



The High Speed Rail (London – West Midlands) (Greatmoor Railway Sidings Etc.) Order

Environmental Statement **Volume 1:** Non-technical summary



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Environmental Statement

Volume 1:

Non-technical summary



Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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1 Introduction

1.1 The Proposed Scheme

- 1.1.1 FCC Waste Services (UK) Ltd (FCC) operates the Calvert landfill site and Greatmoor Energy from Waste (EfW) facility which are both located to the south of Calvert village, west of the Aylesbury Link railway line. As part of their current operation, FCC brings in landfill material by rail which is then off loaded at the existing railway sidings, (an area of short tracks used by stationary and waiting trains), currently located at Calvert on the west side of the Aylesbury Link railway line.
- 1.1.2 In order to construct the proposed High Speed Rail (London - West Midlands) Phase One hybrid Bill scheme, relocation of the sidings to the east of the Aylesbury Link railway line is required.
- 1.1.3 The HS2 Phase One Environmental Statement¹ (ES) included proposals to relocate the sidings to the east side of the Aylesbury Link railway line and the proposed HS2 alignment, north of Decoypond Wood. An amendment to the Bill was made which was deposited in October 2015, to modify the layout of the sidings, to more closely replicate the existing FCC sidings layout and track length.
- 1.1.4 FCC, Buckinghamshire County Council (BCC), Aylesbury Vale District Council (AVDC), Calvert Green Parish Council, Charndon Parish Council and local residents petitioned against the HS2 Ltd. hybrid Bill to the House of Commons Select Committee.
- 1.1.5 In accordance with the House of Commons Select Committee recommendation, HS2 Ltd has worked with FCC in developing a scheme at Greatmoor, which forms the basis of this ES.
- 1.1.6 HS2 Ltd. is therefore promoting a Transport and Works Act Order (TWAO) to relocate the sidings to the south of Sheephouse Wood Site of Special Scientific Interest (SSSI). These are the 'Greatmoor Railway Sidings' referred to as the 'Proposed Scheme' throughout this document.
- 1.1.7 The extent of the application site is shown in Figure 1.

1.2 Scoping Report

- 1.2.1 A Scoping Report was submitted to the Secretary of State for Transport on 16th May 2016. The Report outlined the approach for undertaking the EIA and identified the environmental topics to be scoped in or out.
- 1.2.2 The Secretary of State for Transport issued a formal Scoping Opinion on 29th June 2016, which included responses from statutory and non-statutory consultees including Natural England, Historic England and the Environment Agency. The scoping opinion provided a formal opinion on the scoping report and recommendations for what should be included in the ES.

¹ HS2 Phase One Environmental Statement available online at <https://www.gov.uk/government/collections/hs2-phase-one-environmental-statement-documents>

- 1.2.3 Matters raised in the Scoping Opinion have been addressed in the ES and accompanying documents where appropriate, others matters will be addressed as part of the detailed design of the Proposed Scheme.

1.3 Consultation and engagement

- 1.3.1 HS2 Ltd. has engaged and consulted with relevant parties, including statutory consultees, landowners, residents and other stakeholder/amenity groups, through correspondence, meetings and a public engagement event.
- 1.3.2 Meetings have taken place to present the proposals and explain the development of the scheme with key stakeholders such as BCC, AVDC, Natural England, the Environment Agency (EA), Berkshire, Buckinghamshire, Oxfordshire Wildlife Trust (BBOWT) and the Bernwood Bechstein's Bat Project.
- 1.3.3 A public engagement 'drop-in' event was held on the 25th May 2016 to raise awareness of the Proposed Scheme.
- 1.3.4 The consultation exercise took place over a period of approximately 5 months prior to submission of the application.
- 1.3.5 No objections in principle to the scheme have been received in response to the formal consultation. A number of detailed points in respect of ecology and bats have been received and HS2 Ltd. held informal discussions with stakeholders to address the concerns raised.
- 1.3.6 Approximately 500 residents were invited to the public engagement event and around 50-60 people attended. Attendees included representatives of the County, District and Parish Councils as well as residents.
- 1.3.7 Five responses were submitted to the ballot box. Each of these 'strongly agreed' with the proposal to relocate the sidings south of Sheephouse Wood SSSI.
- 1.3.8 Of the sixty-eight residents who provided feedback through the post: 63 residents either 'strongly agreed' or 'agreed' with the Proposed Scheme; one resident was 'undecided'; and four residents either 'disagreed' or 'strongly disagreed' with the Proposed Scheme.

1.4 Environmental impact assessment and Environmental Statement

- 1.4.1 Applications made for a TWAO must follow the Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006 and an Environmental Statement (ES) has been made and submitted to accompany the TWAO Application.
- 1.4.2 The purpose of the ES is to identify the likely significant environmental effects of the Proposed Scheme, propose mitigation to address any significant adverse effects identified, and report on any significant residual environmental effects which cannot be mitigated.
- 1.4.3 The ES has also taken account of the requirements of the Town and Country Planning Environmental Impact Assessment (England and Wales) Regulations 2011 ("the EIA Regulations"). An EIA has been undertaken which assessed the likely significant

environmental effects as a result of the Proposed Scheme. The findings of the EIA are presented in the ES that accompanies the TWAO.

1.4.4 The ES consists of four volumes as follows:

- Volume 1: Non-Technical Summary;
- Volume 2: Main Environmental Statement;
- Volume 3: Environmental Statement Maps; and
- Volume 4: Environmental Statement Technical Appendices.

1.4.5 This document is Volume 1: Non-Technical Summary (NTS). The NTS provides a summary of the development proposals and its likely significant effects on the environment. The NTS summarises features of the design and other mitigation measures included in the project in order to avoid, reduce or manage its adverse effects on the environment. Residual effects which are those significant adverse and beneficial environmental effects of the project, which are likely to remain after those measures are in place, are identified.

1.5 Cumulative effects

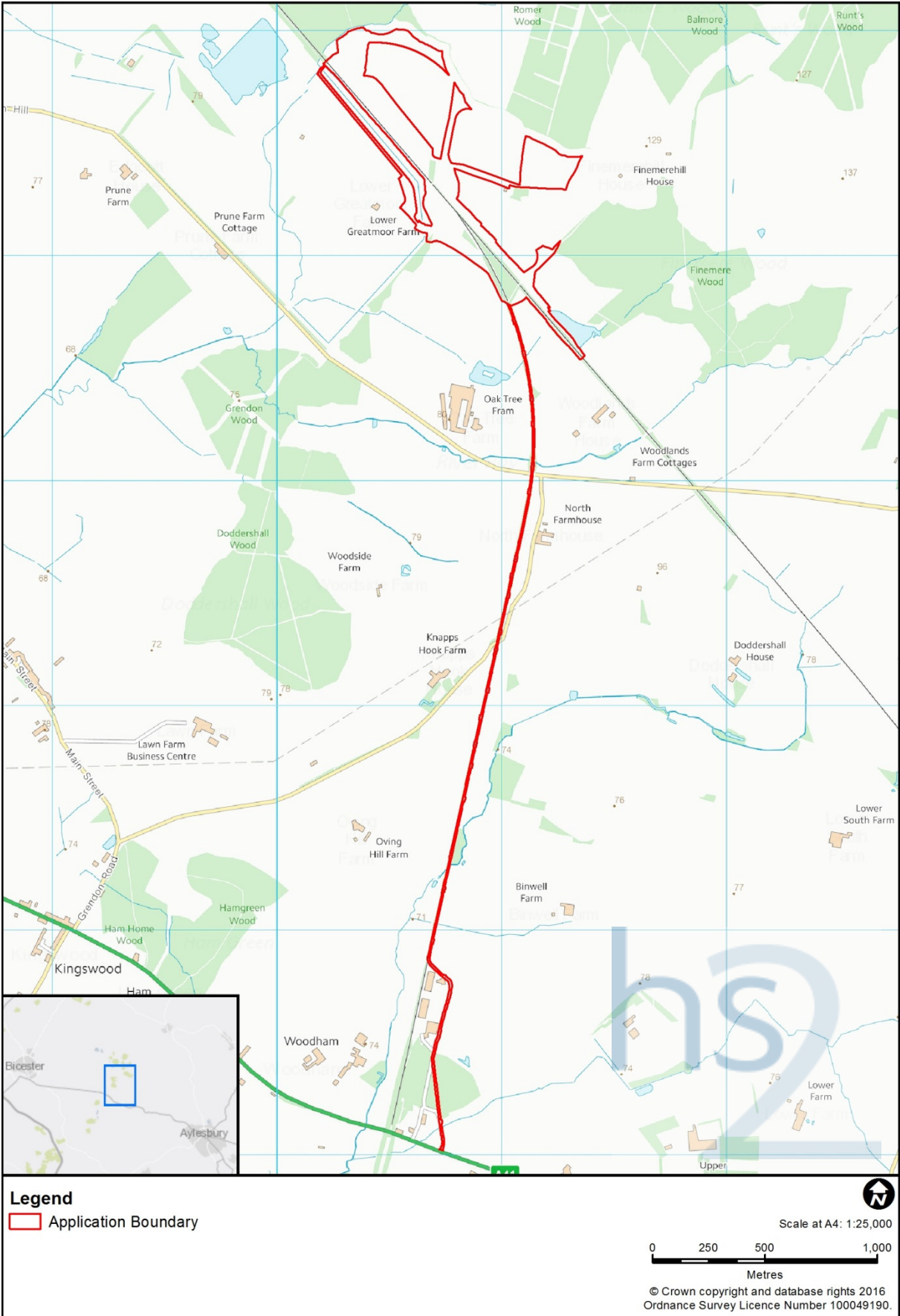
1.5.1 Cumulative effects are those that result from a combination of a number of individual effects. They may result either from a combination of effects arising from the Proposed Scheme or from an interaction between the effects of the Proposed Scheme and the effects of other developments that are likely to be under construction or to have been completed at the same time. Cumulative effects can be either temporary or permanent.

1.5.2 The committed developments considered as part of this assessment are listed in the Volume 2: Environmental Statement and shown on Map ES-o8: Committed Developments in Volume 3: Environmental Statement Maps.

1.5.3 In addition, to the committed developments are those which form part of the Future Baseline, namely:

- HS2 Phase One; and
- the proposed EWR2 upgrade (assumed to start construction in 2019 and be operational from 2022); and
- the restoration of Calvert Landfills; and
- Greatmoor EfW facility.

Figure 1: Application boundary



2 Scheme description

2.1 Site Description

- 2.1.1 The Proposed Scheme is located at Greatmoor, south of Calvert and Sheephouse Wood SSSI², in the district of Aylesbury Vale in the County of Buckinghamshire (refer to Figure 2).
- 2.1.2 The application site area is approximately 36.2ha, which is primarily agricultural land, directly to the east of the Aylesbury Link railway line. The application site also includes the use of an access road along Greatmoor Road (previously known as the Akeman Street Disused Railway) which forms the access road to the Greatmoor EfW facility to the south.
- 2.1.3 The Muxwell Brook runs along the northern boundary of the Proposed Scheme and along the southern boundary of Sheephouse Wood SSSI. Other water courses in the area include the Mega Ditch (a diversion of the Muxwell Brook) and the River Ray. The Proposed Scheme is located in Flood Zone 1 but outside flood zones of the Muxwell Brook.
- 2.1.4 Sheephouse Wood SSSI² is located approximately 30m north of operational sidings of the Proposed Scheme. It is designated for its ancient woodland habitats and associated assemblages of birds, invertebrates and plants.
- 2.1.5 Finemere Wood SSSI³ is located approximately 170m east of the reception sidings and approximately 600m south east of the operational sidings of the Proposed Scheme. It is designated for its ancient woodland, supporting rich communities of native plants, birds, insects and other animals.
- 2.1.6 A large area of semi-improved grassland, known as Finemere Wood nature reserve is located immediately adjacent (south east) of the Proposed Scheme.
- 2.1.7 Grendon and Doddershall Woods SSSI⁴ is located approximately 650m west of the land required for the construction of the Proposed Scheme.
- 2.1.8 Ham Home-cum-Hamgreen Woods SSSI⁵ is located adjacent to the A41 Bicester Road and approximately 680m from land required for the construction of the Proposed Scheme.
- 2.1.9 Greatsea and Romer Wood Local Wildlife Site is located approximately 30m north of the land required for the Proposed Scheme.
- 2.1.10 The above woods, including Sheephouse Wood SSSI and Finemere Wood SSSI, are ancient woodlands and form the remnant blocks of the medieval former royal hunting forest of Bernwood Forest. This area of ancient woodlands and intervening farmed landscape has been identified as supporting an important assemblage of bat species each of varying rarity and importance ranging from common and widespread species

² http://www.sssi.naturalengland.org.uk/citation/citation_photo/1001671.pdf

³ http://www.sssi.naturalengland.org.uk/citation/citation_photo/1005592.pdf

⁴ http://www.sssi.naturalengland.org.uk/citation/citation_photo/1001328.pdf

⁵ http://www.sssi.naturalengland.org.uk/citation/citation_photo/1001358.pdf

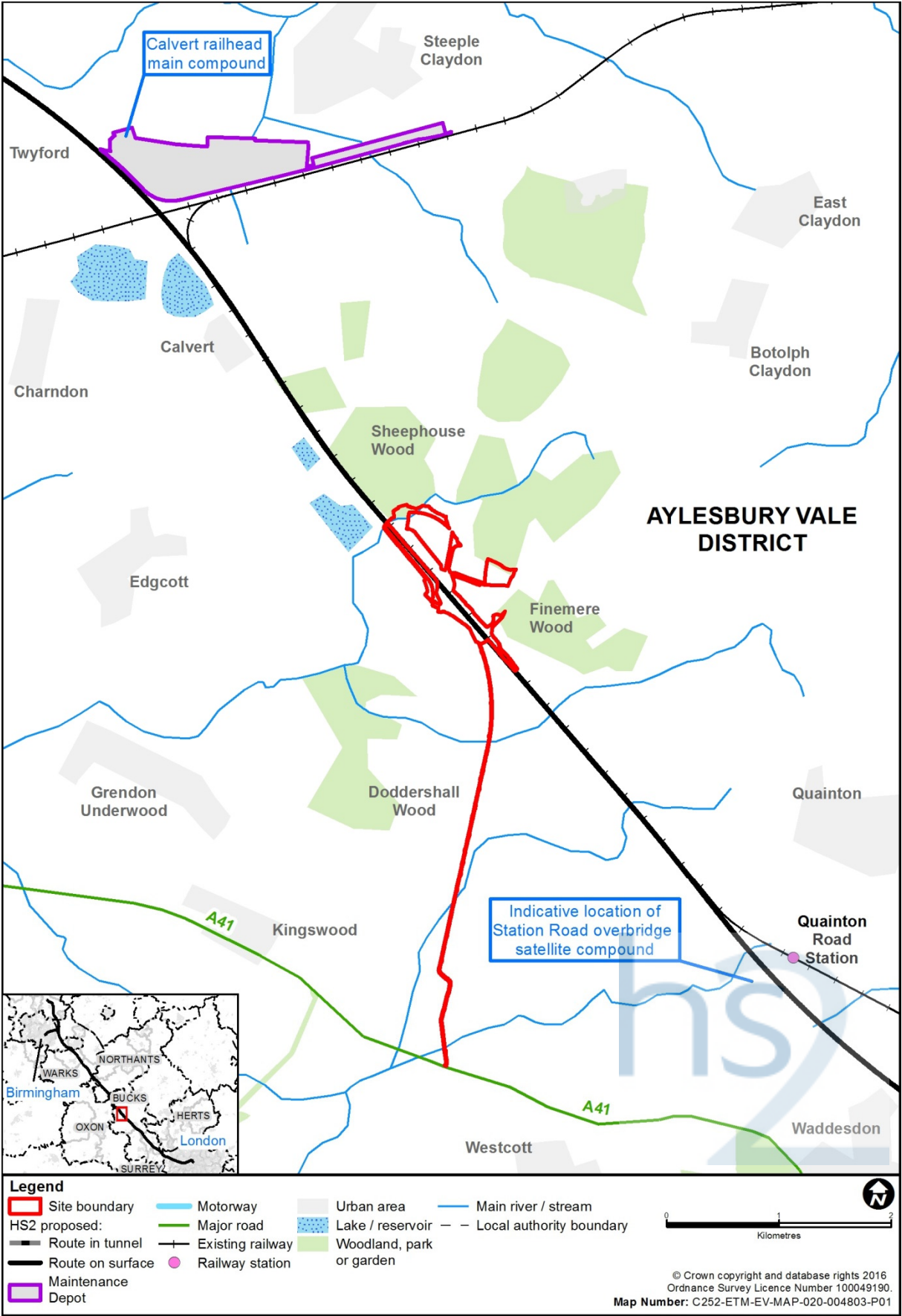
to one of the rarest in the UK. The population of Bechstein's bat in Bernwood Forest is one of the largest known populations in the UK. It is one of the rarest bats in the UK on the north western edge of its known distribution in Europe. The operational Greatmoor EfW facility and the associated current and former Calvert landfills are located on the west side of the Aylesbury Link railway line, immediately west of the proposed sidings location.

2.1.11 Two residential dwellings lie adjacent to the boundary Proposed Scheme; Lower Greatmoor Farm to the west and Finemerehill House to the east.

2.1.12 The following Public Rights of Way (PRoW) transect the sidings element of the Proposed Scheme:

- Public footpath CAG/2;
- Public footpath QUA/35;
- Public bridleway QUA/36;
- Public footpath GUN/31;
- Public Bridleway GUN/25 & GUN/28; and
- Public bridleway GUN/25 and CAG/3.

Figure 2: Site context plan



2.2 Programme

- 2.2.1 Construction of the Proposed Scheme is planned to commence in the autumn of 2017 and commissioning will start in the winter of 2019.

2.3 Description of the Proposed Scheme

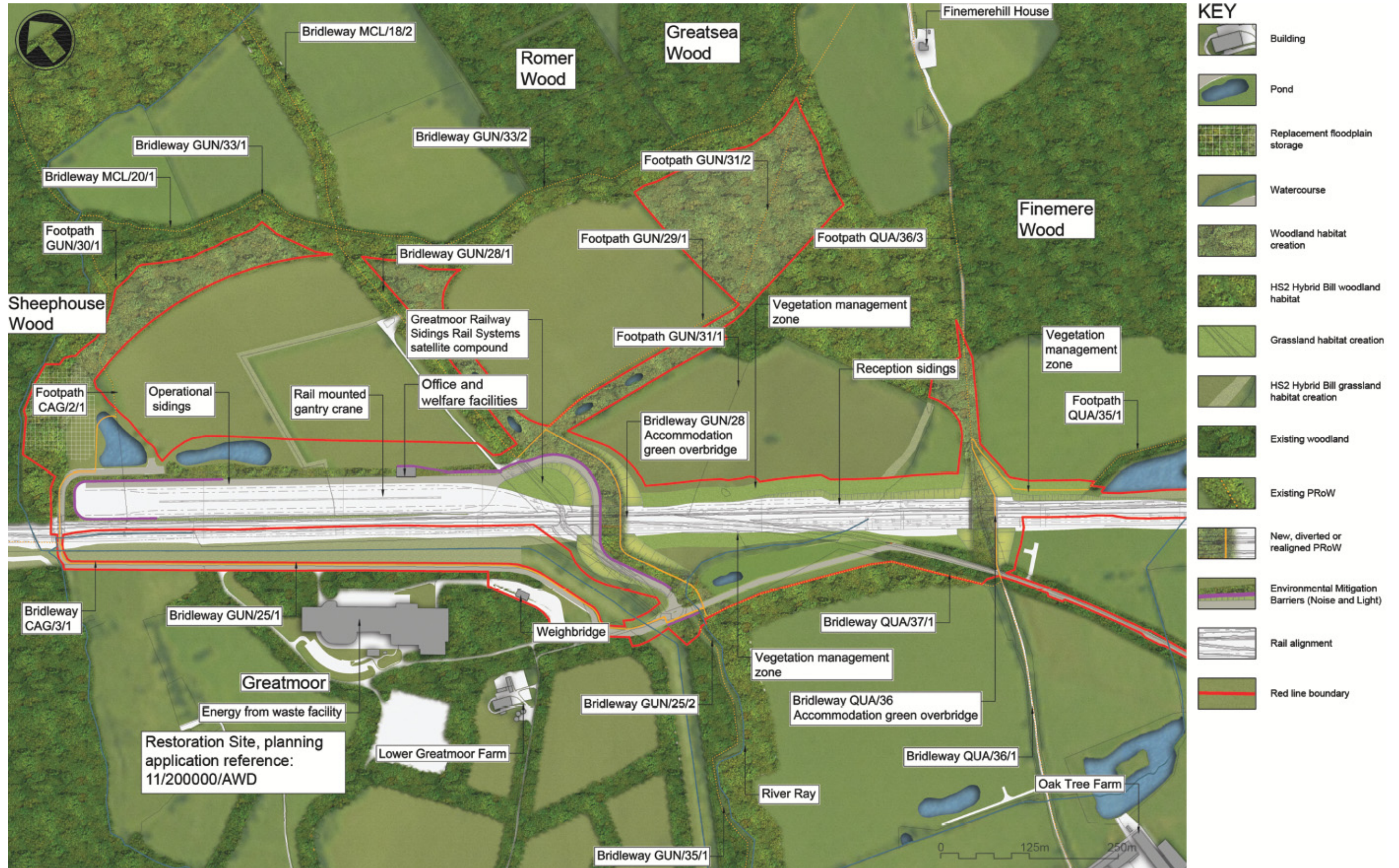
- 2.3.1 The Proposed Scheme is to be situated at Greatmoor, Buckinghamshire between Sheephouse Wood SSSI and a point south of Bridleway QUA/36, where the sidings can be connected to the Aylesbury Link railway line.
- 2.3.2 The Proposed Scheme comprises (refer to Figure 3):
1. reception sidings - which will be used to hold arriving trains and departing trains;
 2. operational sidings - which will be used to load and unload the trains;
 3. office and welfare facilities;
 4. Bridleway GUN/28 accommodation green overbridge;
 5. Bridleway QUA/36 accommodation green overbridge;
 6. an access road between the operational sidings and Greatmoor Road (previously the Akeman Street Disused Railway), which will provide limited maintenance access to the Proposed Scheme during operation;
 7. a weighbridge;
 8. vegetation management zones - areas where tall planting is removed to reduce bat activity;
 9. environmental mitigation barriers - used to reduce disturbance from noise and light on the surrounding environment; and
 10. other mitigation works including earthworks, drainage, planting and power connections.
- 2.3.3 The operational sidings will comprise two pairs of twin tracks, a roadway around the sidings to allow vehicle access and storage and management of the sidings, two mobile grabs, and a gantry crane which is a bridge-like overhead structure used to load and unload heavy items.
- 2.3.4 There will be an access to connect the sidings to FCC's private internal access road to the Greatmoor EfW facility (Greatmoor Road) and the Calvert landfill via Bridleway GUN/28 accommodation green overbridge.
- 2.3.5 Greatmoor Road (previously the Akeman Street Disused Railway) will be stopped up temporarily during construction. Access to all properties along this private road will remain during this period. This road is not proposed to be used for civil engineering works construction traffic, however will provide construction access during rail systems work.

2.3.6

A preliminary lighting scheme has been developed for the Proposed Scheme and has been used to inform the landscape and visual and ecology assessments in the ES. This comprises:

- low level bollard lighting alongside each of the reception sidings for train drivers walking alongside stabled trains during hours of darkness;
- low level bollard lighting along one side of the access road between the junction with Greatmoor Road and the sidings, including across GUN/28 accommodation green overbridge;
- 6m high lighting columns along the western edge of the waste sidings and 10m high lighting columns on both sides of the spoil sidings; and
- LED lighting fixed to the rail mounted gantry crane, which will move along the full length of the waste sidings.

Figure 3: Mitigation plan



3 Construction and operation

3.1 Construction overview

Overview and assumptions

- 3.1.1 The Proposed Scheme will be constructed as part of the HS2 Phase One hybrid Bill works. As such, construction activities will be controlled in compliance with the HS2 Phase One draft Code of Construction Practice (CoCP) as finalised. The current draft CoCP is included in Volume 4.14: Environmental Statement Technical Appendix: Draft CoCP.
- 3.1.2 The sidings will be constructed in the following stages:
- advance works;
 - civil engineering works; and
 - railway installation works.
- 3.1.3 The Proposed Scheme is to be constructed while the Aylesbury Link railway line remains operational for the freight trains running to the current railway sidings at Calvert.
- 3.1.4 Generally, work will be carried out during standard working hours, as defined in the draft CoCP; however, evening and weekend working may be required for safe working in close vicinity to the existing railway and some mid-week night working will be required for material delivery and preparation. Construction of connections to the existing track will require a series of weekend working.
- 3.1.5 Decommissioning and removal of the existing sidings at Calvert are not covered by the TWAO and will be undertaken as part of the HS2 Phase One scheme.
- 3.1.6 The civil engineering works will be managed from HS2 Phase One Station Road Overbridge Satellite Compound located on Station Road, Quainton. The Station Road Overbridge Satellite Compound will be accessed via Station Road, from the A41. The main construction access for the Proposed Scheme will be from the compound and along the HS2 trace.
- 3.1.7 Greatmoor Railway Sidings Rail Systems satellite compound, to be constructed under the TWAO, will be located to the east of the existing Aylesbury Link railway line and accessed from Greatmoor Road.

3.2 Alternative Locations

- 3.2.1 The HS2 Phase One ES included the reinstatement of the sidings to a location on the east side of the Aylesbury Link railway line and the proposed HS2 alignment, to the north of Decoypond Wood.
- 3.2.2 The layout of the sidings was subsequently modified as part of AP4 of the HS2 Phase One scheme and included an extension to the sidings to the north. During the passage of the Bill through Parliament, the House of Commons Select Committee recommended an alternative option be developed by a Transport and Work Act Order

at a site south of Sheephouse Wood SSSI. The Select Committee also recognised the challenges in avoiding the potential impacts on protected bat species, which are active in the area.

3.2.3 Four options for the sidings south of Sheephouse Wood SSSI were assessed to identify which option would have the least environmental impact:

- Option SK10 - sidings at approximately 45 degree angle from the existing Aylesbury Link railway line with a combined farm accommodation, green overbridge and vehicle access;
- Option SK11 - sidings at approximately 45 degree angle from the existing Aylesbury Link railway line with an accommodation green overbridge and separate vehicle underpass;
- Option SK13 - sidings parallel to the existing Aylesbury Link railway line with a farm accommodation, green overbridge and separate vehicle underpass; and
- Option SK14 - (a refinement of SK12) sidings parallel to the existing Aylesbury Link railway line with a combined farm accommodation, green overbridge and vehicle access and associated wider planting.

3.2.4 Options SK13 and SK14 were found to have fewer adverse impacts during operation than SK10 and SK11 as the 45 degree layout of the sidings affects a greater area.

3.2.5 Option SK14 was found to have greater landscape and visual impacts than Option SK13.

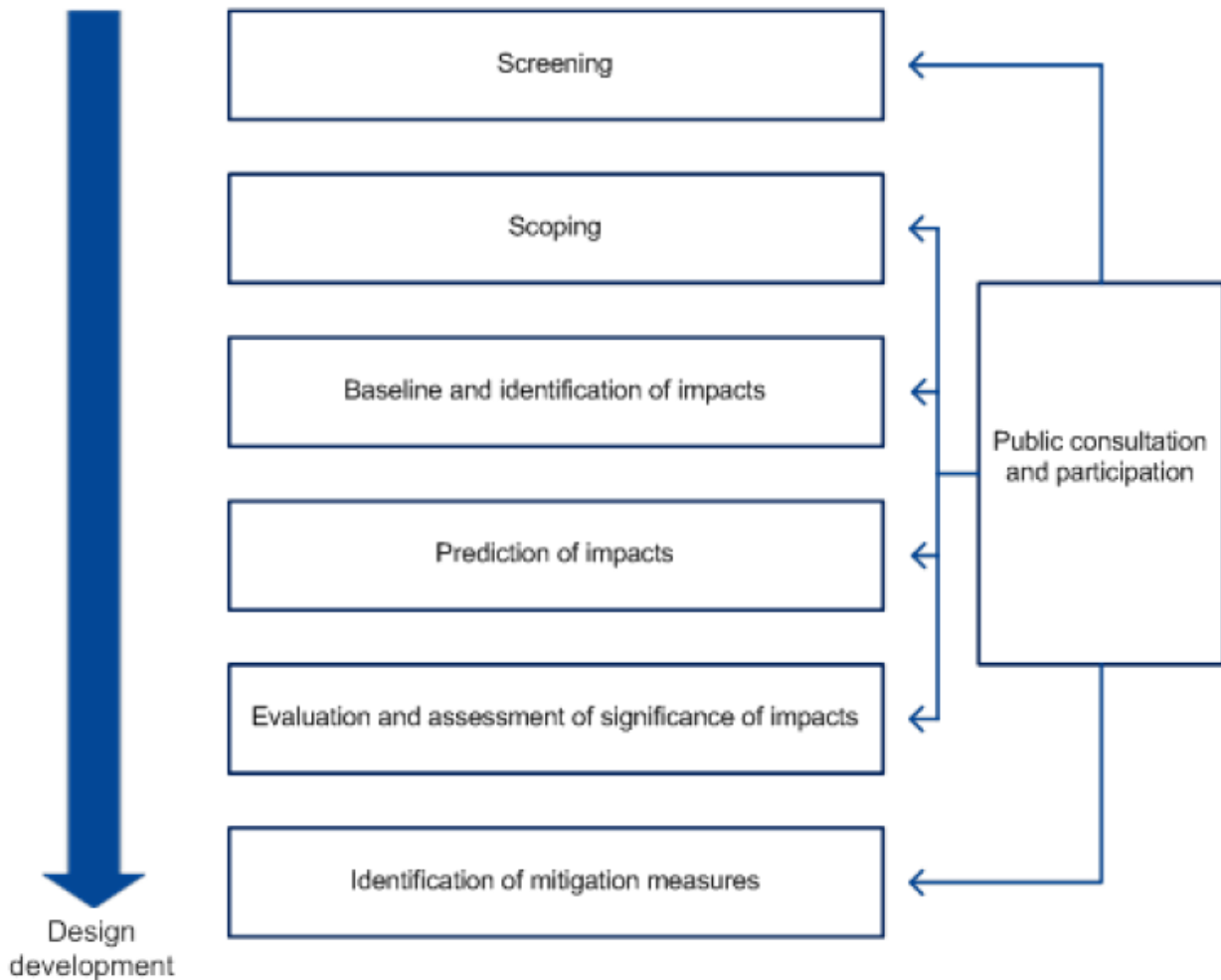
3.2.6 The underpass in Option SK13 had the potential to be used as a bat flight route as bats are likely to be diverted up and over the underpass at an unsafe height with the increased risk of bats colliding with trains. The appraisal found that there was an overall moderate impact on disturbance to bats during operation and this was likely to be worse than Option SK14.

3.2.7 Option SK14 was considered to be the preferred option and this is the Proposed Scheme assessed in this ES.

4 Preparation of the Environmental Statement

4.1.1 The main steps in the preparation of an ES are shown in Figure 4.

Figure 4: Environmental impact assessment process diagram



4.1.2 The ES has considered the construction and operational effects on the following environmental topics, based on the requirements of the EIA Regulations:

- Agriculture, forestry and soils;
- Air quality;
- Community;
- Cultural heritage;
- Ecology;
- Land quality;
- Landscape and visual;
- Sound, noise and vibration;
- Traffic and transport; and

- Water resources and flood risk.

4.1.3 The EIA process comprises the following related activities, which are presented in the Volume 2: Environmental Statement:

- collection of information about current environmental conditions ('the baseline') in the vicinity of the Proposed Scheme;
- prediction of future environmental conditions without the Proposed Scheme ('the future baseline');
- assessment of the likely beneficial and adverse significant environmental effects of the Proposed Scheme;
- development and assessment of proposed mitigation for identified likely significant adverse environmental effects; and
- assessment of the remaining significant adverse environmental effects of the Proposed Scheme assuming the proposed mitigation is in place (referred to as 'residual effects').

4.1.4 Climate change has been taken into account within each of the technical chapters as part of the assessment. It is not anticipated that future predictions of climate change will have any effect on the proposed use of the Proposed Scheme. The Proposed Scheme also does not include construction or operational uses and activities that will generate emissions at a scale that have the potential to cause significant adverse or beneficial effects for climate.

Identification of likely significant environmental effects

4.1.5 The ES identifies both beneficial and adverse impacts on environmental resources or receptors to assess whether the resultant effects are likely to be significant.

4.1.6 The predicted impacts and effects are classified as follows:

- beneficial;
- adverse; and
- negligible.

4.1.7 They have been further categorised as follows:

- low impact/minor effect;
- medium impact/moderate effect; and
- high impact/ major effect.

4.1.8 Generally, for the purposes of this assessment, effects of moderate adverse or above have been considered to be significant.

5 Environmental Summary

5.1 Introduction

- 5.1.1 The following section provides a summary of the assessment of likely significant beneficial and adverse residual effects of the project on an environmental topic basis, as presented in the Volume 2: Environmental Statement. For each topic, the approach to mitigation is described.
- 5.1.2 The current draft CoCP for the Proposed Scheme is included in Volume 4.14: Environmental Statement Technical Appendix: Draft CoCP.

5.2 Agriculture, forestry and soils

- 5.2.1 The agriculture assessment focuses on the effects of the construction and operation of the Proposed Scheme on the current land use, in terms of land take and quality and severance to agricultural holdings.
- 5.2.2 The study area comprises the agricultural land that is physically affected by the Proposed Scheme (to the east and west of the Aylesbury Link railway line). The land to the west of the existing railway forms part of the Greatmoor EfW facility restoration scheme.

Impacts

- 5.2.3 Approximately 20.0ha of agricultural land required permanently for the construction of the Proposed Scheme is likely to be lower quality (not best and most versatile agricultural land), the majority of which is farmed by Portway Farm. No grazing land is required from Portway Farm, and as such its dairy operation will not be affected.
- 5.2.4 Of the approximately 20ha, approximately 14.0ha will be restored for ecological and/or landscape mitigation.
- 5.2.5 Overall, construction of the Proposed Scheme would have a negligible effect on Portway Farm, However, as the Proposed Scheme is situated adjacent to the HS2 Phase One scheme, it increases the residual major significant effect that the construction of the HS2 Phase One scheme will have on the holding.

Mitigation

- 5.2.6 Soil permanently displaced during construction of the Proposed Scheme will, so far as reasonably practicable, be reused locally as part of the proposed woodland and ecological planting. Appropriate handling and restoration of soil will be undertaken in accordance with the draft Code of Construction Practice.

Summary of likely significant residual effects

- 5.2.7 The Proposed Scheme will not give rise to any significant residual effects on agricultural or soil resources. However, as the Proposed Scheme is situated adjacent to the HS2 Phase One scheme, it increases the residual major significant effect that the construction of the HS2 Phase One scheme has on Portway Farm.

5.3 Air Quality

5.3.1 Air quality effects can occur during construction from dust and road vehicle emissions.

5.3.2 The study area for the air quality assessment comprises an area of approximately 500m around the sidings, access roads, Greatmoor EfW facility, and highways including the A41 and Station Road.

Impacts

5.3.3 For human receptors identified in the study area, there are slight or negligible impacts, and no significant effect is anticipated.

5.3.4 The operational phase may result in potentially significant effects from nutrient nitrogen deposition on a small area of Sheephouse Wood SSSI due to emissions associated with the existing waste truck vehicle fleet.

Mitigation

5.3.5 With the implementation of the draft CoCP there will be negligible impacts from construction dust at sensitive human and ecological receptors.

5.3.6 The potentially significant impacts identified at Sheephouse Wood SSSI during operation are associated primarily with the use of FCC's current fleet of waste haulage vehicles that would be used to transport waste from the Proposed Scheme to the Greatmoor EfW facility and Calvert Landfill during operation. However, through the application of controls via a planning condition at the site, the waste haulage vehicles will be replaced with newer vehicles which will have substantially lower emissions, and avoid any impacts and consequent effects.

Summary of likely significant residual effects

5.3.7 There are no likely significant adverse residual effects.

5.4 Community

5.4.1 Construction of the reception sidings of the Proposed Scheme will occupy approximately 0.2ha of grassland along the south-western margin of Finemere Wood nature reserve, which is approximately 0.4% of the total area of the nature reserve. Given the small amount of land lost, the operation and use of the nature reserve would not be disrupted as a result of the construction and operation of the Proposed Scheme.

5.4.2 There are no other community facilities or recreational (promoted) public rights of way (PRoW) in the study area.

Summary of likely significant residual effects

5.4.3 There will be no significant residual effects during construction or operation of the Proposed Scheme.

5.5 Cultural heritage

5.5.1 The cultural heritage assessment takes into account the extent to which designated and non-designated assets are affected by the Proposed Scheme.

5.5.2 In addition to the collation of baseline data, a walkover survey and remote sensing assessment have been undertaken.

Impacts

5.5.3 Construction of the Proposed Scheme, including planting works, will temporarily alter the view at Finemerehill House, a Grade II listed building. This will result in a moderate adverse effect.

5.5.4 There will also be a permanent change in the setting of Finemerehill House, from the change in the views from the property to west and north west. There will be a change in landscape from open farmland to more of a wooded character. The introduction of planting will permanently alter the appreciation of the agricultural context of the House, affecting its character. These changes to the setting of the asset will result in a moderate adverse effect.

5.5.5 Any buried archaeological remains that are present within the land required for the construction of the Proposed Scheme, will be removed which may cause a moderate adverse effect.

5.5.6 During construction, the combined cumulative effect of the HS2 Phase One scheme, EWR2 and the Proposed Scheme, will result in the following significant effects:

- the surviving historic elements Great Central Railway and associated railway structures will be removed due to construction of the schemes which will result in a moderate significant effect; and
- the impact on the rural setting of Finemerehill House will be permanently altered by the construction of the Proposed Scheme which will result in a moderate significant effect.

5.5.7 Although there will be no significant effects on the setting of the heritage assets arising from the operation of the proposed schemes (HS2 Phase One scheme, EWR2 and the Proposed Scheme), the combined cumulative effect on the setting of Finemerehill House is considered to be significant. The operational noise of both railways, the Proposed Scheme and the combined visual impact of night time and day time operation will have a significant effect on how the asset is appreciated from the wider landscape which will result in a moderate adverse significant effect.

Mitigation

5.5.8 Compliance with the draft CoCP will avoid or reduce environmental impacts during construction.

5.5.9 Refinements to the mitigation measures incorporated into the design of the Proposed Scheme or included in the draft CoCP will be considered during detailed design to reduce further the significant effects described above.

5.5.10 Landscape and ecology planting has been incorporated into the design of the Proposed Scheme, which will progressively reduce impacts on the setting of the

heritage assets within the study area as it matures over time during the operational phase.

Summary of likely significant residual effects

- 5.5.11 The Proposed Scheme may result in a permanent (moderate) adverse significant effect of any archaeological remains that may be present within the Proposed Scheme area. An appropriate programme of investigation and recording would be undertaken in relation to any archaeological remains. In addition, there will be a permanent (moderate) residual effect on the setting and appreciation of Finemerehill House.

5.6 Ecology

- 5.6.1 The ecology assessment has considered the temporary construction and longer term operational effects on ecological resources.

Impacts

- 5.6.2 The operation of the Proposed Scheme may lead to increased nutrient nitrogen deposition at Sheephouse Wood SSSI which is likely in the absence of other mitigation to have a significant effect on the SSSI, which is significant at a national level.
- 5.6.3 Construction of the Proposed Scheme will lead to the loss of a single pond located to the south-east of the Bridleway GUN/28 accommodation green overbridge which will result in a significant adverse effect. Due to the removal of scrub and semi-improved grassland adjacent to the Aylesbury Link railway line, this may result in a significant adverse effect on great crested newt.
- 5.6.4 The HS2 Phase One scheme will result in a range of effects on ecological receptors. The terrestrial and aquatic habitat loss associated with the cumulative impact of the Proposed Scheme, the proposed HS2 Phase One scheme and EWR2 will result in a significant adverse effect on the great crested newt population.
- 5.6.5 The Proposed Scheme will increase the width of fragmentation of bat flightlines at Grendon Junction and Benfield's Overbridge. This will result in the temporary fragmentation of these flightlines from June 2017 to June 2018 during construction.
- 5.6.6 Disturbance from the construction of the Proposed Scheme, alongside other work to construct the HS2 Phase One scheme and EWR2, would have a cumulative effect on the nearby pair of breeding barn owls and would result in a significant adverse effect, which is significant at a county level.
- 5.6.7 The combined cumulative effects from the operation of the Proposed Scheme, the proposed HS2 Phase One scheme, EWR2 and Greatmoor EfW facility have the potential to result in ongoing disturbance of the maternity colonies of Bechstein's bats and other woodland bat species associated with Sheephouse, Finemere and Romer and Greatsea woods. With the implementation of the proposed mitigation measures it is unlikely that there will be any cumulative effects on Bechstein's or other woodland bat species.

Mitigation

- 5.6.8 Generally construction activities will be carried out during standard working hours but some night time working will be required.
- 5.6.9 By operation, the existing waste trucks will either be renewed for lower emission vehicles or will cease to operate. When the vehicles are replaced with lower emission vehicles the associated reduction in emissions will remove the significant effects on Sheephouse Wood SSSI.
- 5.6.10 The Proposed Scheme will change the alignment and increase the width of the Bridleway GUN/28 accommodation green overbridge which will enable the Bechstein's bat and other woodland bat species to continue to use this key flightline.
- 5.6.11 Operational activities will be restricted in accordance with the operational timing restrictions to minimise effects on bats.
- 5.6.12 A lighting strategy will be developed to avoid the illumination of areas where bats are active.
- 5.6.13 Where appropriate, temporary mitigation measures, such as mobile or instant hedgerows, may be used. Woodland planting will include additional ponds and areas of rough grassland to compensate for the loss of the pond and provide additional habitat for amphibians and reptiles.
- 5.6.14 A total of 7ha of additional woodland planting will be provided as part of the Proposed Scheme. Once established, these habitats will also provide roosting and foraging opportunities for the bats.
- 5.6.15 Further mitigation, such as environmental mitigation barriers (noise/light), will be provided to ensure the behaviour of bats and birds is not affected by the operation of the Proposed Scheme.

Summary of likely significant residual effects

- 5.6.16 Construction of the Proposed Scheme in combination with the construction of the HS2 Phase One scheme and EWR2 will lead to disturbance of the habitat for a pair of breeding barn owls, which may result in a significant adverse residual effect on this species.
- 5.6.17 There are no likely significant adverse residual effects from operation of the Proposed Scheme.

5.7 Land quality

Impacts

- 5.7.1 There are not considered to be any temporary or permanent effects in relation to land quality (which includes land contamination) as a result of the construction of the Proposed Scheme.
- 5.7.2 It is also considered unlikely that the operation of the Proposed Scheme will give rise to any significant contamination.

Mitigation

- 5.7.3 The measures outlined in the draft CoCP will manage risks from the storage of potentially hazardous materials.
- 5.7.4 In the event that unexpected existing contamination is encountered during construction in this area, this will be remediated as described in the draft CoCP resulting in an overall beneficial effect.
- 5.7.5 If remediation works are required during construction, there will be on-going monitoring requirements following completion, which may extend into the operational stage of the Proposed Scheme.

Summary of likely significant residual effects

- 5.7.6 No significant residual effects are likely due to the construction or operation of the Proposed Scheme.

5.8 Landscape and visual

- 5.8.1 The landscape and visual assessment has considered the existing quality of the landscape and its sensitivity to change as a result of the construction and operation of the Proposed Scheme.
- 5.8.2 Photomontages are shown in Volume 3: Environmental Statement Maps.

Impacts

- 5.8.3 As a result of the construction of the Proposed Scheme, there is likely to be a moderate adverse significant effect on the landscape character of the Kingswood Wooded Farmland Landscape Character Area (LCA), the Finemere Hill LCA and the Claydon Bowl LCA.
- 5.8.4 Changes in the local landscape associated with construction activity for the Proposed Scheme will result in moderate adverse visual impacts at the following viewpoints:
- view west from Finemerehill House;
 - view south-west along Footpath GUN28/1 and from the Claydon Woods Circular Walk (Bridleway GUN/33/1 and GUN/33/2); and
 - View south-west from Knowlhill Farm.
- 5.8.5 There will be no significant effects on landscape character during operation of the Proposed Scheme.
- 5.8.6 Due to the presence of the overbridges, the gantry crane, the reception sidings, the operational sidings and the office and welfare facilities, there will be a moderate adverse significant effect in year 1 of operation at the following viewpoints:
- view west from Finemerehill House;
 - View south-west along Footpath GUN28/1 and from the Claydon Woods Circular Walk; and
 - view north-west and south-east from the bridge over the Aylesbury Link

railway (Footpath GUN 28).

- 5.8.7 By year 15, due to the establishment of planting, this significant effect will reduce to a minor adverse non-significant effect at all viewpoints.

Mitigation

- 5.8.8 The following measures have been incorporated into the draft CoCP to avoid or reduce landscape and visual effects during construction:

- retention of existing trees and vegetation where possible;
- use of well-maintained site fencing;
- design of non-intrusive lighting; and
- maintenance of planting and seeding works and implementation of management measures as landscape works are completed during the construction period.

- 5.8.9 Measures that have been included in the design include new woodland planting, native hedgerow and woodland edge species.

Summary of likely significant residual effects

- 5.8.10 There will be moderate adverse significant effects during construction on the landscape character of the Kingswood Wooded Farmland LCA, the Finemere Hill LCA and the Claydon Bowl LCA.

- 5.8.11 Construction of the Proposed Scheme will result in moderate adverse significant effects at the following viewpoints:

- view west from Finemerehill House;
- view south-west along Footpath GUN28/1 and from the Claydon Woods Circular Walk (Bridleway GUN/33/1 and GUN/33/2) between Sheephouse Wood and Greatsea Wood; and
- View south-west from Knowlhill Farm.

- 5.8.12 There will be no significant effects on landscape character in the LCAs during operation.

- 5.8.13 During year one of operation, there will be moderate adverse significant effects on the following viewpoints:

- view west from Finemerehill House;
- View south-west along Footpath GUN28/1 and from the Claydon Woods Circular Walk; and
- view north-west and south-east from the bridge over the Aylesbury Link railway (Footpath GUN 28).

- 5.8.14 By year 15, these significant effects will reduce to a minor adverse non-significant effect.

5.9 Sound, noise and vibration

- 5.9.1 Noise and vibration levels can increase during construction due to an increase in vehicle traffic on local highways and as a result of construction activities. Operational noise and vibration levels could increase due to the reintroduction of train services on the reinstated section of track.
- 5.9.2 Noise levels around the site have been measured to understand the current conditions in and around the Proposed Scheme. Assessment methods were then used to predict the levels of noise generated by construction and the operation of the Proposed Scheme and the potential effects on sensitive locations, including local residents.

Impacts

- 5.9.3 Construction noise or vibration from the Proposed Scheme is unlikely to result in any significant noise effects on residential or non-residential receptors.
- 5.9.4 During operation, no likely significant effects are anticipated as a result of noise from fixed plant equipment onsite.
- 5.9.5 Operational noise impacts due to onsite vehicular movements are assessed as major adverse during daytime and night time at Lower Greatmoor Farm.
- 5.9.6 The HS2 Phase One ES identified major adverse impacts due to operational noise at Lower Greatmoor Farm, Finemerehill House and Oak Tree Farm and a moderate adverse impact at Prune Farm Cottages. A likely significant adverse effect, as a result of the HS2 Phase One scheme, was identified at Lower Greatmoor Farm and as such this property has been identified as potentially qualifying for noise insulation under the HS2 Phase One noise policy.

Mitigation

- 5.9.7 The assessment of construction noise assumes the implementation of the principles and management processes set out in the draft CoCP.
- 5.9.8 Environmental mitigation barriers have been proposed in order to mitigate noise impacts from operational activities on residential receptors at Lower Greatmoor Farm and Finemerehill House and to mitigate noise adjacent to woodland habitat creation areas.

Summary of likely significant residual effects

- 5.9.9 The avoidance and mitigation measures proposed in the HS2 Phase One ES reduce noise inside Lower Greatmoor Farm and Finemerehill House from the construction activities to a level where it would not significantly affect residents.
- 5.9.10 The measures also reduce the adverse effects of outdoor construction noise from the Proposed Scheme on the acoustic character around the local residential communities such that the effects are not considered to be significant.
- 5.9.11 No likely significant residual effects have been identified during operation of the Proposed Scheme in relation to fixed plant noise emissions or onsite vehicular movements.

5.10 Traffic and transport

The effects on traffic and transport have been assessed based on baseline conditions and future scenarios.

5.10.1 As the Proposed Scheme is linked to the HS2 Phase One scheme, assessment of impacts within this ES has been undertaken in two ways:

- with a baseline including the HS2 Phase One scheme. The assessment of the Proposed Scheme has been made against this baseline; and
- to demonstrate the cumulative impact of both the Proposed Scheme and the HS2 Phase One scheme, a combined assessment has been made against a baseline which does not include HS2 Phase One.

Baseline including the HS2 Phase One scheme (assessment of the Proposed Scheme)

5.10.2 Construction of the Proposed Scheme alone will result in increases in daily HGV traffic flows, which will cause a temporary moderate significant adverse effect in relation to traffic related severance for non-motorised users at Station Road, between the A41 and the Station Road overbridge satellite compound.

Combined assessment of the Proposed Scheme and the HS2 Phase One scheme (against baseline excluding the HS2 Phase One scheme)

5.10.3 Construction of the Proposed Scheme and the HS2 Phase One scheme cumulatively will result in substantial increases in daily traffic flows and these will cause significant adverse effects in relation to traffic related severance for non-motorised users in the following locations:

- Station Road, between the A41 and the Station Road overbridge satellite compound, due to an increase in both HGVs and all vehicles (moderate adverse significant effect);
- A41, between A41/ Blackgrove Road and A41/ The Broadway, due to an increase in HGVs (moderate adverse significant effect);
- A41 Aylesbury Road, between A41/ The Broadway and A41/ A4421 Charbridge Lane, due to an increase in HGVs (major adverse significant effect); and
- A41 Boundary Way, between the A41/ A4421 Charbridge Lane and the B4030 (Bicester), due to an increase in HGVs (moderate adverse significant effect).

5.10.4 Construction of the Proposed Scheme and the HS2 Phase One scheme cumulatively will result in adverse effects on non-motorised users due to temporary PRow diversions increasing travel distances at the following locations:

- Bridleway QUA/36/2 & QUA/36/3: temporary stopping up of bridleway during construction works (minor adverse significant effect);
- Footpath QUA/35/1: temporary stopping up of bridleway during construction works (minor adverse significant effect);
- Footpath GUN/31/1: temporary stopping up of bridleway during construction

works (minor adverse significant effect);

- Footpath CAG/2/1: temporary stopping up of bridleway during construction works (moderate adverse significant effect); and
- Bridleway GUN/28/1: temporary stopping up of bridleway during construction works (minor adverse significant effect).

5.10.5 Operation of the Proposed Scheme and the HS2 Phase One scheme cumulatively will result in adverse effects on non-motorised users due to temporary PRow diversions increasing travel distances at the following locations:

- Footpath QUA/35/1: permanent diversion of approximately 100m (minor adverse significant effect);
- Footpath GUN/31/1: permanent diversion of approximately 200m (minor adverse significant effect);
- Bridleway GUN/25/1: permanent stopping up of bridleway, with alternative route of an additional distance of 2.2km provided (moderate adverse significant effect); and
- Bridleway CAG/3/1: permanent stopping up of bridleway, with alternative route of an additional distance of 2.2km provided (moderate adverse significant effect).

Mitigation

5.10.6 Mitigation measures proposed include:

- all roads within the vicinity of the Proposed Scheme will be kept open during construction resulting in no diversions of traffic onto alternative routes;
- HGV routeing, as far as reasonably practicable, will be along the strategic road network and using designated routes;
- construction of embankments utilising locally sourced material which does not need to be transported via the public highway network;
- provision of temporary alternatives to maintain connectivity for PRow closed during construction, as far as reasonably practicable, to reduce loss of amenity; and
- providing on-site welfare facilities to reduce travel by site workers.

5.10.7 The Proposed Scheme will be constructed in compliance with the draft CoCP (refer to Volume 4.14: Environmental Statement Technical Appendix: Draft CoCP). This will include measures which seek to avoid or reduce environmental impacts during construction.

5.10.8 The Proposed Scheme will also use a derivative of the HS2 Phase One scheme Framework Travel Plan, with the aim of reducing construction workforce commuting by private car, especially sole occupancy car travel.

Summary of likely residual significant effects

- 5.10.9 The Proposed Scheme during construction will result in a temporary moderate adverse significant residual effect in traffic related severance due to increased HGV traffic for non-motorised users of Station Road (between the A41 and the Station Road overbridge satellite compound) only.
- 5.10.10 The combined impact of the Proposed Scheme and the HS2 Phase One scheme during construction will result in temporary adverse significant residual effects in traffic related severance for non-motorised users of: Station Road, between the A41 and the Station Road overbridge satellite compound (moderate adverse effect for HGVs and all vehicles); the A41, between A41/ Blackgrove Road and A41/ The Broadway (moderate adverse effect for HGVs); the A41 Aylesbury Road, between A41/ The Broadway and A41/ A4421 Charbridge Lane (major adverse effect for HGVs); and the A41, between A41/ A4421 Charbridge Lane and B4030 (moderate adverse effect for HGVs).
- 5.10.11 The combined impact of the Proposed Scheme and the HS2 Phase One scheme during construction will also result in temporary minor adverse significant residual effects on users of Bridleway QUA/36/2 & QUA/36/3, Footpath QUA/35/1, Footpath GUN/31/1 and Bridleway GUN/28/1 and a temporary moderate adverse significant residual effect on users of Footpath CAG/2/1. This is due to the temporary stopping up of these PRow. These effects are not changed by the Proposed Scheme.
- 5.10.12 The Proposed Scheme will not result in any permanent significant residual effects.
- 5.10.13 The combined impact of the Proposed Scheme and the HS2 Phase One scheme will result in permanent minor adverse significant residual effects on users of Public footpath QUA/35/1 and Public footpath GUN/31/1 and moderate adverse significant residual effects on users of Bridleway GUN/25/1 and Bridleway CAG/3/1 due to permanent diversions or closures, resulting in additional travel distances for users of these PRow.

5.11 Water resources and flood risk

- 5.11.1 The water assessment has considered the construction and operational effects of the Proposed Scheme on water quality, flood risk and groundwater resources.
- 5.11.2 Key environmental issues relating to water resources and flood risk comprise:
- potential impacts to the risk of surface water flooding;
 - restriction of groundwater flow; and
 - potential impacts on groundwater and surface water quality as a result of construction activities.

Impacts

- 5.11.3 No impacts during construction or operation of the Proposed Scheme have been identified.

Mitigation

- 5.11.4 The draft CoCP sets out the measures and standards of work that will be applied to the construction of the Proposed Scheme. These measures and standards of work will provide effective management and control of the impacts during the construction period.
- 5.11.5 During operation, site specific examples of design measures that will mitigate impact include the drainage arrangements for the Proposed Scheme in the study area.

Summary of likely significant residual effects

- 5.11.6 With implementation of the mitigation proposed, including application of the draft CoCP, no significant temporary or permanent effects on surface water, groundwater or flood risk have been identified.

