Ancient Woodland and HPI woodland) within the Meres & Mosses NA is a moderate adverse impact primarily due to substantial loss of habitat at Whitmore Wood (HSM06). The combined loss of HPI lowland meadow, purple moor grass rush pasture, coastal floodplain grazing marsh in the Needwood and south Derbyshire Claylands is a moderate adverse impact as these habitats are of limited distribution but are characteristic of pastoral agriculture that defines the NA.

This is quite an impact - and does not take into account disturbance, degradation and fragmentation.
National Trust Response to:
High Speed Rail: Investing in Britain’s Future
Consultation on the route from the West Midlands to Manchester, Leeds and beyond

4. FINDINGS – EASTERN LEG

4.1. Sites of European importance

4.1.1. An HRA screening exercise identified the potential for effects at one site of European importance, namely the River Mease Special Area of Conservation.

4.1.2. The screening exercise is reported separately, but conclusions are repeated below. Given the alignment adopted and the avoidance measures to be used in the design of the crossing a draft Appropriate Assessment has shown that there would be no adverse effect on the SAC. Further Appropriate Assessment would be carried out on the finalised design.

I have yet to locate documents covering the screening exercise or the Appropriate Assessment of the SAC.

4.2. Sites of National importance:

4.2.4. Alvecote Pools SSSI (HSL06 Birchmoor to Tonge) would be at potential risk from disturbance during construction, and water born pollution during construction and operation. There would also be a limited loss of supporting habitat and increased risk of bird strike. The potential for disturbance and bird strike are both limited by the M42 which is situated on embankment and viaduct between the site and route. Overall, effects on the site are likely to minor.

Again, it is implicit that disturbance only during construction is an issue, although bird strike is mentioned, for the first time in the document and not discussed further.

4.3. Sites of Regional importance:

4.3.1. The proposed route directly affects a number of sites as follows:
 Nine Ancient Woodland sites, with notable impacts to New Farm Wood and Watnall Coppice (both within HSL13) and Smithy Wood, Hesley Wood and Wombwell Wood (all within HSL16 Blackburn to Cold Hieendley). Impacts on these woodlands would be a moderate adverse effect.
 Twenty-eight HPI woodland sites. These are in addition to those which overlap with Ancient Woodland. Some of these sites are large and occur around Rennishaw, Hucknall (HSL13), Chapletown and Worsborough (HSL16) and would be a moderate adverse effect. Woodland also occurs in conjunction with wood pasture and parkland HPI at Strelley Hall (HSL13), Coleorton Park (HSL06) and Thrumpton Hall (HSL09); and along watercourses (e.g. along the River Tame HSL01 Water Orton to Birchmoor and the River Aire, HSL17 (Cold Hieendley to Church Fenton). These areas are generally small, isolated with peripheral habitat loss and would be generally a minor-negligible adverse impact.
 Five coastal floodplain grazing marshes are directly affected, but are generally a minor-negligible impact due to their small size and limited habitat loss.
 Three fen HPIs are crossed with notable impacts on one small site at Long Eaton (HSL12 Long Eaton to Sandiacre), which would be entirely removed and is a moderate adverse impact.
 Wood pasture and parkland would be directly affected. Notable impacts occur around Strelley Hall (HSL13), where wood-pasture and parkland, lowland meadow and HPI woodland habitat are crossed in close proximity. These are a moderate adverse impact.
 One LNR Norbriggs Flash (HSL13), crossed by the proposed route on viaduct through the centre of the site with a loss 2.6% of the total site area. This is of moderate adverse impact.
 Two further LNRs would be crossed by the route Carlton Marsh, (HSL16), designated for its wetland habitats, would be crossed on viaduct with a loss at construction of 2.2% of the site. Nottingham Canal (HSL13) would be crossed on embankment and 5.6% of site would be lost. In both cases impacts would be limited and peripheral, and minor adverse.

This adds up to very significant landscape scale effects, even without degradation and fragmentation, which are again ignored.
4.4. Natural Area Profiles

4.4.1. Southern Magnesian Limestone NA (HSL13) and Coalfield NA (HSL16) are where most of the adverse impacts are located with particular focus around Chapletown, Worsborough (HSL16) and Hucknall (HSL13). The cumulative loss of Ancient Woodland and large areas of HPI woodland would be of regional importance and a major adverse impact.

4.4.2. Ancient and HPI woodlands are a key feature within the Coal Measures NA (part of HSL06, 17 and 13 and all of HSL12, 14 Killamarsh to Tinsley, 16, 21 Cold Hendley to Woodlesford, 22 Woodlesford to Hunslet and 31 Hunslet to Neville Street) and their cumulative loss would be of regional importance and a major adverse impact.

4.4.3. Within the Southern Magnesian Limestone NA, there would be cumulative loss of lowland meadow HPI in a cut and cover tunnel at Strelley Hall (HSL13), and under a viaduct at Bog’s Farm Quarry SSSI and east of Pinxton (HSL13). Species rich grassland is a key habitat within this NA and is highly fragmented and of very limited distribution and there would a moderate adverse impact.

Again this adds up to very significant landscape scale effects, even without degradation and fragmentation, which are again ignored.

4.5. Other sites and features

4.5.1. Along the proposed route, the condition of the hedgerow network and related features including trees and ponds varies depending on the dominate land use. Where the route crosses the Midlands Plateau (part of HSL01), Trent Valley and Rises NA (part of HSL 01 and 06) and the Southern Magnesium Limestone NA (part of HSL 13 and 17) intensive arable cropping has a general weak hedgerow network and associated features. The impact on these features is of minor adverse effect.

4.5.2. Conversely, in the Coal Measures NA (northern part of HSL06, southern part of HSL17, northern part of HSL13 and all of HSL12, 14, 16, 21, 22 and 31) the hedgerow network is notably stronger in areas dominated by pastoral land use, with frequent trees and ponds. The cumulative impact from the loss of these features and the severing of connectivity over a large distance is of moderate adverse impact and of regional importance to this NA.

4.5.3. Potential effects on the smaller watercourses are generally negligible adverse based on the assumption that no in-channel works will be required. If alternative engineering options are taken forward on watercourses with a WFD status of moderate–good potential / quality then impacts could be minor adverse. However, there is potential for moderate adverse impact on five rivers comprising the River Rother (HSL16), River Doe Lea (HSL14,16), River Erewash (HSL12, HSL13), River Aire (HSL17, HSL21) and the River Calder (HSL17, HSL21) due to the cumulative impact of multiple crossing points and the potential for in-channel works including diversions.

One of the few references to fragmentation. Acknowledges significant regional impact, describes it as moderate, but this is subjective in the absence of rigorous evaluation.

5. National Trust land: site-specific considerations

The HS2 documents do not explicitly address likely impact on NT sites

Hardwick Estate, Doe Lea, Chesterfield

The route will cut through centre of the estate, alongside the existing M1. Together they will create a formidable barrier to wildlife and be a major source of habitat degradation (noise, light and chemical pollution) and wildlife mortality. Their effects will be additive - it cannot be argued that the damage has already been done by the M1 and will not be increased significantly by HS2. The challenges to wildlife of the fences and cuttings of HS2 are different to those posed by the open, busy and noisy environment of the M1. Crossing points for wildlife are likely to be too few and it has yet to be demonstrated that wildlife uses either over or under the road structures in
sufficient numbers to protect populations effectively – see Overview. Widely-spaced, small underpasses are unlikely to be effective at making HS2 permeable to wildlife. A tunnel would remove the problem entirely, but could cause problems of its own during construction and spoil removal. One alternative would be green bridges – wide, planted (with trees and shrubs) overpasses that provide an essentially seamless landscape bridge across the track. They have been built in Europe, N. America and Australia, but the jury is still out on their effectiveness. They would have to be seen as experimental and monitored effectively. In the light of the experimental nature of such crossing points, and to work towards the ‘no net loss’ policy on biodiversity, some compensation should be sought. This could be through habitat improvement on the east or west of the road/rail system, but the greatest gains could be made on the west. The current poor state of the Doe Lea river and ponds would be another target for improvement.

**Dunham Massey, Altrincham, Cheshire**

**Tatton Park, Knutsford, Cheshire**

HS2 will pass between these two estates and very close to both - it will in fact wrap around both to some extent. It will therefore isolate each from the other and both from the surrounding landscape, contributing to the fragmentation already caused by the M6 and M56 and associated developments. The effects on both estates are likely to be hard to quantify. However, this is an opportunity for improving ecological links between the two estates and between other important wildlife sites in the area – a co-ordinated and ambitious plan involving the NT and other NGOs perhaps.

**Nostell Priory, near Wakefield, West Yorkshire**

A rolling stock depot will be within 1 km (the line 3 km). Limited impact, perhaps some disturbance from noise and light pollution, but there is already major industrial activity even closer to the NE.

**Shugborough Estate, Milford, near Stafford, Staffordshire**

HS2 would pass 1 km north of estate. No specific grounds for concern for biodiversity.

**Calke Abbey, Ticknall, Derby, Derbyshire**

HS2 would pass 2.5 km SE of the estate and it is unlikely there will be significant direct biodiversity impact.
6. References


APPENDIX 10: WATER RESOURCES AND FLOOD RISK
National Trust: HS2
Phase 2 Consultation: Water Resources and Flood Risk
Summary

This report outlines a review of how water-related issues are covered in the documentation prepared by the HS2 team as part of their initial Phase 2 proposals. It has been prepared for the National Trust and focusses particularly on issues that may affect its properties close to the proposed line. These are in the Dunham Massey and Hardwick Hall areas.

The HS2 assessments to date have been at a very high level. Whilst key issues are identified there is a need for more analysis to be carried out – both in terms of a broader scope and a greater level of detail. It is too early for HS2 to identify specific impacts on National Trust properties and to propose mitigation measures.

Issues identified are summarised below.

General
- Large-scale issues have only been reviewed superficially. More detailed studies are required.
- Local / small scale issues are yet to be identified.
- Substantial survey, data collection, modelling and assessment work is required.
- These points are recognised by HS2.

Watercourse crossings and fluvial flooding
- Only watercourse / floodplain crossings of 100m or more have been specifically considered.
- Very simple initial assumptions have been made regarding viaducts, embankments and culverts. Detailed reviews are required on a crossing by crossing basis. Changes to proposals are likely to occur.
- Detailed hydraulic modelling should be carried out for the crossings of the River Bollin and the River Doe Lea, both close to National Trust properties.

Groundwater
- The groundwater assessment has focussed on water quality. Only major abstractions are assessed.
- There are also likely to be many small water supplies close to the proposed routes.
- The issue of groundwater flooding has been acknowledged but not considered yet.

Reservoir inundation
- The implications of reservoir inundation flooding are still to be considered by HS2. There is no indication of how this will be assessed.
- This will be relevant for the route as a whole. It may also have implications for National Trust land.

Construction issues
- The documents only cover the long-term scenario. Consideration is required for construction issues – particularly water quality at Hardwick, where several affected watercourses flow into National Trust land.

National Trust lands
- HS2 notes that the line cuts through National Trust lands at Hardwick Hall.
- Limited reference is made to Dunham Massey, which is within about 2km of the western leg.
- The high level of assessment means HS2 is unable to identify specific impacts on these lands.
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1. Introduction

The HS2 team has published consultation documentation for the route from the West Midlands to Manchester, Leeds and beyond. This comprises several documents and associated plans. These include:

- The main consultation document;
- A sustainability statement;
- Topic area technical reports, including water issues;
- Sets of plans covering the proposed routes.

The documentation relates to both the western and the eastern arms.

The National Trust has properties close to / crossed by the proposed routes and so is interested in understanding the issues that might impact on these sites. Thus, it has engaged HR Wallingford to review and comment on the water-related aspects of the technical assessment methodology used by HS2, as described in the various documents, and particularly in the Water technical report. This note provides a summary of the review, with sections on information from the three main HS2 documents referred to above.

The properties of interest are as follows:

- **Dunham Massey** – western leg of HS2, between Lymm and Altringham;
- **Hardwick Hall** – eastern leg of HS2, between Tibshelf and Bolsover;
- **Stainsby Mill** – eastern leg of HS2, immediately to the north of Hardwick Hall.

The two main areas comprise country houses and associated gardens and parks, along with additional estate lands in the surrounding areas.

2. Main Consultation Document

The main Phase 2 consultation document *(Consultation on the route from the West Midlands to Manchester, Leeds and beyond, HS2, July 2013)* outlines the reasons for promoting the scheme and the anticipated benefits. It also describes the proposed routes, stations, etc., and how it is proposed to integrate the scheme with other utilities. There is a section explaining sustainability impacts of the proposed route.

There is specific mention of Hardwick Hall – a National Trust property south of Bolsover. The proposed route in this area runs close to the M1 motorway and cuts through the National Trust lands. There is brief mention that the western line passes close to the National Trust’s land at Dunham Massey – which is approximately 2km east of the line.

In the sustainability summary of the document (Section 9) it is noted that about 80 sustainability criteria have been used in the assessment of options, with increasing detail being applied as the number of route options was reduced.

In the “Water resources” section (9.4) it is noted that there will be a need to divert or to modify some river channels and that this could exacerbate flood risk in some places. It is stated that each crossing will be examined in detail to help determine the most appropriate alignment. Flood risk issues at stations will be addressed with the Environment Agency.
Although no EIA has been undertaken, environmental issues have been taken into account in the development of the proposals to date. An EIA will be carried out when any refinements to the proposals have been made.

This document has not been reviewed in detail, as it does not contain significant information on the possible impacts that would be relevant to the review requested by the National Trust.

3. Sustainability Statement

3.1. Introduction

Whilst the route is described in the Executive Summary the description of the section close to Dunham Massey is incorrect. Whilst it is stated that it is in cutting in the Bollin Valley this is only true for a short length in the northern part of the valley, in the Mossbrow area. Within the rest of the valley the alignment is above ground level for about 2.8km, from about 0.5km north of the M56. Some parts will be in excess of 6m above the existing ground level. This includes approximately 350m of viaduct over the River Bollin. The description in paragraph 2.2.10 – the more detailed description of the proposals - appears to be correct.

The statement only considers long-term issues, and not any construction impacts. However, it is stated that these are to be reviewed in future EIA.

Initially general comments are made on the issues covered, followed by more specific comments related to the western and eastern legs of the proposed line.

3.2. Sustainability impacts – water resources and flood risk (4.14)

The text presented in the sustainability statement is general in nature, so this commentary is also general. However, some key points are worth noting.

3.2.1. Water Framework Directive

In paragraph 4.14.1 of the Sustainability Statement it is stated that “The next phase of work will need to carry out a screening assessment of all crossings of surface and groundwater bodies in order to determine which of the crossings will be subject to a WFD assessment and where necessary to make recommendations for the early collection of data”. Whilst this process must be carried out it is considered that this should be extended further, so impacts on nearby water bodies, not specifically crossed by the line, are also considered. Whilst seemingly a small point it may pick up a few additional water bodies that should be reviewed.

3.2.2. Watercourse diversions

The document rightly identifies the need for hydraulic modelling of rivers at the EIA stage where there will be watercourse diversions. This will also tie in with flood risk issues. In some cases existing models may be available and suitable. However, there is likely to be a need to develop existing ones and to create some new models.
3.2.3. Flood risk

Whilst flood risk is recognised as being an important issue the flood risk assessment is clearly at a very early stage. It is recognised that construction of works in a floodplain can obstruct flows, reduce flood storage and so affect the risk of flooding of upstream areas. A loss of flood storage can also affect downstream flood risk, but this is not stated.

Simplistically, viaducts have initially been assumed for all locations where the HS2 centreline crosses flood zone 2 (floods during a 1 in 1,000 year event) and the flood extent is in excess of 100m. However, when a more detailed consideration is given to these some may be amended to incorporate embankments. Considerable changes should be anticipated.

All smaller crossings are assumed to be embankments, which may or may not be appropriate. Comments are also made on the risk of flooding to the railway infrastructure and other possible sources of flooding.

It is clear that flood risk assessment work is at a very preliminary stage.

3.2.4. Reservoir inundation

Another potential source of flooding is from the failure of a dam or from some other form of water impounding structure – such as a canal embankment. Whilst this is acknowledged in the document no work has yet been done to consider this at any locations (see Section 4.14.9 of the Sustainability Statement).

3.2.5. Groundwater

Possible impacts on groundwater have been considered, focussing on water quality issues for strategic aquifers, and the sensitivity of these to pollution. This is important, where aquifers are used for potable water supplies. Whilst some preliminary work has been carried out it is advised that detailed groundwater risk assessments will be carried out in collaboration with the Environment Agency. Mitigation measures will then be incorporated into the design and construction methodology. It is stated that the impacts on non-potable groundwater abstractions (e.g. agricultural and industrial uses) will also be considered, with appropriate mitigation measures.

Whilst the possibility of groundwater flooding is noted it is stated that this has not been assessed at this stage, but will be assessed in the EIA.

3.3. Western leg

Comments in the Sustainability Statement specifically related to the western leg are considered here.

3.3.1. Watercourse crossings and flood risk

In considering watercourse diversions and flood risk issues it is clear that so far consideration has only been given to major watercourses. For example, 21 watercourse crossings are identified, where the floodplain is 100m or more wide. However, there are known to be another 100 other watercourse crossings and canals that have been identified but not yet assessed.

In the area close to Dunham Massey the River Bollin and the Warburton Park Brook crossings have been identified for viaducts, but the Bridgewater Canal and various tributaries of the River Bollin are not even
mentioned, as the crossings are considerably shorter. It is acknowledged that more detailed study will be required, to develop solutions that meet the requirements of the Environment Agency and other bodies.

The diversion of only one "medium" watercourse is proposed. This is in the Northwich area and will have no impact on land near Dunham Massey.

3.3.2. Groundwater

Whilst it is stated that the proposed route passes through 4 areas of sensitive groundwater (related to water quality) none are close to Dunham Massey. It is stated that groundwater risk assessments will be required to prove that there are no adverse water quality impacts on these or any other groundwater bodies.

3.3.3. Reservoir inundation

It is noted above that another potential source of flooding will be from the failure of a dam or from other forms of water impounding structure – such as a canal embankment.

In the Dunham Massey area there is currently the potential for inundation if there were to be an upstream dam failure. The Environment Agency has published reservoir inundation maps, which indicate areas that might be affected. These were produced as part of a high level national assessment and the modelling method was relatively simple – with drainage structures frequently not included in the models. This means that the mapped flood extents are not always particularly accurate. However, they do indicate a potential problem.

A failure of any of the following reservoirs / lakes could result in inundation in the Bollin valley, in the region of Dunham Massey:

- Tatton Park Mere
- Lamaload Reservoir
- Radnor Mere
- Dunham Massey Lake.

The Environment Agency’s Reservoir Inundation Map (RIM) indicates a large area in the Bollin valley would be affected by such a failure. A failure of the Lamaload Reservoir would flood the largest area – indeed, in the valley this would be a greater area than the 1 in 1,000 year fluvial flood outline.

HS2 currently plans to cross the Bollin River on viaduct, to allow up to a 1 in 100 year fluvial flow plus climate change. However, in the event of flooding due to a reservoir failure any embankments either side could impound and / or divert floodwater, possibly affecting some new areas. As the National Trust has a large land holding on the upstream side of the proposed crossing it is possible that its land could be adversely affected. This issue has yet to be assessed by HS2.

Whilst this is an important point to consider it should be balanced by the fact that such a failure in the UK is extremely rare.

In addition to assessing hydraulic issues associated with such a failure another matter to consider is the potential reduction in land value. Some land may currently not be affected by such an inundation, but could be in the future if it were in an amended reservoir inundation area. This could affect its development potential, and thus its value.
The RIM can be seen on the Risk of Flooding from Reservoirs tab of the following Environment Agency website: [http://watermaps.environment-agency.gov.uk/](http://watermaps.environment-agency.gov.uk/). This is a relatively new addition to the website.

It is noted that in developing the mapping in this area no consideration appears to have been given by the Environment Agency to the flood flow that would occur in both directions along the Bridgewater Canal, which passes through the National Trust land ownership. This is not surprising, as the modelling to produce such mapping is generally fairly coarse.

The implications of reservoir inundation are an important issue to be considered in more detail for the route as a whole. This may have an effect on National Trust land.

3.3.4. Surface water

This has not been considered to date and will need to be reviewed, both for potential impacts to the line, stations and other proposed facilities, as well as on adjacent areas. Whilst the Environment Agency publishes maps of potential surface water flooding, through the same web page as the RIM mapping, this is also a high-level map, with the modelling often not including many local drainage features. Thus, a more detailed assessment may be required.

Whilst the Environment Agency mapping indicates many areas of National Trust land at Dunham Massey to be susceptible to surface water flooding it is anticipated that any effects of the line would be localised, and will not impact on the estate. However, this issue should be included in the detailed flood risk assessment.

3.4. Eastern leg

Comments in the Sustainability Statement specifically related to the eastern leg are considered here.

3.4.1. Watercourse crossings and flood risk

In considering watercourse diversions and flood risk issues it is clear that consideration has only been given to major watercourses. For example, 31 watercourse crossings on the eastern leg have been considered, where the floodplain is 100m or more wide. However, there are known to be another 115 other watercourse crossings and canals that have been identified but have not been considered.

In the area close to Hardwick Hall no watercourses have been identified in the 100m or more category.

The River Doe Lea crosses the proposed route close to the estate. There are some other small watercourses, but these are also not mentioned. It is acknowledged by HS2 that more detailed work will be required to develop solutions that meet the requirements of the Environment Agency and other bodies.

The need to divert 5 “major” watercourses and 3 “medium” watercourses has been identified. However, none of these are near Hardwick Hall and so will not have any impact on the National Trust land. Whilst diversions have also been identified for 19 “minor” rivers the locations of these are not given.

3.4.2. Groundwater

Whilst it is stated that the route crosses some aquifers of good quality and yield it is also advised that no public water supplies would be directly affected by the eastern leg. Substantiation of this is not given.

In addition, 4 significant non-potable water supplies were identified. It is stated that “all four non-potable abstractions appear unlikely to be significantly affected as a result of proposed scheme. This is based on the
fact that the abstraction boreholes would not appear to be directly impacted by the scheme and that best-practice construction techniques would be employed to protect the groundwater resources from pollution”.

The wording of this is quite general and suggests that no detailed / site-specific assessment has been carried out.

3.4.3. Reservoir inundation

It has been noted above that another potential source of flooding is from the failure of a dam or from some other form of water impounding structure – such as a canal embankment.

Within the Hardwick Hall estate there is potential for local inundation due to a failure of either the Miller’s Pond or the Great Pond. However, these are east of the M1 and should not be affected by the HS2 works. In addition, any failure of these should not impact upon the proposed HS2 line.

3.4.4. Surface water

As also advised for the western leg, this issue has not been considered to date and will need to be reviewed, both for potential impacts to the line, stations and other proposed facilities, as well as on adjacent areas.

The Environment Agency’s surface water mapping indicates land at and upstream of the National Trust’s Stainsby Mill to be susceptible to surface water flooding. The construction of an additional embankment west of the M1 will have some local effects, which will be predominantly west of the M1. Any effects at Stainsby Mill are likely to be small. None-the-less, this issue should be included in the detailed flood risk assessment part of the EIA.


4.1. Introduction

This document provides additional description of the methodologies used in the assessments carried out so far. It also provides details of the individual locations considered. To date it has been a very high level assessment of all water-related issues.

4.2. River diversions

4.2.1. Introduction

The classifications for the different types of watercourse are described. These are as follows:

- **Major**: catchment area of 50km² or more;
- **Medium**: catchment area less than 50km², but either defined by the Environment Agency as a “main river” or having an area shown on the Flood Zone maps to be at risk of flooding;
- **Minor**: all remaining watercourses.

The necessary river diversions that have been identified by HS2 are noted below. However, it is possible that additional diversions will be identified as the proposals develop.
It is stated that diversions will be designed to accommodate flows predicted for a 1 in 100 year event, plus climate change impacts. Whilst this is quite reasonable it is also important that the potential impacts of a more severe event are considered, even if ultimately nothing is done to specifically cater for them.

4.2.2. Western leg

In addition to one “medium” watercourse requiring diversion it is noted that 11 “minor” watercourses could require diversion. A brief note is given on each of these. Whilst two are tributaries for the Rover Bollin they are on the spur line into Manchester and well to the south of the Dunham Massey area.

4.2.3. Eastern leg

In addition to the 5 “major” and 3 “medium” watercourses requiring diversion 19 “minor” watercourses could require diversion. A brief note is given on each of these. The only one in the area of Hardwick Hall is on the River Doe Lea, about 2km to the south of the property. It is proposed to be a temporary diversion (during the construction of the M1 crossing) but may be retained permanently. (Note: the River Doe Lea will be crossed in several places. This location is not to be confused with a crossing of the same river immediately to the north-west of Hardwick Hall).

4.3. Groundwater

4.3.1. Introduction

Further information is given on the appraisal of groundwater issues. Firstly, it is confirmed that this was a high level screening assessment, concentrating on groundwater abstractions in excess of 1,000m$^3$ per day (potable and non-potable). Possible impacts on these were assessed using information already available, with no new survey work or other analysis. A key aim was to identify issues where early engagement with regulating authorities would be beneficial or where long-term monitoring might be required.

With this in mind the assessment did not consider the many smaller sources – often small-scale private water supplies – many of which may be close to the route and may be affected. It has also not considered the impacts of tunnels and cuttings on groundwater conditions, or the possibility of groundwater flooding.

Thus, there is considerably more investigation required to identify all potential groundwater issues.

4.3.2. Western and eastern legs

As noted previously none of the groundwater abstraction sites that were considered are near Dunham Massey (western leg), or Hardwick Hall (eastern leg). No detailed review of the information of these has been made.

4.4. Viaduct crossings

4.4.1. Introduction

Viaducts have been assumed for all crossings of watercourses where there is 100m or more of flood zone 2 (floods for a 1 in 1,000 year event) to be crossed. This is a simplistic approach.
In section 2.3.4 it is stated: “Flood water levels (for the 1000 year flood) were estimated by comparing the outline of Flood Zone 2 with the Digital Terrain Model (DTM) by identifying the location of the flood zone edge on the profile drawing and taking the ground level at that point. … and the water level rounded up to the nearest integer”.

More accurate data is available from the Environment Agency for such an assessment. However, this is a reasonable initial approach if all that was required at that stage was the flood level to the nearest metre.

4.4.2. Western leg

A 340m long viaduct is proposed over the River Bollin to the north-west of Dunham Massey. It will be located a short distance upstream of an existing disused railway embankment that also crosses the river. Whilst this existing structure probably restricts flows this does not appear to be reflected in the predicted floodplain extent reproduced on the HS2 route plan. This flood area will be from the Environment Agency’s flood zone mapping. As is particularly common in rural areas there may be some simplifications in the modelling.

The level of the proposed line is such that the viaduct would not be very high. In view of this, and the downstream disused railway, a different solution - such as embankment and culverts - may be proposed. It is vital that detailed hydraulic modelling be carried out here, to reflect both the existing situation and the proposed situation. As noted in section 3.3.3 the issue of reservoir inundation areas should also be considered.

A second viaduct is proposed near Dunham Massey. This would be 160m long and cross the Warburton Park Brook. This would be about 4.5km to the north-west of Dunham Massey, on the far side of the old railway embankment and close to the Manchester Ship Canal. There is only a small catchment upstream, so there is likely to be consideration given to constructing the crossing as an embankment with one or more culverts, rather than as a viaduct. Because of the location and distance it is unlikely that there will be any influence from the crossing on Dunham Massey itself. However, some parts of the overall estate are closer, so there is a possibility that they could be affected.

In addition there are two viaducts proposed across steep valleys that act as tributaries to the Bollin River, on the spur into Manchester. Both are about 3.5km to the south-east (upstream) of Dunham Massey. Due to shallow depths being available and the restriction of the adjacent M56 it is recognised that detailed hydraulic modelling in this area will be required.

4.4.3. Eastern leg

There are no proposed viaducts in the vicinity of Hardwick Hall. The nearest is 9km to the north (Poolsbrook Viaduct across the River Doe Lea).

There is a proposed non-viaduct crossing of the River Doe Lea, a short distance north-west of Hardwick Hall, and about 300m west of the National Trust's Stainsby Water Mill. Because the watercourse here falls into the “minor” watercourse category no information is provided.

The M1 lies between the HS2 line (to the west) and Stainsby Mill (to the east). In addition the Stainsby Pond is about 500m upstream of the river crossing. Because of the various features of the watercourse detailed modelling should be considered when developing the crossing proposals.
4.5. Station assessments

4.5.1. Introduction

Issues related to watercourse crossings and diversions, flood flow obstructions and flood storage at and close to stations have been considered by HS2. However, as these areas are not in the vicinity of the National Trust properties these issues have not been reviewed.

5. Key Issues

Key issues that have been identified are as follows:

5.1. General

- The HS2’s assessment of water-related environmental issues has so far been at a high level.
- Whilst probably adequate at this stage it should only be considered as a very initial review.
- Large-scale issues have only been reviewed superficially. There is a need for far more detailed studies.
- Many local / small scale issues are yet to be identified. These will also require detailed assessments and mitigation measures.
- Substantial surveys / data collection / modelling / assessment is required.
- The above requirements are generally recognised in the HS2 documents.
- HS2 states that it will assess all water bodies that are crossed by the route under the Water Framework Directive. However, this should be extended to cover nearby water bodies as well.

5.2. Watercourse crossings and fluvial flooding

- Only watercourse / floodplain crossings of 100m or more have been considered and presented.
- The risk of increased flood risk due to work at watercourses / in floodplains is recognised but not adequately expressed. Whilst risks to others can be increased both upstream and downstream, the potential increase in downstream risk is not acknowledged.
- Simple assumptions have been made regarding where viaducts will be provided across floodplains, and where embankments and culverts may be used. This requires detailed review on a crossing by crossing basis. During this many changes to the proposals may occur.
- It is clear that flood risk assessment work is at a very preliminary stage.
- Detailed hydraulic modelling should be carried out during the development of proposals for the crossings of the River Bollin and the River Doe Lea, both of which are close to National Trust properties.

5.3. Groundwater

- The groundwater assessment has focussed on water quality.
- Only major abstractions have been assessed. This excludes the many small water supplies that are likely to be close to the proposed routes.
The need to consider groundwater flooding has been acknowledged but not considered yet. It is to be covered in the EIA.

5.4. Reservoir inundation
- The implications of reservoir inundation are yet to be considered by HS2.
- This is a relatively new issue. It is acknowledged but there is no indication of how HS2 will assess this.
- This is important from hydraulic and land use/planning perspectives.
- It will be relevant for the route as a whole and may have implications for National Trust land.

5.5. Surface water
- The issue of surface water flood risk is noted, but is to be considered during the detailed flood risk assessment. This is a reasonable approach.

5.6. Construction issues
- The documentation only refers to the long-term situation. Detailed consideration is required for construction issues – particularly water quality matters in the Hardwick Hall area, where several watercourses that will be crossed by the line then flow into/through National Trust land.

5.7. National Trust lands
- HS2 notes that the line cuts through National Trust lands at Hardwick Hall.
- Limited reference is made to Dunham Massey, which is within about 2km of the western leg.
- A description of the line within the summary of the Sustainability Statement as being in cutting close to Dunham Massey is incorrect. However, it appears to be correct elsewhere.
- The level of assessment so far carried out means that HS2 is unable to make specific comments on the potential impacts on these lands, or any mitigation measures.
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