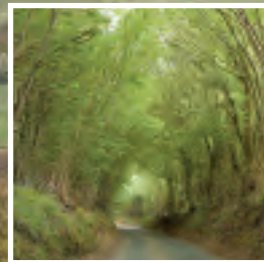
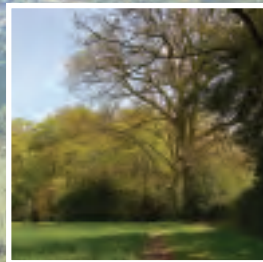
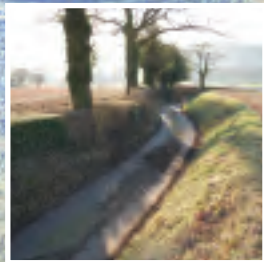


BUCKINGHAMSHIRE'S MITIGATION

BLUEPRINT FOR HS2

Seeking the best, if it comes to the worst



FOREWORD



Buckinghamshire is the 'Entrepreneurial Heart' of England with more new businesses established per head than anywhere else in the country. We are used to driving and embracing change and growth whilst preserving what is unique and best about our county. Recent examples include new housing and businesses

around Aylesbury, the Handy Cross development in High Wycombe and East West Rail across the north of Buckinghamshire. High Speed 2 however is a major challenge. It will do significant damage to the Metropolitan Green Belt, the nationally designated Chilterns Area of Outstanding Natural Beauty and much of Aylesbury Vale. Were the business case robust, had all alternatives been examined and found inadequate and had the project formed part of a clear integrated Transport Strategy we might well have accepted the project but this is clearly not the case. It is very poor value for taxpayers' money and far better alternatives exist. As local authorities we therefore have maintained our principled opposition to the scheme.

Nevertheless, throughout we have always stated that we want the very best possible outcome for the residents of the county. We have therefore sought to work with HS2 Ltd to ensure that, should the scheme proceed, the very best mitigation is put in place. The current 'engagement' process is convoluted and disjointed from the perspective of local people. We have therefore come together with a wide range of environmental and countryside organisations to propose and describe what we all believe to be the minimum acceptable mitigation required for the scheme. The mitigation in this 'Bucks Blueprint' covers more than just immediate screening. It involves specifying landscape value, heritage sites, roads, rights of way, noise standards, tree planting schemes, new local green infrastructure, new tunnelling, viaducts and much more including the endowments necessary to maintain the mitigation into the future.

When announcing the so called 'Y' route north of Birmingham, the Department for Transport made much of the fact that it had been designed to reduce, as far as possible, environmental damage, including damage to national AONBs. We hope that by adopting the proposals in this 'Blueprint' similar principles can be applied retrospectively to the areas between London and Birmingham. Should HS2 proceed we

hope that all will agree that it should be known as an example of the very best of British design and mitigation. An inspiration to the world and not an ugly eyesore designed down to the very lowest cost.

We trust that this Blueprint will form the basis of a constructive and positive dialogue between the bodies endorsing it and HS2 Ltd, the Department for Transport and indeed the Government as a whole.

A handwritten signature in dark ink that reads "Martin Tett". The signature is fluid and cursive, with a long horizontal stroke at the end.

Martin Tett
Leader

Buckinghamshire County Council
March 2013

ENDORSEMENTS

CHILTERN DISTRICT COUNCIL

Chiltern District Council fully endorses the Bucks Blueprint – the mitigation plan for HS2 through Buckinghamshire. Whilst we remain fundamentally opposed to the High Speed 2 Rail Line and the campaign against it remains active, we recognise that there is a need to produce a comprehensive mitigation plan for the county.



SOUTH BUCKS DISTRICT COUNCIL

South Bucks District Council is totally behind the Bucks Blueprint. Should the HS2 project go ahead, it is essential that we set out the highest standards of mitigation for the HS2 line through Buckinghamshire and the best outcomes for our communities.



WYCOMBE DISTRICT COUNCIL

If HS2 goes ahead it is of utmost importance that the best possible mitigation is put in place to effectively minimise the impacts of this project on our beautiful countryside, residents and businesses. This document sets out our expectations for mitigation making it clear that the highest standard is needed to ensure that the intrinsic value of the landscape with its history, wildlife, tranquillity and views is conserved not only for now but for future generations.



AYLESBURY VALE DISTRICT COUNCIL

We remain opposed to the current proposals for HS2 and do not believe this is the right solution to the rail capacity and economic challenges the country is facing. However, we also recognise that we need to make sure that we secure the best possible outcomes for the residents, businesses and visitors to the Vale, should the proposals go ahead. We therefore very much welcome the aims of the Bucks Blueprint and support the principle of ensuring that the impact of HS2 is minimised and properly mitigated for.



CHILTERN'S CONSERVATION BOARD

The Chilterns Area of Outstanding Natural Beauty is a nationally designated area which confers on it the highest level of protection. Any development which would cause damage has to be shown to be in the national interest and demonstrate why it cannot be located elsewhere. The Chilterns Conservation Board's policy is that the route of HS2 should avoid the protected AONB. The Board accepts that this may not be possible.

If, after all the conditions have been satisfied and the route cannot avoid crossing the Chilterns AONB at its widest point then an alignment and design which minimises adverse impacts should be chosen. This means doing everything possible to ensure that it cannot be seen, heard or felt, and the design of all structures must respect the outstanding protected natural setting and be to the highest international standard. The Board's preferred mitigation option is a continuously bored tunnel for the full length through the AONB.

If the AONB designation is important to Government and society then it is imperative that large infrastructure projects such as HS2 demonstrate the highest possible standards of design, care and concern. The Board is confident that this Blueprint begins to articulate how this might be achieved.



NATIONAL TRUST

If HS2 goes ahead, it is essential for people and the places they love that it is the best it can possibly be. This mitigation blueprint clearly sets out principles which must be adopted to ensure HS2 is exemplary in all aspects. The consensus around these principles and coordination of specific requirements for different locations across Buckinghamshire will leave the Department for Transport, and HS2 Ltd, in no doubt about our expectations.



BERKS, BUCKS & OXON WILDLIFE TRUST

A project of the scale of HS2 will have inevitable ecological impacts. If HS2 proceeds along the current route the principles in this Blueprint should help ensure that the aims of the government's policy of "providing net gains in biodiversity where possible" are achieved.

Berkshire
Buckinghamshire
Oxfordshire



CAMPAIGN TO PROTECT RURAL ENGLAND

The Chilterns AONB is a nationally protected area and the closest to our capital city, London. Why, when there are alternatives available, does the government insist on devastating it? All means, as predicated in this document, should be used to minimise the impact of such a hugely expensive and inadequately justified project.



BUCKINGHAMSHIRE THAMES VALLEY LOCAL ENTERPRISE PARTNERSHIP

The Mitigation Blueprint is a great example of what Buckinghamshire is good at – working collaboratively, drawing on the thoughts and innovative ideas of individuals and communities to develop plans that are realistic, pragmatic and deliverable, endorsed by a broad range of partners. The BTVLEP hopes that the Buckinghamshire MPs and the Secretary of State for Transport can also endorse the Mitigation Blueprint and ensure that if this mistake proceeds then the proposals are embraced fully by the HS2 project.



BUCKS BUSINESS FIRST

HS2 threatens to derail one the UK's most productive economies here in Buckinghamshire . Having weathered the recession and returned to growth, HS2 threatens to undermine the competitiveness of one of Britain's most productive and fastest growing local economies by adding to the cost of doing business by increasing journey times, reducing firms' ability to borrow and invest and by despoiling Buckinghamshire's natural landscape.



HS2 is bad news for Buckinghamshire's business. This scheme offers poor value for money for the country as a whole while offering nothing but disruption and delays for Buckinghamshire business and jeopardising our reputation as a destination for inward investment and tourism.

For the 3,000 Buckinghamshire businesses within 2 miles of the line, HS2 promises years of lost productivity through disruption and delays without the promise of any benefit on completion. HS2's outlay can best improve the UK economy, including Buckinghamshire's, by investing instead in broadband and other local infrastructure to help all businesses trade and compete, not just the 13 per cent in cities with HS2 stations.

If HS2 goes ahead then mitigation action must be taken wherever possible to prevent Buckinghamshire carrying the scars of this project for decades to come.

NATIONAL FARMERS UNION

The NFU supports the Buckinghamshire HS2 Blueprint and seeks similar outcomes for its own members. We will not oppose HS2 but will work to protect the interests of farmers, landowners and rural businesses, aiming to reduce the adverse impacts and to achieve the maximum benefits.



THE RAMBLERS' ASSOCIATION

We fully endorse the County Council's expectation that the rights of way network and the green infrastructure should be maintained and, where possible, improved should construction of HS2 on the currently proposed route go ahead; we also agree with the importance of mitigating visual and noise impact, particularly in (but not limited to) the Chilterns AONB.



We are very grateful to all who have offered their opinions, contributions and time to this document. Such wide ranging support has ensured that we have accurately reflected and addressed the views and concerns of Buckinghamshire residents.

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1

BACKGROUND

The risk is that transport policy can become the pursuit of icons. Almost invariably such projects – ‘grand projects’ – develop real momentum, driven by strong lobbying. The momentum can make such projects difficult – and unpopular – to stop, even when the benefit:cost equation does not stack up, or the environmental and landscape impacts are unacceptable.

– Sir Rod Eddington, The Transport Study, 2006

HIGH SPEED 2

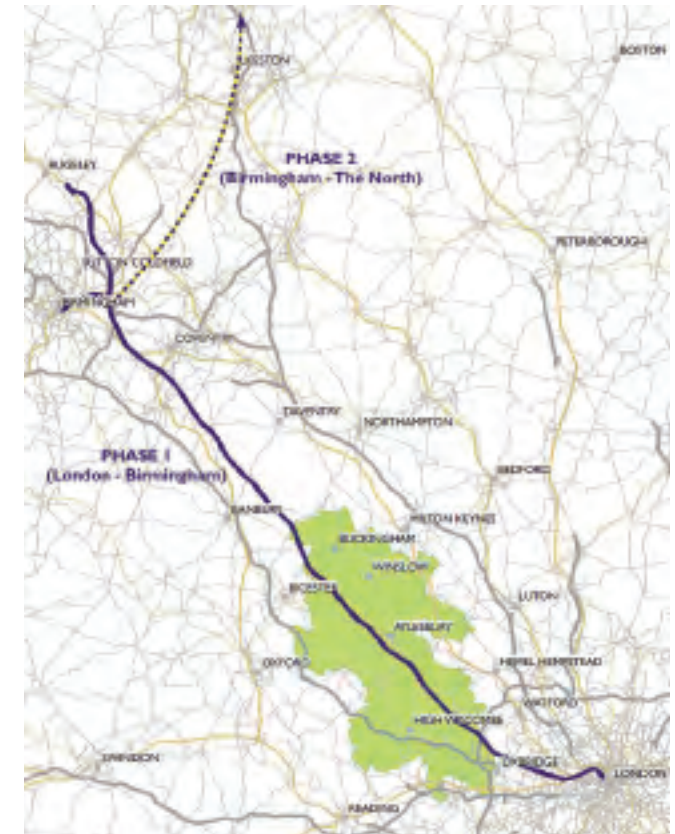
High Speed 2 (HS2) is a new railway, proposed to run from London to Birmingham and later, to Leeds and Manchester. The Government is promoting HS2 as a flagship project which it claims will bridge the north-south divide. HS2 plans to use 400m long trains built to European standards; with each carrying 1100 passengers. Initially 14 trains will run every hour in each direction rising to 18 trains per hour. The design speed of the line is 400 kph (250mph).

The decision on whether and how to proceed with HS2 is of major economic, social and environmental importance to Britain. This section sets out the reasons for developing the Mitigation Blueprint and why we expect the Government to accept the principles and act upon the plans that it contains.

The Mitigation Blueprint

The Buckinghamshire Councils are not opposed to high speed rail in principle and accept the need for key improvement to national rail infrastructure. They are, however, opposed to HS2 because they believe that its business case is fundamentally flawed and represents very poor value for money for the UK taxpayer. HS2 makes a negligible (if any) contribution to the country's carbon reduction target, whilst the environmental and social impacts will be devastating. Further, the claims about wider economic benefits are at best wildly exaggerated and certainly far from convincing. More than anything else, as we struggle with the worst recession in peace-time, the country cannot afford HS2, a project that will cost at least £33 billion based on HS2 Ltd's own figures. In addition, £8 billion will be required for the trains and a further significant sum as yet unquantified but certainly in the billions, will be required for taxes such as irrecoverable VAT depending on the project funding arrangements. It is entirely possible that the final cost, at today's prices, will be close to £50 billion.

Since the proposals were first published, the Councils and key stakeholders like the Chilterns Conservation Board and the National Trust have worked to assess their impact on Buckinghamshire and to co-ordinate and represent the views of affected residents. While all Councils remain vehemently opposed to the line, all recognise that it is important to achieve the best outcomes for individuals and communities should our objections be ignored, overlooked or overruled and the project proceed despite its inherent flaws. With no stations and no connections planned to the classic rail network within Buckinghamshire, there are no



potential benefits for the county, only loss, disruption, upheaval and devastation of both landscapes and livelihoods. The Mitigation Blueprint has therefore been developed to set out the best possible mitigation for HS2 through Buckinghamshire, addressing issues that arise from the direct and indirect impacts of the route. It includes mitigation and compensation measures that are:

- The highest standard
- Practical, feasible and reasonable
- Aligned with community expectations and concerns

- An enhancement to the environment in Buckinghamshire.

It will also seek to address existing infrastructure deficits and maximise economic development opportunities.

Whilst the National Planning Policy Framework (NPPF) states that every developer should as a minimum address environmental issues to an acceptable standard, it is not unreasonable to demand HS2 to deliver more and achieve betterment.

Buckinghamshire in Context

HS2 bisects Buckinghamshire for approximately 60 kilometres from south-east to north-west, about a third of the total route between London and Birmingham. The proposals show the line entering the county after crossing the Colne Valley on a viaduct, and then, shortly before passing under the M25, entering a 13 kilometre tunnel under the Chilterns, passing under Chalfont St Giles and to the south of Amersham Old Town. It then emerges in the centre of the Chilterns Area of Outstanding Natural Beauty (AONB) in an area of Ancient Woodland to the east of the A413 and west of Hyde Heath. The proposed line continues to the east of the A413, mostly in shallow cutting, before crossing over the A413 south of Wendover and then runs generally at ground level to the west of Aylesbury. It passes to the east of Waddesdon in cutting and then follows the alignment of the Aylesbury - Quainton railway line and continues to Calvert. It then generally follows the alignment of the disused railway as far as Newton Purcell before passing east of Turweston in a deep cutting, leaving the county to pass north of Brackley.

Engineering Impacts

Many impacts of the HS2 line are a consequence of engineering measures needed to operate the railway.

From South to North, these include:

- Colne Valley viaduct – 3600m long – noise and visual impacts will be felt in Buckinghamshire
- Chilterns tunnel – 13325m long with portals (2); intervention shafts (4) and related construction sites
- Green tunnels at South Heath and Wendover – 1100m and 1280m long
- Long viaducts at Wendover Dean and across the A413 south of Wendover, both 500m long.



High Speed Rail

To achieve high speeds the track needs to be relatively straight with few gradient changes (vertical alignment) and curves (horizontal alignment). Unlike HSI, the route proposed for HS2 does not follow existing major transport corridors to achieve such minimal changes, and consequently has a huge impact upon both rural and urban environments, with major environmental and ecological effects.

A **reduction in speed** could deliver many benefits throughout the route in Buckinghamshire with minimal impacts on journey time. Greater use could be made of current or disused railway infrastructure and the increased flexibility of the route could avoid sensitive sites. Noise impacts would also be reduced accordingly.

- Culverted embankments across the Aylesbury flood plain and Thame Valley viaduct
- Small viaducts over the River Ray and flood plain near Finemere Wood at Quainton – 50m and 100m long
- Infrastructure maintenance depot at Steeple Claydon / Calvert
- Viaducts over flood plain at Twyford – 310m and 280m long; Chetwode – 650m long;
- Viaduct over Great Ouse and flood plain at Turweston – 300m and 140m long
- Green bridge at Turweston – 100m long



Mitigation Hierarchy

We demand HS2 Ltd, as far as possible, to avoid damage and minimise impacts through the design of the line, both vertically and horizontally. Impacts should be addressed through the use of supporting infrastructure and design elements (such as noise barriers). Where damage cannot be avoided, features should be repaired or reinstated where this can be achieved. Finally, only when these higher options have been explored, should compensatory measures be offered, such as biodiversity offsetting.

We also wish to emphasise that HS2 Ltd's own project specification sets out the following requirements:

The project shall seek to avoid direct or indirect harm to landscape, water and ecological resources, to mitigate adverse impacts where necessary, and to enhance such resources where practicable. Measures to achieve this will be commensurate with the sensitivity of the resource and will reflect the level of protection afforded such resources through relevant laws and policies.

HS2 Project Specification 2012 section 6.4



Key Mitigation and Compensation Measures

We expect:

- The highest quality of design throughout;
- Because of the impact on the Chilterns AONB, an extended bored tunnel from Mantles Wood to Nash Lee Road.

Colne Valley

- Mitigation for wider Colne Valley to be developed in partnership with border authorities and other stakeholders
- High quality design standards for viaduct
- Best possible noise mitigation measures from viaduct
- Low level naturalistic planting beneath the viaduct
- Mitigation to minimise ecological impact on lakes and ancient woodland and impacts on wintering birds during and post construction
- Compensation by providing wetland habitat or enhancement of existing habitats
- Provision of a circular walking and cycling route
- Improvement of leisure opportunities linked to the lakes, Grand Union Canal and other bodies of water
- Measures to compensate for the loss of tranquil and environmentally rich areas
- Provision of alternative areas within walking distance and /or improvement of bus services to enable access to other similar areas

Chilterns – Chalfonts and Amersham

- Robust hydrological assessment is needed to protect water sources, such as the River Misbourne, Shardeloes Lake and the chalk aquifer
- Sensitive design, noise mitigation and screening of tunnel ventilation shafts
- Mitigation of potential vibration impacts on medical equipment at Amersham Hospital and the Epilepsy centre
- Mitigation of vibration impacts on all listed buildings
- Accommodation for footpaths that cross Bottom House Farm Lane – to separate users from vehicles accessing ventilation shafts
- Road changes designed in line with the local environment and character (using The Environmental Guidelines for the Management of Highways in the Chilterns)
- Adequate monitoring to ensure there is no impact on water flow and quality in sensitive habitats above ground

Chilterns – Mantles Wood to Nash Lee Road (Extended tunnel option)

- Mitigation of vibration impacts on all listed buildings
- Sensitive design, noise mitigation and screening of tunnel ventilation shafts
- Designed to avoid impacts on ancient woodland, including full protection of Mantles Wood Ancient Woodland
- Maintenance and preservation of all walking routes in any tunnel gap
- Road changes designed in line with the local environment and character (using The Environmental Guidelines for the Management of Highways in the Chilterns)

Aylesbury and Stoke Mandeville

- Provision of wetland habitat to compensate for impacts on Aylesbury Sewage Works Local Wildlife Site
- Investigation at St Mary's Church, Stoke Mandeville, to be exemplary providing opportunities for learning, a suitable memorial and appropriate treatment of gravestones
- Investigation at Fleet Marston to be exemplary providing opportunities for learning and appropriate curation and storage of these and other finds
- Full integration of National Trust proposals for landscape treatment around Aylesbury, including Hartwell House
- Sensitive realignment of A418 to minimise impacts on residents and design the road in keeping with the setting
- A contribution to improve the Scheduled Ancient Monument setting at Quarrendon to offset heritage impacts
- Realignment of A4010 (Risborough Road) and improvements to link via Terrick and Nash Lee Road
- Footpath network to be maintained, providing enhanced links west of Aylesbury and Stoke Mandeville

- Creation of a linear park in the land between the proposed line and the western edge of Aylesbury
- A contribution and endowment for the creation and ongoing upkeep of a museum in Aylesbury
- National Grid pylons to be buried underground
- Landscape bunding around maintenance/recovery loop
- Lighting regimes that minimise light pollution in a dark area
- Adequate noise protection from 24 hour operation

Waddesdon and Quainton

- Improvement to the A41 / Waddesdon Hill junction and respecting the setting of the Grand Lodge
- Realignment of A41 to the north of Waddesdon alongside the proposed HS2 route
- Realignment of Station Road at Quainton to ensure it maintains its current alignment and enables access to Buckinghamshire Railway Centre
- Creating Lowland Meadow Habitat as compensation for direct land loss at Grendon, Doddershall Meadows and Finemere Wood Meadows
- Creating a green tunnel in this area to mitigate the full range of ecological and visual impacts
- Any direct land-loss at Sheephouse Wood should be compensated by additional woodland planting on the margins of the site unaffected by HS2
- Measures to mitigate impact on the Bechstein's bat (one of UK's rarest mammals) such as habitat compensation and maintaining current movement corridors
- Mature vegetation on north east boundary of Waddesdon Manor to be protected and maintained during both construction and operation
- New routes at Fleet Marston to create an off-road cycleway between Aylesbury and Waddesdon south of HS2

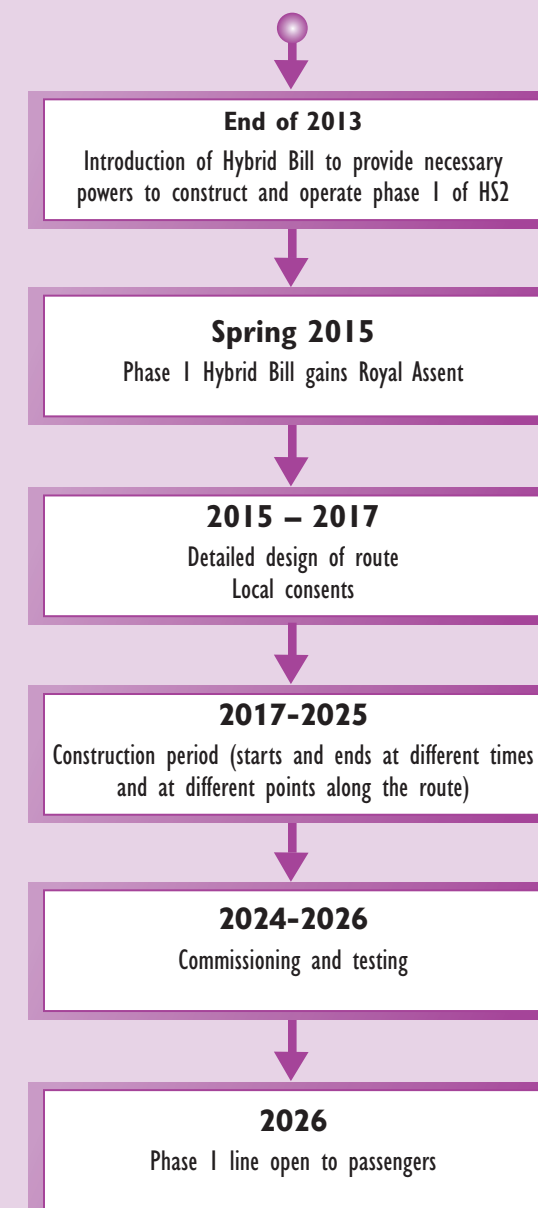
Calvert, Twyford, Chetwode and Steeple Claydon

- Maintain the route of Perry Hill as close to its current alignment as possible
- Secure a net gain in wet grassland in the Calvert area
- Create an alternative nature reserve with visitor access as compensation for impacts at Calvert Jubilee BBOWT Nature Reserve
- Mitigation to ensure ecological impacts on other Local Wildlife Sites is minimised, compensated by creating appropriate wildlife habitats
- Measures to mitigate noise and visual impacts must be provided at Twyford between the disused rail line and the new HS2 route
- Measures to mitigate the impacts of the Infrastructure Maintenance Depot must be provided including: a landscape bund on the Steeple Claydon side of the depot, a lighting regime to minimise light pollution, noise protection
- A new rail station on the East West Rail route at Steeple Claydon
- Create a green tunnel at Chetwode to mitigate visual and noise impacts, or a partially retained cutting with effective sound absorbent lining
- Maintain and improve the existing footpath network

Newton Purcell and Brackley – Turweston and Westbury parishes

- Extending the proposed green bridge to improve access and connectivity
- Creating a Helmdon Cycleway / Westbury Circular Ride
- Compensating direct land loss at Turweston Manor Grassland Local Wildlife Site by creating Lowland Meadow and Fen Habitat
- Low noise surfacing provided on realigned A43 Brackley bypass and effective noise mitigation of A43 as it crosses the HS2 line
- Ideally providing a deep bored tunnel at Turweston with at minimum a partially retained cutting with effective sound absorbent lining
- National Grid pylons to be buried underground
- Providing land to replace the loss of Turweston playing field
- Maintaining and improving the existing footpath network
- Measures to mitigate noise impacts at ground level and on low viaduct over River Ouse at Turweston Grassland site, similarly at Westbury viaduct

TIMETABLE FOR HS2 PHASE I



KEY REFERENCES

Environmental Guidelines for the Management of Highways in the Chilterns. Published by Chilterns Conservation Board, Buckinghamshire County Council, Bedfordshire County Council, Hertfordshire County Council and Oxfordshire County Council. March 2009. -HS2 Project Specification. HS2 Ltd. January 2012.

51m Alliance - <http://www.51m.co.uk/>



The Mitigation Blueprint aims to safeguard the amenity, quality of life and economic sustainability of Buckinghamshire residents, visitors and businesses.

The following section sets out our key concerns and demands split into thematic chapters.

Mantles Wood near Hyde Heath: an irreplaceable ancient woodland which will be destroyed by HS2
Chiltern Conservation Board

2

THEMATIC ISSUES

LANDSCAPE & VISUAL IMPACT

Key principle:

...To ensure that landscape and visual impacts are comprehensively assessed and that proposals are designed to eliminate or mitigate adverse impacts and enhance the landscapes through which they pass

Landscape is about the relationship between people and place, and it provides the setting for our day to day lives. Landscape is not just about special or designated areas and is not only the countryside. It can be a small patch of urban wasteland as much as a park and garden, and it is a consequence of the way that different parts of the environment, both natural and cultural, interact and are perceived by us. People's perceptions turn land into landscape.

Our concerns:

Buckinghamshire has both a distinctive and varied mosaic of landscapes, unique to the County in the wider landscape of southern England. HS2 would have a massive impact on a range of ecological, cultural, visual and archaeological features. Our concerns, therefore, are that the overall impact of the project will not be properly considered across the range of

landscape components, since we have seen no evidence to date that HS2 Ltd have looked at these impacts in sufficient depth.

We are particularly concerned about the visual impact of HS2 in the following areas:

- The Chilterns AONB, a nationally protected area
- The Vale of Aylesbury including the Bernwood Forest
- The urban edge of Aylesbury
- Near historic and attractive villages such as the Chalfonts, Quainton and Turweston
- Intrusion on ancient woodland habitats
- The Infrastructure Maintenance Depot at Steeple Claydon / Calvert

Our expectations:

We expect HS2 Ltd to mitigate the visual impacts on people, both residents and visitors, whose outlook and visual amenity are impacted by the line, train operations and associated infrastructure:

- In the EIA framework we expect HS2 Ltd to identify all landscape and visual issues associated with the line, and support the conservation and enhancement of Buckinghamshire's distinctive and protected landscapes
- The assessment must include publically accessible viewpoints that are important from an ecological, cultural heritage and topographical perspective
- HS2 Ltd must develop and implement a high quality framework for mitigation. For example, 'green bridges' which may support wildlife movement must also be sensitively designed to blend into the surrounding landscape, and where possible be



Highest design standards

We expect an independent Design Review Body to be established to review, advise and influence the design quality of proposed structures and mitigation measures. It is essential that such a Body has early involvement to ensure that the line and its associated infrastructure and features represent civic pride, enduring design and world class standards. These standards should be enshrined in the Hybrid Bill. For significant structures we expect there to be international design competitions.

We are inspired by the following quote from the British author and historian Kenneth Clark about Brunel's Great Western Railway and expect that the same dedication to design and detail will be evident should HS2 proceed:

"Every bridge and every tunnel was a drama, demanding incredible feats of imagination, energy and persuasion, and producing works of great splendour."

Kenneth Clark

HS2 will impact so many people and so many environments that anything less would be unacceptable.

incorporated with access routes. Other options include appropriate planting schemes, earthworks, and sensitive design of infrastructure

- Structures in the most sensitive areas (such as River Great Ouse Valley, Thame Valley and Wendover viaducts) should be subject to international design competition

- HS2 Ltd must ensure that noise impacts are considered as part of the landscape assessment and their effect on tranquillity
- HS2 Ltd must properly mitigate landscape impacts in the Chilterns. The AONB is a nationally designated area with the highest level of protection, and the project should reflect the partnership approach to the protection of the area, providing a range of landscape scale and local community benefits. This can achieve maximum benefits by engaging and collaborating with communities and the public, private and voluntary sectors
- The impacts on the Vale of Aylesbury landscape must be comprehensively assessed, since there are local landscape designations that merit recognition



View of Aylesbury vale
National Trust

ECOLOGY & WILDLIFE

Key principle:

...Wherever possible, to avoid damage and reinstate habitats, or where this cannot be avoided, to offset the adverse impacts on habitats and species caused by the construction and implementation of HS2. Our principles are to: secure a net gain in biodiversity, maintain and increase habitat connectivity, and ensure management and monitoring measures are improved.

Throughout Buckinghamshire rare and protected species and habitats can be found; from the chalk grassland and beech woodlands in the Chilterns to the wet meadows and internationally important bat population in the Vale of Aylesbury. The Chilterns Area of Outstanding Natural Beauty (AONB) contains an important diversity of habitats including the country's most extensive areas of beech woodland. The Chilterns' rounded hills are part of the chalk ridge which crosses England from Dorset to Yorkshire and the familiar beech and bluebell woods of the Chilterns attract millions of visitors each year.

Our concerns:

The HS2 route cuts directly through Buckinghamshire's rural and urban landscapes with serious and irreversible impacts on local ecology and wildlife. Areas of serious concern include:

- Temporary and permanent land-take
- Severance
- Barrier effects, fragmenting habitats
- Noise and visual disturbance

- Light pollution
- Dust deposition
- Water quality affected by surface water run-off
- Hydrological effects

Impacts on species may include loss or damage to habitats, collisions with trains, disturbance, and prevention of dispersal and migration. Any negative effect on Buckinghamshire's ecology and wildlife has impact on the region's biodiversity and ecosystems, and may in turn damage the local economy in terms of outdoor pursuits, tourism and natural flood or air quality protection.

The area-based sections deal with some specific sites, but these are just provided as examples since it would be impossible to reference all impacted sites. Some habitats, such as hedgerows and arable field margins, will be impacted along large parts of the line in Buckinghamshire.

There should be no loss of Ancient Woodland, which is irreplaceable and the richest land based habitat in the UK. Development such as HS2 in the vicinity of ancient woods may cause disturbance in many ways, such as: disrupted hydrological function; changes to soil structure; and noise pollution. The footprint of the line, associated infrastructure such as tunnel vent shafts, and construction camps should be placed well away from such sensitive sites. We also expect there to be no damage to internationally important chalk streams.

Our expectations:

We expect full, comprehensive and appropriate mitigation measures to be developed to the highest standards and provided in all cases where land take or damage to ecological assets is deemed unavoidable by

the proposed route of the rail line:

- We expect the Environmental Impact Assessment to assess fully the impacts on protected and / or rare species and habitats, including for species and habitats away from the line, such as chalk rivers impacted by changes in hydrology and the severance of mammal commuting lines
- We expect the EIA to suggest appropriate monitoring schemes for the construction period and for a defined time once operational. Should these identify impacts on ecological sites and wildlife are worse than expected or not recovering, we expect appropriate action to be taken to remedy the situation and ensure the long-term survival of species and habitats
- We expect the effects on hydrological features and wider ecological implications to be explored, supported by detailed and accurate studies on how the route may alter the relationships between water tables, ground and surface water flows with habitats and wildlife throughout Buckinghamshire. We also expect HS2 Ltd to set out mitigation proposals where negative impacts are likely to occur
- If the EIA has failed to determine the impacts in a particular location, we expect a precautionary approach to be adopted, assuming that areas are of interest until it can be proved that they are not
- We expect all opportunities to incorporate biodiversity in and around HS2 to be maximised
- We expect HS2 Ltd to seek to extend or link habitat fragments such as woodland or quality grasslands and to ensure that any land needed to create wildlife

corridors is safeguarded as early as possible

- We expect mitigation measures to be based on international best practice and informed by detailed and robust studies and relevant surveys
- We expect HS2 Ltd to work with relevant stakeholders to identify areas – in particular ancient woodland – where woodland buffers are required. Woodland buffers provide a physical barrier to many forms of disturbance.
- We expect HS2 Ltd to take account of the provenance of any trees planted as mitigation or as compensation. Ideally they should be locally grown to ensure they reflect the local landscape and are as resistant as possible to disease.
- We expect HS2 to provide endowments to support the long term management of new habitats planted as compensation for loss or damage elsewhere.

There are four key areas we expect the EIA to address:

1. Net-gain of biodiversity

We want to ensure that environmental offsetting for unavoidable impacts on wildlife habitats leads to a net gain in Buckinghamshire's biodiversity, using DEFRA's method for Biodiversity Offsetting. Offsets are activities designed to deliver biodiversity benefits and compensate for losses, in a measureable way. We expect HS2 Ltd to work with local authorities, and wildlife organisations to implement a positive system for offsetting. This also applies to populations of species and offsite habitat creation must be undertaken ahead of construction to enable habitats to mature and species to adapt.

2. Maintain and increase connectivity

Connectivity is critical, as the project will lead to fragmentation and severance of habitat corridors. It is very important therefore that the proposed 'green bridges' are designed to allow animal movements where necessary. HS2 must lead to increased connectivity, to allow migration in the face of climate change.

3. Improved management

Where impacts on habitats cannot be avoided or mitigated, we expect a focus on both the creation of new habitats and the enhanced management of existing sites. DEFRA's Biodiversity Offsetting and Buckinghamshire's Biodiversity Opportunity Areas should be used for reference.

4. Monitoring

We expect comprehensive and long-term monitoring schemes to be established to monitor the effectiveness of both mitigation and offset. These schemes must include measures to adapt mitigation and offset if it is found to be failing.

As a minimum, we expect HS2 to be completed, in line with the National Planning Policy Framework, especially in terms of:

- Minimising impacts on biodiversity
- Facilitating the change from a net loss of biodiversity to achieving net gains for nature
- Promoting the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species

SOUND, NOISE & VIBRATION

Key principle:

...To ensure appropriate and acceptable thresholds for noise and vibration impact are identified and adhered to - for different noise sources, for different receptors and at different times. Above all, noise should be minimised and all reasonable mitigation measures provided, with a clear recognition of tranquil environments and the importance of them remaining tranquil.

Noise is a subjective term often used to refer to an unwanted sound. Noise effects, however, are harder to appreciate because of the different impacts and types of noise and vibration on people and property. Noise, vibration, and harshness (NVH) is the study and modification of the noise and vibration characteristics of various forms of transport. While sound and vibration can be easily measured, noise – including descriptors such as ‘harshness’ – is subjective, and considered either by ‘jury’ evaluations, or with analytical tools that provide results reflecting human impressions.

Types of Noise Impact

To appreciate the types and likely impacts of noise the following sets out the main causes of railway sound, noise and vibration:

AIRBORNE NOISE

Direct airborne noise includes the following:

- Mechanical noise from motors, fans and ancillary equipment on the train – tends to be the dominant source at low speeds
- Rolling noise from wheels passing along the rails – tends to dominate between low speed and higher speeds of up to 300km/h
- Aerodynamic noise from air flow around the train body, pantograph and bogie areas that start to become prevalent at high speeds (over 300km/h)

Airborne noise from railways can be mitigated in the following ways:

- At source, through advanced rolling stock and track design
- On the propagation pathway, using barriers and earth bunds
- At the receptor by using noise insulation
- By constraint on speed and frequency of operation

STRUCTURE RADIATED AIRBORNE NOISE

Airborne noise also includes structure radiated noise, for example from viaducts.

Structure radiated noise from railways can be mitigated by damping the track structure, using resilient baseplates, resiliently supported ties or floating slab track.

GROUND-BORNE NOISE & VIBRATION

Ground-borne noise and vibration consists of:

- Ground-borne vibration (tactile vibration)
- Ground-borne noise (audible low frequency ‘rumbling’ sound generated inside rooms by low amplitude vibration of walls, floors and ceilings)

Ground-borne noise and vibration from railways can be mitigated by incorporating vibration isolating track forms, for example floating slab track or booted sleepers.

Our concerns:

We are concerned that the EIA for this proposed project will use noise studies of HSI as the primary source of information, and this is clearly not appropriate as HSI has a very much lower design and operational speed and a lower frequency of operation than that proposed for HS2. The source noise of HS2 trains will also be higher. In addition, HSI had its original route changed to remove it from the AONB and close to major traffic corridors. While HSI, therefore, may be of interest and could offer guidance it cannot, and should not be the primary guidance indicator.

We are also concerned that the noise levels deemed acceptable by HS2 Ltd are too high, not least the criterion of 85dB for pass-by events. This exceeds the World Health Organisation guidelines of 60dB LpAF, max, and we believe that HS2 should be aiming higher rather than lower. We also believe that the noise effects should be based on existing situations, i.e. whether the route is passing through urban, suburban, or countryside areas. Further, there was little

reference to noise mitigation in the draft Scoping Report, and expected mitigation standards are not included.

Mitigation using sound barriers could create significant effects in other ways – they could be entirely unsympathetic to the landscape, reduce visual amenity and be detrimental to ecological concerns. Noise mitigation should not just focus on the provision of physical barriers but consider how the railway might be integrated into the landscape using land swaps, mounding or re-contouring. Whilst not the cheapest solution they must respect the environment.

Our expectations:

It is important to define both adverse and significant adverse effect in terms of noise. It is agreed that there is no one noise metric that can judge the subjective response to a given noise exposure. It is therefore effectively impossible to equate a single noise metric that defines the categorisation of effect. As a result, the Significant Observed Adverse Effect Level (SOAEL) is likely to vary for different noise sources, different noise receivers and at different times.

Whilst recognising these difficulties, we believe that any noise analysis in the EIA must consider populations in rural environments as well as those in urban environments and we expect HS2 Ltd, as a matter of course, to adopt the best available noise mitigation for both rural and urban areas. Furthermore:

- We expect the EIA to identify not only the likely significant effects (both positive and negative) and the description of planned measures to avoid, reduce and if possible, remedy those effects, but also to set out thresholds at which improved mitigation will be required
- We do not agree that the WHO 'Guidelines for Community Noise' are an appropriate single standard to use because they relate to steady and continuous noise, and underestimate annoyance from intermittent noise such as railway noise. We therefore suggest that the scope should be extended to those areas within 45 dB LpAeq (day) and 35 dB LpAeq (night)
- We do not accept that rural areas should suffer noise increases because they are relatively 'quiet'. It is unfair to use the same impact criteria for urban areas (already exposed to significant noise levels) and for quiet rural areas. Likely effects of operational noise must be assessed using absolute noise criteria for daytime and night time
- We expect HS2 to embrace higher standards than other projects and develop sensible approaches to noise assessment that acknowledge the uniqueness of the project. This should consider both airborne and ground-borne noise, and should set out the scope of assessment, and the magnitude of the impacts
- Ground-borne vibration is a very distressing effect and retrospective mitigation is very difficult. We therefore expect HS2 Ltd to construct the route so that ground-borne noise is largely inaudible in residential areas
- We expect the indirect impact of noise barriers to be mitigated (e.g. by bunds, grading appropriate to the local landscape and associated planting) even if this requires a greater land take, rather than just being used as vertical barriers.

TRAFFIC & TRANSPORT

Key principle:

... To ensure that HS2 (i) maintains a safe and efficient transport environment for all users; and (ii) safeguards or provides an appropriate, adequate and workable transport infrastructure network, including highways, public transport facilities, stations, interchanges and depots.

Traffic and transport impacts are an important consideration in any proposed development. As a new transport project affecting the whole of Buckinghamshire, HS2 will automatically affect existing transport networks across the county. Most importantly, the effects during the construction period will need to be managed to create minimal disruption.

Our concerns:

We are concerned that during both the construction and operational phases of HS2, there will be negative and potentially prolonged impacts on both transport users and the transport network across Buckinghamshire. We also have significant concerns about possible road and junction realignments or changes that are included within the proposals and may present safety or access issues during the construction period. Inevitably the proposals will also increase pressures on parts of the transport network, either as a consequence of diversions or additional construction traffic movements. Further concerns during the construction phase relate to the disruption of existing rail services and impaired access to railway stations; and to the disruption and diversion of public rights of way.

Our expectations:

- We expect the traffic and transport assessment to consider impacts on all transport users, the county's transport infrastructure and all journey purposes
- We expect it to include a clear and detailed transport model that identifies all impacts, and where these are in any way negative, further work must be done to change, improve or enhance the proposals to maintain the efficiency and safety of Buckinghamshire's transport network
- We expect HS2 Ltd to carry out detailed traffic surveys and modelling to inform their transport models. We also expect important effects to be assessed including (a) road layout changes / road widening / junction changes / road closures / rights of way; (b) changes in traffic, public transport, pedestrian and cyclist flows; (c) changes to journey times and distances; and (d) access changes for homes, businesses and other establishments
- We expect the design of any changes to be appropriate to their setting, with the use of bespoke solutions especially important in sensitive or designated areas
- We expect routes used for construction traffic to be clearly identified, maintained and used by all, with any breaches monitored and enforced
- We expect these routes to use appropriate roads that have least impact on the local environment and communities

- We expect road closures to be avoided, except in exceptional circumstances. Any closures will be sequenced appropriately and include sensible diversions

We also demand consultation to continue throughout the construction and operational phases with the transport authority, Buckinghamshire County, District and Parish Councils within Buckinghamshire, Department for Transport, Local Enterprise Partnerships, Local Nature Partnerships, Local Access Forum and Network Rail.



Wendover

SOCIO-ECONOMIC

Key principle:

...To ensure that the operation and construction of HS2 does not harm Buckinghamshire's local economy.

Buckinghamshire is one of the most prosperous, productive and entrepreneurial parts of the UK. The economy is worth £11.8 billion per annum, with 29,485 businesses offering 218,600 jobs. It is a net contributor to the exchequer, is over-represented in the Government's Plan for Growth sectors, and has the smallest public sector of any county. New firm formation in Buckinghamshire, at over 72 new firms for every 10,000 residents is the second highest of any LEP outside London.

Whilst two thirds of Buckinghamshire's area is nationally protected, not least the Chilterns Area of Outstanding Natural Beauty, the county has welcomed development in both the local and national interest. Examples include new homes, a new station development at Aylesbury Vale Parkway, extensive redevelopment of Aylesbury's canalside area, plans for a new coach interchange at the M40 in High Wycombe and outside built up areas, and planning permission for a new Energy from Waste facility at Greatmoor near Calvert. The County Council has been central in championing the East West Rail project, supported by others including Buckinghamshire Thames Valley LEP. The LEP has already allocated all its Growing Places Fund and started planning for when money is recycled.

There are more than 3,100 businesses within 3km of the HS2 route, meaning that up to ten per cent of Buckinghamshire firms will be severely impacted by both the construction and operational phases, not least from changed traffic patterns and flows. As Alan Cook set out in his report (with the 2012 Budget pledging to take forward his recommendations) "a well-functioning [road] network enables growth by reducing business costs, improving access to markets, enabling competition, improving labour mobility, enabling economies of scale and agglomeration, and helping attract inward investment ... the roads network is also important for the 'rebalancing' of the economy, as a key engine of labour mobility and trade between different regions of the UK". There can be little doubt that HS2 will have a huge impact on many roads, creating significant costs for businesses, their customers and staff and limiting the ability of other areas to trade with Buckinghamshire.

The proposed compensation and exceptional hardship schemes show that property values will be affected, but this effect is magnified for business as reduction in values impacts their ability to gain secured lending at a time when loan finance is exceptionally hard to come by, especially for small and medium sized firms. And where companies operate from rented premises chargeable time may be lost during the construction period because of congestion from traffic or road closures.

Tourism

Tourism is a Plan for Growth sector, fifth largest industry in the UK, supporting 2.2 million people and worth £97billion for the economy, with in-bound tourism 'our third biggest export earner' and a 'particularly important source of employment in rural communities'. Tourism is critical for Buckinghamshire, providing 20,000 or 8.9% of jobs. Indeed, the importance of AONBs and what they offer to their local economy is acknowledged in the Natural Environment white paper, which sets out that tourism initiatives such as cycling and walking routes 'can have a significant positive impact on the local economy'. In Buckinghamshire, users of the Chilterns Cycleway spend an average of £71 each a day when they come to stay, and visitors to the Chilterns AONB (last



Buckinghamshire Railway Centre



Coombe Hill, National Trust

estimated in 2007 as 55m leisure visits per year) contribute £471.6m to the economy.

As described above, HS2 will have major visual impacts across Buckinghamshire. The reputation of Buckinghamshire as a tourist destination could be damaged forever, as access to both the Chilterns Cycleway and Ridgeway may be disrupted during construction, Wendover and Great Missenden will suffer intrusive visual impacts, whilst access to facilities, such as Wendover Woods will be hampered, further reducing footfall. Public transport users, cyclists and walkers spend more in the local economy than car-borne visitors, so frustrating access to the countryside will reduce use by the groups expected to spend most. And beyond the Chilterns AONB there are other important tourist attractions such as:

- Aylesbury Town Centre
- Waddesdon Manor
- Buckinghamshire Railway Centre
- Aylesbury Golf Club
- Buckinghamshire Goat Centre
- Public rights of way network

Our concerns:

We are concerned that HS2 will cause irreparable reputational damage for Buckinghamshire as a tourist destination and an area for inward investment. We are also concerned that the proposals will inevitably increase operating costs for Buckinghamshire businesses, and limit opportunities for business with other regions. It is also worrying that affected businesses may receive significantly less compensation

than homeowners, with businesses in rented premises getting nothing.

Our expectations:

HS2 Ltd recognise the 'impact major infrastructure projects like HS2 can have on local communities', while the Government is apparently 'committed to minimising the impact of HS2 on local communities and the natural environment'. If HS2 is to be built to help in 'generating the growth and jobs that will allow us to compete and win in the 21st century global marketplace', we are clear that this must not derail the UK's most successful local economies, where jobs and wealth are being created and where productivity is growing fastest. We expect the Coalition to be responsible guardians of success:

- We expect HS2 Ltd to conduct a comprehensive analysis of impacts on businesses, employment and tourism – carried out for all other cities to be served
- We expect to see an assessment of the indirect impacts on businesses along the route through Buckinghamshire, in line with the Government's desire to assess the impact of major infrastructure on the local economy of an AONB
- We expect to see an assessment of the cause and effects of the construction period – in terms of air quality, traffic congestion and road closures
- We expect HS2 to accord with the National Planning Policy Framework (NPPF) requirement that applications for all developments affecting AONBs should be subject to key tests, including an assessment of the impact of the proposals on the local economy in that AONB

- We expect additional operating costs for Buckinghamshire businesses to be recoverable within the overall project costs. If journey time savings are valuable then accrued costs from delay or disruption should be measured equally

Socio-economic impacts on Farming

Farmers and land owners on the route will bear the brunt of HS2 impacts, and these concerns are reflected in the National Farmers Union's policy statement. Critical to the NFU is its detailed planning and route alignment study and impacts on food production in the UK, a key component of a sustainable economy.

The NFU expects these issues to be considered before the route is approved:

- What quantity of the best and most versatile agricultural land will be lost?
- How will severance issues be addressed for farm holdings most affected?
- What and how many accommodation bridges will be provided to enable farming to continue in an efficient manner?

Impacts of the line include: severance of accommodation crossings which become inefficient for farms to share; adding to production costs; and affecting already narrow profit margins. Individual farms will press for specific access arrangements and needs for temporary access during construction works to enable farming to continue. Many farmers are concerned that construction will permanently damage field drainage and make land unworkable. Further costs may be incurred when instructing land agents to renegotiate tenancy agreements / routes to reflect

productivity impacts and HS2 could have major impacts on both farm viability and environmental management.

There are questions about land acquisition, particularly about isolated small areas of unused land acquired through compulsory purchase. It is hoped arrangements can be agreed that enable the establishment of trust funds for the future management of these areas, similar to HSI. Owners and occupiers along the route are already suffering from unrecognised blight due to the nature of the project and construction will only increase blight fears. Farmers, including agricultural tenants, will struggle to make investment decisions to improve their productivity, as they cannot plan until they know the future status of the land.

- We believe the Government must help those with properties and businesses impacted by HS2. Blight compensation rarely meets the loss of value that a property and surrounding land will suffer. We believe compensation must be enough to ensure that any figure agreed is fair and compensates for the loss of land and business impacts. Case studies suggest that land loss has a greater impact on the remaining business than just compensation for the open market value for the land being acquired
- We believe adequate compensation must also be paid for access needed to carry out environmental, archaeological, mapping and other surveys; and for ground investigation works, including boreholes, piezometer, trial pits and penetration tests. These were agreed in advance between HSI and the Kent Channel Link Group (KCLG). KCLG was

established to minimise the impacts and maximise the benefits for farmers in Kent.

CULTURAL HERITAGE

Key principle:

... To ensure that designated heritage assets and other key archaeological remains and cultural landscapes are preserved, protected and maintained from physical impacts and harm to their setting. Where impacts are significant and unavoidable, appropriate mitigation and compensation measures must be identified.

The HS2 route will destroy archaeological sites, historic buildings and features, sever historic landscape patterns and cause visual and noise intrusion in the setting of nearby heritage assets. This is a permanent and irreplaceable loss of public amenity for which a high standard of mitigation and compensation is justified.

The National Planning Policy Framework states that Councils must recognise that heritage assets are irreplaceable and conserve them in a manner appropriate to their significance. In developing the strategy, planning authorities should consider:

- How to sustain and enhance the importance of heritage assets and put them to use in line with their conservation
- The wider social, cultural, economic and environmental benefits from conservation of the historic environment
- How new development can make a positive contribution to local character and distinctiveness
- How the historic environment can contribute to the character of a place

Where a heritage asset would be lost (whole or in part) a developer must record information about the asset. This could mean recording a historic building before demolition or excavating an archaeological site before construction. We expect the HS2 Environmental Statement to describe the significance of any heritage assets affected by HS2, including any contribution made by their setting, informed by a comprehensive survey providing information on known sites and identifying previously unrecognised historic sites and features.

Our concerns:

We are concerned that development impacts on the historic and cultural environment will change the way we view our landscape. As planned, HS2 has the potential to destroy current heritage assets which are part of the county's rich historical landscape and green infrastructure network. The National Trust, which is responsible for many hundreds of buildings and gardens of historic or cultural significance, state that:

"The proposed route for Phase 1 of HS2 would involve the compulsory purchase of land at Hartwell House near Aylesbury. We believe this will have significant physical and noise impacts on the house, grounds and neighbouring areas during construction and when complete. We are also a major land owner in the Chilterns and we own the central core of the Waddesdon estate further north. We believe there will also be potentially significant impacts in these areas".

The Buckinghamshire Archaeological Society is also concerned about sites that will possibly need extensive excavation if HS2 is to go ahead. They state that:



Buckinghamshire County Council aims to promote the understanding, appreciation and sustainable conservation of Buckinghamshire's rich historical and archaeological heritage as it plays a major part in the character of the county.

The County and District Councils also aim to ensure that designated heritage assets and cultural landscapes across Buckinghamshire are preserved, protected and maintained. Examples of key sites include listed buildings throughout Amersham, Grims Ditch (prehistoric bank and earthworks), Stoke Mandeville's historic village and church, Fleet Marston Roman Town, Hartwell House (Ernest Cook / National Trust) and Waddesdon Manor & Estate (National Trust / Rothschild Foundation). Many other archaeological sites will only be revealed by survey.



Hartwell House

“If HS2 goes ahead as currently planned then what remains of the Saxon and Norman village will be swept away by the bulldozers due to the high-speed route going through the old church, its churchyard and its deserted village. The historical evidence suggests that the site of the old church and village of Stoke Mandeville is of national importance”.

Our expectations:

We expect historical and cultural landscapes to receive full protection wherever possible. Where impacts are unavoidable:

- We expect a comprehensive cultural heritage assessment and archaeological field evaluation to be made available to Parliament and stakeholders to enable informed debate on the significance of heritage assets and the impact of HS2 upon them and their settings
- We expect that impacts on land and buildings of historic importance should be minimal for themselves and the surrounding areas and population
- We expect that where impacts are unavoidable, full and appropriate mitigation and compensation must be offered to reduce loss of significance and support enhancement opportunities elsewhere. This might include compensating for loss of community value by contributing to heritage-based green infrastructure
- We expect full vibration assessments on listed buildings so that foundations are not weakened during construction especially for the bored tunnel
- We expect assessment regimes to be established at the earliest opportunity so that any damage to



Twyford

historic water features or buried archaeology resulting from changes in hydrology both immediately and in the future can be determined. This needs to be accompanied by funding for any necessary remedial action

- We expect the importance of the historic landscape character to be recognised and incorporated into mitigation measures
- We expect a research framework and

archaeological investigation programme to be agreed with the Councils' archaeological adviser. This should include opportunities for public engagement, publication of the results and provision for display or storage in an appropriate way

- We expect that where historic buildings or structures will be destroyed, or cannot be maintained in their current location, consideration must be given to moving them to an alternative site and securing a future use

COMMUNITY & AMENITY

The Community and Amenity section considers impacts associated with loss of / restricted opportunities for Green Infrastructure, severance and / or diversion of Public Rights of Way, and impacts on other facilities such as recreational areas and open spaces. As such this section has been separated into Rights of Way and Green Infrastructure.

RIGHTS OF WAY

Key principle:

...To maintain the Rights of Way network to protect opportunities for non-vehicular access to services and the natural environment between and within communities, and minimise impacts on local wildlife.

Rights of way provide many opportunities to enjoy the natural environment, and can be wide tracks or narrow trails, running through towns or across remote countryside. In Buckinghamshire, the 3,300km Public Rights of Way network is a considerable economic asset, an important part of the county's sustainable transport network and key to the county's tourism sector. It is used for non-vehicular journeys to school, work, shops and other amenities and is vital for the public seeking peaceful fresh air and exercise in the countryside.

Our concerns:

The HS2 proposals will, without adequate crossings and noise mitigation, have major negative impacts on Rights of Way, affecting route connectivity, public amenity and the quiet enjoyment of the countryside.



The many trails promoted by Councils and other partners would be affected, with further effects for the rural economy and environment.

Local people also have many concerns about Rights of Way, including:

- Potential severance leading to disruption of Rights of Way networks
- Limited opportunities to enjoy health-promoting access to the countryside;
- Lengthy Rights of Way diversions to reach crossing points
- Loss of bridleways used for horse riding as leisure activity

Our expectations:

The overall outcome must be that, as far as possible, all public rights of way are maintained on their existing routes; and that the quality of experience of using them must remain very high.

- We expect any severance issues to be effectively mitigated to minimise impacts on the local population, visitors, environment and economy. We therefore expect the ES to include a detailed assessment of Public Rights of Way that cross HS2 line, new road layouts and those affected by noise or visual intrusion. Bridge crossings should be made more effective by providing a green corridor either side with biodiversity and pedestrian benefits
- We expect that HS2 appreciate that the 'value' of a particular path cannot be measured in terms of the volumes of people that use it on a particular day. Many paths are valued precisely because they are tranquil and not busy
- We expect mitigation proposals to include:
 - ◆ Footways / cycleways to maintain links and meet existing and future transport needs
 - ◆ Short and sensible Rights of Way diversions across the line
 - ◆ Effective mitigation to maintain the tranquility of the Rights of Way network
 - ◆ Protection from air pollution and dust during the construction period
 - ◆ Screening from the railway with native planting or noise mitigation measures, especially important for bridleways where equestrian safety is of particular concern
- We expect that where bridges or underpasses cannot be provided, an expedient diversion must be provided. Wherever possible this should be along diagonal desire lines to reduce inconvenience and avoid creating routes alongside HS2. Further, accommodation crossings such as

farm bridges should also be used to reduce divisions where suitable

- We expect the standard ‘test’ for diverting rights of way (s.119 Highways Act 1980) to be adopted: that a path diversion should ‘not be substantially less convenient to the public’
- We expect HS2 Ltd to complete an assessment about the opportunities the line provides to enhance the existing Rights of Way network. This could include walking and cycling links between Aylesbury, Waddesdon and Calvert, connecting into the National Cycle Network (Route 51)



Walking and health

Rights of way networks and other accessible green spaces are increasingly important in Walking for Health initiatives. Regular walking reduces the risk of a number of diseases and medical conditions and can also assist in the recovery from long term conditions. If those in need of regular exercise to maintain and improve their health and wellbeing do not have access to an interesting and appealing environment, they are less likely to maintain this regime. This could lead to increased expenditure on various health services. We expect that HS2 will work to enhance the county’s network of green spaces including foot paths and open spaces.



The Ridgeway

With its beginnings in the Stone Age when valleys were virgin forest, the Ridgeway was a formative highway in Britain, a 250 mile track from the Dorset coast to the Wash. Used for many centuries, it now forms a long distance footpath - 87 miles long, stretching from Avebury in Wiltshire to Ivinghoe Beacon in Buckinghamshire.

Along its route, its heritage is realised through the burial mounds of Stone Age men - Britain’s first farmers - whilst over time along its route, forts were built to command the high ground and in several places they defended the Ridgeway against attack. Saxons moved their armies along Ridgeway tracks and fought with Vikings at battles during their advances into Wessex.

The Ridgeway was not just for the long distance traveller, as local markets and sheep fairs were held until the 17th century. As the importance of the Ridgeways declined as a highway its tracks formed a resort for cattle thieves as drovers moved livestock from Wales and the West Country to the Home Counties.



GREEN INFRASTRUCTURE

Key principle:

...To maintain, create and enhance a network of multi-functional green spaces for Buckinghamshire communities.

Green Infrastructure (GI) is ‘a network of multi-functional green spaces, both urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities’ (NPPF). Green space is taken to include rivers, standing waters, coastal waters and estuaries. This multi-functional network is central to the Green Infrastructure concept and approach. It refers to the potential for Green Infrastructure to have a range of functions, to deliver a broad range of ecosystem services. Multi-functionality can apply to individual sites and routes, but it is when the sites and links are taken together that we achieve a fully multi-functional GI network’ (Natural England (2009) Green Infrastructure Guidance).



In general, Buckinghamshire is well served by accessible Green Infrastructure, but there are pockets of deficit across the county, with more significant gaps in Aylesbury Vale (Buckinghamshire Green Infrastructure Strategy 2009).

Our concerns:

The HS2 proposals will sever accessible green spaces, damage opportunity areas identified for future Green Infrastructure, and impact on key links, disrupting the county’s multi functional green infrastructure network. Many opportunity areas critical to future Green Infrastructure provision are destroyed by the proposed route, and HS2 presents a lengthy barrier for other connections and links.

Our expectations:

- We expect all severance issues to be identified and addressed to ensure impacts for the local population, visitors, environment and economy are minimized
- We expect the EIA to include a detailed assessment of the accessible greenspaces impacted by the HS2 corridor and its construction / operational depots
- We expect HS2 Ltd to adhere to NPPF and consult with the Buckinghamshire & Milton Keynes Natural Environment Partnership
- We trust that Green Infrastructure mitigation will include:
 - ◆ New strategic access links in key opportunity areas in line with Buckinghamshire’s Rights of Way Improvement Plan and the Green Infrastructure Strategy



- ◆ New accessible green spaces and strategic Green Infrastructure, particularly in Aylesbury Vale, where there is a deficit
- ◆ Improvement and enhancement of existing green spaces, especially where development may impact or create additional pressure
- ◆ Enhancements to biodiversity (at a landscape scale) focusing on Biodiversity Opportunity Areas
- ◆ Appropriate off-site mitigation / compensation measures where impacts cannot be directly mitigated on site
- ◆ Restoration of damaged or degraded landscape patterns and removal of ‘eyesores’

WATER RESOURCE & FLOOD RISK

Key principle:

... To ensure that water resources are properly protected against the HS2 proposals, and that any other major impacts on the water environment in Buckinghamshire are appropriately, properly and comprehensively mitigated.

Agriculture, business, households, recreation and environmental activities in Buckinghamshire all depend on adequate water supply. Major projects often lead to heightened flood risk in local areas and impact on regional water resources.

Our concerns:

Analysis of the current HS2 proposal and environmental baseline information indicates that there will be significant effects on water resource in our area. HS2 will cross rivers, reservoirs and lengths of aquifer (underground layer of water-bearing rock) between London and Birmingham. The Chilterns chalk aquifer provides a vitally important water resource for residents of both Buckinghamshire and London. We are concerned about effects on: water quality, with ground water or surface waters contaminated; river or stream quality, impacting habitats and flows; aquifers, with changes to groundwater flows; and flooding from all sources.

Railway lines and embankments often cut across floodplains and watercourses and therefore change how the natural floodplain behaves and functions, impacting on the natural water environment. These types of works involve piling or excavation that can directly impact on the water table and ground water



flooding, or cause indirect impact elsewhere by increasing / lowering water table levels that could impact on important designated sites such as Ancient Woodlands.

Any impacts must be assessed before construction begins, including the overview strategic scale flood risk assessment as the impact of any development is not piecemeal, since effects in one area can often lead to impacts in another. Such assessments must be completed by the developer or scheme promoter who must also provide appropriate mitigation measures.

Our expectations:

We expect the accompanying EIA to include a detailed and accurate assessment of the following:

- Existing water quality, including groundwater quality and quantity
- Surface water flood depth
- Depths of groundwater
- Floodplain extent, depth, velocity and hazard



HYDROLOGY

Hydrology is the study of the movement, distribution, and quality of water. Impacts from population growth, business activity, urbanisation, climate change, pollution and depletion of water in aquifers has all led to increased pressure on water resources. The need to minimise impact and preserve resources is therefore essential.

Buckinghamshire, and particularly the Chilterns, is a key water resource with many local aquifers that contribute towards local and regional water supplies.

Many areas on the proposed HS2 line require tunnelling (green or deep tunnelling) that could have major impacts on the natural condition of the stored water and natural filtration of water through the geology in the area.



- Flows of aquifer, including qualities and geological layers
- Flood risk for people, property and agricultural land in Buckinghamshire

- We expect comprehensive information to be provided about the likely water use for the project's construction and maintenance. This is critical given the unpredictable water supply across southern England as climate change introduces fluctuations in weather patterns. In line with other major projects, HS2 must demonstrate adequate sustainable water collection and re-use techniques
- We expect to see a detailed assessment of how HS2 will be constructed without any detrimental impacts since it requires cutting or tunnelling through principal and secondary aquifers, and close to licensed abstractors with protected rights, particularly through the Chilterns
- We expect that the County Council will be regularly consulted by HS2 Ltd throughout the construction and operational phases of this project as the lead Local Flood Authority under the Flood and Water Management Act
- We expect District Councils to be regularly consulted by HS2 Ltd as they have detailed local knowledge of drainage issues as Risk Management Authorities (previously Land Drainage Authorities)
- We expect HS2 Ltd to employ a hydrological consultant to provide baseline data and information on all flooding sources and assess potential impacts
- We expect HS2 Ltd to consult with the County Council and Environment Agency on what should be included in the Flood Risk Assessment
- We expect HS2 Ltd to discuss specific requirements about areas of the proposed development with the County Council and Environment Agency
- We expect HS2 Ltd to provide baseline information, impact assessment, and proposed mitigation / compensation measures to the County Council enabling each site to be considered individually (because hydrology and impacts vary in each location). This is especially important for communities living in areas where flood risk might be increased
- We expect existing data and information to be collated and further surveys carried out where there are gaps in existing data. Whilst the District Councils have produced a Strategic Flood Risk Assessment for known flood risk, and the County Council has carried out a Preliminary Flood Risk Assessment, these will not provide site specific information about the HS2 proposals
- We expect HS2 to obtain flood, ground water and Catchment Flood Management Plan information from the Environment Agency
- We expect any flood risk assessment provided by HS2 to consider the impacts on the natural environment, people and property. This should include risks and opportunities, i.e. if flooding was moved elsewhere, that area would become floodplain and cause impact on that environment, but this could be turned into an opportunity. Any impact on highways and public rights of way must be addressed by appropriate measures.

MINERAL RESOURCES & WASTE

Key principle:

...To ensure that aggregates are sourced and extracted sustainably, and waste is disposed of in an appropriate manner, re-used or recycled wherever possible, to minimise the impacts on the county both during the construction and operational phases.

The County Council has adopted its Minerals and Waste Core Strategy (MWCS) that provides the strategic policy framework and provisions for minerals and waste planning within Buckinghamshire. Future Local Plans for Minerals and Waste are planned in line with the Local Development Scheme timetable. Sites in both the MWCS and those that may be allocated in the two Local Plans could be impacted if the HS2 line goes ahead.

In Buckinghamshire, the major mineral resources are sand and gravel in the Thames Valley. These are important raw materials for the construction industry. As the Mineral Planning Authority (MPA), the County Council must maintain at least a seven year supply of aggregates, known as a 'land bank'. The target for mineral production each year is known as the annual supply of apportionment, and includes a requirement to meet needs across London and the south east.

Building HS2 will generate large volumes of excavated material and whilst HS2 Ltd asserts that most of this material will be used to fill other areas on the line, there is a concern that there will still be a large surplus of excavated material that must be transported for disposal. Moreover, a disposal strategy predicated on re-use of surplus material along the line will not be

appropriate in all circumstances – for example, any significant change to the natural landform of the Chilterns AONB would be unacceptable.

Our concerns:

Until 2026, Buckinghamshire faces two challenges – providing sufficient minerals for construction needs, and moving from landfill to other disposal methods.

Minerals

We are concerned about the impact of building the HS2 line in addition to Buckinghamshire's expected minerals extraction and the annual apportionment supply. Wherever possible recycled aggregates should be used in preference to primary aggregates. Where the use of secondary aggregate is not feasible we encourage the sourcing and supply of minerals and raw materials by rail, or sourcing minerals from Buckinghamshire based on the proximity principle.

We are concerned about the scale, demand, timing, and sources of primary mineral needed for HS2. This should not result in any increase in Buckinghamshire's future mineral apportionment, and any supply for HS2 must not lead to a reassessment of Buckinghamshire's land bank or annual supply. In addition, part of the proposed route runs through a designated Minerals Safeguarding Area (MSA), where the designation seeks to avoid sterilising mineral resources where non-minerals development is proposed. Understandably, we are concerned that HS2 may sterilise economically valuable mineral deposits.

Waste

Construction and demolition waste is a major part of all waste disposal in Buckinghamshire. The County

Council is required to plan for, manage and dispose of all waste generated in the county. HS2 may generate substantial amounts of waste and spoil, requiring disposal. It is also likely to increase traffic pressure on roads in Buckinghamshire as construction traffic and waste vehicles seek to get to disposal points.

Our expectations:

Minerals

- We expect to receive (for review) a mineral strategy that details where, and how much aggregates (primary, secondary or recycled) will be sourced for HS2
- We expect that HS2 Ltd will implement high quality restoration techniques if sites are opened specifically for aggregates provision for HS2 (borrow pits)
- We expect minerals to be sourced sustainably and with consideration of the local environment to ensure impacts are minimized
- We expect that HS2 Ltd will carry out appropriate studies to demonstrate whether or not the route may sterilise a mineral deposit of economic value
- We expect HS2 Ltd to present plans that clearly and efficiently manage the use of mineral resources, liaising with relevant individuals and organisations
- We expect the use of minerals to be minimised, particularly primary minerals, by maximising the use of secondary or recycled aggregates
- We expect that any minerals sourced within the county will form part of the existing apportionment and not an additional requirement

Waste

We expect HS2 Ltd to produce a waste strategy that promotes waste prevention and safeguards existing waste management capacity within Buckinghamshire. This strategy must be comprehensive recognising that the greatest environmental benefits and cost savings will be delivered by producing less waste in the first place and one that includes a wide range of re-use and recycle options for unavoidable waste. We expect to see a development with a range of sustainable waste management options. The following explains our expectations in specific areas:

- We expect HS2 Ltd to ensure sustainable design practices and the efficient use of construction materials are embedded at the planning and design stages to encourage waste minimisation and recovery, for example by achieving a net balance between 'cut and fill'
- We expect HS2 Ltd to produce a comprehensive waste management plan that identifies expected types and quantities of waste generated, and the action for each type, prioritising re-use, recycling or recovery. It should also describe how sustainable construction techniques will be followed and how waste will be managed close to its source
- We also expect HS2 Ltd to assess fully the capabilities and capacity of the existing and planned waste management facilities to manage or dispose of waste. We expect this information to be shared and discussed with the Waste Planning Authority so it can be considered in local plan development

KEY REFERENCES

A fresh start for the Strategic Road Network. Alan Cook 2011.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4378/strategic-road-network.pdf and http://cdn.hm-treasury.gov.uk/2011budget_growth.pdf

Baseline Environmental Audit for High Speed 2: Optimised Preferred Route 3 through Buckinghamshire. BCC Natural Environment Team

Buckinghamshire Archaeological Society -
<http://www.bucksas.org.uk/hbgprojects/hs2stokemandeville.html>

Buckinghamshire Green Infrastructure Strategy. Buckinghamshire Green Infrastructure Consortium. 2009.

Buckinghamshire Minerals and Waste Core Strategy. Adopted November 2012.

Buckinghamshire Minerals and Waste Local Plan 2004 – 2016. Adopted June 2006.

Greenspaces Audit of HS2 Optimised Route 3. V Wetherell – BCC. July 2011.

HS2 London to the West Midlands ~ Appraisal of Sustainability Appendix 5. A report for HS2 Ltd by Booz & Company and Temple. February 2011.

High speed Rail: Investing in Britain's Future. Phase two: the route to Leeds, Manchester and beyond. 2013.

High Speed Rail: Investing in Britain's Future, Response of the National Farmers Union. The National Farmers Union, July 2011.

High Speed 2 Briefing Note – Rights of Way – Report by Jonathan Clark, Strategic Access Advisor, BCC. J Clark. June 2012.

High Speed 2 and Rights of Way issues to address – outcome of design meetings between Atkins, ETM, HS2 Ltd and BCC. J Clark (BCC) December 2012.

HS2 and the Historic Environment of Buckinghamshire: An Initial Appraisal of Optimised Preferred Route 3, S Kidd (BCC), 2011.

Impacts of nearby development on the ecology of ancient woodland, for the Woodland Trust by Corney, Smithers, Kirby, Peterken, Le Duc & Marrs. 2011.

Impact on designated wildlife sites, Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust. 2013.

Land Use Consultants (July 2011) A Study of Sensitivity of the Buckinghamshire Landscape to the proposed HS2 Route.

National Trust reveals vision for HS2 around Aylesbury. National Trust Press Release. November 2012.

National Planning and Policy Framework. DCLG. 2012

Natural Environment White Paper – The Natural Choice. HM Government. June 2011.

Natural England Green Infrastructure Guidance. Natural England. 2009

The Plan for Growth. HM Treasury and Department for Business Innovation and Skills. 2011.

3

LOCAL ISSUES

HS2 COMMUNITY FORUM AREAS IN BUCKINGHAMSHIRE:

- 1 Colne Valley
- 2 Chalfonts & Amersham
- 3 Central Chilterns
- 4 Dunsmore, Wendover & Halton
- 5 Aylesbury & Stoke Mandeville
- 6 Waddesdon & Quainton
- 7 Calvert, Twyford, Chetwode & Steeple Claydon
- 8 Newton Purcell & Brackley

The local maps are based upon the community forum areas designated by HS2 (up to 3km from the proposed line).



Colne Valley (Area I)

The Colne Valley is the first major stretch of countryside to the west of London. It stretches from Rickmansworth (north) to Staines and the Thames (south), Uxbridge and Heathrow (east), to Slough and Chalfont (west). The Colne Valley Regional Park was founded in 1965 and is an important resource for a large number of people and organisations who have a stake in the Colne Valley Park. The HS2 route runs close to the A412 and just north of Denham Green before passing through the area on viaduct, crossing Hillingdon Outdoor Activity Centre, the Grand Union Canal and the Broadwater Lake Nature Reserve, forming part of the Mid Colne Valley Site of Special Scientific Interest (SSSI).



Broadwater Lake, Colne Valley Regional Park
Colne Valley Park

People seeking relaxation and recreation take little notice of local authority boundaries. The Hillingdon Outdoor Activities Centre (HOAC) is in Hillingdon, but is extensively used by sailing enthusiasts and schools from South Bucks and further afield. Ramblers, anglers, bird-watchers and canal boaters cross county and borough boundaries without necessarily knowing, or needing to know, which authority area they are in. We are therefore seeking a plan that defends the Colne Valley developed in partnership with relevant stakeholders and local authorities. Set out below are some of our initial suggestions.

Green Infrastructure and Amenity

The Colne Valley is a Biodiversity Opportunity Area (meaning that it has been identified as a place for the restoration and creation of Biodiversity Action Plan habitats); a Historic Landscape Zone; and a Landscape Character Zone. These designations stress not only the ecological importance but also reinforce the quality of life enjoyed by communities in this tranquil and environmentally rich area.

There is potential to create a countryside access gateway in the area, focused on the Grand Union Canal (Slough Arm), Huntsmoor Park and the Little Britain area. Combined, these sites could act as a focus for enhancing existing green spaces, creating new public access spaces and facilities and improving links. There are also opportunities to improve the river corridor through habitat restoration, creation and management, and enhance landscape and access which may improve the overall character and distinctiveness of parts of the Colne Valley.

Leisure opportunities and compensation:

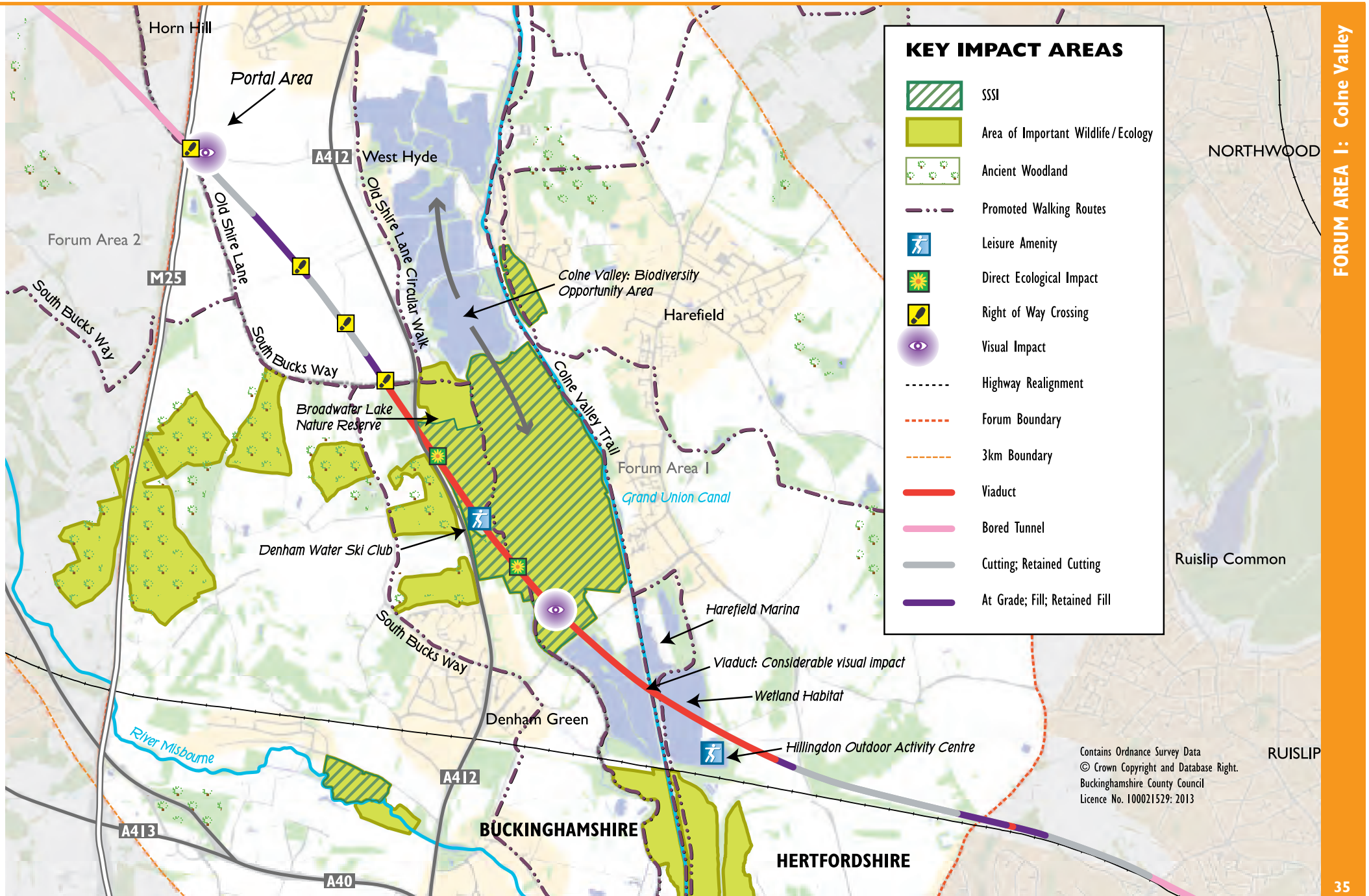
We believe that there are outdoor leisure opportunities in the area and feel that these should be maximised, reflecting the sporting and recreational activities that already take place in the valley. If as a consequence of HS2 the Hillingdon Outdoor Activity Centre is lost, a similar venue should be provided to replace it. With more than 60 lakes in the Colne Valley, another site should be found, a reasonable distance from the viaduct, and developed on similar lines. Compensation to the owners of Harefield Marina and the Denham Water Ski Club should enable them to remain in business, although moving is likely to involve building a new spur or basin off the Grand Union Canal.

Grand Union Canal:

We expect support for the Grand Union Canal, with mitigation to help the Denham waterway site improve its working and efficiency. Discussions must also take place with the Colne Valley Community Interest Company to agree the compensation needed by endowment from HS2 Ltd. Such an endowment might provide for a new canal museum which would act as a heritage education centre, and present educational programmes about the environment, history and heritage.

Ecology

The River Colne and adjacent lake are a nationally significant important habitat for bats that use the river and open waters for feeding. The river and lakes contain diverse fish populations, important in their own right but crucial to the wetland ecosystem of the



Colne Valley, providing food for birds and mammals such as otters. The area also attracts 70 breeding and 80 wintering species of bird. It is vital, therefore, that the viaduct is designed to minimise impacts on the SSSI by direct land take, overshadowing and construction methods. This includes determining the exact design and site of piers and minimising the overhead width of the viaduct. Measures must also be implemented to minimise disturbance to the important bird populations in the area and to minimise the chances of collisions with birds when flying over, taking off and landing. We expect compensation from HS2 to provide a new wetland habitat, or to enhance existing habitats.

Additionally, whilst native planting may go some way to compensate for loss of woodland, the ancient woodland is irreplaceable. For example, Battlesford Wood will require minimal construction impact, and compensation for any direct land take and impacts on the remaining woodland. This compensation could be by creation of BAP Lowland Mixed Deciduous Woodland.

Landscape and Visual impact

The viaduct will create a major visual impact as a hard engineering structure that cannot be screened in a landscape where nothing currently exists, and must be designed to a very high standard. As a mitigation measure, there is scope for low level naturalistic planting below the viaduct to act as a landscape and visual buffer between the A412 and Broadwater Lake Nature Reserve.

Noise

There are great concerns about noise from the viaduct and its propagation over the bodies of water. HS2 Ltd must provide full attenuation for this problem.

Rights of Way

Of key importance in this area is the relationship between Rights of Way, HS2 and the M25. For example, assurance is needed that Bridleway 44 (Chalfont St Peter) will be accommodated between the HS2 tunnel portal and the M25. Further, the option of creating a separate roadside path on Chalfont Lane where the bridleway exits on to the road must be considered to ensure safety for vulnerable users connecting to Horn Hill. A further walking and cycling access is required to mitigate for the water way sites, and a circular route would create links between the numerous recreational areas, connecting wildlife areas and parks with 'priority routes'. These could link quiet roads and bridleways and where possible should be screened from the viaduct with native vegetation.

Cultural Heritage

The viaduct will be within 300m of The Savay, a Grade I listed medieval building. Noise and vibration effects will require sensitive assessment and design.

Highways

High numbers of heavy vehicle movements are expected across the area, associated with the construction of the viaduct and the removal of excavated material from the tunnel. We expect vehicles to use temporary on / off slip roads direct to the M25 rather than routeing vehicles via the A412 and J17. Construction traffic between Denham and Harefield must be assessed and jointly agreed by all Highway Authorities (BCC, Hertfordshire County Council, and Hillingdon).

Water Resources and Flooding

We expect the developer to assess the flood risk from all watercourses in this area which will be impacted by the proposed line. Potential changes to surface water flows, groundwater flows and overland flows must also be managed.

The Chilterns: Area of Outstanding Natural Beauty

The Chilterns landscape is of such high quality it has been designated as an AONB since 1965. It is made up of many features which are valued both individually and collectively. It is imperative that the whole landscape is considered and not just the land which will be built on by HS2. This whole landscape approach is complemented by taking an ecosystem approach which should give a high weighting, for example, to the Chilterns importance as an aquifer and network of ancient woodland and hedges.

The Chilterns landscape is part of the cultural heritage of the county containing many features and characteristics of many ages which creates a unique and nationally important landscape. The protection of the assemblage of those features - which gives its *genius loci* - is vital. Simply protecting individual elements is not sufficient.

It is the quality of this landscape and the opportunities to enjoy it that make it so valuable. It is, therefore, important that the environmental impacts of HS2 are avoided as far as possible. Many features such as ancient woodland cannot be offset. Once lost they are lost forever, so it is vital that damaging impacts are avoided and not just mitigated.

It is also essential that the **landform** on which its nationally important landscape is based is conserved as far as possible. Artificially moulding this landform just to screen the visual and audible intrusion of the railway

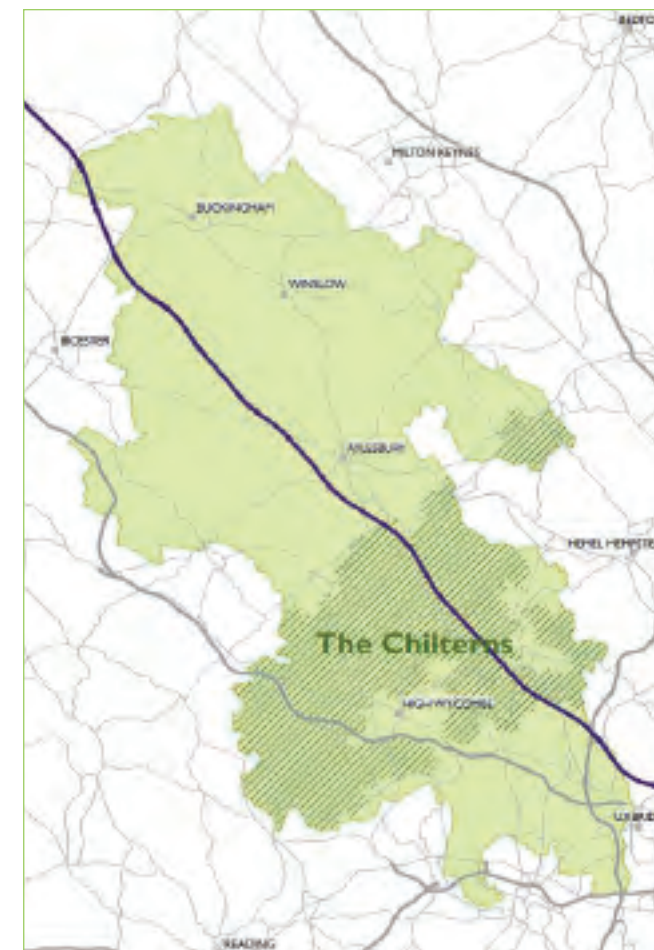
may compound the damage. It would be far better for the railway to be in tunnel and deep cutting so that noise and screening bunds are not needed.

The **tranquillity** the area currently offers must remain intact. It is therefore important that the railway is designed to avoid all forms of visual and noise intrusion including its infrastructure. Any ancient lanes that will be disturbed by construction must be faithfully recreated and not replaced by a modern road design which would have an adverse and urbanising impact. The special character of the Chilterns must be conserved and, where possible, re-created down to the fine detail.

The area is crossed by many public rights of way. They must all be retained, connected by bridges that are not eyesores, or green bridges that are sufficiently wide to allow vegetation to grow up and provide a degree of naturalness. These will also provide much needed crossing points for wildlife, the movement of which will otherwise be severely curtailed.

Policy

We are concerned about how little attention is paid to key national policies within the HS2 EIA Scope and Methodology Report. For example, it is worrying that only passing reference is made to the Natural Environment White Paper (2011) within the Ecology chapter and mentioned only once elsewhere. We would like to stress the following statement, taken from the Natural Environment White Paper, and expect it to be given due attention:



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

Further, the August 2012 report by Jacobs, Review of HS2 route through Buckinghamshire: Landscape and Engineering impacts states that:

‘The cumulative level of landscape and visual effects would have a significant adverse impact on Chilterns designated AONB.’

The Countryside and Rights of Way Act 2000 requires ‘all public bodies have regard to the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty’ (s85 CROW Act 2000). We expect HS2 Ltd and the Department for Transport, indeed all of Government, to act in full accordance with this statutory duty.

It is imperative that all above ground structures are designed specifically to fit their setting. Specific guidance exists for the Chilterns and HS2 Ltd is demanded to use it. Standard design applied without respect for the location and its character will not be acceptable.

Current HS2 proposed route:

The currently proposed scheme shows a bored tunnel through the AONB from the M25 to Mantles Wood. The tunnel exit at Mantles Wood and the surface route through the remainder of the AONB from Mantles Wood to just beyond Wendover is profoundly damaging to a nationally designated landscape in terms of a wide range of impacts, not least of these being noise, visual, ecological and heritage impacts.



Coombe and Bacombe Hill

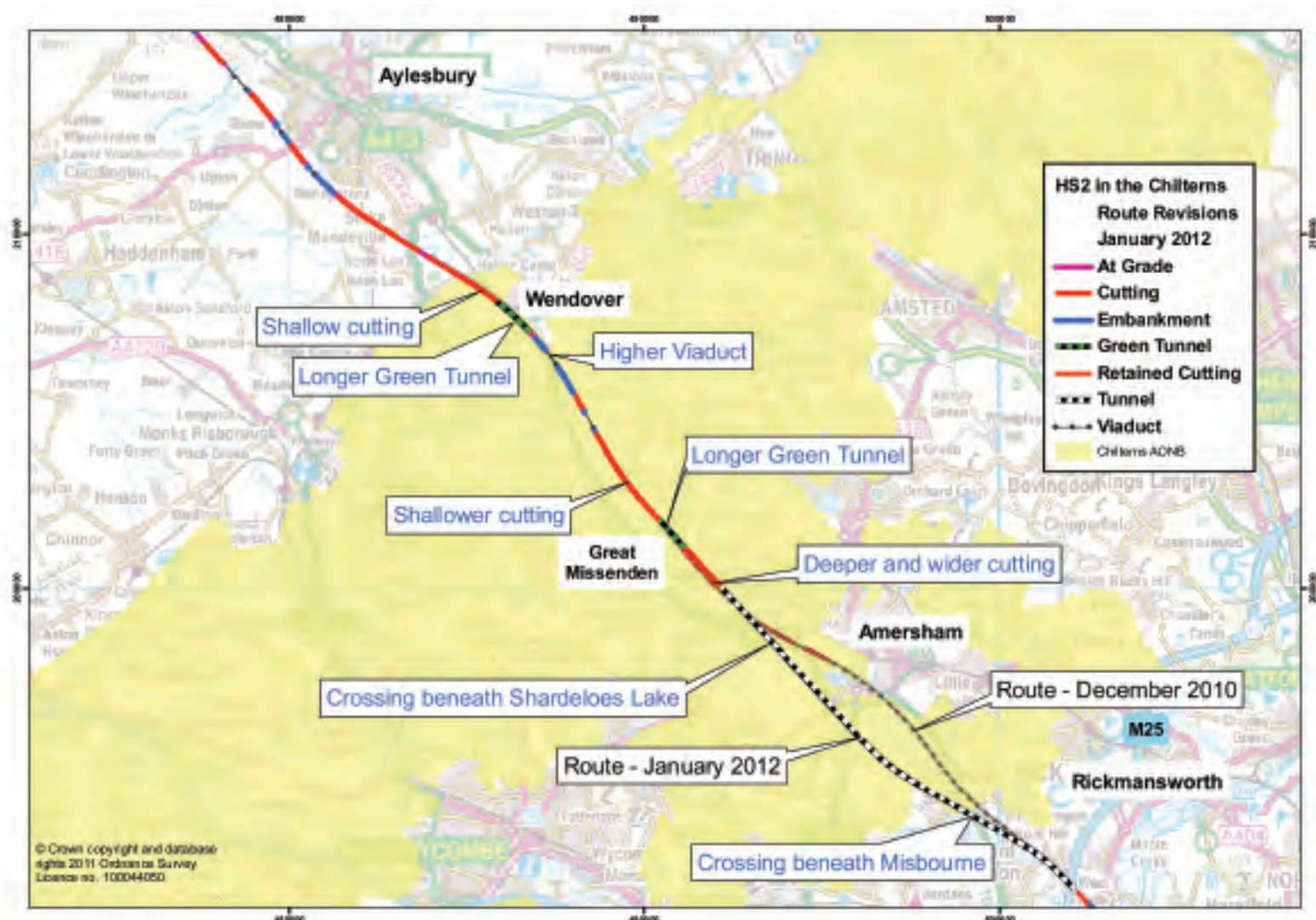
The complex sites at Bacombe and Coombe Hill lie to the southwest of Wendover.

Coombe Hill, with the Boer War memorial, is one of the most important features of the Chilterns and the monument sits at one of the highest and most striking spurs, commanding a wide view of the Vale of Aylesbury. Coombe Hill is a well visited area of the Chiltern Hills with 100,000 visitors recorded per year. The monument is an iconic Buckinghamshire landmark, synonymous with the county and possessing high social and cultural values. It is a Grade II Listed monument representing one of the first and largest examples of a war memorial set up in dedication of individual men who fell whilst fighting for their country. The site is a designated SSSI due to its importance for species-rich chalk grasslands.

Bacombe Hill is a Local Nature Reserve. The site falls within the Chilterns AONB, includes large areas of open access land and is crossed by the Ridgeway National Trail as well as numerous other paths.

Our concerns

The proposed surface HS2 route will be elevated for the majority of the visible sections of this site, and clearly visible from both sides of Coombe and Bacombe Hill. Major impacts for visitors will include noise, loss of tranquillity, and visual intrusion. Should the line go ahead without an extended tunnel in this area, there will be significant negative impacts.



HS2's proposed route through the Chilterns, January 2012 compared with December 2010

Chilterns: Chalfonts and Amersham (Area 2)

The Chalfonts and Amersham are part of the Chilterns AONB. The proposed route passes beneath this area in a bored tunnel from the M25 as far Mantles Wood between the villages of Hyde Heath and South Heath. On the way it passes beneath Chalfont St Peter and Chalfont St Giles; directly to the south of old Amersham; and below the course of the River Misbourne close to Shardeloes Lake.

Water Resources

Shardeloes Lake and River Misbourne:

This is an area that is both ecologically and hydrologically affected by the HS2 proposals. The bored tunnel will be at shallow level below the lake, leading to a risk of water loss due to boring through the porous chalk aquifer. We fear that such disturbance of the fragmented and weathered chalk strata could not only disrupt the aquifer, with consequent risks to water supplies and the surface water features of the lake and the River Misbourne, but also impact on the valuable ecology and habitats in the area. The lake is also a heritage asset, a key part of the grade II* registered Shardeloes historic park.

Key mitigation includes:

- There must be robust and comprehensive hydrological assessment to inform engineering design to ensure there is no impact on Shardeloes Lake or on the River Misbourne chalk stream. Ongoing regular monitoring of the lake and river will also be required to ensure that there is no future impact.

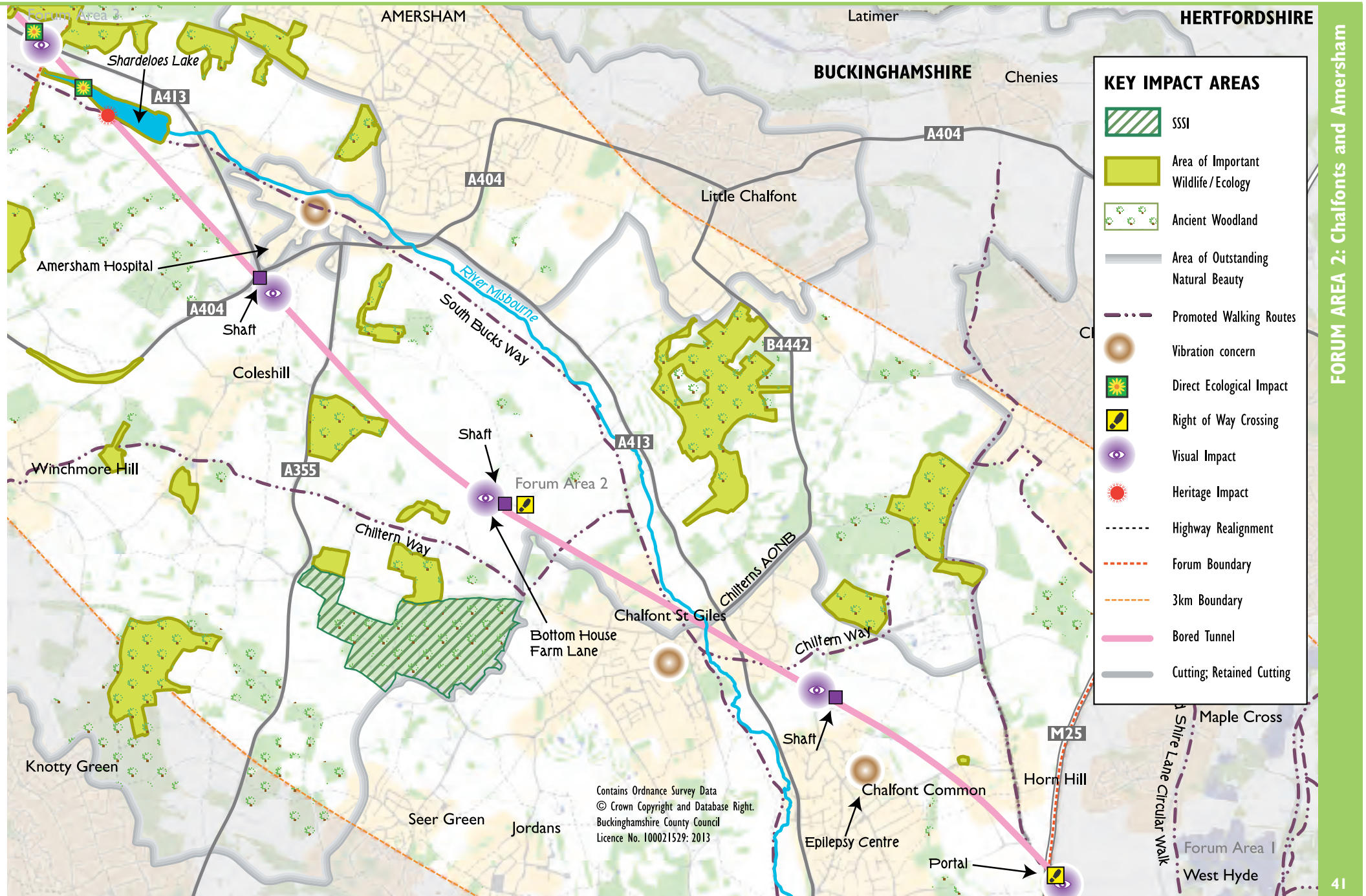


HS1 North Downs, Shaun Pope

Also, due to the removal of superficial layers of clay and gravels, **tunnel cuttings and portals** will reduce protection to a large section of the aquifer. There are concerns that due to the nature of the geology, the extensive tunnel under the river may impact upon the nature of the river bed thereby leading to subsidence and potentially lead to increased loss of water resource.

Key mitigation includes:

- The tunnel portal north of Amersham and cutting immediately following in section 2 potentially intercepts the groundwater and this will require waterproof construction to avoid interference with the groundwater regime. (CCB)
- Maintaining accessibility for walkers, cyclists and horse riders along Bottom House Farm Lane during and following construction of the intervention Shaft and AT Station



Flood Risk

We expect HS2 Ltd to assess the flood risk from all watercourses in this area impacted by the proposed line. Any possible changes to surface water flows, groundwater flows and overland flows must also be managed as part of the proposals.

Noise & Vibration

Amersham & Amersham Hospital Area

There have been many concerns expressed about potential noise and vibration issues associated with the tunnel, both during the construction and operational phases of HS2. This particularly focuses on vibrations at Amersham, Amersham Hospital and the Epilepsy Society's Centre at Chalfont St Peter. The nature of these effects at properties will depend on a number of factors including train speed, railway design, distance from the route, the composition of the ground through which the vibration travels, and the design of buildings.

Key mitigation includes:

- We expect all appropriate mitigation to be used where the construction of the tunnel, related infrastructure or lines operation may impact upon the use of sensitive machines (such as MRI scanners) or may be close to important listed buildings. We expect these locations to be assessed before construction to ensure the needed steps are taken
- We expect any vibration impacts to be mitigated at source either by increasing the tunnel depth or by using an absorbent track bed



Track at Keepers Wood, Chiltern Conservation Board

Heritage

There are several significant historic settlements in this part of Buckinghamshire including the market town of Amersham and the villages of Great and Little Missenden. Their historic centres are designated conservation areas, containing a high concentration of listed buildings, many constructed in a vernacular tradition of timber framing, handmade brick and roof tile. Clusters of listed buildings also exist within Chalfont St Giles and Chalfont Common. Among the more significant buildings are the Grade I churches of St Mary's Amersham, St Peter & St Paul at Great Missenden and St John the Baptist at Little Missenden. We demand

HS2 Ltd to do all necessary to protect the foundations of these special buildings from vibration impacts.

Rights of Way

The footpaths crossing Bottom House Farm Lane will need temporary accommodation to cross the proposed widened access route along the road. It is currently used by walkers, horse riders and cyclists, who will need an alternative route to avoid conflict with HS2 vehicles accessing the ventilation shaft. Whilst the lane will be widened during the construction period, this must include facilities for walkers, cyclists and horse riders.

Traffic and Transport



Chalfont St Giles, Chiltern Conservation Board

Any essential road realignments or widening within the AONB will need to be designed sensitively and on a case by case basis to respect both setting and context. The Chilterns AONB Management Plan (2008-2013) suggests how routes and accesses can be provided to conserve the natural landscape.

- In an already congested area, appropriate construction routes from the M40 are problematic. Routeing vehicles from Junction 2 (Beaconsfield) to reach the A413 at Amersham could be made acceptable if existing congestion in old Beaconsfield were alleviated by the construction of the Wilton Park relief road. A financial contribution to deliver this might be considered relevant mitigation for the construction traffic impacts in this area.

Ecology and Wildlife

Several ancient woodland sites are directly impacted by the route in this area, with some proposed for

destruction, such as Mantles Wood. We expect all ancient woodland to be retained, and not destroyed, and protected during the construction period when changes to hydrology, dust, air pollution and noise may threaten their existence. We also expect tunnel portals and ventilation shafts to be designed to avoid attracting protected species (i.e. bats) which might use them as swarming or hibernation sites, where they would be at risk of collision. Portal entrances in Ancient Woodland are very likely to attract bats looking for hibernation sites.

Visual Impacts

Intervention shafts are required approximately every 2–3 kilometres along the length of the tunnel for emergency ventilation and intervention. HS2's proposed sites are:

- North of Chalfont St Peter close to Chesham Lane;



Bowood Lane, Chiltern Conservation Board

- Halfway along Bottom House Farm lane;
- By the junction of the A404 and A413 at Amersham
- East of Little Missenden along the A413



We expect shafts to be designed to avoid significant environmental effects, and be visually unobtrusive. They must be suitably positioned and screened as necessary, giving opportunities for local landscape and biodiversity improvements, whilst minimising disturbance over the length of the line. Amersham, in particular, is designated as a conservation area and therefore the design and location of any ventilation shafts in the town will need careful consideration.

Chilterns: Mantles Wood to Nash Lee Road (Areas 3/4)

The whole of this area is designated as the Chilterns AONB. It is a nationally recognised landscape. Current HS2 Ltd proposals cut straight through the widest part of the AONB. Current HS2 proposals include a bored tunnel from the M25, exiting at Mantles Wood, and then continuing for over 10kms with surface construction that includes shallow cuttings, embankments and viaducts up to 18 metres high. The map at page 39 shows the proposed plan for the AONB. Less than half (45%) of the route through the AONB will be protected by the bored tunnel. This proposal has permanent adverse effects to four ancient woodlands, a Scheduled Ancient Monument, promoted rights of way routes and the overall tranquillity and visual beauty of the landscape in the AONB. It also runs close to and severely impacts many communities (including Hyde End, South Heath, Potter Row, the Lee, Dunsmore, Wendover Dean, Bacombe Lane and the south side of Wendover) with over 1000 properties within 500m of the line, and almost 3000 within 1km of where surface construction will take place. *We cannot and do not support this proposal.*

It is absolutely essential that an evaluation be carried out of the environmental impacts of the current surface route proposal from Mantle's Wood to Nash Lee Road. This should be done based on the *Treasury Green Book Supplementary Guidance: Accounting for environmental impacts*, *The National Ecosystem Assessment*, and the principles of valuing natural capital. This would provide a template for the evaluation of other infrastructure projects in other protected landscapes. In addition, the opportunity should be taken to investigate heat recovery from tunnels as a source of sustainable energy.

Given the national importance of the Chilterns AONB, the profoundly damaging effects of the proposed surface route and the requirements of the CROW Act to conserve and enhance the AONB, we consider that the best design solution for the AONB is a fully bored continuous tunnel. The European Technical Specification on Interoperability (TSI) stipulates that any tunnel in excess of 20 kilometres requires a Special Safety Investigation to identify whether any additional infrastructure measures are required. Such an investigation was considered by HS2 Ltd to take at

least 12 months and which they believed might lead to a significant increase in cost. The distance from the tunnel entry point at the M25 to the northern edge of the AONB north of Wendover is 24.5 kilometres.

While we understand that HS2 Ltd does not intend to perform such a Special Safety Investigation, it is unsatisfactory that they have rejected a fully bored continuous tunnel of over 20kms without one.

It should also be noted that a revised draft TSI has been prepared which maintains the 20km limit but introduces

the principle of an underground rescue station.

Work on bored tunnel alternatives by local community groups has shown that options exist which can be shown to compare favourably with the surface option when a 'whole cost' analysis is made. Such an analysis includes not just the comparative engineering costs, but the effect on landscape values; property values; business activity; land purchase; and the costs associated with the mitigation needs of the surface option. Furthermore, this alternative also has the benefit of resulting in significantly reduced impacts on communities and the AONB during construction.

We expect mitigation measures provided by HS2 to reflect the level of protection afforded to the Chiltern AONB through relevant laws, policies and HS2's own technical, operational and environmental requirements detailed in their Project Specification, and quoted in chapter 1 of this document.

Extended Tunnel Proposal

The Extended Tunnel Proposal shows that it is possible to have a bored tunnel through the Chilterns AONB at a neutral whole cost and still comply with the TSI. Despite HS2 Ltd's technical advisors having conceded that the proposal is technically feasible, and despite the community groups having made repeated efforts to engage with HS2 Ltd on detailed costings and technical details, engagement has been unsatisfactory.

If a long tunnel is divided by a section of at least 500 metres in open air then it can be treated as two separate tunnels for the purposes of TSI and would

therefore not necessitate an investigation. Including exit and entrance arrangements for the tunnels, the gap would be 700m in total assuming that a gap is required.

An extended tunnel solution for the AONB would necessitate two pairs of Tunnel Boring Machines (TBMs) in order to avoid impacts on the construction programme. Research has shown that options for potential gaps of the required length exist along the proposed extended tunnel route which are within the 20km limit.

Benefits of the Extended Tunnel Proposal

Under the current HS2 Ltd proposals, green tunnels are proposed through Wendover and the South Heath area. However, green tunnels are complex, damaging and time-consuming to construct. The destruction of four ancient woodlands and the scheduled monument and the damage and disruption caused by the construction of green tunnels, would be avoided with a fully bored tunnel. The option of an extended bored tunnel would result in significantly less damage to features of ecological value and less fragmentation of the wildlife habitats present.

One of the strongest aspects of this proposal is the marrying of environmental costs and benefits with engineering costs and benefits. The failure of HS2 Ltd properly to recognise the value of protecting the landscape by an extended tunnel is a serious flaw. The report by PBA states that:

One major area where the proposed tunnel will provide a benefit is in preserving the landscape of the AONB. The landscape provides benefits over and above the commercial

value of the land, benefits such as recreation, ecology, tranquillity etc. These benefits do not drive the commercial value of the land and are therefore said to be external to the market however they provide clear benefit to the nation.

Taking account of all costs and benefits, including those concerning the environment and its amenity value, continuing the tunnel from Mantles Wood to Nash Lee Lane can be constructed at no extra cost to the country. Bearing in mind the statutory responsibility to protect the AONB, an extended tunnel should replace the surface route and so protect the entire AONB. We require that HS2 Ltd includes a proposal for a tunnel through the AONB in their mitigation measures.



Double Standards

In January 2013, the Department for Transport published details of the second phase of the HS2 project and stated the following:

The initial preferred route avoids National Parks, Areas of Outstanding Natural Beauty and Registered Parks and Gardens.

While we welcome this assertion, it is a testament to the unsuitability of HS2 phase one route currently being proposed. The Chilterns AONB is now the only AONB being threatened by the HS2 line. This further strengthens calls for an extended tunnel to protect this nationally significant landscape.

High speed Rail: Investing in Britain's Future. Phase two: the route to Leeds, Manchester and beyond. (2013) p78.

Stoke Mandeville and Aylesbury (Area 5)

From Wendover bypass, the line approaches Stoke Mandeville from the southeast, passing the village to the west and then crosses the western flank of Aylesbury, the largest affected settlement outside London and Birmingham. The line cuts through the grounds of the Grade I listed Hartwell House and divides Aylesbury Golf Course, a local public amenity. The line's proximity to Aylesbury, Fairford Leys and Stoke Mandeville creates major adverse impacts for residents, emphasising the importance of excellent mitigation and further 'betterment' measures.

Ecology

Aylesbury Sewage Works Local Wildlife Site

This is part of the river system for the Thame and is an important habitat for a large number of bird species including water rail, kingfisher and little owl.

Mitigation measures include:

- Providing additional wetland habitat, or enhancing existing habitat to compensate for the line's impacts close to this key site
- Providing methods that prevent or deter birds flying in the path of the train

Heritage

St Mary's Church ruins, Stoke Mandeville

St Mary's is the demolished ruin of Stoke Mandeville's medieval parish church, set within a churchyard where the entire parish population would have been buried until the late 19th century. The HS2 proposals obliterate the historic 12th century church site, requiring the excavation and appropriate storage of human remains and gravestones. The site is owned by Stoke Mandeville Parish Council. The old church was pulled down only 50 years ago, but it has never been excavated, nor surveyed in any detail. It is not a 'scheduled monument' and is therefore not protected by legislation. The Parish Council has discussed the proper process for human remains storage with HS2 Ltd, and any decision taken is expected to be via further consultation with both the Parish and County Councils.

Key expectations:

- This site may be one of the most archaeologically important along the entire phase I route. Investigation should therefore be exemplary providing opportunities for public participation and learning
- Any memorials and churchyard railings should be removed to a safe place
- We expect the local community



Stoke Mandeville

Headstone at St Mary's church

to be involved and for there to be proper, appropriate storage identified that is acceptable to the local community

- Storage of Christian remains must be in a consecrated local site where they may form part of a future research archive of national importance
- HS2 Ltd must consider providing a suitable memorial e.g. rebuilding the ground plan of the medieval church as a memorial garden

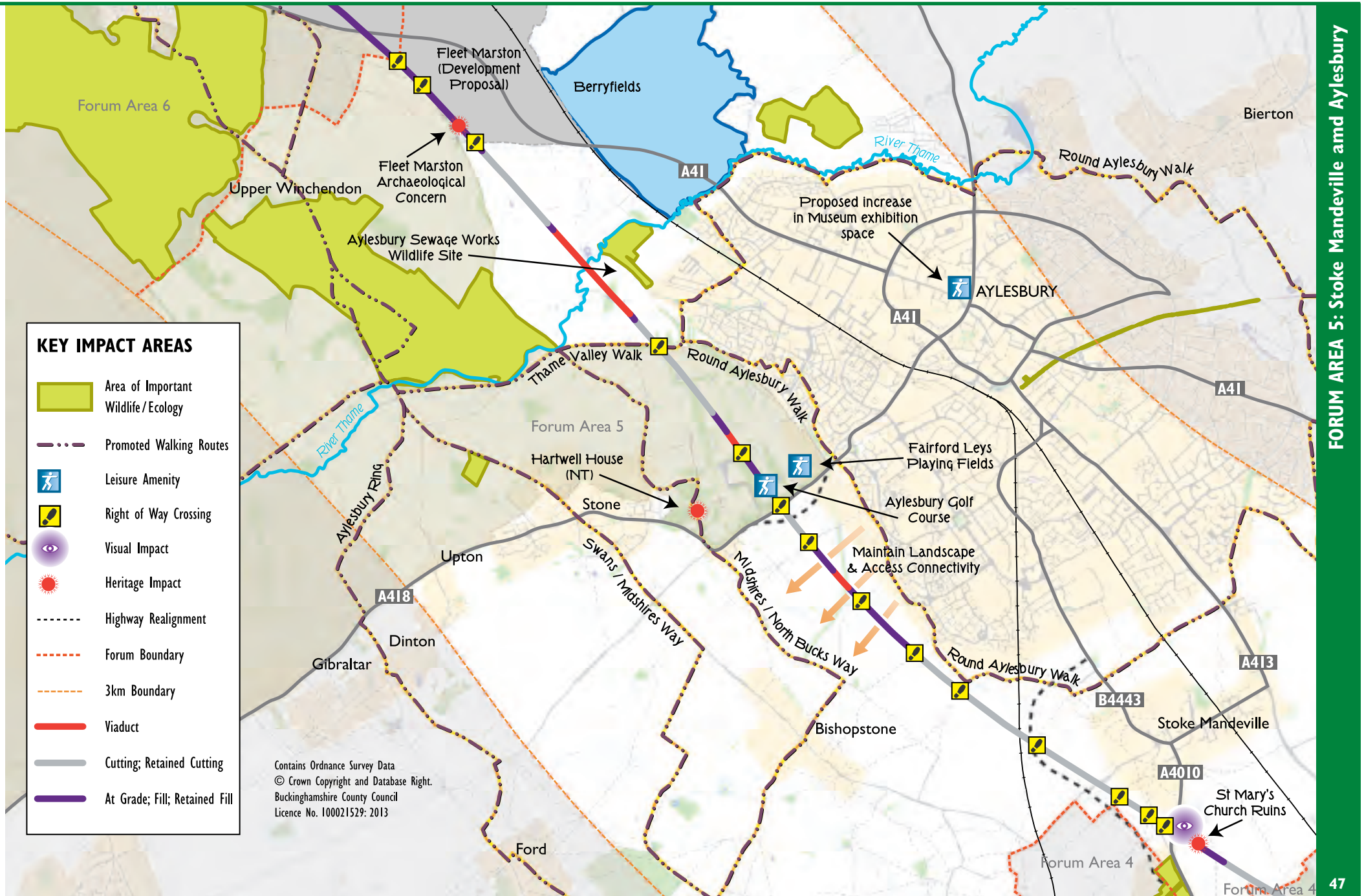


Stoke Mandeville deserted Saxon and Norman village

Stoke Mandeville village was not always where it is today. Half a mile south of the village, around the site of St Mary's Parish Church, is the original village, now deserted. The village appears in the Domesday Book and was there before Normans invaded in 1066.

Not much is known about the village although evidence compiled by Bucks Archaeological Society show that the site is of national importance.

We are concerned that the site will be seriously damaged by HS2 and its related infrastructure. We expect that HS2 Ltd's Archaeological experts will work with the local community to ensure the best mitigation measures are implemented to minimise damage to the remains of Saxon and Norman Village which have not yet been excavated.



Hartwell House

The map on page 47 shows the proximity of the HS2 route to Hartwell. Working in partnership with others, the National Trust has proposed a scheme which mitigates the visual and noise impacts of the line, for Hartwell and for neighbouring communities of Fairford Leys, Aylesbury, Lower Hartwell, Sedrup and Bishopstone. Their plans show the impacts of the line could be reduced if mitigation is planned on a big enough scale. National Trust proposals can be seen on page 51.

Fleet Marston

The scheme will pass through the remains of a Roman settlement, requiring proper investigation and study, and providing opportunities for public viewing and participation.

Other compensation for loss of archaeological remains along the route would be to take adjacent severed fields east of HS2 out of cultivation to protect their archaeological interest (linked to GI below).



Aerial photo of Fleet Marston

Michael Farley

Quarrendon

Whilst the Scheduled Ancient Monument at Quarrendon is not directly impacted by the line, providing a contribution to improve the setting and management of this site would be one of several suitable measures to offset heritage impacts. Further, it is a flagship project in AVDC's Green Infrastructure strategy.

Traffic & Transport

Roads across Aylesbury and Stoke Mandeville are increasingly congested as a consequence of development, not least being HS2. In addition construction traffic impacts around and through the town are likely to be severe. We therefore expect HS2 to deliver substantial and permanent improvements to Aylesbury's road network.

The County Council commissioned transport assessment work to determine the effect of realigning the A4010 Risborough Road. The results show that a realignment (detailed in box adjacent) would have a number of benefits for the local community and the project's costs:

- HS2 construction costs are reduced as Risborough Road and Marsh Lane crossings are not needed
- The realigned road crosses HS2 near the Risborough rail crossing, enabling one construction site
- Traffic demands on Station Road, Stoke Mandeville are reduced
- Access for blue light services to / from Stoke Mandeville Hospital is maintained
- Impacts on both Stoke Mandeville village and the primary school are reduced



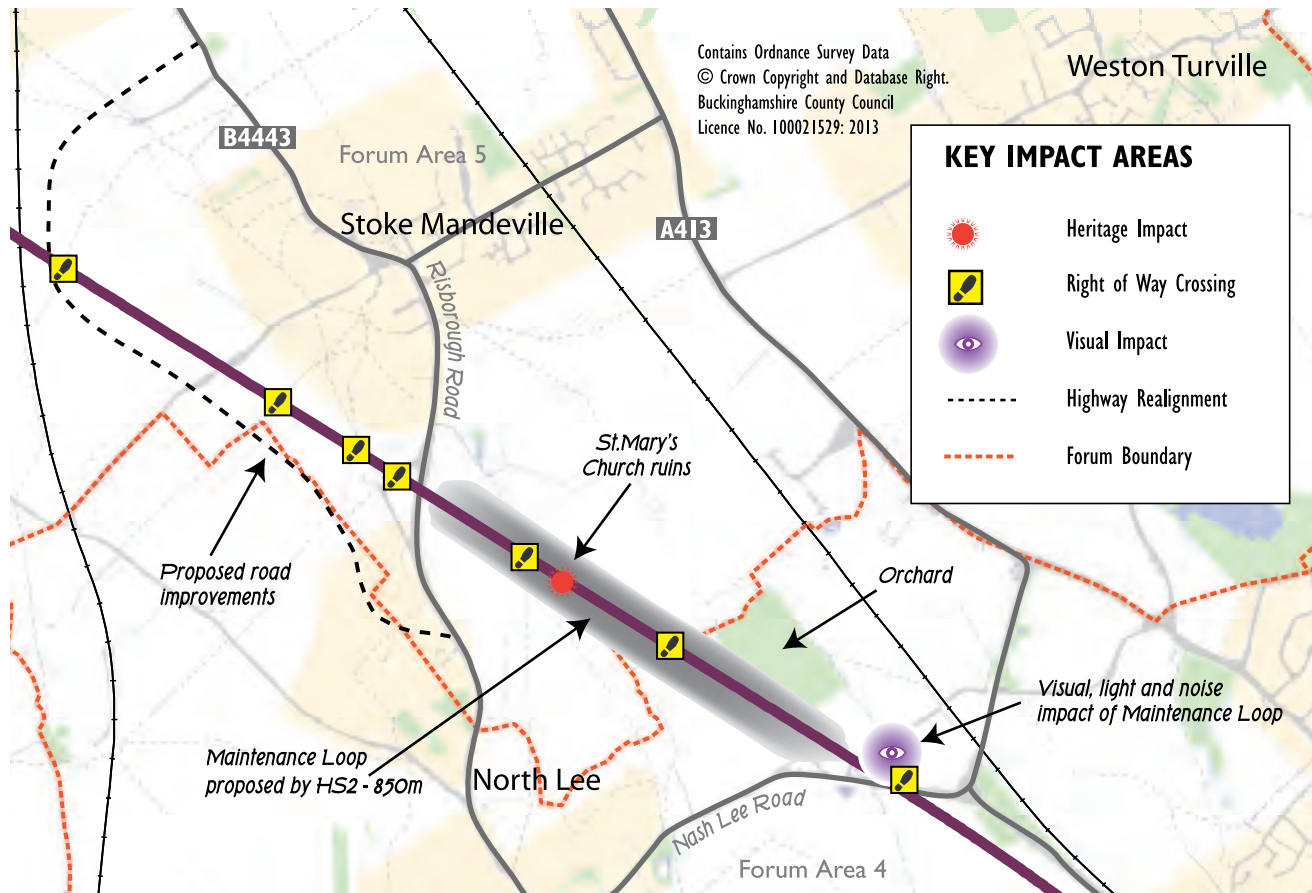
Realignment of A4010 Risborough Road

The scheme involves rerouting the A4010 north of its current alignment, between the nursing home and Goats Centre.

The revised route ties into Marsh (west), whilst Marsh Lane east is severed, providing access only.

The route continues west of HS2 before crossing close to the Risborough Rail line crossing. It then ties into Lower Road B4443 between Aylesbury and Stoke Mandeville.

We expect to engage with HS2 and their consultants to agree this proposal and ensure it is a key component in future proposals, since it provides clear benefits and minimises the impacts of HS2 on Stoke Mandeville. We will engage with HS2 to ensure that road realignments have no negative impact on the rights of way network in this area. We expect that detailed information about the proposed maintenance sidings between Nash Lee Road and Old Risborough Road to be shared with Councils and local communities as quickly as possible so that appropriate and suitable mitigation measures can be developed to reduce the impacts on surrounding communities and businesses. This must include arrangements for access to the sidings and routeings for construction vehicles on suitable and enhanced roads, such as Nash Lee Road.



Noise

To minimise the noise and visual impact on residents of Stoke Mandeville, Hawkslade, Southcourt / Walton Court, Fairford Leys and Rabans Lane, we expect to work with HS2 Ltd to develop a comprehensive and robust package of mitigation measures, which include but are not restricted to track side planting, bunds, landscaping, and effective noise abatement measures.

Water Resources and Flooding

We expect HS2 Ltd to assess thoroughly the flood risk from all watercourses, rivers and drainage channels across this area, especially where these are impacted or crossed by the line. Any possible changes to surface water flows, groundwater flows and overland flows must be properly managed as part of the proposals and adequate mitigation measures incorporated to the satisfaction of both the Environment Agency and the lead local flood authority.

Rights of Way

It is important that appropriate and suitable accommodation arrangements are made for the number of rights of way that cross the route in this area. In many instances because of the route's vertical alignment these will be accessible footbridges or possibly green bridges to accommodate the range of users in certain locations. These are critical to ensure that Aylesbury and its environs remain connected to the wider countryside, and to support walking or cycling journeys across and around the town.

Maintenance/Recovery Loop

It is vital that appropriate mitigation measures are provided at the maintenance loop outside Stoke Mandeville. This is especially critical as much work here would occur at night therefore presenting serious light and noise pollution concerns. Key mitigation measures include:

- Landscape bunding around loop
- Lighting regimes that minimise light pollution
- Adequate noise protection from 24 hour operation.



Compensation options:

The HS2 proposals will have a significant negative impact on the GI network around Aylesbury, where there is already a deficit, and what exists will be negatively impacted by the proximity of the line. To compensate for this we expect HS2 Ltd to create a linear park on land between the proposed line and the built up area on the western side of Aylesbury, together with an endowment fund to support longer term ecological enhancement, maintenance and management. This park would link important assets such as Hartwell House and Quarrendon Leas, providing a resource to communities negatively impacted by HS2 across Aylesbury.

Amenity

There is an aspiration to create a new museum/exhibition space in the centre of Aylesbury. This would enable many of the artefacts excavated along the route to be displayed and allow the public to gain an understanding and appreciation of Buckinghamshire's rich historic and archaeological heritage. We expect HS2 Ltd to understand the importance of giving something back to Buckinghamshire residents to compensate for damage to so many key sites.

National Trust proposals

Working with Dominic Cole Landscape Architects, the National Trust has prepared proposals that mitigate the impacts of HS2 as it passes through Stoke Mandeville, alongside Aylesbury and up to Waddesdon. Their work suggests measures that should be adopted to provide both noise and visual mitigation, paying particular attention to the area around the Grade I listed Hartwell House.

Hartwell House

It is in the national interest to protect Hartwell House from the negative impacts of the HS2 line. It is a Grade I listed building, meaning it is one of the most significant listed buildings in the country (top 2.5%). Hartwell has a remarkable history and significance stretching back almost a thousand years. Further, the grounds of Hartwell are a Grade II* Registered Park & Garden meaning it is one of the most historically significant parks and gardens in the country.

The map on page 51 clearly shows how close HS2 runs to Hartwell. By working in partnership, the National Trust has developed proposals that mitigate against visual and noise impacts, showing how the impact of the line can be reduced if HS2 Ltd plan for mitigation on a big enough scale.

Selected extracts from the proposals can be seen below and opposite. The land bridge proposal is of critical importance, as are the planted embankments that can conceal noise barriers, security fencing, and fast moving trains from the otherwise rural scene which has been protected from development for the last 300 years. The proposals also safeguard rights of

way in the locality. We expect HS2 Ltd to include the necessary land in the Hybrid Bill to support such critical mitigation measures.

Waddesdon and Quainton (Area 6)

From the west of Aylesbury, HS2 passes east of Waddesdon in cutting before picking up the alignment of the historic Aylesbury - Quainton railway line which it follows to Quainton and on to Calvert. The area has a number of sensitive ecological, historic and highways issues which are set out below. There have been calls for a lower vertical alignment across this area that would provide substantial benefits including less visual intrusion, less noise and easier links with the existing road network thanks to lower bridges over the line. In principle this approach is supported, subject to further ecological and flood risk appraisal.

Traffic and transport

Waddesdon

The County Council and the National Trust are considering how the HS2 proposals close to Waddesdon, including the need for haul routes, support the provision of a suitably aligned bypass. Whilst discussions with HS2 Ltd are at an early stage there are a number of route options that would divert the A41 around Waddesdon and reduce the impact of heavy traffic flows and construction vehicles. Any option would support a junction improvement at the A41 / Waddesdon Hill junction, key for the area, providing it respects the setting of Waddesdon's Grand Lodge. In addition, any option would be accompanied by measures to protect and maintain the footpath network in this area, including providing safe crossings.

Quainton

The likely layout of transport networks in Quainton close to the Buckinghamshire Railway Centre, including Quainton Road, Station Road, the Railway Centre, HS2 and East West Rail is both complex and sensitive. The Buckinghamshire Railway Centre needs to be accessed by large vehicles (particularly low loaders) and there is a strong desire from local residents to retain Station Road on its current alignment. Without a change to the vertical alignment of HS2 in this area, Station Road will need to rise further to cross HS2. In turn, this would require a specific access ramp / turning area for large vehicles accessing the Railway Centre. If the alignment of Station Road can be maintained, residents of Quainton and Waddesdon will suffer significantly less disruption.

Construction traffic

We are aware that HS2 Ltd propose to use the disused railway south-west of Finemere Wood as an access route to the proposed HS2 line of route. This proposal is supported as a way of routing construction traffic from the A41 to the line of route.

Noise and Visual

Due to the planned vertical alignment of HS2 at Quainton, there are major concerns about noise impacts on the local community. If the line was in cutting it would reduce both the noise and visual impact for local residents and spoil from the cutting could be used to support noise mitigation, especially close to the allotments near Station Road.

Ecology

We are particularly concerned about the possible damage to nature reserves and nationally important protected species wildlife populations in the Waddesdon and Quainton area. Ecological mitigations must be designed to take account of the combined effect of other projects such as East West Rail.

Grendon and Doddershall Meadows Local Wildlife Site

This site has significant ecological importance because it:

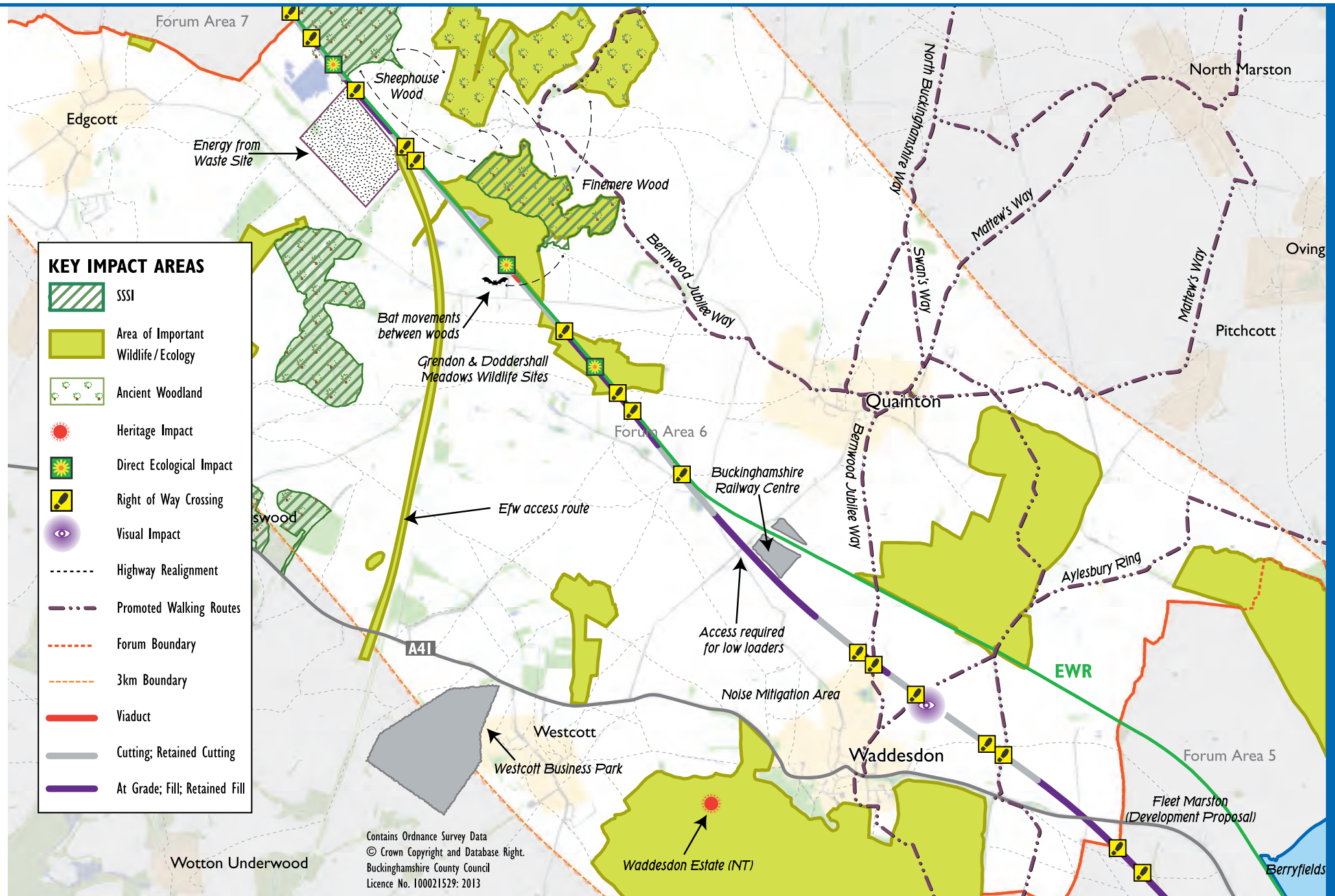
- Supports a diverse range of meadow plants
- Supports farmland birds including the skylark, barn owl and yellowhammer
- Includes wetland habitats and species
- Provides important roosting and breeding sites for species, particularly invertebrate species of conservation concern (i.e. Black Hairstreak butterfly)

Construction associated with the new route – in particular widening the track bed – may result in the loss of valuable meadow land

Increased site fragmentation is of particular concern as it could cause loss of biodiversity and disturbance to farmland birds.

To avoid significant disruption, mitigation measures must include:

- Work to ensure there is no impact on wetlands hydrology, such as surface water and groundwater flow interference





Finemere Wood, Jim Asher, BBOWT



Finemere Wood

Finemere Wood is an ancient woodland, designated as SSSI. Large parts of the woodland are ancient in origin and it is part of the Bernwood Biodiversity Opportunity Area. The area, adjacent to the proposed HS2 line, acquired by BBOWT, acts as a buffer to Finemere Wood and is managed to become species rich meadow. The Finemere hedgerows hold a nationally important population of the Black Hairstreak butterfly, as well as hosting a breeding population of Bechstein's bats (with the highest level of legal protection).

The woods fall within the GI Opportunity Zone O5 Bernwood Forest, recognised as having potential for landscape scale habitat management, creation and restoration, with a focus on ancient woodland and woodland edge habitat. Potential for management of historic environment features / assets in this zone is also identified.

The site will be directly affected by the HS2 route and land take along the full length of the south western edge of the BBOWT reserve is expected, resulting in a loss of connectivity of habitats, including grassland, meadow and historic hedgerows and woodland. The

- Monitoring pre, during and post construction. Creating extra compensatory BAP Lowland Habitat Meadow is expected as the line goes through this site

Meadows at Finemere Wood BBOWT Nature Reserve:

Grassland to the south / south west of Finemere Wood was bought by BBOWT with the aim of restoring it to traditional wet meadow land, similar to Grendon and Doddershall Meadows, to give butterflies and birds more places to colonise. This reserve acts as an important buffer between the proposed line and Finemere Wood, the significance of which is discussed below.

We expect HS2 Ltd to adopt suitable engineering to minimise hydrology impacts.

loss of mature hawthorn and blackthorn hedgerows is particularly important for the butterfly population and a migration site for the local bat population. There will also be implications for the future breeding success of the Bechstein's bat.

The destruction of traditional landscape character will have major impacts on the visitor experience, including the loss of tranquillity, visual and noise intrusion and severance of a bridleway.

Compensation measures:

- As compensation for direct land loss, the creation of BAP Lowland Meadow Habitat is expected, preferably as an extension

Sheephouse Wood

The area is a large semi-natural ancient woodland, designated as an SSSI, with a diverse woodland bird community, and over 40 species recorded. It is also home to the rare Bechstein's bat. The proximity of HS2 to the area raises concerns about possible adverse effects on breeding bird densities and bat communities.

It is appreciated that there may be good reasons why the HS2 alignment cannot divert from the SSSI. We therefore expect HS2 to implement appropriate compensation / mitigation measures, in particular:

- If the south/ south-west edge of the woodland is damaged or land is lost, we expect compensation to be provided by additional planting on the margins of the site unaffected by HS2. Ancient woodland is however irreplaceable and therefore substantial planting of new woodland will be needed for mitigation.

Bechstein's Bat

This species is one of the rarest mammals in the UK, listed in Annex II of the EC Habitats and Species Directive. It is a UK Biodiversity Action Plan Priority Species and listed as Near Threatened on the IUCN Red List (IUCN 2012). In 2005 there were just six known breeding populations of this species. Recent research (Bat Conservation Trust 2012) identified new breeding populations of Bechstein's bat in Buckinghamshire, Dorset, Gloucestershire, Kent, Somerset, Surrey and Worcestershire. Smaller populations, such as those discovered in Buckinghamshire, may differ in their habitat requirements.



Bechstein's bats have been identified across this area and in at least 11 woodlands in the Bernwood Forest, the core of which will be bisected by HS2. Studies have located roost locations and have confirmed that Bechstein's bats switch between roosts either side of the proposed line, and it is highly likely that many bat species do similar along the existing area of the railway line. The Sharp Ecology Report that assessed the costs of HS2 in 2011 (further informed by subsequent field studies) warned that HS2 will result in:

- The loss of woodland and other habitats used for commuting, foraging and roosting of Bechstein's bats

- The loss of potential movement corridors between habitats, resulting in population isolation and possibly local extinction over time

The report was also concerned that HS2 Ltd had not fully considered the potential financial costs associated with survey, assessment, mitigation, compensation and monitoring to ensure compliance with national and international legislation. The Bat Conservation Trust (2012) also recommended that longer-term intensive surveys are necessary to enhance understanding of the population, its needs and potential impacts of development.

The BCT recommended the following mitigation (based on existing data):

- Woodland close to Bechstein's bat records should be retained or enhanced in line with the Natural England Management Guidelines for Bechstein's bat
- Non-intervention areas should be identified that protect woodland habitats supporting Bechstein's bats
- Lighting schemes should be designed to limit illumination and light spill in areas where Bechstein's bats are present

The Sharp Ecology report proposed mitigation measures to avoid impacts and provide appropriate habitat compensation and enhancement, including:

- Preferred option - 3km of cut and cover tunnel through the Claydon Woods Area
- Second option - use of Green Bridges
- Third option - tree planting to compensate for habitat loss and improve landscape connectivity

With the international significance of the Bechstein's bat, we expect these mitigation measures to be implemented, and expect HS2 Ltd will provide the funding for a contemporary assessment of the impacts on the species during both construction and operation. It must not be overlooked that the area is home to a number of other species of bat. Surveys, assessment and mitigation must consider combined effects of other consented and proposed projects across the area.

Heritage

We want to improve the archaeology exposure of the area by creating a tourist trail and encouraging people to learn about sites that the line passes through.

Waddesdon Estate

Situated south west of Waddesdon Village, Waddesdon Manor is a Grade I Listed Building and Grade I Registered Park and Garden. Dating to the 19th century, the estate has been designated to be of international significance and enjoys more than 350,000 visitors every year. Accordingly, we expect considerable steps to be taken to prevent disruption or damage created by the HS2 proposals.



Waddesdon Manor, Avella

Key Mitigation:

- We expect mature vegetation on the north east boundary of Waddesdon Manor to be protected and maintained during both the construction and operation phases. This provides a vital screening effect, mitigating significant adverse visual impacts to the Manor and Gardens

Water Resources and Flooding

We expect HS2 Ltd to assess the flood risk from all watercourses across the area that will be impacted by the proposed line. Potential changes to surface water flows, groundwater flows and overland flows must be appropriately managed.

Rights of Way

We expect that all new tracks / Rights of Way in the Fleet Marston area are defined as bridleways to secure an off-road route between Aylesbury and Waddesdon on the south side of HS2. If any existing footpaths are to become bridleways, we expect adequate provision to be made to ensure the walkers are not inconvenienced – i.e. by ensuring suitable width.

Calvert, Twyford, Chetwode and Steeple Claydon (Area 7)

From Greatmoor to Twyford, HS2 continues to follow the line of the existing railway, with a slight diversion north of Calvert. The HS2 line passes west of Calvert village before passing the lake north of Calvert and crossing the nature reserve. It then crosses the Bicester-Bletchley railway line. HS2 then follows the disused railway alignment, passing north-east of Twyford. On either side of Twyford, viaducts are proposed to carry HS2 over local watercourses and designated flood plains.

The Calvert corridor includes projects that must be considered and treated for combined consultation. The HS2 line, East West Rail, the Energy from Waste facility, SSSIs and Bernwood Forest must be considered together and protected where possible. We must minimise disruption to residents.

Infrastructure Maintenance Depot

HS2 Ltd plan to provide an Infrastructure Maintenance Depot (IMD) between Calvert and Steeple Claydon, in excess of 2 kilometres long. Understandably local residents are very concerned about traffic, visual and noise impacts on local communities.

Mitigation measures must include:

- Landscape bunding on the Steeple Claydon side of the depot
- Lighting regimes that minimise light pollution in a dark area

- Adequate noise protection from 24 hour operation
- Travel plan and measures to support sustainable travel by IMD staff
- Consideration of a passenger halt at Steeple Claydon

We are concerned about the site for the IMD, since the large land take is not suitable for such a rural location. The impact of the facility operating 24 hours a day must be properly assessed with sensible mitigation and compensation measures developed for local residents. The site is only served by a rural network of “C” class roads.



East West Rail passenger station

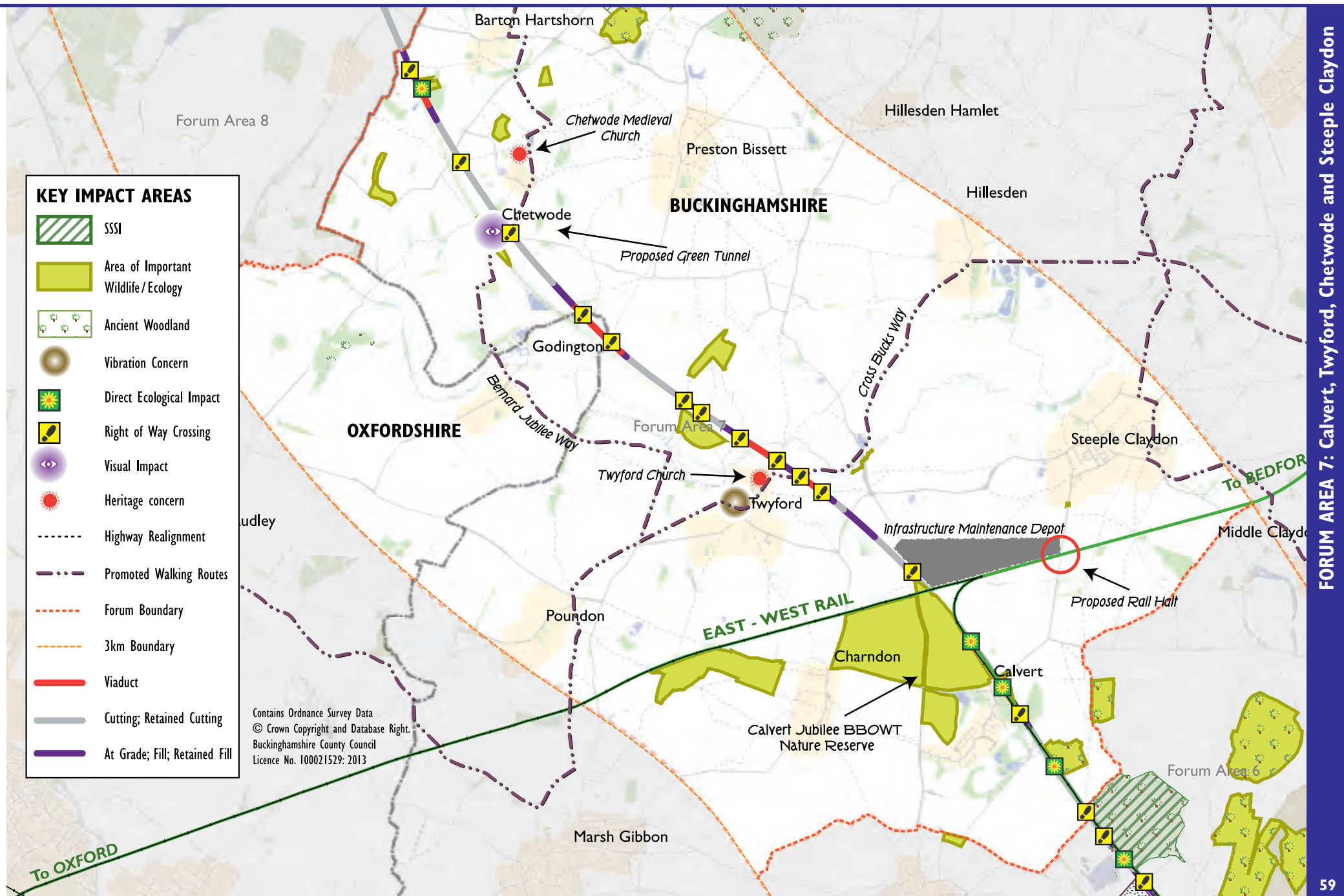
As further compensation for the community in this area, we believe that a passenger halt should be provided on the East West rail line at Steeple Claydon.

We understand that HS2 railway equipment will need to come into the area using EWR. Providing a halt therefore seems a reasonable suggestion, allowing improved connectivity of the area with Bedford, Oxford, Milton Keynes and Bicester, enhancing connections to South West England and South Wales.

Such a station would also allow staff to access the depot and help keep traffic off local roads



HSI Singlewell Infrastructure Maintenance Depot, Shaun Pope



Heritage, Noise and Vibration

HS2 comes within 250m of the conservation area, listed buildings and archaeological sites in Chetwode. Chetwode Church is a Grade I Listed Medieval Church and is believed to have some of the oldest stained glass windows in the country with limited or no foundations. There are therefore serious concerns about the impact of vibrations created by HS2 less than 300m away.

There are also significant concerns about noise impacts in Twyford due to its proximity to the line. The HS2 line will come within 250m of Twyford's Grade I listed medieval parish church. A noise bund is therefore critical in Twyford with further work required to assess the optimal height, extent and character of the bund. The area north west of the village, around St Mary's House, is also an important historic environment, and the former manorial centre of the medieval village of Twyford. We expect detailed work on noise mitigation to be carried out to ensure the residents of Twyford are protected, balanced with the best treatment for the village's historic assets.



Norman doorway at Twyford Church

Ecology

Calvert Jubilee BBOWT Nature Reserve Local Wildlife Site

This is a former clay pit and municipal waste tip which has been reclaimed by nature and is now an important reserve for birds and butterflies. The proposed route runs along the eastern edge of the reserve, and the wetland area to the north is valuable for butterfly species and wildflowers. Birds found here include the nightingale and turtle dove. The area will be affected not only by the HS2 line but also by construction works for the proposed Infrastructure Maintenance Depot. The open water in the reserve is very deep so rarely freezes and therefore provides an important site for wildfowl in the winter.

The proposed HS2 route then passes the lake north of Calvert village and crosses the nature reserve on a shallow embankment. This will be severely impacted as a consequence of construction work for about a kilometre along the eastern edge. Environmental impacts on fauna and flora are likely to be significant.

Mitigation measures include:

- Minimising construction impact on the nature reserve



Calvert Jubilee BBOWT Nature Reserve Local Wildlife Site

Jim Asher, BBOWT

- Compensating the loss of quiet enjoyment of the nature reserve for visitors, possibly by creating an alternative nature reserve with visitor access
- Compensating for the loss of habitats, by providing biodiversity offsetting areas as close to the area of loss as possible.

Traffic and transport

To minimise disruption to local residents, HS2 Ltd must determine a way to keep access via Perry Hill open as long as possible and restrict disruption.

We are also keen to support and promote the following mitigation proposed by Jacobs:

Planting works to the embankments of the over bridge

would in time reduce its visual impact to local residents and visitors to the nature reserve, though this is not likely to be fully mitigated due to the height of the proposed road. Planting of hedgerows and trees to the sides of the access roads in the proposed options would also help to integrate them and reduce visual impact.

Water Resources and Flooding

We expect the developer to assess the flood risk from all watercourses in this area which will be impacted by the proposed line. Potential changes to surface water flows, groundwater flows and overland flows must also be managed.

Landscape and Visual

We are concerned about the likely adverse visual impacts of the line on: a public footpath running eastwards to Chetwode, residential properties at School End, and properties at The Hermitage and Priory House due to views of the cutting and over bridge

Mitigation measures should include:

- In the first instance, providing a green tunnel in this area must be seriously considered
- Failing this, visual impacts of the scheme might be alleviated by hedgerows and mature tree planting along the top of the cutting

All mitigations should be designed to take account of 'combined effects' of other projects such as the Energy from Waste facility and the East West Rail project.



East West Rail

East West Rail is a major project to promote and support economic growth by establishing a strategic railway connecting East Anglia with Central, Southern and Western England. The scheme is being promoted by the East West Rail Consortium, comprising local authorities and strategic partners, including Buckinghamshire County Council and Bucks Business First.

The 'Western Section' will link Oxford, Bicester, Winslow, Bletchley and Bedford, with a spur connecting Aylesbury and Milton Keynes. East West Rail is being delivered by Network Rail and jointly promoted by Network Rail and the East West Rail Consortium, to create a railway that improves local rail services and offers new journey possibilities with new links to national mainline services for passengers and freight.

The route is planned to open in December 2017 and has parallels with the M25, since it provides an orbital route around London which both passenger and freight services will use for short, medium and long distance journeys.

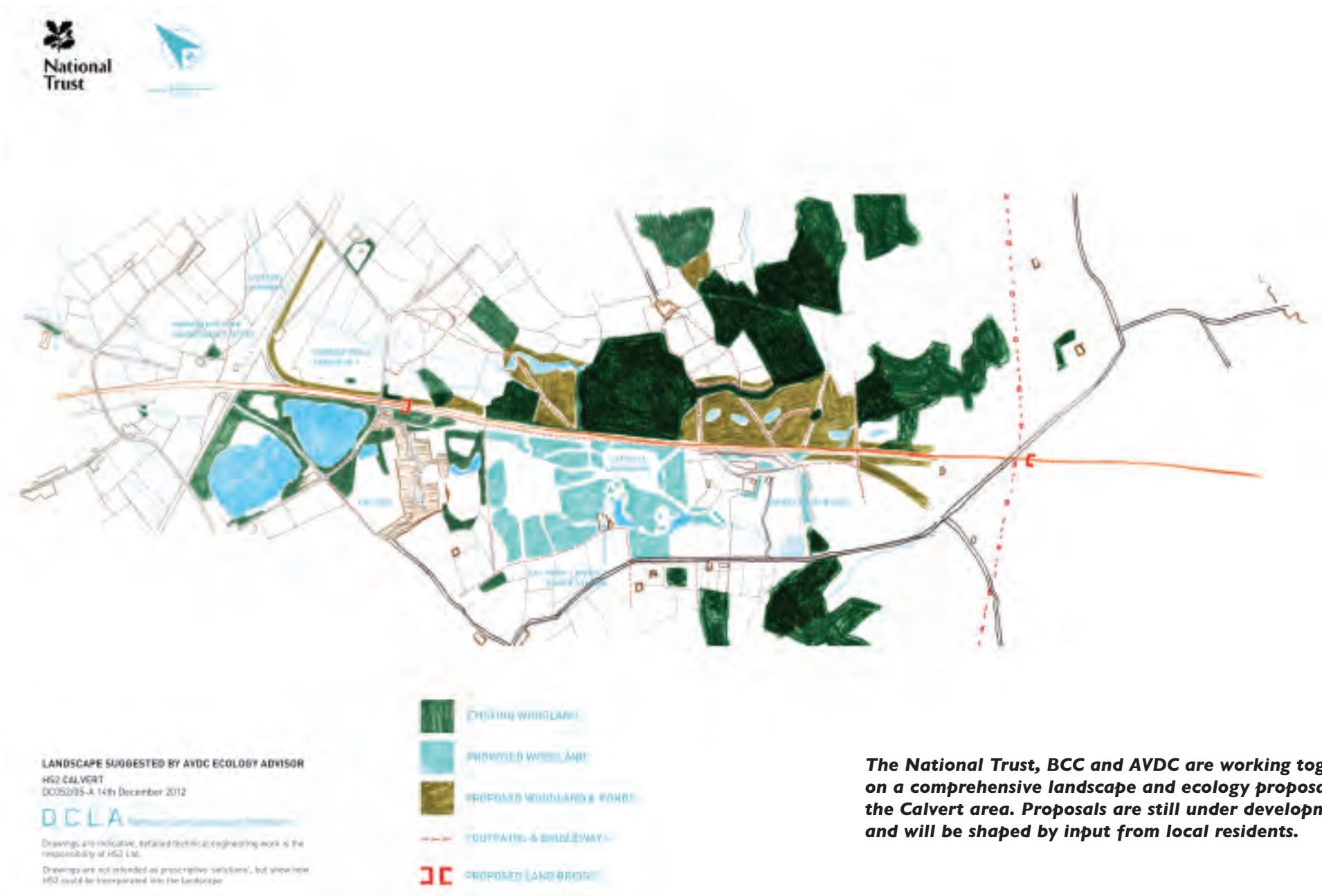


Energy from Waste

The County Council has awarded a contract to build and run an Energy from Waste facility at Greatmoor to FCC Environment. FCC Environment submitted the most competitive tender and will save Buckinghamshire tax payers over £150million over the 30 year contract.

The facility will divert household and commercial waste from landfill. Importantly, deliveries to the plant will be via a new access road from the A41, diverting traffic away from local villages. It will also produce 22MW of electricity, enough to power up to 36,000 homes and create 300 construction jobs and 64 permanent jobs. The proposal received planning approval in April 2012.

Buckinghamshire currently has a recycling rate of 45% but by 2020 aims to increase its recycling rate to 60%. However, due to the increase in landfill tax, if alternative waste disposal methods are not found, the Council will be paying £13 million every year to dispose of waste via landfill. This is money that could be used to protect services provided for vulnerable communities or individuals across Buckinghamshire. It is expected that the plant will be operational by 2015.



The National Trust, BCC and AVDC are working together on a comprehensive landscape and ecology proposal for the Calvert area. Proposals are still under development and will be shaped by input from local residents.

Newton Purcell and Brackley (Area 8)

There are two Buckinghamshire Parishes, Turweston and Westbury, in this area, both directly and indirectly impacted by the HS2 route.

The route includes a viaduct over the River Great Ouse flood plain about 700m west of Westbury, and then runs across east of Turweston, before crossing the flood plain on a viaduct, and crossing the A43 which needs to be diverted to the north and raised significantly to create the necessary room for HS2.

The nature of the valley and the degree of topographical variation suggests that this area is particularly sensitive, especially where HS2 crosses the valley on a prominent viaduct. Minimising disruption to this area is vital as the HS2 proposals will significantly change this rural area and its recreational function.

Landscape and visual impact

The HS2 proposals for this area include two viaducts that will have significant adverse landscape impacts. The viaducts must be designed to avoid significant environmental effects, and visual intrusion. They need to be suitably positioned and screened as necessary, offering opportunities for local landscape and associated biodiversity enhancement while minimising disturbance over this length of the line. National Grid pylons east of Turweston must be moved to

accommodate the HS2 line. As compensation, we expect to see the electric lines undergrounded.

The route cuts through the playing fields east of Turweston that are the village's recreation ground. The playing fields are also Queen Elizabeth II Jubilee Field, part of the Queen Elizabeth II Fields Challenge campaign. This aimed to protect outdoor recreational space for communities across the UK as a permanent legacy of the Queen's Jubilee celebrations. With the line bisecting these grounds, half the field is likely to be left unusable. We expect HS2 to secure alternative land for the village playing fields as a matter of priority.

Ecology and Water Management

The Turweston Manor Grassland Local Wildlife Site is a key site within this area suffering direct land loss as the proposed route cuts across the wet grasslands and floodplain of the Great Ouse River on a viaduct. The site supports a range of habitats such as springs, large fen areas and chalk grassland and is significant to the county.














- Wet grasslands are highly susceptible to both ground and surface water flow interference and therefore engineering will need to ensure no hydrology impacts
- Site monitoring must happen before, during and after construction to prevent habitat loss. If this cannot be achieved it will either need to be re-engineered, or as a last resort, additional compensatory habitat created.

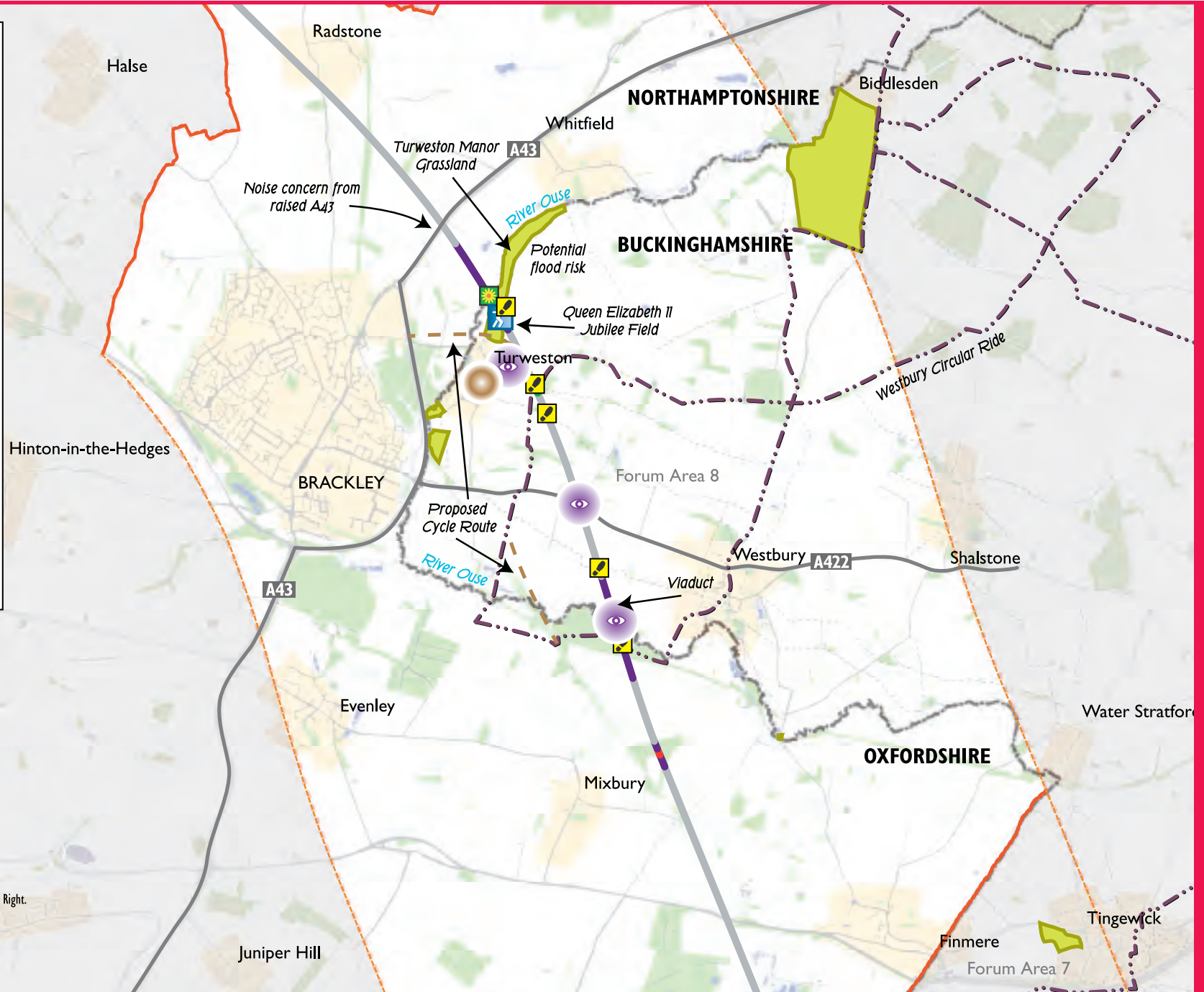
Viaduct construction could also have negative impacts on grasslands, should flood risks increase by altering / changing the landform.

- Any flood risk assessment undertaken by HS2 Ltd must therefore look at the impacts the route will have on both the natural and built environment between Turweston and Westbury. Flood risk management will present both risks and opportunities, i.e. if flooding is moved, a different area becomes floodplain with direct impacts on that environment.

The Great Ouse, its tributaries and associated lakes are a broad habitat of major significance and must be monitored as part of the flood risk assessment, not just before the line is constructed. Hedgerows in the area also provide habitat connectivity for mammals and invertebrates that must be replaced by a green bridge (or similar) crossing the line, designed to optimise the amount of wildlife that can cross over.

KEY IMPACT AREAS

-  Area of Important Wildlife / Ecology
-  Leisure Amenity
-  Direct Ecological Impact
-  Right of Way Crossing
-  Visual Impact
-  Vibration Concern
-  Highway Realignment
-  Promoted Routes
-  Forum Boundary
-  3km Boundary
-  Viaduct
-  Cutting; Retained Cutting
-  At Grade; Fill; Retained Fill



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Landscape

The villages of Turweston and Westbury lie close to the valley floor and are significantly larger than any of the other nearby villages. They both have areas of new housing around their historic core but retain a strong sense of their historic identity with vernacular buildings predominant. Around Biddlesden Park there are a few other dwellings forming a small settlement. The A422 cuts across the area in two places but elsewhere roads through the area are narrow meandering, and sometimes sunken, lanes.

Rights of Way

Rights of Way are important across this area and need to be managed and maintained for use by ramblers, equestrian businesses and cyclists. We expect all routes to remain open to keep constant connectivity levels across Aylesbury Vale.

We also expect local cycle routes to be improved, particularly the completion of the Westbury Circular Ride which follows onto the dismantled Banbury-Buckingham railway. There are also aspirations for a safe cycle route from Brackley to Westbury and Turweston. Connecting these routes north to Helmdon would establish a link to the national Sustrans network and open up further cycling and walking opportunities. These are important measures for the communities of Brackley, Westbury, Turweston and Mixbury. Using these cycleways, one could loop from Brackley to Westbury and then back via Turweston, or, for longer rides, head out towards Helmdon and beyond.

Noise and Vibration

Ensuring that appropriate thresholds for noise and vibration are met across the area will be a major challenge thanks to its existing tranquillity and remoteness, and we expect HS2 Ltd to meet higher standards for this rail scheme and develop sensible approaches to noise mitigation. Turweston will need significant mitigation to reduce noise impacts, and Westbury (north east of a high viaduct) will also require measures that reduce noise impact for residents. Such measures might include:

- Low noise surfacing on A43 Brackley bypass and noise mitigation panels by the River Ouse Bridge
- A partially retained cutting at Turweston to reduce the land take and provide improved noise mitigation using a sound absorbent lining
- Airborne noise from the Westbury viaduct must be identified in the ES as a significant area of concern. Adequate measures must be considered to mitigate noise at source

Situated a short distance from the line, listed buildings in Turweston are vulnerable to ground-borne noise and vibrations during both the construction and operation of the HS2 route. There are major concerns that the buildings' foundations will be unable to withstand the impacts of vibrations.

Water Resources and Flooding

We expect HS2 Ltd to assess the flood risk from all watercourses that will be impacted by the proposed line. Potential changes to surface water flows, groundwater flows and overland flows must also be managed.

KEY REFERENCES

Accounting for environmental impacts: supplementary Green Book guidance. HM Treasury and DEFRA. February 2012.

Aylesbury Transport Model – Stoke Mandeville Mitigation Measures – High Level Modelling Note. Produced by Jacobs for BCC. January 2013.

Bat Conservation Trust. http://www.bats.org.uk/pages/-bechsteins_bat-910.html

Buckinghamshire Green Infrastructure Strategy. Buckinghamshire Green Infrastructure Consortium. 2009.

Colne Valley Regional Park - <http://www.colnevalleypark.org.uk/>

Countryside and Rights of Way Act (2000) - <http://www.legislation.gov.uk/ukpga/2000/37/contents>

The Chilterns AONB: <http://www.chilternsaonb.org/>

The Chilterns AONB Management Plan 2008 – 2013. The Chilterns AONB.

The Case for a Full Chilterns Tunnel: a report by Peter Brett Associates for CRAG and CCC. October 2012.

Chiltern Landscape Character Assessment. Prepared for BCC and CDC by Land Use Consultants. 2011.

East West Rail <http://www.eastwestrail.org.uk/>

Environmental Guidelines for the Management of Highways in the Chilterns. Published by Chilterns Conservation Board, Buckinghamshire County Council, Bedfordshire County Council, Hertfordshire County Council and Oxfordshire County Council. March 2009.

Greenspaces Audit of HS2 Optimised Route 3. BCC. 2011.

HS2 London to West Midlands EIA Scope and Methodology Report. A report for HS2 Ltd by Arup/URS. September 2012.

HS2 Project Specification. HS2 Ltd. January 2012.

Impacts of nearby development on the ecology of ancient woodland, for the Woodland Trust by Corney, Smithers, Kirby, Peterken, Le Duc & Marrs, 2011

Impact on designated wildlife sites. Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust. 2013.

IUCN Species Programme – Red List of Threatened Species. <http://www.iucnredlist.org/>

Last chance for Stoke Mandeville's deserted village? In the bath of the HS2 Rail Line. Buckinghamshire Archaeological Society. May 2012

Natural Environment White Paper – The Natural Choice. June 2011.

National Trust : vision for HS2 around Aylesbury. <http://www.nationaltrust.org.uk/article-1356398204607/>

Review of HS2 route through Buckinghamshire: Landscape and Engineering impacts. Jacobs. 2012

Report to assess the costs and deliverability of High Speed 2. Sharp Ecology. June 2011.

A Study of Sensitivity of the Buckinghamshire Landscape to the proposed HS2 Route. Land Use Consultants. July 2011.

UK National Ecosystem Assessment: understanding nature's value to society. June 2011.

4

CONSTRUCTION

“There are many environmental factors to take into account when planning any works, whether minor or major. The cumulative impact of even seemingly small, piecemeal highway works can have a significant detrimental impact on the biodiversity, local landscape and natural beauty of the area”.

*Chilterns Conservation Board
Environmental Guidelines for the Management of
Highways in the Chilterns*

The **Mitigation Blueprint** is primarily concerned with the legacy left by HS2 once operational. A detailed consideration of the construction impacts requires a further comprehensive study. HS2 Ltd will set out overall construction standards in the **Code of Construction Practice (CoCP)**, with local issues expected to be addressed in **Local Environment Management Plans (LEMPs)**. The CoCP sets out expected standards and controls for each of the EIA topics such as Noise, Ecology, Air Quality etc.

Consideration of the construction phase is currently limited to potential impacts and opportunities relating to traffic and the transport network. We expect that the environmental impacts of enabling works (such as highway changes to accommodate

construction traffic) will be included and assessed within the **Environmental Statement**.

Traffic and Transport Impacts

Lorry movements

Major disruption will be caused by the large number of lorry movements on the limited major routes capable of being used by large, heavy vehicles. The number of lorry movements will cause considerable damage to the existing infrastructure with consequent maintenance and repair costs. There is the likelihood of further disruption as commuting road users try to avoid roads being used by construction traffic and divert to less appropriate routes. Given the proposed construction period, the effects on the local economy will be considerable. It has been estimated that over the length of the route in Buckinghamshire approximately one million lorry movements will be needed simply to transport excavated material, either for re-use or stock piling. Above this there will be further movements for the materials and plant required for construction.

Removal of Spoil

As the south of the county is close to the built up areas of outer London, it is difficult to see earth haulage movements going towards London and it is equally difficult to see where, locally, such amounts of spoil may be deposited. Longer rather than shorter transportation distances are therefore likely to be necessary. A further aspect of spoil disposal which may have major consequences is if spoil is contaminated as this can only be disposed of in registered and closely controlled sites. Contamination may derive

from activities including farming operations, landfill or, where the new route runs on existing dismantled railways.

Construction staff transport

To reduce local impacts, no construction traffic including staff transport should be routed via local villages. Particular villages close to the HS2 route identified for further protection include Hyde Heath, South Heath, Little Missenden, Little Kingshill, Great Missenden, The Lee, Dunsmore, Quainton, Calvert, Twyford, Chetwode, Newton Purcell and Mixbury.

Impact of construction traffic on footpaths

We expect HS2 Ltd to agree that any closures and / or diversions of all rights of way directly affected by construction must be minimised, both in terms of closure period and length of diverted route. Wherever possible all new bridges and routes should be constructed before existing routes are closed. We expect HS2 to realise that what may be regarded as a small diversion for a car driver will be a major obstacle for a pedestrian.



Water management

Management of water levels, watercourse crossing and ground water interference during the construction of HS2 is critical. The expectation is that HS2 Ltd will have regard to and respect the EU Water Framework Directive, ensuring that any run-off entering a watercourse will not reduce its water quality and impact on its ecological status.

Site Specific Recommendations

Whilst construction traffic routeing is speculative at this stage, the expectation in Buckinghamshire is that access should be from the strategic highway network, as far as possible. Guidelines for Buckinghamshire include:

- In Colne Valley, the use of temporary slips onto the M25 is preferred over the use of local roads to move construction material and excavated material
- The A413 at Chalfont St Giles is constrained and should be avoided. We expect an appropriate route to be provided (for tunnel shaft off Chesham Lane) via a separate haul road from the A413, routed from Junction 1 of the M40 and the A40
- In the Amersham area, vent shaft sites should be accessed via Junction 2 of the M40, using the A355 and A413. This will require improvements to the network between Pyebush roundabout and the A355 (also known as the Wilton Park relief road)
- The surface route between Wendover and Mantles Wood should be accessed via the trace (rail bed) as far as possible. Narrow roads leading from the

ridge to the A413 should not be used nor improved for construction traffic, whilst use of the B485 should be managed to minimise impact on this key route



Construction impacts on the wider area: case study Chesham

Chesham is a market town north of Amersham, south-east of Aylesbury and only 2.5 miles from the proposed HS2 alignment. The Town Council have expressed significant concerns about direct and indirect construction impacts on the town. In particular, we expect to see the following concerns considered and sufficiently mitigated:

- Construction traffic must be prevented from travelling through the conservation area via Church Street.
- Impacts of construction traffic and displaced commuter traffic on the A413 requires consideration.
- Chesham residents have requested further details regarding potential disruption to the Chiltern Railways in near by towns which could lead to commuter displacement to Chesham
- Key routes between Chesham and surrounding villages such as South Heath and Missenden are vital for Chesham's economy and for the village communities as Chesham is the areas centre for shopping.

- Routeing any construction traffic via Junction 4 of the M40 at High Wycombe is unacceptable and alternative routes must be agreed
- Construction traffic for Aylesbury and its environs should come from either the M40 (Junction 8) or the M25 (Junction 20) and then via the trace (track)
- Construction traffic for the route north of Aylesbury should be routed via Junction 9 of the M40
- The use of Waddesdon as a construction route is unacceptable (owing to its important heritage) and alternative haul routes to the trace must be provided
- HS2 Ltd must provide suitable and acceptable routes to the rail line between Twyford and the A422
- Work on the Turweston and Westbury sections of the line must be accessed via Junction 10 of the M40 and the A43

KEY REFERENCES

Environmental Guidelines for the Management of Highways in the Chilterns. Published by The Chilterns Conservation Board, Buckinghamshire County Council, Bedfordshire County Council, Hertfordshire County Council and Oxfordshire County Council. March 2009.

HS2 Phase One: London and West Midlands Draft Code of Construction Practice A draft report for HS2 Ltd by Arup/URS. December 2012.

5

THE LEGACY

“We expect HS2 Ltd and Department for Transport to take responsibility for all adverse impacts of the HS2 line. Once mitigation and compensation measures are in place, HS2 should not have any significant negative impacts on the socio-economic and environmental context of Buckinghamshire”

HS2 Blueprint

It will be a sad day for Buckinghamshire should the HS2 project proceed to completion and operation unless it can be shown that it has brought positive benefits to the county as recompense for the unprecedented disruption, damage and distress caused.

Vision

The Colne Valley is spanned by a world class viaduct that is envied for its design and ability to minimise noise and vibration. The visitor experience is enhanced by improved facilities and well-established and managed habitats linked by land and water discovery trails. Thriving attractions provide employment and draw visitors from many miles around.

The Chilterns AONB is protected by a tunnel that stretches from the M25 to Wendover. The effects of sonic or high pressure noise are minimised by well-designed tunnel portals. Ventilation shafts are screened

by mature vegetation or are landmark features, taking their cue from the local vernacular and materials. Shardeloes Lake and the River Misbourne have been preserved and protected, and other water sources are unaffected. Robust track bed design has eliminated vibration. Buckinghamshire continues to flourish as a tourist destination and visitor attraction, supporting the local economy.

Approaching Stoke Mandeville, the maintenance sidings are effectively shielded from view both locally and from the key viewpoints of Coombe and Bacombe Hills. Around Aylesbury, improved road links manage traffic and congestion impacts to secure journey time reliability. Archaeological investigations, involving the public, have yielded important and exciting finds attracting both national media and academic attention. Finds are retained locally with the best examples best displayed in a new museum / visitor centre.

Residents west of Aylesbury are protected by landscaped bunds and revised landforms that offer effective noise and visual protection. New leisure and recreation opportunities are offered by a linear park that maintains connections with the nearby countryside; new or improved games pitches; and a reconfigured golf course and nature reserve. The grounds of Hartwell House have been appropriately preserved and protected, in line with its designation, and the hotel continues to support Aylesbury's economy.

The landscape close to Fleet Marston and Waddesdon is protected by the realignment of the A41 north of Waddesdon village. That realignment also offers traffic relief to Waddesdon with the A41 passing north of the

village. As a result the setting of the historically important Waddesdon Manor and grounds is preserved and protected, and visitors spend time in the village.

The road network at Quainton continues to provide direct access from the A41 to both Buckinghamshire Railway Centre and the village whilst accommodating long vehicle turning requirements. The Railway Centre attracts many more visitors wishing to experience both old and new, facilitated by a visitor viewing area for the high speed line and links fostered with the National Railway Centre.

The major infrastructure projects – East West Rail, HS2 and the Energy from Waste facility – are sensitively integrated into the Calvert opportunity area. The Steeple Claydon halt (on the EWR route) provides a sustainable means of travel for the local population, tourists and employees of the Infrastructure Maintenance Depot and other sustainable enterprises stimulated by inward investment. Increased numbers of visitors are drawn to the special and historic landscape of Bernwood Forest and Claydon House. Connectivity is maintained across the railway line and habitats are enhanced so that they sustain a rich diversity of wildlife, not only along the narrow corridor of the railway, but also across the wider landscape.

The construction of HS2 has taken all opportunities to improve drainage and provide flood attenuation. Rural tranquillity has been preserved using the best possible noise mitigation measures. New and reconfigured roads are designed in keeping with their setting, are safe to use, accommodate expected traffic and are fit

for purpose. Post-construction, roads are reinstated to their original condition using appropriate materials, and where appropriate, road space from widened carriageways will be reassigned for walking and cycling.

Farmland used for construction sites, railheads and other purposes has been restored to its original productive use. Access to fields is maintained and land fragments have been assigned to purposeful use, or swapped across landholdings. Field drainage patterns have been maintained and improved. Designated heritage assets and cultural landscapes across Buckinghamshire are reserved, protected, maintained and enhanced, particularly close to the rail line, and they continue to serve as areas of interest and enjoyment.

The Rights of Way network is fully integrated across the county. The network provides opportunities for non-vehicular access to services and the natural environment in Buckinghamshire. The rail line does not obstruct or inhibit any designated Right of Way access in the county, with crossings well designed and sympathetic to their setting. Where possible they are incorporated into green bridges that offer visual mitigation and act as wildlife corridors.

A well connected and integrated ecological network allows for the safe and frequent movement of wildlife populations throughout the county. This network forms the basis of healthy ecosystem service provision for Buckinghamshire's people and wildlife, and has avoided fragmentation through innovative management and frequent monitoring. The county continues to enjoy multi-functional green-space for the enjoyment and benefit of current and future communities.

Water resources are sufficient, plentiful and of a good standard thanks to the safeguarding of water supplies and the adequate storage and treatment of wastewater. The operation of the rail line has not caused any additional flood risk within the county, hence flooding risk for people and property has not been adversely affected by the rail line. Where possible flood attenuation has been enhanced and developed in synergy with compensatory habitat.

The rail line has helped enhance the standard of living within Buckinghamshire, not least by improvements to the natural and built environment. Opportunity areas along the line benefit from improved amenities and connectivity and are thriving. Local employment opportunities have increased within Buckinghamshire, and local businesses have prospered. Individual villages and towns within Buckinghamshire have grown economically with the standard of living favourable compared to the rest of England.

Noise impacts from the rail line and other sources do not excessively impact on the everyday lives of both rural and urban residents of Buckinghamshire. Ongoing and monitoring approaches for noise assessment within Buckinghamshire will ensure that noise and vibration are not a significant issue arising from transport within the county.

Overall, should HS2 proceed, we wish to see the concerns and requirements of Buckinghamshire residents – such as those set out in this document – regarded seriously. We demand that HS2 Ltd and the Department for Transport take responsibility for all adverse impacts of the line. Once mitigation and compensation measures are in place, HS2 should not

have any significant negative impacts on Buckinghamshire, and indeed should show betterment wherever possible.

6

APPENDICES

Appendix A

Understanding the Hybrid Bill procedure

Appendix B

HS2's engagement approach using Community Fora

APPENDIX A

Understanding the Hybrid Bill procedure

A Parliamentary Hybrid Bill is a way to authorise or approve major projects outside the usual planning system. The Bill confers powers to compulsorily purchase land, build and operate the line. A Hybrid Bill is presented by a Minister and is expected to enjoy cross-party support. This means it is likely to have enough support in Parliament to be voted through even if objections are raised and changes proposed during its passage.

A Hybrid Bill must pass through both Houses of Parliament (Commons first, then Lords). Its Second Reading establishes that the principle of the project has been consented. After Second Reading, it is then considered by a Select Committee, normally made up of members chosen by the House and others chosen by the Committee of Selection. Anyone specifically and directly affected by the Bill may petition the Select Committee. This is an opportunity to express views and make recommendations about certain aspects of the proposals, in effect highlighting issues for attention at later stages in the Bill's passage. The Select Committee cannot consider petitions which challenge the principle of the Bill.

There is no universal right to submit petitions, it is only for individuals or organisations with an appropriate status. This status is known as *locus standi*.

- Petitioners should establish not just problems with the proposal but also what should be done about them. This requires, for instance, close and early examination of the Strategic Environmental Assessment, any Environmental Impact Assessment, other documentation; identification of compensatory and mitigation arrangements, and understanding of the consequences: e.g. if additional land is needed for tree-planting, then there must be provision in the Bill for the compulsory acquisition of the land required
- Petitioners are likely to make the most impact if those with shared interests pool resources and act as one, such as through the 51m Alliance of Councils
- One of 51m's challenges to the HS2 project at the Judicial Review was that the Hybrid Bill process is not compatible with the Environmental Impact Assessment (EIA) Directive. This states that the public should have the opportunity to take part in the environmental decision-making process before a decision is made. This is clearly not possible because the Select Committee considers petitions after the Second Reading, i.e. after the principle of the Bill has been established

APPENDIX B

HS2's engagement approach using Community Fora

HS2 Ltd has set up community fora along the line of route between London and the West Midlands as a way of engaging with local communities. There are eight community fora in Buckinghamshire which bring together key local stakeholders. Regular meetings were held throughout 2012 and up to February 2013 to get local representatives working with HS2 Ltd to:

- inform the local community about HS2 proposals and consultations
- highlight local priorities for the route design
- discuss ways to avoid and mitigate the environmental impacts of the route such as screening, managing noise and reinstating highways
- identify possible community benefits

The fora are widely considered to be unsuccessful, with very few examples where local communities have influenced any aspect of the design and construction of the route. HS2 Ltd have increasingly used 'bilateral' meetings with individual groups and stakeholders to secure engagement. The County Council has developed a series of schedules setting out the impact of the line in each forum area. The schedules are split by issue: ecology/wildlife; highways; rights of way; heritage; amenity; flooding and detailed mitigation sought.