East Sussex County Council
Bexhill to Hastings Link Road

Landscape and Ecological Management Plan

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Revision 9

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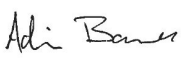
DATE 12/4/2010	SIGNATURE 	SIGNATURE 	SIGNATURE 	SIGNATURE 
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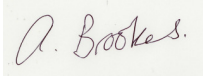
DATE January 2013	SIGNATURE 	SIGNATURE 	SIGNATURE 	SIGNATURE 
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Contents

1 Introduction

1.1 Purpose of document

This Landscape and Ecological Management Plan (LEMP) for the Bexhill to Hastings Link Road describes the proposed ecological and landscape mitigation, habitat creation, habitat management, and ecological monitoring during the pre-construction, construction and aftercare periods of the Scheme in order to safeguard specific landscape features, habitats and species, as required by planning conditions 23, 24 and 25. The ecological or landscape elements of other planning conditions are also addressed in part by this document, specifically conditions 5, 7 and 14, although separate submissions will be provided that will discharge these conditions in full. The detail contained within this LEMP will be used to support the two other Management Plan documents which are required as part of a S106 agreement: the Construction Environmental Management Plan (CEMP) and the Operational Environmental Management Plan (OEMP).

The principal objective of the LEMP is to demonstrate how the Scheme's landscape and ecology mitigation, monitoring and habitat creation proposals address those planning conditions identified above. An Environmental Master Plan has been produced to illustrate the package of landscape and ecological mitigation, providing a final vision for the Scheme, and these figures should be looked at in conjunction with this document.

The mitigation and landscape proposals described in the LEMP and Environmental Master Plan adhere to the commitments made within the Environmental Statement and at Public Inquiry to replace all habitats affected by the Scheme on at least a two for one basis. The detailed design process which has happened since then will mean that the figures for habitat losses and gains which were presented at Public Inquiry may have changed slightly. However, it is considered that these changes are not significant and the basic tenet that all habitats must be replaced on at least a two for one basis has been retained in the landscape and ecological mitigation designs.

The information in the LEMP, together with the Environmental Master Plan, will feed into the two documents required under the S106 agreement: the CEMP and OEMP. The CEMP will address the construction of the Scheme (a period of two years) with the OEMP covering the operational phase of the road for its lifetime. It would not be possible to produce a single comprehensive document which covers the environmental management of a road for its lifetime so it is proposed that the OEMP is a live document which is reviewed and revised on a regular basis over the lifetime of the road.

The LEMP is written to address pre-construction ecological mitigation measures (e.g. species translocation, creation of replacement habitats, habitat manipulation works for protected species etc), the two year construction period, covered by the CEMP, and the first five years of Scheme operation, covered by the OEMP. After this time the OEMP should be fully reviewed and revised to ensure the management and monitoring prescriptions within it remain appropriate. This seven year period which the LEMP covers coincides with the two year construction and five year aftercare period which forms the Hochtief/Taylor Woodrow Joint Venture contract period. It is therefore the responsibility of the Hochtief/Taylor Woodrow to ensure the commitments detailed within this document are addressed during this seven year period, after which time these responsibilities will transfer to East Sussex County Council.

The construction phase of the Scheme is principally covered by the mitigation and habitat creation elements within this LEMP (Section 3), with the operational phase of the scheme being informed by the habitat management section (Section 4). The details for ecological monitoring associated with the Scheme are covered in Sections 5 and are relevant across both the construction (CEMP) and operational (OEMP) phases of the work.

1.2 Background information

The Bexhill to Hastings Link Road (BHLR) aims to improve access to and within Hastings and Bexhill and to open up the north Bexhill and Hastings area for development, boosting the local economy and promoting regeneration.

The Scheme is 5.6 km long from its junction with the A259 in Bexhill to its junction with the B2092 Queensway in Hastings. The first 1.4km of the road (the Bexhill connection) will be located along the bed of an abandoned railway line passing through the built up area of Bexhill, constructed to a single two lane carriageway standard. The remainder of the road will be constructed to a wide two lane single carriageway standard.

The BHLR is seen as part of a "green" access corridor between Bexhill and Hastings and will be accompanied by a Greenway to accommodate recreational activities such as cycling, walking and horse riding. This has been designed as a fenced and gated corridor with a hard surface cycle way/footpath and a soft horse track plus safety margins running along the south side of the Main Scheme.

1.3 Planning context

On 10th December 2008 East Sussex County Council (ESCC), in its role as local planning authority, resolved to grant planning permission for the BHLR. Following that resolution, the application was referred to the Secretary of State who decided that the application should not be called in for her own determination and planning permission for BHLR was granted on 29th July 2009. Listed Building consent for the demolition of a modern barn and a dilapidated woodshed, and the removal and re-erection of the red brick barn at Adams Farm, conditional upon the BHLR proceeding, was granted by the Secretary of State on 22nd January 2009.

On 4th February 2009 the County Council made two Compulsory Purchase Orders, one under sections 239, 240, 246, 250 and 260 of the Highways Act 1980 and section 13 of the Local Government (Miscellaneous Provisions) Act 1976 ("the Highways CPO"), and the other under section 226 of the Town and Country Planning Act 1990 and section 13 of the Local Government Miscellaneous Provisions) Act 1976 ("the Planning CPO"), for land between Bexhill and Hastings required for the construction of the BHLR and for associated works and measures.

The County Council also made a Side Roads Order on 14th January 2009 under sections 14, 124 and 125 of the Highways Act 1980 ("the SRO") for the BHLR.

A Public Inquiry into these orders was held in Hastings between 9th November 2009 and 3rd December 2009. The Inspectors report recommended to the Secretary of State that the Scheme be approved; in a letter dated 20th September 2012 the Secretary of State gave approval for the Scheme.

On 21st June 2012 the Hastings Alliance submitted a claim for Judicial Review of the provisional funding decision made by DfT Ministers in March as ESCC has been

named as an Interested Party. This claim was subsequently rejected on 8th August 2012.

There are three planning conditions (Conditions 23, 24 and 25) relating specifically to wildlife, landscape and habitat issues which are addressed by this document. Planning Conditions 5, 7 and 14 also have elements within them that relate to wildlife, landscape and habitat issues and there are overlaps between information provided in this document and information required to discharge these conditions. However, full details relating to the discharge of Conditions 5, 7 and 14 will be provided in separate submissions. The planning conditions are reproduced in Appendix L.

1.4 The addressing of planning conditions 5, 7, 14, 23, 24 and 25 within this document

The table below shows the location of information within this document that addresses planning conditions 5, 7, 14, 23, 24 and 25:

Table 1.1. Planning condition references

Planning condition reference	LEMP section reference
Planning condition 5: Notwithstanding the details already submitted, no development shall commence, except mitigation and compensation works and archaeological evaluation, until details of the design and materials for the construction of the railway crossing and all under-bridges and over-bridges, including railings, parapets, surface finishes, fencing together with the reuse of any materials salvaged from the demolished existing railway bridges, have been submitted to and approved in writing by the Head of Planning. Bridge structures over water shall include a clear span, with abutments set back from the watercourse on both banks to provide a bank width of 2 metres beneath the bridge, and a soft bank solution beneath the bridges with shade tolerant planting, as outlined in the submitted Figure 3 Indicative sketch of soft bank engineering solution Revision A dated September 2008. The bridges shall be carried out in accordance with the approved details unless otherwise agreed in writing by the Head of Planning.	3.3, 3.4.1, Appendix A - Appendix B - Appendix C - Appendix D - Appendix E -
Planning condition 7: Development shall not commence until details of a scheme for the free passage and/or protection of animals by means of highway underpasses, bridges and any other means has been submitted to and approved in writing by the Head of Planning and the link road shall not be brought into public use until the approved scheme has been fully implemented unless otherwise agreed in writing by the Head of Planning.	3.3, 3.4.1, Appendix A - Appendix B - Appendix C - Appendix D - Appendix E -
Planning condition 14: Before the commencement of each phase of the development, plans and full details of both hard and soft landscaping works, substantially in accordance with the details shown on planting plans 208:31:21; 208:31:22; 208:31:23; 208:31:24; 208:31:25; 208:31:26 and 208:31 :27 dated April 2007, shall have been submitted to and approved in writing by the Head of Planning. These details shall include:	3.64, Appendix B - Appendix J -

Planning condition 23: Development shall not commence until there has been submitted to and approved in writing by the Head of Planning a detailed scheme, to include the proposals in the Environmental Statement and subsequent addenda, for mitigation and compensatory habitat creation/restoration (including connectivity between habitats) and these works shall be carried out as approved. The details of the scheme shall include:	
a) A clear statement of the purpose, aims and objectives for the scheme.	3.1
b) A review of the site's ecological potential and any constraints.	2.1, 2.2, 2.3, 2.4 Appendix M -
c) Description of mitigation, habitats and species appropriate for the site.	2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5 Appendix M -
d) Selection of appropriate strategies for mitigation measures and creating/restoring habitats or enhancing species populations.	3, 4, 4.3
e) Selection of specific techniques and practices for establishing vegetation.	3.6 Appendix K -
f) Sources of native provenance (local if possible) habitat materials (e.g. plant stock) or species individuals.	3.6.1 Appendix J - Appendix K -
g) Method statement for site preparation and establishment of target features.	3.6.1 Appendix K -
h) Extent and location of proposed works.	Appendix A - Appendix B -
i) Links to the habitat management plan.	4
j) The personnel responsible for the work	3.1, 3.2, 3.3, 3.4, 3.5, 3.6,
k) Timing of the works.	3, 4.3, Appendix K -
l) Links to the ecological monitoring scheme.	5.1
m) Disposal of wastes arising from the works.	3.7
Planning condition 24: Development shall not commence until there has been submitted to and approved in writing by the Head of Service-Planning a habitat management plan for the application area and all mitigation and compensation features both during construction and then during the operation of the development for the lifetime of the road. The plan shall include:	
a) A clear statement of the purpose, aims and objectives of management.	4.1
b) Description and evaluation of the features to be managed.	4.2, 4.3, Appendix M -
c) Ecological trends and constraints on site that may influence management.	2.2, 2.3, 5.2
d) Appropriate management options for achieving the aims and objectives.	4.2, Appendix A -
e) Prescriptions for management actions.	4.2

f) A work schedule to include a five year project register, an annual work plan and the means by which the plan will be rolled forward annually.	4.3
g) Personnel responsible for implementation of the plan.	4.2
h) Links to the ecological monitoring scheme and remedial/contingency measures that may be triggered by the monitoring.	5.3, 5.4, 5.5, Appendix K -
Planning condition 25: Development shall not commence until there has been submitted to and approved in writing by the Head of Planning a scheme of monitoring to show the actual effects of the scheme on the ecology of the area both during construction and then during the operation of the development for the lifetime of the road. The scheme shall include:	
a) A clear statement of the purposes, aims and objectives for monitoring.	5.1
b) Details and justification for selection of baseline data and any changes or thresholds that, if occurring or reached, will trigger remedial measures.	5.2, 5.5
c) Details of positive conservation targets along with any associated performance standards or success criteria that will indicate that targets have been reached.	5.3.1, 5.3.2, 5.5
d) Details of the parameters that are to be monitored along with any appropriate "indicators" for monitoring.	5.3.1, 5.3.2, Appendix C - Appendix D - Appendix E - Appendix F -
e) Methods for sampling and analysis, including the timetable and locations for field sampling.	5.3.1, 5.3.2, 5.5.2 Appendix A - Appendix C - Appendix D - Appendix E - Appendix F -
f) Submission of a report on the monitoring to the Head of Planning and at quarterly intervals from the commencement of construction works until the end of the seven year contract maintenance period and thereafter annually, or as otherwise approved in writing by the Head of Planning, including a report on actual or anticipated changes in communities or populations, the reasons for the changes and any remedial measures considered to be necessary to modify the changes.	5.4, 5.5
g) Procedures to be put in place to enable the monitoring reports to be considered by the Head of Planning in consultation with the developer.	5.4

2 Baseline conditions

2.1 Landscape and land cover

The route of the Scheme covers two distinctly different landscapes. The first is the section from Belle Hill, Bexhill, where it follows the route of the former railway line. Much of this section is covered by dense trees, but there are also some more open sections all close to the adjacent land uses of urban/suburban residential housing areas and commercial/industrial sites. Some parts of the abandoned railway line have now been built on and contain industrial sheds and a yard near the A259 King Offa Way, and areas of paved hard standing in locations off London Road and leading up to Ninfield Road.

The second is the rural countryside between Bexhill and Hastings where open agricultural fields bounded by hedges and areas of woodland (most being designated as semi-natural ancient woodlands) are the dominant features. The route passes along the northern boundary of the area of Combe Valley Countryside Park. The changes in topography here form the Combe Haven Valley (which in part contains the Combe Haven Site of Special Scientific Interest (SSSI)) and also the valleys of Watermill Stream and Powdermill Stream.

The southern limit of the High Weald Area of Outstanding Natural Beauty (AONB) lies in the area north of the route and is not directly affected by the Scheme, but ESCC recognises the area north of Bexhill, outside the AONB, as being of significant landscape quality and distinctive character.

2.2 Existing habitats

Two Sites of Special Scientific Interest, six Sites of Nature Conservation Importance (SNCIs) and three Local Nature Reserves (LNRs) are located within 500m of the Scheme.

A wide range of habitats are present throughout the route corridor. At the western end of the Scheme the route passes through a short urban section (Bexhill Connection) with habitats including areas of scrub, private gardens and grassland, some of which are part of an abandoned railway, designated as a Site of Nature Conservation Importance (SNCI). An open ditch with marginal vegetation is also present along part of this section.

Further east, the route passes through mainly arable farmland crossed by a network of hedgerows and watercourses. Combe Haven Valley contains a variety of mesotrophic grassland and swamp communities. The route also passes close to pockets of semi-natural ancient woodland, including Little Henniker Wood, Great Henniker Wood, Hanging Wood, Chapel Wood and Park Wood, several of which form part of SNCIs. Some areas of secondary woodland and copse are also present, including one area designated as an SNCI which is crossed by the route. Approximately thirty five ponds are present within the CPO boundary and a 500m buffer surrounding this, some of which are ephemeral, others well-established and permanent. The eastern end of the Scheme finishes on the edge of the town of Hastings.

Two SSSIs are located within the route corridor: Marline Valley Woods SSSI to the north side of the route at its eastern end, and Combe Haven SSSI to the south of the route along Combe Haven. Marline Valley Woods SSSI is designated for its ancient woodland, species-rich unimproved grassland and the presence of a steep-sided stream valley which comprises ghyll woodland. Combe Haven SSSI has been designated for its alluvial meadows, grassland and ancient woodland, and a large reedbed area. The south-east portion of Combe Haven SSSI also comprises Filsham Reedbed LNR, which is the largest reedbed in East Sussex.

The complex of habitats present within the route corridor provides valuable opportunities for a wide range of species, which rely on the diversity and connectivity of each habitat type.

A comprehensive description of the SSSIs, grassland, woodland and hedgerow habitats is provided in Appendix M. This Appendix describes the species, condition and management status of each unit within these broad habitat types.

2.3 Key species

A number of protected and notable species (as identified in the Environmental Statement) are present along the route of the Scheme. Key species and species groups comprise the following:

- Bats – At least eight species of bat are known to use the habitats within the Scheme corridor for foraging, commuting and roosting, including brown long-eared (*Plecotus auritus*), whiskered/Brant's (*Myotis mystacinus / brandtii*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), serotine (*Eptesicus serotinus*), noctule (*Nyctalus noctula*), Natterer's (*Myotis nattereri*) and Daubenton's (*Myotis daubentonii*). Other Myotis species may also be present. A barn at Adam's Farm which will be lost as part of the Scheme is used as a summer roost by low numbers of male and non-breeding female common pipistrelle and brown long-eared bats, a transitional autumn/spring roost for low numbers of common pipistrelle, and a feeding/night roost for low numbers of Natterer's bats. Taking into account any bats which may use the barn on nights which were not surveyed, it is estimated up to five common pipistrelle, five brown long-eared bats and ten Natterer's bats utilise this structure to roost. Ninfield bridge was identified in 2008 as being used as a summer or transitional roost by a small number of common pipistrelles although surveys and inspections of the structure in 2012 indicate there are no longer any suitable roosting features for bats to utilise. .

- Dormice – Dormice (*Muscardinus avellanarius*) have been shown to be widespread within suitable habitats within the route corridor. Areas of ancient woodland are likely to form core habitat for dormice, which are linked via a network of species-rich hedgerows. The Scheme will result in the loss of hedgerows and woodland in which dormice are known to be present, thus removing some areas of existing foraging habitat and severing potential dispersal routes.

- Badgers – Badgers *(Meles meles)* are active throughout the Scheme and adjacent habitat although the level of activity varies. A total of ninety seven setts were recorded within the Scheme's CPO boundary in 2012 with seventeen located within the construction footprint and therefore requiring closure. The Scheme will lead to a permanent loss of foraging habitat beneath the road alignment, but a comprehensive habitat creation and landscaping plan will

ultimately provide a net gain in foraging area and suitable sett development habitat.

- Great crested newts – Three suites of surveys undertaken between 2005 and 2012 have identified eight ponds (Ponds 5, 7, 13, 15, 16, 17, 20 and 46) which support a small population of great crested newts *(Triturus cristatus).* Only one pond (Pond 13) has shown a consistent great crested newt presence across all three surveys. Ponds 5, 13 and 16 are used for breeding. Of the five ponds in which great crested newts were found in 2012 (Pond 46 no longer offers suitable GCN habitat and has been discounted from the mitigation strategy in agreement with Natural England), four are clustered around Decoy Farm and are considered to represent a metapopulation. The fifth pond (Pond 5) is isolated from this group and so is likely to form part of a separate metapopulation.

- Reptiles – Three common reptile species are known to be present within the route corridor and will be directly affected by the Scheme through habitat loss: grass snake (*Natrix natrix*), common lizard (*Zootoca vivipara*) and slow-worm (*Anguis fragilis*). Surveys undertaken in 2008 indicate a small population of reptiles present within suitable habitat.

- Birds – Sixty bird species have been recorded within the route corridor, eleven of which appear on the IUCN Red List of threatened species, and thirteen species on the IUCN Amber List, including the barn owl *(Tyto alba)* which is also listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). The Environmental Statement identified barn owl breeding sites at Adam's Farm and Bynes Farm although follow up surveys in 2012 confirmed only non-breeding roost sites at Hillcroft Farm and Adam's Farm barn. Surveys also suggest that barn owls use much of the grassland habitat throughout the Scheme. A number of the other bird species recorded are known to hold breeding territories within the route corridor. The Combe Haven Valley is regionally important for spring and autumn bird passage. The site also supports important local populations of both breeding and overwintering birds.

- Fish and crayfish – Ten species of fish have been recorded within watercourses crossed by the Scheme (Combe Haven Main Channel, Watermill Stream, Powdermill Stream and Decoy Pond Stream). American signal crayfish *(Pacifastacus leniusculus)* are present in Powdermill Stream but no white-clawed crayfish *(Austropotamobius pallipes)* have been confirmed as present within any watercourse.

- Odonata – The site is considered to be of regional significance for dragonflies and damselflies with fifteen species being recorded during surveys in 2005 and with seventeen species considered to have bred within the study area and Combe Haven Valley since 1988.

2.4 Hydrology

There are five watercourses in the vicinity of the route:

1) Egerton Stream – which uses part of the disused railway corridor in Bexhill as a flood storage area and is currently catered for in the drainage design for the Scheme;

2) Combe Haven – a statutory watercourse – crossed by a free span structure Combe Haven underbridge (S07);

3) Watermill Stream – a classified watercourse – crossed by a free span structure Watermill Stream underbridge (S09);

4) Powdermill Stream – a classified watercourse – crossed by a free span structure Powdermill Stream underbridge (S12). It follows an artificial course along the eastern edge of Powdermill Valley above the valley bottom along the foot of the spur at Adam's Farm. It is the most significant tributary to Combe Haven, into which its floodwaters are currently routed along the unclassified Powdermill Valley Stream, also crossed by the Scheme on a diverted route at Powdermill Valley Stream underbridge (S11);

5) Decoy Pond Stream – a classified watercourse – crossed by a free span structure (EA requirement) Decoy Pond underbridge (S14).

3 Mitigation and habitat creation

3.1 Outline mitigation measures

Mitigation measures to avoid or minimise significant ecological impacts identified in the Environmental Statement, addendum Environmental Statement and Supplementary Nature Conservation Report are described in Table A.1 in Appendix A. Compensation measures required to offset any residual impacts are described in Table A.2 in Appendix A. Both tables should be read in conjunction with the relevant species reports, protected species method statements and the Environmental Master Plan drawings that are provided in Appendices B to H.

To ensure reasonable certainty that compensation will entirely replace affected features of ecological value or their function, and because of the inevitable delay before the replacement habitats will be fully functional, the basic tenet of the Scheme's mitigation / compensation strategy is that all lost and severed habitats will be replaced on a 2 for 1 basis. This allows larger, linked habitat areas to be created, which tend to be more resistant to environmental changes such as climate change, are better able to sustain species populations and are less likely to become fragmented and isolated. It also allows for the creation and maintenance of viable areas of floodplain grassland, fen, neutral grassland, woodland and other Biodiversity Action Plan (BAP) habitat types of high biodiversity value. The larger habitat blocks and new connecting corridors (new hedgerows and woodland shaws) are designed to re-connect and enhance wildlife corridors, linking into the surrounding habitats and allowing species dispersal and natural succession to take place.

However, compensation is required not just for habitat loss but also for habitat degradation, resulting in a reduced capacity to support the key species; this is particularly relevant for potential impacts to SSSIs. Other forms of compensation include improvements to the management of existing woods to improve their capacity to support breeding birds, offsetting a potential reduction in capacity for breeding birds in woodland through habitat loss or disturbance. All habitats created will be managed appropriately for their value to be sustainable in the long term, as described in Section 4.

The implementation, supervision and monitoring of all mitigation measures will be undertaken by an Ecological and/or Environmental Clerk of Works. The Environmental Clerk of Works will be an environmental or construction professional (such as an environmental consultant, surveyor or contract manager) with direct responsibility for monitoring compliance with environmental legislation, policy or mitigation, excluding those relating to ecology. The Ecological Clerk of Works will be a professional ecologist with the relevant levels of experience required to satisfy the criteria described in the sections below.

3.2 Designated sites

A combination of direct and indirect impacts to SSSIs and SNCIs will be addressed through the provision of compensatory habitat to mitigate the loss of habitat within, or contiguous to, designated sites. Measures to mitigate specific impacts (e.g. pollution and noise disturbance) are also provided.

3.2.1 Combe Haven SSSI

Table A.1 in Appendix A summarises the anticipated impacts to Combe Haven SSSI and an outline of the proposed mitigation measures. Further detail relating to mitigation for each impact is provided below:

Pollution control

As there is an extensive ditch system that drains into the Combe Haven SSSI, all receiving waters have been considered to be sensitive and a precautionary principle will been used throughout the duration of the Scheme to control the effects of potential pollutants.

Water quality management during construction and the avoidance of pollution incidents to Combe Haven SSSI will be addressed in the Construction Environmental Management Plan (CEMP), as will the issue of using calcareous construction materials on a site with acidic soil and groundwater.

Mitigation measures relating to pollution control have been produced in consultation with the Environment Agency and in accordance with current good practice for highway drainage design, outlined in the Design Manual for Roads and Bridges (DMRB) and Construction Industry Research and Information Association (CIRIA) publications. Guidance from the following documents will be adhered to in order to mitigate the possible adverse impacts to surface watercourses with links to Combe Haven SSSI:

- CIRIA Report 609 (2004) *Sustainable Drainage Systems – Hydraulic, structural and water quality advice;*
- CIRIA Report 532 (2001) *Control of water pollution from construction sites;*
- CIRIA Report 522 (2000) *Sustainable urban drainage systems – design manual for England and Wales;*
- CIRIA Report 156 (1996) *Infiltration Drainage – manual of good practice;*
- CIRIA Report 142 (1994) Control of Pollution from Highway Drainage Discharges;
- CIRIA Report 648 (2006) Control of water pollution from linear construction sites;
- Code of Good Agricultural Practice for the Protection of Water (the “Water Code”) (DEFRA 1998 as amended 2002); and,
- Guidelines for the use of herbicides on weeds in or near watercourses and lakes (DEFRA 1995 PB2289).

Environment Agency Pollution Prevention Guidelines (PPG) will also be adhered to, the most relevant being:

- PPG1 – General guide to water pollution and prevention;
- PPG 2 – Above ground oil storage tanks;
- PPG 3 – Use and design of oil separators in surface water drainage systems;
- PPG 5 – Works in, near or liable to affect watercourses;
- PPG 6 – Working at construction and demolition sites;
- PPG 8 – Safe storage and disposal of used oils;
- PPG 9 – Prevention of pollution by pesticides;
- PPG 21 – Pollution incidence response planning;
- PPG 22 – Dealing with spillages on highways; and,
- PPG 23 – Maintenance of structures over water.

The drainage design created to reduce pollution across the entire Scheme will be implemented and will further protect the SSSI from pollution. The drainage design consists of the following:

- Kerbs and gullies between chainage 0 and chainage 1640;
- Shallow grass swales ('grassed ditch') to collect highway runoff elsewhere;
- Filter pipes to collect seepage from the swales which also act as carrier pipes;
- Inlet/Inspection chambers at approximately 90m intervals;
- Sediment traps within each catchpit gully and catchpit chamber;
- It is intended not to use by-pass interceptors with the exception of at the two outfalls in the positive drainage system; this has outline approval from the EA. The use of filter systems means that any polluted water / oil etc will be captured within the topsoil / filter material before reaching interceptors. The on-line attenuation of highway drainage in Egerton Stream reduces the flow of water that would enter any interceptor to such a level that they could prove ineffective;
- Attenuation ponds which act as a flow dissipation device to store and discharge the 100 year (+20% climate change) event;
- The existing Egerton Stream is to be diverted to the east of the carriageway through a series of pipes and swales. To the west of the proposed carriageway will be a series of storage swales connected by pipes that work as flood compensation areas. These are only used when the piped diversion is at or nearing capacity.

The location of each of these drainage features is shown in the 500 series drawings in Appendix I.

The above pollution prevention measures will be enforced, monitored and checked by the Environmental Clerk of Works who will be present on the Scheme throughout construction.

Disturbance to bird assemblages during Scheme construction and operation

Birds, particularly waders and waterfowl, are disturbed by noise, moving traffic and features such as trees and embankments introduced into previously open landscapes. In the case of the Scheme there is a potential impact up to approximately 1km from the road, which would affect a substantial proportion of Combe Haven SSSI. An increase in disturbance associated with the use of the Greenway by non-motorised users is also anticipated.

Disturbance to birds during the construction phase of the Scheme will be minimised by the careful selection of plant, effective site management, engineering control, acoustic screening and restricted hours of working. Compliance by all contractors with the general recommendations of BS 5228: Parts 1 and 2 is also considered to represent good practice and will be adopted wherever practicable. These include:

- Vehicles and equipment fitted with effective exhaust silencers, maintained in good working order and operated to minimise noise emissions in accordance with BS 5228;
- Compressors fitted with properly lined and sealed acoustic enclosures where environmental noise disturbance may arise and these should be kept closed whenever the machines are in use;
- Pneumatic percussive tools fitted with mufflers or silencers in accordance with the manufacturer's recommendations;

- Machines in intermittent use shut down in the intervening periods between work or throttled down to a minimum (including HGVs waiting to access the site on the highway);
- Where practicable, rotary drills and bursters actuated by hydraulic or electrical power should be used for excavating hard material;
- Care taken when loading/unloading vehicles, dismantling scaffolding or moving materials to reduce impact noise;
- Noise reduction through the use of temporary barriers, screens, acoustic sheds and enclosures provided where reasonably practicable and when located close to SSSIs;
- Where practical, all plant to conform to the noise limits presented in the EC Noise Emission in the Environment by Equipment for use Outdoors, Directive 2000/14/EC;
- Noise monitoring undertaken by the Contractor to ensure compliance with any Local Authority construction noise conditions or undertakings made the by the Contractor itself;
- Where practicable the prefabrication of large units undertaken off-site;
- Where practicable and subject to ground conditions, piling techniques that minimise noise and vibration will be adopted instead of percussive techniques; and,
- The contractor to employ 'Best Practicable Means' (CoPA 1974), at all times and at all locations during the construction phase to minimize construction noise and vibration.

The Environmental Clerk of Works will be responsible for ensuring that best practice with respect to noise control is enforced during the construction period, as per the Construction Environmental Management Plan.

Furthermore, it is proposed to provide temporary noise barriers and visual screening in the form of close boarded fencing (or similar) 1.8m in height in appropriate positions to reduce the short term disturbance associated with construction. These fences would be erected at the commencement of disturbing activities (e.g. excavations, machinery movements etc) within the vicinity of the SSSI. On completion of the disturbing activities in each area, the fences would be removed. Owing to the short period of time that these fences would be in position (a maximum of two years during construction) any disturbance to birds associated with the fences themselves is considered to be temporary, minor and reversible. The alignments of the proposed barriers are shown in Appendix B and Appendix H.

Post construction impacts from noise and visual disturbance to birds will be mitigated through the use of noise bunding and natural screening where this in itself would not result in disturbance to birds. Whilst the creation of landscaped embankments may have an impact to localised bird movements associated with the SSSI, it is anticipated that birds would become habituated with this new landscape feature, especially as the landscape planting will mature over a period of many years, allowing birds to become accustomed to it. The only suitable alternative to landscape bunding to mitigate the disturbance impacts associated with an operational road would be to erect fencing. However, fencing may still cause disturbance to birds without providing the added biodiversity benefits that come with landscaped bunding (e.g. foraging, commuting and breeding opportunities for a range of fauna). As such, the use of landscaped bunding to mitigate the impacts associated with operational disturbance of the road is considered to be acceptable. The location and design of the bunding and screening is shown by the drawings in Appendix J.

In addition, new habitat will be created to supplement the carrying capacity of existing habitat associated with the SSSI. Habitat creation is described in Table A.2 in Appendix A.

Severance and isolation

Impacts associated with severance of the 'hinterland' adjacent to the SSSI, severance of the Disused Railway SNCI north of Combe Haven SSSI from the area to the south (which is within the SSSI), and isolation of grazing marsh from Powdermill Valley will be addressed through the compensation planting strategy outlined in Table A.2 in Appendix A and as shown in the Environmental Master Plan in Appendix B.

3.2.2 Marline Valley Woods SSSI

Table A.1 in Appendix A summarises the anticipated impacts to Marline Valley Woods SSSI and an outline of the proposed mitigation measures.

Habitat creation proposals to offset impacts associated with shading, fragmentation, noise disturbance, and changes in air quality are described in Table A.2 in Appendix A. Details relating to mitigation for additional impacts are described below:

Pollution control

The impacts from road runoff would be mitigated by intercepting the runoff with a cut off drain, as shown in Appendix I.

To the west of the railway line opposite Marline Valley Woods SSSI is an area of designated semi-natural ancient woodland. The wing walls of the proposed bridge structure will be located at least 2m to the southern edge of the woodland. Modifications have been made during the Detailed Design stage to avoid direct impact upon the woodland and to minimise shading from the new structure. To reduce the impacts associated with noise, dust and litter a buffer strip will be created along the full extent of the tree canopy to prevent access by machinery and construction staff. This tree protection fencing would be reinforced with fencing suitable to prevent litter from entering the SSSI and to reduce the spread of dust. The location of all protective fencing is shown in Appendix H.

Measures to reduce the risk of significant dust emissions during the construction phase are described in Table 3.1 below and will be enforced on site by the Scheme's Environmental Clerk of Works who will be present throughout construction.

Pollution control measures described in Section 3.2.1 will also be implemented through the CEMP and enforced by the Environmental Clerk of Works.

Table 3.1: Measures to reduce the risk of significant dust emissions during the construction phase

1	Maintain all dust control equipment in good condition and record maintenance activities.
2	Do not allow dry sweeping of large areas.
3	Provide and ensure the use of wheel-wash facilities near the site exit wherever there is a potential for carrying significant quantities of dust or mud off the site.

4	Impose and signpost maximum speed limits of 5 miles per hour (mph) on un-surfaced haul routes and work areas, and 10 mph on surfaced haul routes and work areas.
5	Minimise the amount of excavated material held on site and sheet all materials wherever possible to prevent liberation of dust.
6	Avoid double handling of material.
7	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
8	Only use cutting, grinding or sawing equipment fitted with, or in conjunction with, suitable dust suppression techniques such as water sprays or local extraction.
9	Carry out site inspections regularly to monitor compliance with dust control procedures set out above and record the results of the inspections, including nil returns, in a log book.
10	Increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
11	Record any exceptional incidents causing dust episodes on or off the site, and the action taken to resolve the situation, in a log book.
12	Plan construction activities in order to reduce the number of plant, and to maximise the use of plant while at the site.
13	Do not leave construction plant idling when not in use.
14	Locate site plant away from sensitive receptors.
15	Use mains electricity or battery power where possible (or practical for hand tools) rather than diesel.
16	Purchase electricity generated from renewable sources.
17	Avoid the use of diesel or petrol powered generators.
18	Plan routes that vehicles make to the facility in order to make them as efficient as possible.
19	Ensure that vehicles used should be at their maximum capacity in terms of load, to minimise the number of vehicles and journeys to and from the site.
20	Use non-road methods of material delivery or, for long-distance haulage, partial non-road delivery, for example by trains.

Disturbance to bird assemblages during Scheme construction and operation

Impacts from noise to over wintering and breeding birds will be mitigated through the use of noise attenuation fencing and natural screening and through the implementation of the best practice working methods outlined in Section 3.2.1. The location of all protective fencing is shown in Appendix H. The location of natural screening is shown in the Environmental Master Plan in Appendix B.

Interruption of dormouse movement corridor

Dormouse mitigation is described in the method statement which supports the application to Natural England for a European Protected Species Mitigation Licence with respect to dormice. See Appendix C (Method Statement – Document 2. Delivery Information. Document reference: B1297000/Dormouse/EPSLicence/02).

3.2.3 Disused Railway SNCI (Bexhill and Crowhurst Sections)

Compensation habitat creation to offset the impacts associated with severance and the loss of woodland and scrub are described in Table A.2 in Appendix A.

The location and design of noise bunds to be erected to reduce long term noise disturbance to breeding birds is shown by the drawings in Appendix J.

3.2.4 Buckholt Farm Woods SNCI

Habitat management to mitigate the interruption of bat flight lines is outlined in Table A.2 in Appendix A.

The location and design of noise bunds to be erected to reduce long term noise disturbance to breeding birds is shown in the seeding drawings Appendix J.

3.3 European protected species

Mitigation strategies to avoid or reduce impacts to European Protected Species (EPS) will be implemented in accordance with the respective European Protected Species Mitigation Licence that will be obtained from Natural England before the Scheme commences.

Full details of the mitigation strategies for dormice, bats and great crested newts can be found in Appendices C to E, respectively. A summary of the mitigation measures that will be implemented to address specific impacts to EPS is provided in Table A.1 in Appendix A.

The delivery of all EPS mitigation will be undertaken by appropriately licensed ecologists or their assistants. When determining an application for a European Protected Species Mitigation Licence, Natural England assesses the qualifications and experience of the named ecologist, with a licence only being granted once the competency of the ecologist has been proven. As such, the named ecologist will be suitably experienced to undertake EPS mitigation. All assistants acting under the licence would be individually appointed by the named ecologist based on their experience with the respective species. As a minimum, all assistant ecologists named on the licence would be expected to hold the relevant Natural England 'survey' or Class licence (i.e. they have proven to Natural England that they have sufficient relevant experience working with the species concerned) and have experience undertaking ecological watching briefs and/or acting as an Ecological Clerk of Works. All other field personnel will work under the direct supervision of the named ecologist or their assistants. The named ecologist will be a member of the Institute of Ecology and Environmental Management (either Full, Associate or Graduate membership).

3.4 Other protected or notable species

Mitigation strategies to address impacts to badgers, reptiles, trout and lamprey, birds and invertebrates are outlined in Table A.1 in Appendix A. Further details are provided below:

3.4.1 Badgers

Full details of the mitigation strategy with respect to badgers can be found in the licence application method statement in Appendix F (see Section 4 of Method Statement document). In summary, the specific mitigation measures will comprise the following:

- Construction of two artificial badger setts to relocate the home-base of the social groups of Main setts 24 and 55, which will be closed. Construction of the artificial sett to replace sett 24 was completed in August 2012. Construction of the artificial sett to replace sett 55 will be undertaken in early 2013. Setts 24 and 55 will be closed in July 2013;
- Closure of fifteen other setts comprising one subsidiary, one Annex and thirteen outlying setts;
- Monitoring of all closed setts by the Ecological Clerk of Works (EcoW) between completion of closure and dismantling of the setts prior to construction (there may be a time lag between these events);
- Where necessary setting up exclusion zones around setts to be retained but lying within the CPO boundary (potentially 48 setts) including monitoring by the EcoW. The EcoW will assess the need for exclusion zones for all works located within 30m of a sett;
- Badger fencing along the whole route of the Scheme to channel badgers to crossing points (tunnels and overpasses) and to avoid road traffic mortalities. Where noise barriers and bunding are planned, the badger fencing will be incorporated into this;
- One way badger gates will be installed within the badger fencing to allow badgers to exit (but not enter) the road corridor in the unlikely event that they find themselves on the road side of the badger fencing. These gates will be spaced at 500m intervals along the fence line;
- CPO/highways standard boundary fencing will incorporate badger gates to allow access to the hinterland around the road scheme;
- The construction of underpasses and overpass features incorporated into the bridge structures along the 5.6km route to enable social groups to integrate and continue to use traditional commuting routes and foraging areas away from the road corridor (see the Environmental Master Plan in Appendix B);
- Generic construction phase mitigation measures to protect individual animals.

Unless otherwise stated, badger mitigation will be designed and supervised by appropriately licensed ecologists or assistants acting under their supervision. When determining an application for a badger development licence, Natural England assesses the qualifications and experience of the named ecologist, with a licence only being granted once the competency of the ecologist has been proven. As such, all licensed ecologists will be suitably experienced to undertake and design badger mitigation works. All assistants acting under the licence will be individually appointed by the named ecologist based on their experience with badgers. As a minimum, all assistant ecologists named on the licence will be expected to have at least three years professional experience during which time they had undertaken badger surveys, ecological impact assessments with respect to badgers and have experience undertaking ecological watching briefs and/or acting as an Ecological Clerk of Works. All other field personnel will work under the direct supervision of the named ecologist or their assistants. The named ecologist and assistants will be members of the Institute of Ecology and Environmental Management (either Full, Associate or Graduate membership).

The installation of underpasses, overpasses, badger fencing and gates will be completed by the principal contractor.

3.4.2 Reptiles

Previous targeted surveys have indicated there is a low population of reptiles across the Scheme although anecdotal records suggest that this figure may be

underestimated. As such, translocation works will be undertaken in all areas of suitable reptile habitat affected by the Scheme. The translocation of reptiles away from the construction zone will also be undertaken in areas subject to great crested newt mitigation.

The translocation works will involve the erection of 1000 gauge plastic (or similar) and post fencing to surround the entire working area. Reptile refuges will be laid within the fenced enclosure and allowed to bed in for at least one week before they are inspected for thirty days during the reptile active season (mid-March to mid-October). Captured reptiles will be removed from the works area and released at the designated receptor site on the day of capture. Each area subject to trapping and translocation will be declared free of reptiles following five visits in suitable weather conditions with no reptile capture and after at least thirty days of trapping. No construction activity likely to kill or injure reptiles will be undertaken until the trapping process has been completed. Fencing will be retained undamaged until the site is deemed unsuitable for reptiles following site clearance – this will be determined by the EcoW.

Reptiles captured in the Queensway/Crowhurst Road trapping site will be translocation to habitat immediately adjacent to the trapping area (receptor site E – see map in Appendix G), as this whole area offers good quality, mature reptile habitat with only a portion of it is being affected by the Scheme. This receptor site will be enhanced by the provision of two hibernacula (one in the northern section and one in the southern), both of which will be provided during the winter of 2012/13.

Any animals trapped in the western reptile exclusion zone (north east of Acton's Farm) will be translocated into receptor site D, an area adjacent to retained woodland and marshy ground that will remain largely unaffected by the Scheme and which will be planted up as species-rich neutral grassland, offering good quality reptile habitat. There are already two ponds in this area, with a third to be constructed as part of the GCN mitigation strategy, and a hibernaculum will be constructed to enhance the habitat further. The long term management of these areas to ensure they remain suitable for reptiles is described in Section 3.6.

All reptile trapping and translocation will be undertaken by appropriately experienced ecologists i.e. ecologists who are familiar with best practice guidelines with respect to reptile handling and mitigation (Froglife, 1999, HGBI, 1998 and Gent & Gibson, 2003), and those who have previous and proven experience identifying, surveying, trapping and handling reptiles.

The areas subject to reptile mitigation are shown in Appendix G. Reptile exclusion fencing is shown in drawing B129700-PH2/3000.01a, Sheets 0012, 0013, 0016-0020, 0023, 0025-0032.

The process of replanting the receptor sites will be undertaken by hand. Ground disturbance will be limited to the location where new trees/shrubs will be planted. Light vehicles (4x4 and trailers) are likely to be used to transport the planting stock and equipment onto the site although vehicle movements will be minimised and designed to avoid any specific habitat features where reptile presence is likely. A planting method statement will be reviewed and approved by the Ecological Clerk of Works prior to commencement. The work will also be preceded by a toolbox talk from an ecologist. The habitat at the site is currently suitable to support reptiles and so there would be no period between planting and maturation during which the habitat is sub-optimal for these animals. The current date in the programme for planting of the receptor sites is October / November 2014.

3.4.3 Assemblages of birds

Impacts to birds will arise through disturbance caused by noise (during construction and operation), the loss and fragmentation of habitat and the increased risk of road mortality.

Measures to address impacts associated with road mortality and the loss or fragmentation of habitats are outlined in Table A.2 in Appendix A.

Conventional options for the control and mitigation of construction noise impacts includes the careful selection of plant, effective site management, engineering control, acoustic screening, and restricted hours of working. Options for engineering noise control include the adoption of appropriate construction processes and techniques. These are considered in further detail in the CEMP.

Compliance by any contractor with the general recommendations of BS 5228: Parts 1 and 2 is considered to represent good practice and will be adopted wherever practicable, as described in Section 3.2.1.

The CEMP will incorporate a construction code of practice and make provision for guidance on the control and management of construction environmental impacts. The principles of good practice summarised in Section 3.2.1 and the use of all other reasonably practicable means for the control of noise and vibration will be incorporated into the CEMP and enforced by the Environmental Clerk of Works.

Furthermore, it is proposed to provide noise barriers and visual screening in the form of close boarded fencing (or similar) 1.8m in height in appropriate positions to achieve the maximum possible benefit. The alignments of the proposed barriers are shown in Appendix B and Appendix H. Visual disturbance during the operation of the road will be mitigated by the provision of landscaped bunds and the planting of blocks of woodland and scrub, as shown in Appendix B.

3.4.4 Invertebrates

Impacts to invertebrates are predicted as a result of death and injury to individuals along the route, and the loss and contamination of habitats.

Compensation measures to address these potential impacts are outlined in Table A.2 in Appendix A.

To mitigate any contamination of habitats, an appropriate drainage design will be implemented for the periods during construction and operation. Full details of the drainage design are provided in the CEMP although an outline design is provided in Section 3.2.1.

3.4.5 Fish

Impacts to fish and crayfish are predicted as a result of changes in water flows, contamination from polluted run-off, and damage to channels during work on these habitats.

In-river and bank-side work will be carried out following prescriptions outlined in the CEMP.

Water quality management during construction, the appropriate design, implementation and management of drainage during construction, and the avoidance of pollution incidents will be addressed in the CEMP, in accordance with current good practice for highway drainage design outlined in the Design Manual for Roads and Bridges (DMRB) and Construction Industry Research and Information Association (CIRIA) publications, as outlined in Section 3.2.1. These mitigation measures will be enforced by the Environmental Clerk of Works.

3.5 Habitats

The creation of compensatory habitats to offset residual impacts to watercourses, hedgerows (including those with wet ditches), secondary woodland, species-rich floodplain grassland, and mosaics of neutral grassland and scrub is outlined in Table A.2 in Appendix A. Compensatory habitat creation to offset residual impacts to habitats at Chapel Wood, Little Bog, Decoy Pond, Adam's Farm and North Abutment Woods is also described in Table A.2 in Appendix A.

Impacts associated with pollution of water will be addressed by the appropriate design, implementation and management of drainage during construction and operation. Best practice and mitigation described in Section 3.2.1 will also be enforced through the CEMP and by the Environmental Clerk of Works.

Impacts associated with dust will be addressed via the measures described in Table 3.1 in Section 3.2.2 and will be enforced through the CEMP and the Environmental Clerk of Works.

Exclusion zones to prevent damage to woodland edge habitat and flora in woodland at Lower Wilting Farm will be maintained with the use of fencing, as shown in Appendix H.

Appendix J shows the location of noise bunds used to reduce disturbance to birds at Chapel wood, Little Bog, Decoy Pond, Adam's Farm and North Abutment woods.

3.6 Landscape

3.6.1 Preparation, planting and seeding to completion

The Planting Plans are provided in drawings B1297000-PH2/3000.01a/0000-0014 in Appendix J.

The Seeding Plans are provided in drawings B1297000-PH2/3000.01a/0030-0043 in Appendix J.

The Environmental Master Plan is shown in Drawings B1297000-PH2/3000.01a/0050 – 0064 and can be found in Appendix B.

Landscape mounds to screen the link road will match the height (in relation to the highway) and width of the landscape mounds shown on East Sussex Planting Plans Nos. 208.31.21-27. The planting areas generally match the areas on the ESCC planting plans. The scheme includes supplementary planting and ditches shown on Additional Habitat Continuity Plans agreed with Natural England (ESCC Drawing Nos. 208/31/32/B Sheets 1-12). A planting plan is included detailing the compensatory woodland habitat to be planted on one of the two fields at the Marline Valley site between Marline Valley Woods SSSI and Brickyard Shaw. The above drawings are provided in Appendix J.

There are some differences as follows:

- In order to reduce the volume of earthworks excavation and movement, the profiles of the landscape mounds have been altered slightly with gentle concave slopes facing away from the highway. The new profiles blend smoothly with the adjacent landscape.

- Retention of the existing Glovers Farm bridge (deletion of the new Glovers Farm bridge) required a minor revision of greenway alignments to link with the existing bridge and a minor revision to the layout of nearby planting.

- Other minor adjustments to the alignment of some of the greenways entailed minor adjustments to areas of grass and wildflower seeding.

- Additional screen planting has been provided (at ESCC request) along the realigned portion of Crowhurst Road to reinforce screening of the bridge over the railway and Crowhurst Road to mitigate for a slight alteration to the design of the bridge.

- The design of the accommodation bridge near Adams Farm has been altered to include a native species hedge extending across the bridge creating a 'Green Bridge' linking woodland and hedgerow habitat on both sides.

- Further existing hedges and trees (in addition to those already identified on ESCC drawings) will be protected and retained along the site boundaries and within the site. They have been identified on the planting plans and will be included on the clearance drawings also.

- On ESCC planting plans the woodland on cutting slopes of the former railway corridor north of Ninfield Road Bridge at Bexhill is to be retained and managed. Detailed design of the current scheme has required a slight lowering of the highway below existing levels in the cutting for a distance of about 150m north of the bridge to provide sufficient clearance. Without mitigation measures this would entail re-grading the cutting slopes and felling existing trees on either side. Instead, the lower slopes will be steepened to 60° and reinforced with soil nailing. Vegetation near the bottom of the cutting will still be lost but trees and shrubs on the upper slopes will remain to screen the link road. As part of management proposals for this woodland, new trees and shrubs will be planted to fill gaps on the upper slopes.

- The spacing of plants in the woodland edge planting strips has been changed from 1m to the Highway Agency's normal spacing of 1.5m modified to ensure there will be a consistent cover of plants following the curving outline of the plantations. Plants at 1m spacing would tend to become weak and drawn out, requiring thinning at a very early stage.

- The spacing of plants in parts of the high forest areas has been changed from 2m to 2.5m. This change has been made for limited areas that are not critical for visual screening. Habitat continuity is maintained by keeping a continuous strip at the original 2m spacing through all plantations.

- The Egerton Stream flood water storage tanks originally proposed under the public open space at Belle Hill have been replaced with flood retention swales west of the proposed highway. The trees originally proposed to be planted on

the west side will still be planted although the final number has been revised following consultation with the Environment Agency. The low mounds have been redesigned as narrower, steeper bunds planted with trees and shrubs between the swales and the highway boundary. Due to the presence of a new pipe to take outflow from the flood retention swales back to Egerton Stream underground near the west end of the pedestrian underpass, the verge on the west side between the underpass and chainage 265 will be densely planted with large growing shrub species instead of trees. A new stream diversion pipe for Egerton Stream is situated under part of the new Belle Hill community open space, constraining the options for tree planting. However, this would have been a more significant issue with the original proposal for storage tanks.

- The layout of the Belle Hill community open space includes a raised zebra crossing and pedestrian underpass on the line of Chapel Path public footpath. A ramp provides disabled access to the underpass. A new bus stop on London Road will replace the one that will be lost on the A259 immediately west of the Link Road. Parking spaces are provided for nearby residents of London Road, and the design includes a curved sitting area. A noise barrier and tree and shrub planting enclose the area and screen it from the link road. Footways in the public open space are surfaced with fine bound gravel in shades of ochre/buff.

The Environmental Master Plan in Appendix B uses standard Highways Agency codes to identify landscape elements and their landscape functions. The codes for the functions are interpreted on the first sheet. The codes for the elements are interpreted on the keys of each drawing sheet.

The elements consist of:

- Species rich neutral grassland LE 1.3
- Neutral grassland with scrub LE 1.3.1
- Open grassland (badger foraging) LE 1.6.1
- Open grassland (improved) LE 1.6.2
- Arable LE 1.7
- New woodland and copses LE2.1
- Existing woodland to be managed LE2.1.1
- Woodland edge management LE2.2
- New shaws (local term for a small linear wood or copse) LE2.4.1
- Scrub LE 2.8
- Amenity trees and shrub planting LE3.1
- Native species hedgerows LE4.3
- Native hedgerows with trees LE4.4
- New woodland edge LE 4.4.1
- Water bodies and associated plants LE6.1
- Ditches LE6.2
- Marsh, wet grassland and fen LE6.4.1
- Marsh, wet grassland and fen with widely scattered trees LE6.4.1.1
- New amenity grassland
- Semi-mature tree planting

The landscape specification is contained in the contract documents in the form of appendices to the Highways Agency Specification for Highway Works Chapter 14 Landscape and Ecology (Series 3000). The specification defines the minimum standards/grades/constituent/origins of plants, seed mixes, soils, planting additives,

and all materials for plant protection and support. It defines the workmanship for grading, ground preparation, planting, sowing and aftercare operations.

The great majority of the tree and shrub planting will consist of bare root transplants at 40-60cm and 60-80cm height. Evergreens will be supplied in containers. Semi-mature trees are proposed in the Belle Hill area and at the approaches to the green bridge near Adam's Farm. These will be supplied with their roots in rootballs and shall be planted in pits at least 400mm wider than the rootballs on all sides to provide room for root growth during establishment. Decorative planting in the Belle Hill community open space and near Chapel Path will be planted into minimum 300mm depth topsoil with a 75mm settled layer of bark mulch to subdue weeds.

All mass plantations of native trees and shrubs on mounds and other re-graded areas will be planted into 300mm depth of topsoil. Scattered trees and scrub in neutral grassland will be planted in individual pits sized 300X300x300mm. The topsoil in most of these areas will be nutrient poor to encourage species diversity in the grassland. The scattered trees and scrub plants will be planted with organic matter and slow release fertilizer granules in each pit to aid establishment. For mass planted areas, organic matter and slow release fertilizer granules will be mixed into the topsoil backfill when planting all trees and shrubs. All bare root transplants and whips will be immersed in mycorrhizal root dip prior to planting. After planting, all transplants will be protected with staked tree/shrub shelters and mulch mats. Semi-mature trees will be supported with ground anchors plus, where necessary, supplementary stakes/guys to provide further support during establishment.

Seed mixes and sowing rates for the grassland and wildflower elements are shown on the Seeding Plans in Appendix J. Areas of amenity grassland, improved grassland and open grassland (badger foraging) will be sown on 150mm minimum depth of topsoil. Areas to be returned to arable use will be top soiled to 300mm depth and temporarily sown with the amenity/improved grassland mix. Areas for species-rich neutral grassland shall be sown on 150mm depth nutrient poor topsoil.

3.6.2 Management of existing woodland and woodland edge

(a) General

In this section the terms 'Year 1', 'Year 5' etc. are used to describe the timing of operations for habitat management. Year 1 refers to during the year of completion of construction, Year 5 refers to during the fifth year after completion of construction, Year 10 the tenth year after completion of construction etc. The landscape aftercare period for this project is seven years after completion of construction with the first five years of aftercare included as part of the current contract. The last two years of the aftercare regime will be carried out by ESCC. Thereafter ESCC will continue environmental management using guidelines in the Operational Environmental Management Plan (OEMP).

Timber and brush from felling, thinning, pruning, coppicing and pollarding trees and shrubs shall, subject to the approval of the Ecological Clerk of Works (EcoW) be stacked in woodland areas to provide additional habitat. Material judged by the EcoW to be excess to requirements for habitat enhancement at any location shall be removed from site for sustainable disposal. Subject to approval from the management of the Combe Haven Country Park some of the material could be delivered for use in the Country Park. Another option could be to liaise with bodies such as Forest Enterprise, Woodland Trusts or other forest-based industries regarding the disposal of unwanted forest arisings.

All woodlands within the site area will be monitored once annually by an arboriculturalist to identify ash trees showing symptoms of the Ash die-back fungal disease *Chalara fraxinea*. Up to date guidance will be sought at the time on how to proceed should the disease be identified on site. Currently the national or county strategy for dealing with *Chalara* infected trees in the natural environment (outside of nurseries and recent plantations) has not been decided.

The locations of the woodlands (W18, DR2, UA etc) are shown on the EMP drawings in Appendix B.

(b) Woodland in Combe Haven SSSI

The extent and type of woodland management proposed in the SSSI for Decoy Pond Wood and for the wooded thicket on the embankment of the former railway viaduct near Adams Farm (part of Combe Haven SSSI) will be subject to consultation with Natural England.

W18 – Decoy Pond Wood
The following measures will ensure that a healthy and diverse ground flora in the wood is maintained, subject to approval from Natural England:

- Coppice or pollard approximately half of the willows around the pond areas in Year 1 and the remainder in Year 5 prior to hand-over to ESCC management. A few of these trees could be left untouched in each operation to retain a variety of tree forms within the wood.
- Review and remove some of the less desirable invasive species (such as goat willow) in Year 1 and in Year 5 prior to hand-over to ESCC management.
- Cyclical coppicing of hazels; a quarter of them in Year 1, a quarter in Year 5 and the remaining quarters in Years 10 and 15 under ESCC management as detailed in the OEMP. In Year 20 the cycle of coppicing would begin again.
- Inspect areas of bracken to determine the possible benefit or otherwise of bracken control, and if necessary carry out bracken control by an agreed method in Year 1 and Year 5.
- Annual monitoring and removal/control of any alien invasive species.
- Monitor/control of seedlings from the mature sycamores in the adjacent Decoy Pond Shaw, in Year 1 and Year 5.
- Annually monitor the English elms and Wych elms for Dutch Elm Disease.
- Investigate the need for further dredging in the existing pond.

DR2 – The embankments of the disused railway are included in the SSSI at the northern and southern approaches to the demolished viaduct that once crossed the Combe Haven valley. The northern embankment within the site will be managed as follows:

- Selective thinning/removal of some of the more vigorous species of scrub vegetation at 5 year intervals starting in Year 1 to retain a balance of scrub and open patches with herbaceous flora.
- Biennial cutting of herbaceous layer in open patches, removing the clippings to maintain/encourage the growth and diversity of fenland and chalkland species. (Cutting in Years 1, 3 and 5 as part of this contract, and by ESCC in Year7).
- Annual monitoring and removal/control of alien invasive species.

(c) Woodland at the South End of Marline Valley Woods SSSI

W27 Park Wood – The extreme southern point of the SSSI is just within the Scheme boundary and will be shaded by the bridge taking the link road over the railway. Mitigation for this impact and the impact of air pollution on the SSSI takes the form of a management regime and planting for compensatory woodland and grassland habitat. The management of Alder Wood and Brickyard Shaw is described below. Compensatory planting in the field next to Brickyard Shaw is shown on the planting drawings in Appendix J. Management of the existing pasture field next to Alder Wood is described under Management of Existing Grasslands, below.

Alder Wood – The land owner of the wood will be consulted on his/her intentions for managing the woods. The wood is protected by a group Tree Preservation Order (TPO). Woodland management measures will be subject to approval from Hastings Borough Council. The following management measures are proposed:

- Cyclical coppicing of hornbeam and sweet chestnut within the wood to encourage regeneration of ground flora. Mature standards of sweet chestnut would not be coppiced. Taller mature hornbeams will be left as they are. A third of the coppicing will be carried out during the first year of construction (before completion), a third in Year 3, and the last third by ESCC in Year 8. ESCC would restart the cycle in Year 13.
- Review and selectively remove some of the holly during the first year of construction to provide more light for the ground flora within the wood.
- Annual monitoring and removal/control of alien invasive species.
- Inspect areas of bracken to determine the possible benefit or otherwise of bracken control, and if necessary carry out bracken control by an agreed method in Year 1 and Year 5.

Brickyard Shaw – The land owner of the wood will be consulted on his/her intentions for managing the woods. The wood is protected by a group TPO. Woodland management measures will be subject to approval from Hastings Borough Council. The following management measures are proposed:

- Coppicing of all hazel during the first year of construction, ESCC would coppice the same area again in Year 13.
- Possible selective clearance of one or two trees to provide more light to the pond in the middle of the wood.
- Annual monitoring and removal/control of alien invasive species.

The detailed management proposals for both woods, for the adjacent new area of compensatory woodland planting and for the pasture to be allowed to develop as species-rich meadow will be submitted for approval by Natural England.

Disused Railway SNCI – The south end of this site is within the Scheme boundary. The following management measures are proposed

- The trees and scrub on the cutting slopes of the disused railway north of Glovers Bridge will generally be retained, but will be surveyed by an arboriculturalist to identify for felling or pollarding any trees that are unstable or unhealthy and could threaten public safety on the Link Road. The pollarding/felling will be completed before Year 1.
- Existing open areas or new open areas created by tree felling will be assessed for the appropriate mitigation. A gap or clearing at a location

important for traffic screening would be infill planted to close the gap with new trees and shrubs as part of the main planting works, whereas a gap or clearing in a location where management for species diversity of the SNCI is more important would be managed by selective control (by cutting) of bramble and scrub and by an annual late summer cut of the herbaceous layer.

- A small portion of the SNCI will be lost where the link road deviates from the SNCI. Prior to construction the areas to be lost will be marked out with fencing and adjacent areas of the SNCI outside the fence will inspected by an appropriately experienced ecologist (i.e. a professional ecologist with at least three years experience undertaking ecological impact assessments associated with development activity) to identify any vegetation for special protection. A landscape architect will refine the planting proposals for the area, as necessary. The extent of any recommended scrub thinning will be agreed with the EcoW and will be carried out in Years 1 and 5. Grass and weed cutting will be carried out once annually in late summer and the clippings removed for disposal off-site. After Year 5 ESCC will continue the scrub thinning/trimming at 5 year intervals and grass/weed cutting only as necessary to create a diverse herb layer.
- Annual monitoring and removal/control of any alien invasive species.

W8 – The following management measures are proposed:

- All pole-stage ash and areas of previously coppiced ash and hazel will be coppiced in Year 1. ESCC to repeat this at Year 15.
- Selective clearance of some of the crack willow in perimeter ditch in Year 1 and Year 5.

W19 The Bog – The following management measures are proposed:

- Monitor and control any expansion of the drier woodland into the open wet areas by removal of invading woodland species, to occur in Year 1 and again in Year 5. Subject to review for effectiveness, ESCC is to carry out this measure again in Year 10 and every 5 years thereafter.
- Monitor the effects of highway earthworks and drainage on moisture levels in the wood.
- Liaise with the Environment Agency regarding any works to Decoy Pond stream to ensure that the wood retains its existing wetland habitats.
- Reed cutting in Year 1 and Year 5. Subject to review for effectiveness, ESCC is to carry out this measure again in Year 10 and every 5 years thereafter.
- Annual monitoring and removal/control of any alien invasive species.

W23 Chapel Wood – Management shall be carried out in a way that retains the existing high species diversity at the edge of the wood. The land owner of the wood will be consulted on his/her intentions for managing the woods.

The following management measures are proposed for the southern edge of the wood in the area identified on the EMP for management of existing woodland:

- Areas of former hornbeam and hazel coppice to be re-coppiced with not more than 10% of them in Year 1, another 10% in Year 5 and remaining areas onwards at 5 year intervals by ESCC. Oak standards to be retained.
- Once annual late summer cut of grass and herbaceous areas between the highway verge and the wood, not in straight lines but moving in and out and

around the scrub and scattered trees at the edge of the wood to create a scalloped border.
- Limit invasive scrub species such as bramble or gorse by selective cutting. Cutting to be carried out in Year 1 (extent to be agreed with the EcoW) and again in Year 5 before hand-over to ESCC.
- Annual monitoring and removal/control of any alien invasive species.

W34 and Attached Un-maintained Hedgerow H120 – This area has been subject to recent tree felling. The following management measures are proposed:

- Remaining woodland and hedgerow species (hazel, ash, holly and blackthorn) will be retained and protected.
- Felled areas will be surveyed during detailed design for construction and infill planting will be added to the planting drawings as part of the main landscape works. Any remaining tree stumps will be left in place. Tall growing weeds will be treated with weedkiller (selected from an approved ESCC list) and removed, and the ground will be cultivated and prepared ready for re-planting. This plot will be treated and managed during the aftercare period in the same way as any of the areas of new planting in this project.

G10 – Trees, scrub, grassland and ornamental existing ornamental planting at Adams Farm.

- The quarry area will be left untouched.
- Grassland areas excluding lawn areas near the farmhouse will be cut once annually in late summer, removing the clippings to limit fertility and encourage species diversity.
- Lawns in the garden areas around the house will be mowed regularly during the growing season every year to maintain them as residential lawns from the year of construction until the mowing regime can be passed on to a new owner or a tenant. It is not necessary to remove clippings in this area.
- Trees near the link road will be surveyed by an arboriculturalist to identify for felling or pollarding any that are unstable or unhealthy and could threaten public safety. The pollarding/felling will be completed before Year 1.

G20 – The large areas of scrub, and grassland north and south of the link road will be will retained and used as a receptor site for reptiles prior to the start of and during construction. If the number of reptiles translocated into this area is greater than expected, it may be necessary to clear scrub in selected areas to increase the carrying capacity of the habitat (refer to section 3.4.2 for further details relating to reptile mitigation). The following management measures are proposed starting in Year 1:

- Monitor and control the spread of invasive scrub species such as gorse and bramble. Extent to be agreed with the EcoW to be carried out in Year 1 and Year 5, and by ESCC at five year intervals thereafter.
- Some developing areas of woodland will be left to continue developing as woodland.
- A small area of abandoned hazel coppice with oak standards will be restored by coppicing. To be carried out in Year 1 and by ESCC in Year 10.
- Grassland areas will be maintained for diversity by annual cutting phased to cover half of the grassland areas alternately each year in a biennial cycle. Clippings will be removed.

Urban Areas UA31, UA34, UA48 and UA49 – Trees and scrub on the cutting slopes of the disused railway and adjacent areas within the Scheme will generally be retained but will be surveyed by an arboriculturalist to identify for felling, pruning or pollarding any trees that are unstable or unhealthy and could threaten public safety. The pollarding/felling will be completed before start of construction. The following management measures are also proposed:

- Existing open areas or new open areas created by tree felling will be infill planted to close the gaps with new trees and shrubs as part of the main planting works. Any significant gaps in the vegetation at locations where screening the link road from adjacent properties is important will be infill planted using Extra Heavy Standard trees for early effect in addition to normal woodland planting with transplants.
- Management of the new planting will be the same as for all new planting in the Scheme.
- Each year starting in Year 1, scattered small areas, not more than 10% of the existing cover of trees and scrub will be pruned, pollarded/coppiced to maintain healthy and dense woodland cover. This will be continued annually to Year 5 and subsequently by ESCC to Year 10 and intermittently as necessary for public safety and maintenance of a healthy, sturdy and dense screen of vegetation along the link road.

3.6.3 Management of existing and new hedges

Existing hedges to be retained are shown and labelled on the EMP drawings (in Appendix B) as H1, H2, etc or OA500, OA501 etc using the same numbering as used on the Environmental Statement Nature Conservation Figures. Proposed new hedges are shown on the planting drawings in Appendix J. During design, the existing hedges to be retained within or on the boundary of the site will be assessed by a landscape architect who will divide them into the categories of 'Old Overgrown', 'Intermediate Recently Unclipped', and 'Currently Close-clipped'.

Old overgrown – Many existing hedges have been left unclipped for years and have grown into rows of large trees and shrubs. These old hedges will be left as they are because they provide a good habitat for wildlife, such as dormice, bats, invertebrates and breeding birds.

Recently unclipped – For each of these hedges a judgement will be made whether to prune and resume clipping to restore it to traditional size and density for enclosure and to maintain traditional field patterns, or to allow it to continue growing out to provide enhanced cover and food for wildlife. If the latter option is selected, light clipping would be undertaken on at least a four year cycle to maintain the form of a hedgerow.

Currently Close-clipped – These will be maintained in their current form by clipping the top annually to 2m maximum height and on each side in alternate years to maintain or improve current form.

New Hedges - Newly planted hedges will be clipped for the first time in Year 3 and annually thereafter gradually bringing them up and limiting them to 2m height, clipping the sides alternately, one side one year, the other side the following year etc.

As with all maintenance operations the final two years of the seven year aftercare period will be carried out by ESCC, and on-going thereafter with reference to guidance in the OEMP.

The TPO protected trees in hedge H2 will be protected and retained during the works. Any beneficial pruning will be subject to approval from Rother District Council.

3.6.4 Grassland management

Pre-scheme construction completion management of newly seeded grassland areas is detailed in the Appendices of the HA Series 3000 specification, as shown in Appendix K.

As part of compensatory habitat proposals at the Marline Valley site, an existing pasture of improved (relatively species poor) grassland between Alder Wood and Brickyard Shaw will be managed to restore species diversity. During the two years of construction this will entail monthly cutting to 100mm height during the spring and summer months with removal of all clippings off-site. From the start of Year 1 until hand-over at Year 5, the field will be cut twice annually to 100mm height; once for a hay crop in late June/early July and once in October with the clippings removed. Emerging colonies of invasive weeds such as dock, thistle, nettles etc shall be cut or individually spot treated with a systemic contact herbicide (selected from an approved ESCC list) to kill them and prevent them from setting seed. Herbicide treatment is only to be carried out when the proportion of listed invasive species reaches 5% - 10% of the grassland area. The hay crop will be dried on site, baled and removed/stored/sold off site before the end of August each year. The field will be managed to encourage diversity of meadow species, not to maximise the hay crop. ESCC will continue the management regime in Years 6 and 7 and thereafter with reference to guidelines in the OEMP.

3.7 Waste disposal

The disposal of any waste associated with the mitigation or habitat creation schemes will be addressed by the Site Waste Management Plan, as described in the CEMP although the following best practice measures will be employed:

- Excavated materials will be stored in separate stockpiles prior to sorting for re-use.

- Excavated spoil deemed unsuitable for reuse on site by testing will be removed to a suitable licensed landfill and the necessary measures should be implemented to ensure compliance with the Environmental Protection Act (1990) and waste legislation.

- To ensure maximum potential for reducing waste to landfill, and encouraging reuse and recycling, waste will be segregated. Separate skips will be made available for all types of waste. Each skip will be clearly labelled and site personnel will be informed of procedures within the Site Induction. Regular monitoring by the Environmental Clerk of Works will be undertaken to ensure correct procedures are followed. The skips will be emptied at regular intervals to prevent overfilling. Toolbox Talks will be undertaken with all site personnel to ensure full understanding of waste procedures.

4 Habitat Management Plan

4.1 Management objectives

To achieve the required mitigation and compensation, the management objectives for the landscape and ecology of the Scheme are:

- to achieve the successful establishment of the planted and seeded areas;
- to ensure their healthy growth and continuing successful development to achieve the environmental functions of the landscape and ecology elements; and,
- to achieve the required mitigation and compensation that the Scheme design is intended to bring, as stated in the Environmental Statement and Design and Access Statement.

4.2 Landscape maintenance prescriptions

The maintenance requirements are set out in the Appendices of the HA Specification for Highway Works Series 3000 (as shown in Appendix K) and in the following tables. This work will be carried out from initial establishment in the construction period to the end of the five year aftercare period. Although not always referenced directly within the tables below, the management prescriptions have been designed to be of benefit for key species of wildlife found within them (e.g. reptiles, GCN, badgers, dormice, bats, barn owls and birds).

Table 4.1 Grasslands LE 1

LE	Title	Prescription	Description
1.-	All grassland areas	Herbicide treatment and possible grazing	Emerging colonies of invasive weeds such as dock, thistle, nettles etc shall be cut or individually spot treated with a systemic contact herbicide to kill them and prevent them from setting seed. Herbicide treatment only to be carried out when the proportion of listed invasive species reaches 5% - 10% of the grassland area. Possible use of sheep grazing in securely enclosed pastures to maintain grassland areas. Herbicides shall be chosen by the Contractor from ESCC's list of approved herbicides.
1.3	Species rich neutral grassland	Mowing	Year 1: cut in October for spring sown grass (to allow seeds to drop), or May and October for autumn sowings. Cut height to be 4-7 cm. Subsequent years: divide plots into two areas and cut in alternate years in August. Remove arisings at all times.
1.3.1	Neutral grassland with scrub	Mowing	Cut three times annually in the growing season avoiding the planted scrub species. As other scrub species emerge, identify on site the limits of the areas using suitable markers to avoid cutting and allow scrub areas to develop. Timing to vary according to whether the grass was spring or autumn sown.

LE	Title	Prescription	Description
1.6.1	Open grassland (badger foraging habitat)	Mowing	Cut three times annually in the growing season. Timing to vary according to whether the grass was spring or autumn sown.
1.7	Arable	n/a	Return to landowner for agricultural management.
-	Amenity grassland	Mowing	Regular mowing on a two-weekly basis during the growing season to ensure sward height kept short, (this will help deter barn owls from hunting in areas immediately adjacent to the road as short swards will not attract their prey species).

Table 4.2 Woodland LE 2

LE	Title	Prescription	Description
2.1	New woodland and copses	Thinning	Review thinning requirements in Year 5. Thin selected trees to prevent overcrowding and leave the woodland made up of a variety of species, heights and ages. Felled trees – chop into manageable lengths and stack into piles for wildlife (GCN, dormice, invertebrates), the extent to be decided by the EcoW and the excess removed from site.
2.1.1	Existing woodland to be managed	Removal of unstable trees near highway. Re-coppicing of areas of former coppice woods.	Annual survey by arboriculturalist to identify diseased trees, particularly Ash trees infected with Ash Die-back. Coppicing and control of invasive species as described in 3.6.2 above. Placement of stacks of dead wood and brush to enhance habitat; extent to the approval of the EcoW, with excess removed from site.
2.2	Existing woodland edge management (Chapel Wood)	Coppicing, selective scrub clearance and grass cutting	See details in 3.6.2 above.
2.4.1	New shaws (identified on the EMP drawings)	Coppice	Coppice on 4 years rotation 15% of plants.
2.8	New Scrub	Formative pruning	Annually prune to create compact bushy forms.

Table 4.3 Amenity trees and shrubs LE 3

LE	Title	Prescription	Description
3.1	Amenity trees and shrubs	Pruning	Where uniformity is intended prune to promote uniform shape to suit species and variety. Generally, prune to promote good balanced forms.

Table 4.4 Hedges LE 4

LE	Title	Prescription	Description
4.3	Native species hedges	Trimming	Trimming as detailed in Section 3.6.3 above – in late winter after fruits have been used as a food source by birds/mammals but before bird nesting season.
4.4	Native species hedges with trees	Trimming and pruning	As for native species hedges (LE 4.3) but avoiding damage to trees in hedge. Light formative pruning of trees to promote good balanced form. All trimming and pruning to be carried out in late winter.
4.4.1	New woodland edge	Formative pruning	When plants begin to merge prune where necessary to remove straggling lengths and promote dense vegetation.

Table 4.5 Water bodies LE 6

LE	Title	Prescription	Description
6.1	Waterbodies and associated plants	Great crested newt Habitat Suitability Index assessment Cutting seeded areas. Natural regeneration plus planting of starter colonies of wetland species on margins with periodic cutting.	Management of waterbodies to be influenced by the results of an annual great crested newt Habitat Suitability Index, as described in Section 5.5.2. From Year 1, areas around ponds sown with a seed mix for marsh, wet grassland and fen to be cut annually in late summer to 100mm height and the clippings removed. As part of the main planting works, margins will be planted with starter colonies of marginal and aquatic plants at intervals around the ponds. The remainder of the margins will be left to natural colonisation with cutting in Year 3 and Year 5 to subdue the most vigorous species.
6.2	New Ditches	Natural Regeneration	With the exception of the stream banks of Decoy Pond Stream, new ditch banks will be left bare for vegetation to re-colonise. Starting in Year 2, the banks will be strimmed biennially, one bank one year and the other bank in the next year etc, to subdue growth of the most vigorous species. Aquatic and marginal planting along Decoy Pond Stream under the bridge will be maintained as described in the Series 3000 specification.
6.4.1	Existing retained ditches	Intermittent Cutting	Starting in Year 2, herbaceous, and marginal vegetation along existing ditches will be strimmed biennially, one bank one year and the other bank in the next year etc, to subdue growth of the most vigorous species.

LE	Title	Prescription	Description
6.4.1.1	Marsh, wet grassland and fen	Cutting seeded areas – natural regeneration of water margins with periodic cutting	From Year 1, areas sown with seed mix for marsh, wet grassland and fen to be cut annually to 100mm height in late summer and the clippings removed. Margins of any new areas of open water to be left to naturally regenerate vegetation, with cutting in Years 3 and 5 to subdue growth of the most vigorous species
-	Marsh, wet grassland and fen – with widely scattered trees	Annual cutting + thinning out of planted trees – natural regeneration of water margins with periodic cutting.	From Year 1 areas sown with seed mix for marsh, wet grassland and fen to be cut annually to 100mm height in late summer and the clippings removed. Margins of any new areas of open water to be left to naturally regenerate vegetation with cutting in Years 3 and 5 to subdue growth of the most vigorous species. Planted trees to be maintained as per the Series 3000 specification. After Year 7 ESCC may need to thin out the trees to preserve open spaces.

Table 4.6 Fences

LE	Title	Prescription	Description
n/a	Permanent badger fence	Check and repair	Annual inspection of permanent badger fencing and gates, checking for evidence of damage. Repair any defects when reported/identified.
n/a	Species crossing features		Annually check the species crossing features for damage and continued effectiveness. Repair any defects when reported/identified.
n/a	Temporary amphibian and reptile fence and fencing demarcating badger exclusion zones.		Regular checks of temporary exclusion fencing for damage throughout the construction period. Repair any defects when reported/identified.

Table 4.7 Hard Landscape Surfaces

LE	Title	Prescription	Description
EMP	Hard landscape paving in Community area. London Road, Bexhill	Check, maintain and repair defects	Annually check paving, steps, seating, and bollards. Identify any defects and carry out remedial repairs as necessary immediately after the identification of the defect. Litter pick as necessary.

4.3 Timing of landscape maintenance actions

The following descriptions and tables outline the maintenance operations for the landscape and ecological elements to the end of the Aftercare period. A report will be produced annually describing the results and progress of the landscape and habitat monitoring and management works. Broad maintenance goals will be

reviewed and detailed practices revised and adjusted as required to meet those goals. Reports will be issued to the Head of Planning at ESCC by the end of the calendar year within which the monitoring works were completed. Based on the recommendations of each report, appropriate changes or modifications will be implemented to the following year's maintenance or monitoring actions, as described in the OEMP, in agreement with ESCC.

Notes:

1. In the tables the term "In CP + 1-5 Aftercare" = In Construction Period and years 1 to 5 Aftercare Period.
2. The tables show the month of the operations required but not the number of visits needed to meet the maintenance requirements.

Table 4.8 Grasslands LE 1

Operations	Years	J	F	M	A	M	J	J	A	S	O	N	D	Comment
Contractor/EcoW review of grassland areas to identify areas of poor germination	In CP + 1-5 Aftercare									X				
Remedial seeding	In CP +1-3 Aftercare			X	X	X								As required.
Litter picking by landscape contractor	In CP + 1-5 Aftercare	X	X	X	X	X	X	X	X	X	X	X	X	
Pest and disease control by landscape contractor	In CP + 1-5 Aftercare	X	X	X	X	X	X	X	X	X	X	X	X	When required only.
Species Rich Neutral Grass Cutting (LE1.3) (1st yr)	In CP / 1 Aftercare					X					X			Remove arisings. Cut times vary with sowing times
Species Rich Neutral Grass cutting (LE 1.3)	2-5 Aftercare								X					Remove arisings. August cut after flowering.
Neutral Grass with Scrub cutting (LE 1.3.1)	In CP / 1 Aftercare					X					X			Cut times vary with sowing times
Neutral Grass with Scrub cutting (LE 1.3.1)	To 5 Aftercare			X			X			X				Identify emerging scrub areas to retain, and avoid cutting.
Amenity grassland	In CP + 1-5				X	X	X	X	X	X				Twice monthly

Operations	Years	J	F	M	A	M	J	J	A	S	O	N	D	Comment
	Aftercare													cuts of amenity grassland to ensure short sward height.

Table 4.9 Woodland types, Hedges LE 2, LE 4

Operations	Years	J	F	M	A	M	J	J	A	S	O	N	D	Comment
Inspection and General Review	In CP + 1-5 Aftercare									X				By Landscape Architect
Replacement of dead or failing plants	In CP + 1-5 Aftercare	X	X	X								X	X	Within plant dormant period.
Reform plants, check and adjust / replace plant supports or shelters	In CP + 1-5 Aftercare	X		X		X		X		X		X		In addition, particularly after stormy weather whenever it occurred.
Removal of litter	In CP + 1-5 Aftercare	X	X	X	X	X	X	X	X	X	X	X	X	
Remove plant supports and shelters	In 5 Aftercare	X	X	X										Remove from site.
Formative pruning	In CP + 1-3 Aftercare									X	X	X		Stockpile arisings for wildlife.
Selective coppice	5 Aftercare											X	X	Only after review of need
Weed control around plants	In CP + 1-5 Aftercare				X		X		X		X			Or until plants have grown sufficiently to no longer require weed / grass control.
Grass cutting / strimming in planting plots	In CP + 1-5 Aftercare				X		X		X		X			

Table 4.10 Amenity Trees and Shrubs LE 3

Operations	Years	J	F	M	A	M	J	J	A	S	O	N	D	Comment
Formative pruning	In CP + 1-5 Aftercare									X	X			To create good form and remove straggling growths.
Inspection by Landscape Architect	In CP + 1-5 Aftercare			X								X		

Deadwood pruning	In CP + 1-5 Aftercare	X	X									X	Remove dead or damaged branches.
Top up mulch	In CP + 1-3 Aftercare			X							X		Where required.

Table 4.11 Water bodies LE 6

Operations	Years	J	F	M	A	M	J	J	A	S	O	N	D	Comment
Inspection	In CP + 1-5 Aftercare				X						X			
Weed and pest control	In CP + 1-5 Aftercare				X	X	X	X	X	X	X			Where required on basis of inspections.
Cutting and removal of aquatic vegetation	2, 4 and 5 Aftercare				X						X			Where required on basis of inspections.

Table 4.12 Existing Woodlands LE 2.1.1 and 2.2

Operations	Years	J	F	M	A	M	J	J	A	S	O	N	D	Comment
Inspections By EcoW and Landscape Architect	In CP + 1-5 Aftercare			X										
Coppicing		X	X									X	X	As detailed in 3.6.2 above
Removal of deadwood, unstable trees and selective tree thinning		X	X									X	X	Cut into manageable lengths and stack for wildlife.

Table 4.13 Hard Landscape Paving

Operations	Years	J	F	M	A	M	J	J	A	S	O	N	D	Comment
Inspections	In CP + 1-5 Aftercare								X					
Remedial for any defects	In CP + 1-5 Aftercare								X					Carry out any works outside school term times.
Litter picking	In CP + 1-5 Aftercare	X	X	X	X	X	X	X	X	X	X	X	X	

4.4 Remedial action

The results of all monitoring survey work will feed back into the general management of the site, and management strategies will be altered where necessary. If monitoring surveys highlight a potential problem this will be reported in that year's monitoring report and appropriate remedial measures recommended.

5 Ecological monitoring

5.1 Aims and objectives

It is good practice to monitor the success of mitigation or compensation measures, and to address the situation should any of the implemented measures fail (e.g. due to lack of management). Where European Protected Species mitigation licences are obtained, it is usually a condition of the licence, and therefore a legal requirement, to undertake post-mitigation monitoring. Given the uncertainties in predicting effects, and the novel nature of some mitigation packages (e.g. dormouse bridges), monitoring is essential. Monitoring should include a feedback mechanism to revise mitigation measures if effects are greater than predicated or if the measures in place are found to be inadequate (IEEM, 2006).

Ecological monitoring for this Scheme will include the monitoring of both newly created and retained habitats. In the case of the former, the monitoring will determine the success of the mitigation and compensation strategy and the results used to fine tune habitat management. In the case of retained habitats, monitoring will be aimed at ensuring those habitats are healthy and contributing to the overall mitigation strategy.

Species monitoring surveys for great crested newts, badgers, bats, dormice and barn owls will also be undertaken to obtain information regarding the presence and behaviour of these species in relation to newly created habitats/features required as mitigation, as well as in unaffected habitats adjacent to the Scheme where their historic presence has already been confirmed.

The monitoring period described below covers the two year construction period followed by a five year post-construction period, a total of seven years. In addition to this, monitoring in the long-term (twenty years and more) will be undertaken from Year 5 (post-construction) in combination with a long-term landscape monitoring and management plan. The long-term monitoring results will be assessed against data obtained before construction of the road as well as data gathered during the monitoring described in this LEMP to identify and assess any long-term trends or changes associated with the presence, distribution and behaviour of the target species. Remedial measures will be implemented to rectify deficiencies in existing mitigation and/or to address any additional unmitigated impacts associated with the operation of the road. Full details relating to long-term ecological (and landscape) monitoring is provided in the OEMP, which will be reviewed at least every five years throughout the lifetime of the road.

5.2 Baseline information

In order to effectively monitor change, baseline information is required so as to determine the existing ecological conditions against which future comparisons can be made. As part of the Ecological Impact Assessment process, and in order to support mitigation / development licence applications to Natural England (i.e. for bats, badgers, great crested newts and dormice), detailed species surveys were undertaken between 2005 and 2012 to identify the presence/likely absence and distribution of certain species (specifically legally protected and BAP species) within the context of the Scheme. Information relating to how these animals utilise the habitats within and adjacent to the Scheme was also collated. The results of these

surveys will be used to form a baseline against which the results of all future monitoring surveys will be assessed.

As the above surveys were undertaken in accordance with appropriate best practice guidelines by suitably qualified ecologists, and provide up to date information relating to species' presence and use of habitats within the Scheme, this data is considered to be sufficiently robust to form a baseline.

5.3 Species monitoring

5.3.1 European protected species

Licences can only be issued if Natural England is confident there will be no detriment to maintaining the conservation status of the population of European Protected Species (EPS) concerned at a favourable level, and in some cases a package of monitoring and remedial action will be required to provide that confidence (Natural England, 2012).

All mitigation schemes carry a risk of failure. If mitigation measures fail, then the resulting impact on the conservation status of the EPS may mean that the 'Favourable Conservation Status test' (FCS test) (which is required in order to ensure compliance with the Conservation of Habitats and Species Regulations 2010) will not have been met. This risk is greatest for activities that are judged to have a medium or high impact on the species (Natural England, 2012).

Post-development monitoring has a role in providing confidence in any judgement that there will be no detriment to favourable conservation status by detecting problems that may lead to such a detrimental effect and enabling appropriate remedial action to be taken to avoid it (Natural England, 2012).

Post-development monitoring is required for most medium and high impact schemes. Monitoring and remedial action forms an important component of mitigation packages and is a key prerequisite for an EPS mitigation licence application to pass the FCS test. The success of mitigation/compensation commonly depends on measures undertaken following any necessary capture operations and the main phases of development. Deficiencies in newly created habitats are a common problem and both aquatic and terrestrial habitat features may require several years of management to achieve a high value for particular species. Monitoring is necessary to inform that management. Monitoring numbers and breeding success can also be used to identify the need for remedial action (Natural England, 2012).

When assessing licence applications, Natural England considers whether post-development monitoring proposals, in conjunction with the other mitigation measures, will be sufficient to ensure that the FCS test will be met. The need for monitoring, and the type of monitoring required, is related to the impact of the development and the status of the EPS population. In this way, monitoring requirements are proportionate to the risk of potential impacts on conservation status. For developments resulting in low impacts, monitoring will not normally be required (Natural England, 2012).

As part of the mitigation package for this project, post-construction monitoring of protected species (in particular those directly affected by the Scheme) will be carried out. Monitoring for bats, dormice and great crested newts will be undertaken in accordance with the conditions of the respective European Protected Species

Mitigation Licence for each species. By granting the relevant species licence, Natural England has assessed and approved the proposed monitoring strategies.

Outline details of the monitoring strategies agreed with Natural England (via the licensing process) for bats, dormice and great crested newts are described below with a summary also provided in Table 5.3 below. Full details describing the monitoring requirements for these species are provided within the licence application documents in Appendices C to E.

All monitoring surveys will be conducted in accordance with current best practice guidelines for the respective species, as referenced in Table 5.3. All monitoring surveys will be completed by appropriately experienced ecologists holding the necessary licenses.

(a) Great crested newts

Proposed monitoring

The following monitoring strategy has been submitted to Natural England as per the details of the method statement in Appendix E (refer to section E5.2 of the GCN Licence Method Statement):

- All ponds known to support GCN (Ponds 5, 13, 15, 16 and 20) will be surveyed, together with the newly created waterbodies within 500m of these ponds (refer to Figure C3.2a:Development Survey Area and Pond Locations for location of all ponds).
- Ponds 17 and 29 which will be subject to habitat management will also be surveyed.
- Monitoring surveys will comprise a population size class assessment (undertaken over six surveys between mid-March and mid-June) and a habitat suitability assessment.
- Monitoring surveys will be undertaken for two years post-construction.
- All surveys will be undertaken in accordance with the Great Crested Newt Mitigation Guidelines (English Nature, 2001).
- Ponds 5, 13, 15, 16, 17, 20 and 29 will be subject to Habitat Suitability Index assessment surveys during the two year construction period and for five years thereafter, as will the newly created newt ponds.

The success of the mitigation strategy will be assessed against the habitat suitability of existing and newly created newt ponds for GCN on completion of habitat management works (measured using Habitat Suitability Index criteria described by Oldham *et al,* 2000).

The presence of GCN within the ponds surveyed and/or a Habitat Suitability Index score of 0.69 or above achieved within five years of the construction of the road would represent successful achievement of the mitigation strategy.

Pond management options to ensure retention of optimum habitat conditions

If, following annual assessments of Ponds 17, 29 and the newly created newt ponds, the Habitat Suitability Index score for these ponds drop below the score recorded in the previous year, remedial action will be considered, as outlined in Table 5.2 in Section 5.5.2. Further details relating to potential pond management options to ensure the retention of optimum habitat conditions for great crested newts are described below.

Great crested newts prefer open, medium sized ponds with both submerged and floating vegetation cover. Ponds change naturally over time and can silt up, dry out, or become swamped with vegetation so it is often necessary to manage ponds in order to slow down this process for the benefit of target species (in this case, great crested newts). As such, the newly created ponds and Ponds 17 and 29 will be subject to habitat management throughout the lifetime of the road.

Marginal and submerged vegetation are important components of pond ecosystems providing cover, egg laying sites, and food for the invertebrate prey of newts. However, vegetation should not be allowed to over-shade and fill a pond as this can lower the water temperature, and also lead to the build up of nutrients from dead plant material and thus the build up of silt. Optimal conditions can be produced by managing plants so that there is only scrub and tree vegetation on the northern margin of the pond where little or no shade will be cast on the water surface. Keeping trees from being in close proximity to ponds can also prevent them from taking up excessive water, causing the ponds to dry out. Where trees are present near to the ponds, these will be cut back or pollarded as they mature to reduce the effect of shade. Raking out excessive plant material and pond weed will also be undertaken to help prevent stagnation of the water and slow the process of natural succession. If the ponds do become overly silted up, they will be dredged (English Nature, 2001 and Langton *et al*, 2001).

Invasive or dominant plant species will be removed or controlled before they reduce the quality of the aquatic habitat for great crested newts. The removal of invasive plants by hand is the preferred option although mechanical control, and as a last resort, the use of appropriate herbicides may also be considered. If any fish are introduced to the ponds, they will be removed immediately by methods such as netting or electrofishing. Where necessary, the pond margins will be fenced to prevent trampling by livestock.

To reduce disturbance to any amphibian population present, management works such as removing and altering vegetation, as well as dredging will be completed in autumn and winter when amphibians are generally occupying terrestrial habitat. Where possible, vegetation will be removed by hand in ponds where great crested newts are present.

(b) Dormice

Monitoring requirements

The monitoring programme will aim to identify the potential impacts of the Scheme by assessing the dormouse population pre-construction (2012), during construction (2013/14) and in the operational phase of the work (2015-19):

Short-term Aims of the Monitoring Programme:

- Determine minimum numbers of dormice in each survey area.
- Assess activity index and occupancy rates of nest tubes/boxes per survey area.
- Determine pre-breeding/post hibernation numbers and pre-hibernation population densities.
- Map the distribution of dormice across the Scheme.
- Identify immediate impacts on the local dormouse populations due to disturbance and temporary habitat loss arising from Scheme construction.

Medium to Long-term Aims of the Monitoring Programme:

- Identify utilisation of retained vegetation and colonisation of newly created habitat and other mitigation measures including boxes.
- Monitor breeding success and timings.
- Monitor pre-breeding/post-hibernation numbers and pre-hibernation population densities.
- Monitor minimum numbers of dormice in each survey area.
- Monitor activity index and occupancy rates of nest tubes/boxes per survey area to assess population trends.
- Monitor the local dormouse distribution.

This monitoring programme will allow the opportunity to identify and rectify unexpected impacts or the potential under-performance of the mitigation and compensation measures put in place.

Proposed monitoring

The following monitoring strategies were submitted to Natural England in 2012 as per the details of the method statement documents in Appendix C (see section D of the Method Statement – Document 2. Delivery Information. Document reference: B1297000/Dormouse/EPSLicence/02).

A seven year monitoring programme of the local dormouse population will be undertaken, covering the two year construction period and a five year maintenance period. Nest tubes and boxes installed in existing dormouse habitat and in enhanced and newly planted habitats will be surveyed five times per year from 2013 – 2019. The surveys conducted in 2005, 2008 and 2012 provide baseline data on the local dormouse population. Boxes and tubes located within the clearance zone will be relocated into retained areas of the site for continued monitoring.

Newly planted and enhanced habitats will also be monitored as part of the habitat management plan (See Section 4).

Dormouse monitoring of the newly constructed under-bridges and over-bridges will be conducted with use of motion sensitive wildlife cameras placed at one end of the dormouse walkway at each over-bridge/under-bridge. Each over-bridge/under-bridge will be monitored twice a year for one month in the period April to June and from July to September, from 2015 to 2017 as per the schedule below. Cameras will be rotated so that over a three year period, each structure has been monitored each month during the active period. Monitoring in 2018 and 2019 will be undertaken for crossing points where dormice use has not been proven during 2015-2017.

In addition to the cameras, hair tubes will be placed at both ends of each walkway. Hair tubes will be constructed and baited with jam or peanut butter as per English Nature guidance (Bright *et al*, 2006).

The monitoring programme will allow an assessment of the efficacy of the mitigation strategy and amendments made to it should it be deemed to be inadequate.

Confirmed presence of dormice and the maturation of habitat planting and management strategies within the survey areas will also be taken as an indicator of a successful mitigation strategy.

(c) Bats

Data collected in 2012 will be used as a baseline for the following surveys:

Monitoring surveys of known roosts

Two dawn or dusk surveys per year will be undertaken for two years during construction (2013 and 2014) and for five years post-construction (2015-2019) of the known roosts at Upper Wilting Farm, Adam's Farm House, Acton's Farm (buildings 2-3), Glover's Farm House, and Glover's Barn.

In addition, two dawn or dusk surveys per will be undertaken for one to two years during construction (2013 and 2014, depending on when structures are built) and for five years post construction (2015-2019) of the following newly created roosts: Adam's Barn (post reconstruction in its new location), Ninfield Bridge, Powdermill Valley Bridge, Powdermill Stream Bridge, Decoy Farm Bridge and Watermill Stream Bridge.

The aim of the surveys will be to record the number and species of roosting bats, the species of foraging/commuting bats and the level of activity. The level of activity will be categorised based on the number of bat calls recorded to allow a comparison of bat activity in different parts of the site. The following system will be used to categorise bat activity: no calls = no bat activity, 5 commuting passes or less and no foraging activity = low activity, 6 to 15 commuting passes and/or up to 10 minutes of total foraging activity = moderate activity, 16 or more commuting passes and/or foraging for more than 10 minutes = high activity.

In addition the following environmental variables will be measured: temperature, precipitation, wind speed (if possible using an anemometer) and cloud cover.

All surveys will be undertaken in accordance with current best practice guidelines (BCT, 2012).

Monitoring surveys of foraging and commuting habitat

Transects and static monitoring of crossing points will be undertaken to monitor the success of landscape planting and road crossing features in maintaining bat flight lines. As a minimum, surveys will be undertaken for five years post-construction. The value of undertaking surveys during the construction period will be assessed each year as it is possible that surveys may not be appropriate, particularly if ground conditions mean access is unsafe at night.

All surveys will be undertaken in accordance with current best practice guidelines (BCT, 2012).

The success of the mitigation strategy will be measured against the development of landscape planting designed to provide commuting and foraging habitats. The establishment and maturation of the new planting into habitat features that are suitable for and used by bats will indicate that the provision of replacement and compensatory habitat has been successful. To reflect the improvements in the quality of landscape planting as it matures over time, bat activity levels in these areas should maintain or increase when compared to the results of bat activity surveys recorded during Year 1.

Due to the transient nature of the roost type at Adam's Farm barn and the low number of bats using it, the absence of bats at the relocated barn is not considered

to be a reliable indicator of deficient mitigation, as described in section 5.5.2. However, the continued use of the barn by bats (especially by the three species of bats recorded during the pre-construction surveys) would clearly demonstrate that the translocation and enhancement of this roost has been successful.

5.3.2 Other protected or notable species

(a) Badgers

During construction, the Ecological Clerk of Works (EcoW) will undertake regular checks across the site as part of their weekly routine to ensure badgers aren't excavating into the works area and are using the artificial setts provided.

Post-construction, a survey of the use of artificial setts will be undertaken during Year 2. Surveys of the new road to search for badger road-kill will also be undertaken to ensure the effectiveness of badger fencing and crossing points.

The occupation of artificial setts will indicate successful mitigation with respect to the closure of setts 24 and 55. The use of crossing points and an absence of badger road-kill will indicate that mitigation measures to retain connectivity and prevent mortality due to road traffic accidents has been successful.

(b) Reptiles

Numbers of reptiles across the Scheme are considered to be low and patchily distributed, potentially due to the generally isolated nature and small size of areas with suitable habitat. As the potential impacts to reptiles are anticipated to be low, and as reptiles are abundant in habitats adjacent to the Scheme, post-construction monitoring is not proposed. The success of the mitigation will therefore be measured against the successful translocation of reptiles into the receptor areas as per best practice guidelines (HGBI, 1998).

(c) Barn owls

One survey of all previous roosts sites, any potential roost sites, and all newly erected nesting boxes will be undertaken during Year 2 of operation. Road kill surveys will also be undertaken on five occasions per year for five years following the opening of the road. The surveys would be undertaken by an ecologist who satisfies the knowledge, skill and experience requirements outlined in the document *'Competencies for species survey: Barn owl'* (IEEM, 2011).

Success criteria for breeding and roosting barn owls will be the continued use of existing roost sites (including existing buildings and trees were previous occupancy has not been recorded) and the use of newly erected nest boxes. An absence of barn owl road-kill will indicate that habitat management measures to deter barn owls from hunting on roadside verges have been achieved.

5.4 Reporting

The results of all species monitoring surveys will be shared with the relevant bodies i.e. the County Planning Authority, Natural England and the local records centre.

So that East Sussex County Council has an opportunity to discuss the content of the monitoring reports with the developer, each survey report will be issued with an invitation to the Head of Planning (and other interested parties within the Council) to attend a meeting with the developer to discuss the results and recommendations of

the reports. If considered necessary, the meetings will take place at a time and location to be agreed between the Council and the developer. The agenda of any meetings would be determined by the Head of Planning.

As monitoring surveys are often spread throughout the year (e.g. dormouse monitoring surveys take place between April and October), survey reports will be provided to ESCC on completion of each annual suite of surveys. It is not proposed to undertake quarterly reporting of all protected species surveys, as per planning condition 25f.

Reports will be issued by the end of the calendar year within which the survey was completed. If a monitoring survey is not programmed to be undertaken in a given year, no report will be issued. Table 5.1 shows the programme for when survey reports will be provided. Table 5.3 shows the proposed timing of each species survey in relation to the construction start date.

In the event that the trigger points described in Table 5.2 are reached or if evidence suggesting that mitigation may be failing is observed early in the survey programme of any given year, an early warning report will be issued to the Head of Planning which describes the issue identified and provides recommendations for any remedial measures. This report will be issued as soon as possible after any issue has been identified so that remedial action can be agreed and implemented at the first available opportunity. If agreed with the developer and ESCC, this LEMP and/or the OEMP will be amended to incorporate the recommended remedial actions. The production of an early warning report would not replace the production of the species monitoring report, as described in Table 5.1.

Each monitoring report will provide the following:

- **Methodology.** This will include reference to current best practice guidelines, equipment used, survey conditions, survey location, constraints and assumptions.
- **Results.**
- **Discussion and analysis of results.** This will include comparisons between the baseline data and all previous years' survey work and an assessment of the significance of trends / changes identified. Any limitations or problems with the methodology will also be discussed.
- **Recommendations.** Any remedial measures considered necessary to address negative trends/results will be proposed.

Based on the recommendations of each report, appropriate changes or modifications will be implemented in agreement with ESCC and/or Natural England (e.g. amended habitat management, revised survey methodologies, additional compensation or mitigation measures). If necessary, amendments to EPS mitigation licenses will be applied for to cover any remedial action required.

Table 5.1. Programme for submission of species monitoring reports

Species	Survey season	Date of report submission
Great crested newts	March to June	By the end of December (same year of survey)
Dormice	April to November	By the end of December (same year of survey)
Bats	April to October	By the end of December (same year of survey)
Badgers	To be combined with	By the end of December (same

	dormouse surveys	year of survey)
Barn owls	To be combined with dormouse surveys	By the end of December (same year of survey)

5.5 Remedial action

The results of all monitoring survey work will feed back into the general management of the site, and management strategies will be altered where necessary. If monitoring surveys highlight a potential problem (i.e. if pre-determined thresholds or triggers are reached), these will initially be highlighted in early warning notices issued to ESCC, and will also be reported in that year's monitoring report where appropriate remedial measures will be recommended.

5.5.1 Potential remedial measure options

If monitoring suggests that mitigation is unsuccessful, remedial measures will be implemented. While this document does not attempt to predict all possible scenarios in which mitigation is deemed to be failing, a list of remedial options available to address any failings is provided below. This list is not intended to be exhaustive, but to give an indication of potential options available to the Scheme should problems be detected:

- Provision of secondary scrub, hedgerow or woodland planting to bolster habitat area and connectivity;
- Amendments to the design of dormouse and multi-species road crossing features;
- Provision of new areas of fencing or alterations to existing fencing to enhance noise / visual disturbance attenuation;
- Provision of new areas of planting or alterations to existing planting to enhance noise / visual disturbance attenuation;
- Provision of new areas of fencing and planting, or alterations to existing fencing / planting design to help prevent bats / barn owls flying low across the road;
- Alterations to the management regime of newly created or restored habitats to ensure maximum benefits to target species;
- Enhancements to planting designs leading to road crossing points (over and under-bridges);
- Provision of increased numbers of bat / dormouse / barn owl boxes to further enhance retained habitats;
- Amendments to the design of Adam's Farm over-bridge – currently designed as a 'green' bridge;
- Amendments to the design of other over-bridges to encourage their use as crossing points by species such as badgers;
- Amendments to the design of artificial badger setts to enhance their use by displaced animals;
- Habitat management of reptile receptor sites to increase the habitat carrying capacity;
- Provision of additional herpetofauna hibernacula.

5.5.2 Thresholds levels that would trigger the requirement for remedial measures

The threshold levels which would trigger the requirement for remedial measures are described in Table 5.2. Potential remedial measures that would be implemented to address deficient or failing mitigation measures are also described. These should be treated as indicative as specific remedial action would only be designed and

implemented following a detailed assessment to identify the reasons behind failing mitigation.

The absence of great crested newts within new or existing ponds is not considered to be a reliable trigger point for prompting remedial measures. Survey work has indicated that there is a small population of great crested newts within the site, with some ponds only found to support individual newts. As such, the absence of newts from a pond in any given year is not necessarily a reliable indicator of failed mitigation, and instead could be the result of individuals making use of several ponds within a metapopulation. Therefore, the creation and management of good quality aquatic and terrestrial habitat, and the retention of suitable connecting habitat between ponds is considered a more reliable indicator of the success of newt mitigation.

Dormouse surveys undertaken during 2005, 2008 and 2012 indicate that dormice are likely to be present in all suitable habitat throughout the site. The retention, creation and appropriate management of dormouse habitat and crossing points is required to ensure that dormouse presence within the Site is maintained. The trigger points for remedial measures therefore relate to the quality of dormouse habitat within the Site as a reduction in habitat quality would have implications for dormouse presence and distribution. Bespoke crossings ('walkways') will be constructed on over-bridges and under-bridges along the scheme to allow dormice safe passage across the road and watercourses. These will be monitored as described in Section 5.3.1b. As there is limited research available on the effectiveness of these structures, monitoring will be key to determine their success or otherwise. A full year's monitoring data will be obtained before any review will be made. Only if no dormice have been recorded using these structures will any remedial messages be considered, such as their redesign or enhanced landscape planting leading up to the crossings.

Due to the transient nature of bats and their often infrequent use of the transitory roost types affected by the proposals, bat presence/absence and/or population size is not considered to be a reliable indicator of deficient mitigation and so has not been used as a trigger point. Instead, the quality of newly created and retained commuting, foraging and potential roosting habitat is considered to be a more suitable indicator of whether the scheme's bat mitigation is likely to be successful i.e. if the site continues to support good quality habitat for bats then the likelihood of maintaining and/or enhancing their favourable conservation status is high.

Table 5.2. Trigger points and potential remedial measures

Species	Trigger point	Potential remedial measure
Great crested newts	If the Habitat Suitability Index score for any of the monitored ponds (ponds 5, 13, 15, 16, 17, 20 and 29) drops below the score recorded in the previous year.	• An assessment of the pond would be undertaken to identify the reasons behind the falling score and whether this can be attributed to the Scheme or management regime. • Where necessary, make alterations to the management regime of newly created or restored habitats (aquatic and terrestrial) to ensure maximum benefits to GCN. • Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be affecting GCN

Species	Trigger point	Potential remedial measure
		presence (e.g. shading, fish presence, reduction in macrophyte presence, pollution, loss of connectivity etc.)
Dormice	If, after Year 1, monitoring surveys indicate that no dormice have used crossing points, or are not using connective habitat linking the crossing points to the wider countryside. In subsequent years, if numbers of animals using crossing points falls from that of the previous year.	• Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be affecting use of crossing points by dormice e.g. bolstering of linear habitat features through supplementary planting to strengthen connectivity between crossing points and areas of suitable habitat; provision of nest boxes within habitat connected to crossing points. Redesign of 'walkways'.
	If monitoring surveys identify any new hedgerow, woodland or scrub planting that is damaged, dead or diseased.	• Replacement planting would be undertaken in the next appropriate planting season, as per the habitat management plan.
Bats	If monitoring surveys of existing roosts and bat boxes identify changes that would negatively affect bat occupation e.g. blockage of access points, loss/inappropriate management of connecting habitat, increased light/noise disturbance, damage caused by vandalism etc.	• Undertake management works to address habitat deficiencies that may potentially be affecting roost use e.g. provision of secondary scrub, hedgerow or woodland planting to bolster connectivity. • Repair or increase provision of bat boxes, roost features or bat access points to further enhance retained habitats or to compensate for post-construction changes to existing roosts.
	If monitoring surveys indicate that no bats utilise multi-species crossing points or follow connective habitat linking the crossing points to the wider countryside/roost sites during Year 1, or that in subsequent years their numbers decrease from the previous year.	• Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be affecting use of crossing points by bats (e.g. bolstering of linear habitat features through supplementary planting to strengthen connectivity between crossing points and areas of suitable foraging habitat and/or known roosts.)
Badgers	If post-construction monitoring indicates that badgers are not using artificial setts 24 or 55.	• Baiting of the sett with food and bedding to encourage use by badgers would be undertaken by the EcoW on a weekly basis for the duration of the construction period. • Clearance of vegetation or spoil that may be blocking any of the holes.
	If monitoring surveys indicate that badgers are avoiding multi-species crossing points (e.g. due to an absence of field signs at crossing points), or are not following connective habitat linking the	• Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be affecting use of crossing points by badgers (e.g. bolstering of linear habitat features

Species	Trigger point	Potential remedial measure
	crossing points to the wider countryside (e.g. due to an absence of field signs along connecting hedgerows).	through supplementary planting to strengthen connectivity between crossing points and areas of suitable foraging habitat and/or known setts.)
	If monitoring surveys record one or more badger road traffic fatality.	• Check the condition of the badger fence along its entire length in an effort to determine where any individuals may be entering the road corridor. If necessary, repair or modify badger exclusion fencing. • Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be affecting use of crossing points by badgers (e.g. bolstering of linear habitat features through supplementary planting to strengthen connectivity between crossing points and areas of suitable foraging habitat and/or known setts.)
Barn owls	If monitoring surveys record one or more barn owl road traffic fatality.	• Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be causing barn owls to be flying low across the road (e.g. modifying the habitat maintenance regime to discourage barn owls from hunting along road verges, creating a barrier through landscape planting / fencing discouraging barn owls from cross the road at points where casuality(s) have been recorded.) • Provide additional barn owl nest boxes in suitable locations.
Reptiles	If the number of reptiles released into any one receptor site exceeds 50 per ha (i.e. greater than the maximum threshold size for a 'low' population of reptiles as defined by HGBI, 1998).	• Increasing the carrying capacity of the receptor sites in the short-term by controlling the amount of scrub/bracken/ruderal vegetation. Scrub/bracken cover should not exceed 15% on the site and this should be in small patches rather than large stands. Scrub should be controlled by hand cutting, with the arisings piled and composted on site. • Consideration will be given to releasing reptiles into additional receptor sites at locations B and C (see Appendix G). In this instance, two hibernacula will be constructed at each additional receptor site and appropriate habitat management works would be undertaken to increase the carrying capacity of the respective

Species	Trigger point	Potential remedial measure
		site.

Table 5.3. Ecological monitoring programme during the construction and operation of the Bexhill to Hastings link road

Survey	Advanced mitigation and construction		Post construction					Details
	Year 1	Year 2	Year 1	Year 2	Year 3	Year 4	Year 5	
Badgers	Regular visits as part of EcoW Role	Regular visits as part of EcoW Role	5 road kill surveys.	1 artificial sett visit 5 road kill surveys.	5 road kill surveys.	5 road kill surveys.	5 road kill surveys.	During construction the Ecological Clerk of Works (EcoW) will undertake regular checks across the site as part of their weekly routine to ensure badgers aren't excavating into the works area and are using the artificial setts provided. Post-construction, a survey of the artificial setts will be undertaken during Year 2. Surveys of the new road to search for badger road-kill will be undertaken on five occasions between April and October for five years post construction to measure the effectiveness of badger fencing and crossing points.
Bats	2 visits of all existing and new roost features.	2 visits of all existing and new roost features.	2 visits of all existing and new roost features Transect and static monitoring	2 visits of all existing and new roost features Transect and static monitoring	2 visits of all existing and new roost features Transect and static monitoring	2 visits of all existing and new roost features Transect and static monitoring	2 visits of all existing and new roost features Transect and static monitoring	Two evening emergence / dawn swarm surveys of known roosts and newly created roost features along the scheme will be undertaken to assess whether usage has changed as a result of the scheme's construction and operation. Transects and static monitoring will also be carried out along the scheme post-construction to determine how successful landscape planting and road crossings have been in maintaining bat flight lines. All surveys will be undertaken in accordance with best practice guidelines (BCT, 2012).
Dormice	5 visits	5 visits	5 visits	5 visits	5 visits	5 visits	5 visits	Regular monthly visits will be undertaken within retained woodland and newly planted areas. All surveys will be undertaken in accordance with best practice guidelines (English Nature, 2006).
Great crested		1 visit (HSI	6 visits	1 visit (HSI survey)	6 visits	1 visit (HSI survey)	1 visit (HSI survey)	Years 1 and 3 post construction: Two surveys of known newt ponds, newly created ponds within 500m

Survey	Advanced mitigation and construction		Post construction					Details
	Year 1	Year 2	Year 1	Year 2	Year 3	Year 4	Year 5	
newts		survey)						of these, and the two retained ponds to be managed to optimise great crested newt habitat. All surveys will be undertaken in accordance with best practice guidelines (English Nature, 2001). Annual Habitat Suitability Index (HSI) surveys of ponds 17 and 29 and newly created GCN ponds.
Barn owls			5 road kill surveys.	1 roost visit. 5 road kill surveys.	5 road kill surveys.	5 road kill surveys.	5 road kill surveys.	Surveys of the new road to search for barn owl road-kill will be undertaken on five occasions between April and October for five years post construction to measure the effectiveness of the barn owl mitigation landscaping design. Year 2 post construction: Survey of previous roosts and any potential roost sites along the scheme.

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Appendix A - Summary of Mitigation and Compensation Proposals

Table A.1. Summary of agreed mitigation to avoid/minimise significant ecological impacts and deliver benefits.

Refer to the Environmental Master Plan in Appendix B for details relating to the location of mitigation.

Much of the information contained within Tables A.1 and A.2 has been taken directly from the ecology Statement of Evidence presented at the Scheme's Public Inquiry. The detailed design process which has happened since then will mean that the figures quoting detailed habitat loss and gain figures may have changed. However, it is considered that these changes are not significant and the basic tenet that all habitats must be replaced on at least a two for one basis has been retained in the landscape and ecological mitigation designs.

Valued Biodiversity Resource (VBR)	Potential Significant Impact(s)	Agreed mitigation	Core Document reference for more detail
Combe Haven SSSI	1. Disturbance to bird assemblages during construction and operation;	1. Temporary mobile noise and visual screens will be deployed during construction. Where possible, works within the vicinity of the site will be programmed for August to November to avoid the breeding season and most sensitive periods of the over-wintering season. Permanent noise bund contouring will be designed to reduce long-term noise levels to insignificant levels for most birds.	ES 9.5-9.8, 12.4.3, 12.4.37, 12.3.39, 12.4.40, Table 12.20, 12.5.7, 12.6.7- 12.6.14 AES 9.5.25 12.5.4-12.5.8, 12.5.16-23, 12.5.31 -51,
	2. Severance of SSSI from adjoining floodplain grassland;	2. See compensation in Table A.2.	
	3. Dust and pollution from road run-off and/or spillages, including during flood events;	3, 4 & 5. Appropriate design, implementation and management of drainage during and after construction will reduce the risk of pollution and hydrological changes to insignificant levels. The dust reduction strategy (as shown in Table 3.1 in Section 3.2.2 will be adhered to).	
	4. Change to pH of soil and watercourses due to use of calcareous materials in road construction;		
	5. Increased risk of serious pollution through spillage;		
	6. Severance from railway corridor;	6. See compensation in Table A.2.	

Valued Biodiversity Resource (VBR)	Potential Significant Impact(s)	Agreed mitigation	Core Document reference for more detail
	7. Grazing marsh would be isolated from Powdermill Valley; 8. Degradation of water-courses from bridges.	7. See compensation in Table A.2. 8. Careful bridge design and construction to avoid fragmentation effects and reduce shading to insignificant levels.	
Marline Valley Woods SSSI	1. Shading of tip of the wood by new road bridge; 2. Contamination by dust during construction; 3. Contamination by road run-off; 4. Noise disturbance during construction and operation; 5. Interruption of dormouse movement corridor; 6. Fragmentation of 0.66ha of contiguous woodland outside the SSSI; 7. Adverse effects on lower plants from changes in air quality; 8. Adverse effects on plants of salt spray from bridge.	1. See Table A.2 for compensation. 2. Implementation of the Dust Reduction Strategy to reduce impact to insignificant levels. 3. Insertion of a cut-off drain to avoid potential impact. 4. Erection of temporary noise fencing and natural screening. See compensation in Table A.2. 5. Management of adjoining habitats to be designed to replace lost dormouse habitats and restore movement corridor. 6. See compensation in Table A.2. 7. See compensation in Table A.2. 8. Bridge will have solid parapet walls, which will reduce leakage of salt spray to insignificant levels.	ES 12.4.3, 12.4.46-47. 12.6.15-12.6.22 AES 12.5.10-15, 12.5.56 SoE on Water quality and flood risk. AES Table 10.1
Disused railway SNCI, Bexhill and Crowhurst sections	1. Loss of 0.97ha secondary woodland and scrub; 2. Severance of corridor; 3. Noise disturbance to breeding birds.	1 and 2: See Table A.2 for compensation. 3. Erection of noise bunds to reduce long term noise to insignificant levels.	ES Table 12.16
Buckholt Farm	1. Interruption of bat flight-lines.	1. Adjoining hedges to be managed to encourage bats to fly	ES

Valued Biodiversity Resource (VBR)	Potential Significant Impact(s)	Agreed mitigation	Core Document reference for more detail
Woods SNCI	2. Noise disturbance to breeding birds.	high over the road. See compensation in Table A.2. 2. Erection of noise bunds to reduce long term noise to insignificant levels.	12.4.49
Species rich floodplain grassland and fen	1. Loss of 21.28ha; 2. Severance of 8.3ha of wetland to the north of the road; 3. Pollution of water during and after construction.	1. and 2. See compensation in Table A.2. 3. Appropriate design, implementation and management of drainage during and after construction to reduce risk of impacts to insignificant levels.	ES 9.5 – 9.8, 12.4.3, 12.4.5, Table 12.15; App 12-J, CEMP
Mosaic of neutral grassland and scrub	1. Loss of 6.38ha. 2. Fragmentation of remaining areas. 3. Short term dust deposition during construction.	1 and 2. See compensation in Table A.2. 3. The dust reduction strategy will reduce risk of impact to insignificant levels.	ES 12.4.3, 12.4.24, Table 12.15 ES 12.4.3, 12.4.25, 12.5.10
Watercourses	1. Removal of 1848.32m^2; 2. Increased risk of pollution during construction.	1. See compensation in Table A.2 2. Appropriate design, implementation and management of drainage during and after construction will reduce risk to insignificant levels.	ES 12.4.3, 12.4.29-30, 12.5.13, 12.6.29-30, App 12-J.
Hedgerows, including those with wet ditches	Removal of 4190m2 of hedgerow, 846m2 of which is wildlife rich hedgerow (HEGs Grades 1 and 2)	See compensation in Table A.2	ES 12.4.3, 12.4.32, App 12-J
Woodland at Lower Wilting Farm	1. Damage to tree routes from bridge construction; 2. Dust pollution; 3. Damage to flora from construction vehicles and storage	1. Erection of temporary fencing to protect woodland edge. 2. To avoid the risk of significant dust emissions during the construction phase a strategy had been formulated.	AES Table 10.1

Valued Biodiversity Resource (VBR)	Potential Significant Impact(s)	Agreed mitigation	Core Document reference for more detail
	of materials.	3. Construction vehicles will be prevented from accessing vulnerable areas. Erection of temporary fencing to protect woodland edge.	
Chapel wood, Little Bog, Decoy Pond, Adam's farm, and North Abutment Woods	Noise disturbance to birds.	Noise bunds will be erected to reduce noise to insignificant levels. See compensation in Table A.2	ES 12.4.26
Secondary woodland	1. Loss of 4.35ha; 2. Severance from surrounding woodland network; 3. Damage to tree routes from bridge construction; 4. Dust pollution; 5. Damage to flora from construction vehicles and storage of materials	1. and 2. See compensation in Table A.2. 3. and 4. Erection of temporary fencing to protect woodland edge. 4. To avoid the risk of significant dust emissions during the construction phase a strategy had been formulated. 5. Construction vehicles will be prevented from accessing vulnerable areas.	AES Table 10.1
Badgers	1. Closure of seventeen setts on the route; 2. Disturbance to some setts close to the route during construction; 3.Loss of foraging areas; 4. Interruption of movement corridors during and after construction.	1. See compensation in Table A.2 2. Construction activity close to setts to be governed by terms of NE licences. Mitigation to include the creation of construction exclusion zones. 3. See compensation in Table A.2 4. Maintain habitat links and connectivity with the use of landscape planting, over and under bridges with 'badger friendly' access (i.e. bridges with low intensity use where special crossing features are not required).	ES 12.4.5, 12.4.27, 12.4.54 – 57, 12.5.19, 12.6.37 – 43 AES Table 12.1

Valued Biodiversity Resource (VBR)	Potential Significant Impact(s)	Agreed mitigation	Core Document reference for more detail
		The following bridges will have overpasses incorporated into them: Woodsgate Park Road bridge, Ninfield Road bridge, Glovers Farm bridge, Actons bridge, Adams Farm bridge, and Crowhurst Road bridge. The following bridges will have underpasses incorporated into them: Combe Haven bridge, Watermill Stream bridge, Powdermill Valley bridge, Powdermill Stream bridge, and Decoy Pond bridge. Dedicated badger underpasses will also be created at the following locations: Ch780, Ch1200, Ch1550, Ch2900, Ch3700, Ch4300, Ch5100	
Bats	1. Loss of a bat roost at Adams Farm Barn; 2. Reduction in bat roost opportunities; 3. Change in behaviour due to lighting; 4. Interruption of flight-lines and loss of foraging areas.	1. Removal of bat roost structures to be governed by terms of NE licences. 2. Erection of bat boxes in appropriate locations, including underpasses, bridges and trees. 3. Sensitive positioning of lights, as per best practice guidelines (BCT, 2012). 1 and 4. See compensation in Table A.2	ES 12.4.5, 12.4.33, 12.4.58 – 62, 12.6.44-12.6.46. AES Table 12.1
Dormice	1. Death and injury to individual dormice along the route during construction; 2. Loss of habitat and interruption of movement corridors.	1. Removal of dormice from affected area in accordance with terms of NE licence. 2. Provision of dormouse walkways on all over and under-bridges. Habitat enhancement and creation to assist with dormouse crossing. See compensation in Table A.2	ES 12.4.5, 12.33, 12.6.49 – 50, AES Table 12.1
Trout and Lamprey	1. Change in water flows, which could reduce suitability for these species;	1. Careful design of replacement channels to mimic existing or create improved conditions.	ES 9.5 – 9.8, 12.4.97-99, 12.5.29-36,

Valued Biodiversity Resource (VBR)	Potential Significant Impact(s)	Agreed mitigation	Core Document reference for more detail
	2.Contamination of nursery beds from salt and polluted run-off; 3. Damage to channels during construction; 4. Death and injury to individual fish during work on channels.	2. Timing of works affecting relevant streams, to avoid risk of siltation during breeding period. Appropriate design, implementation and management of drainage during and after construction. Discharges will be dispersed and directed to low risk areas. Discharges will be controlled through a SuDS Scheme. Effectiveness of pollution control mechanisms will be routinely monitored and amended where necessary. 3. Construction activities near streams to be agreed with EA. 4. Channel to be cleared of fish in advance.	12.6.60-61 App 12-H AES 12.5.8, 12.5.25, 12.5.57
Assemblage of birds	1. Disturbance through increased noise levels during and after construction; 2. Disturbance through introducing moving cars into the area; 3. Death and injury to birds crossing road, particularly barn owls; 4. Loss and fragmentation of habitat.	1. Sound screens to be erected in most sensitive areas during construction. Erection of noise bunds to reduce noise to insignificant levels for all key bird species. 2. Visual screens to be erected in most sensitive areas during construction. 3. and 4. See compensation in Table A.2	ES 12.4.35-36, 12.4.37, 12.4.68-90, 12.5.24, 12.6.53-57
Reptiles	1.Death and injury to individuals along route during construction; 2. Loss of habitat.	1. Trapping and translocation of reptiles from all areas of suitable habitat across the Scheme. Reptiles to be translocated to receptor sites D and E, both of which will have hibernacula provided during the winter of 2012/13. 2. See compensation in Table A.2	ES 12.4.91, 12.5.37, 12.6.59 AES Table 12.1
Great crested newts	1. Death and injury to individuals along route during construction; 2. Degradation of breeding and terrestrial habitats; 3. Loss of terrestrial habitats;	1. Capture and translocation in accordance with NE licence requirements to new receptor sites. 2. Appropriate design, implementation and management of drainage during and after construction. 3. See compensation in Table A.2.	ES 12.3.148-158, 12.4.92-96, 12.5.38, 12.6.58 AES Table 12.1

Valued Biodiversity Resource (VBR)	Potential Significant Impact(s)	Agreed mitigation	Core Document reference for more detail
	4. Severance of movement corridors.	4. Design of Decoy Stream under bridge to incorporate 2m wide riparian corridor to allow passage of animals under road.	CEMP
Invertebrates	1. Death and damage to individuals along the route; 2. Removal of habitats; 3. Contamination of habitats.	1. and 2 See compensation in Table A.2 3. Appropriate design, implementation and management of drainage during and after construction.	ES 12.4.102-105, 12.5.39, 12.6.62-65

Table A.2. Residual impacts requiring compensation

Refer to the Environmental Master Plan in Appendix B for details relating to the location of compensation habitat creation.

VBR	Value	Residual impact(s) / Trigger points	Level of significance	Agreed compensation / remedial measures (Planning (P) or Highways (H) Plot No. used for residual impact compensation	Policy compliance
Combe Haven SSSI	National	1 Loss of adjoining complementary habitats 2. Severance from adjoining habitats.	Substantial Adverse	1. and 2. The creation and ongoing management of 24.45ha of wetland habitats, including 10.75ha of seasonally flooded wetland habitats, within plots: P2/4, P2/5, P2/6, P2/7, P2/10, P2/11, P2/12, P2/13, H4/14	Compensation agreed, therefore in compliance with NPPF.
Marline Valley Woods SSSI	National	1. 3.3ha of woodland likely to be affected by changes in air quality; 2. 30m^2 of woodland will be shaded by road bridge; 3. 0.66ha of adjoining ancient woodland will be fragmented; 4. Ongoing noise disturbance to birds.	Substantial Adverse	The extension of woodland at Site A (see EMP), to create a 6.6ha woodland managed to provide appropriate conditions for lower plants and ferns and other affected flora and fauna, within plots: P4/2, P4/1, P4/3	Compensation agreed with NE and in compliance with NPPF.

VBR	Value	Residual impact(s) / Trigger points	Level of significance	Agreed compensation / remedial measures (Planning (P) or Highways (H) Plot No. used for residual impact compensation	Policy compliance
Disused Railway SNCI, Bexhill and Crowhurst Sections	County	1. Loss of 0.97ha; 2. Severance of the wildlife corridor;	Large Adverse	1. The creation of 12.5ha of similar habitats (woodland and scrub) along the road embankments. 2. The creation of 12.5ha of similar habitats along the road embankments, and new hedgerow connections to replace severed habitats. See secondary woodland and hedgerow for plot numbers.	Agreed that this provides more than 2:1 compensation. Therefore there is capacity to compensate for other losses and/or provide slight biodiversity benefits.
Floodplain grassland and fen	County	1. Loss of 21.28ha; 2. Severance of 8.3ha.	Large Adverse	The creation and ongoing management of 24.45ha of wetland habitats, within plots: P2/3, P2/4, P2/5, P2/6, P2/7, P2/9, P2/10, P2/11, P2/12, 2/13, P3/2, H4/14.	Compensation agreed, therefore in compliance with NPPF.
Network of streams and ditches	County	1. Loss of 1848m^2 of watercourse (but avoiding the most biodiverse).	Substantial Adverse	The excavation and ongoing management of 5172m^2 of replacement watercourses strategically located to restore the habitat connectivity. The network of streams and ditches pass through the majority of land plots.	Compensation agreed, therefore in compliance with NPPF.
Mosaic of neutral grassland and scrub	District	1. Loss of 6.38ha;	Slight Adverse	The creation and ongoing management of 18.9ha of neutral grassland for foraging, 9.5ha of species-rich and 22.92 ha of neutral grassland and scrub, within plots: H3/8, H3/10, H4/14, H4/15, H4/18, H4/19, H4/26, P3/3, P3/4, P3/5, H4/1, H4/4, H4/2, H4/11, H4/17, H4/24, H5/1, H5/2, H5/6, H5/8, H5/12, H5/13, H5/15, H5/16.	Agreed that this provides more than 2:1 compensation. Therefore there is capacity to compensate for other losses and/or provide slight biodiversity benefits.
Network of Hedges	County	1. Removal of 4190 m^2 of hedgerow, 846 m^2 of which is species-rich.	Large Adverse	Planting and on-going management of 8674 m^2 of new hedges strategically located to reconnect the network. The creation of 12.5ha linear woodland and	Adequate compensation agreed,

VBR	Value	Residual impact(s) / Trigger points	Level of significance	Agreed compensation / remedial measures (Planning (P) or Highways (H) Plot No. used for residual impact compensation	Policy compliance
				scrub along road embankments, providing connecting habitat. The network of new hedges pass through the majority of land plots linking habitats.	therefore in compliance with NPPF.
Wood adjoining Marline Valley Woods SSSI	Local	1. Fragmentation of 0.66ha of continuous woodland; 2. Noise disturbance to birds;	Slight Adverse	1. The creation of 12.5ha linear woodland and scrub along road embankments, providing connecting habitat. 2. Little Bog and Decoy Pond woods to be managed to increase capacity for breeding birds. New wood at Site A will provide an alternative location for breeding birds, more than 1km north of the new road. See secondary woodland for plot numbers.	Compensation agreed with NE and in compliance with NPPF.
Chapel Wood, Little Bog, Decoy Pond, Adam's farm, and North Abutment woods	Local	Disturbance to breeding birds.	Slight Adverse	Chapel Wood, Little Bog and Decoy Pond woods to be managed to increase capacity for birds, within plots: H4/26, H5/2, H5/6, H5/8, H4/19, H4/20, H4/21, H4/23, H4/22, H4/26. New wood at Site A will provide an alternative breeding location, more than 1km to the north of the road, within plot: P4/1.	Compensation agreed with NE and in compliance with NPPF.
Secondary Woodland	Local	1. Loss of 4.35ha; 2. Severance from surrounding woodland network;	Slight Adverse	1. Creation 19.1ha of new woodland. 2. New woodland blocks, copses and shaws will link into existing woodland and hedgerow network to restore habitat and wildlife corridor continuity, within plots H3/8, H3/7, H4/1, H4/4, H4/14,H4/15, H5/1, H5/6, H3/1, H3/10, H3/9, H4/11, H4/26, H4/27, H5/2, H5/7, H5/8, H5/15.	Adequate compensation agreed, therefore in compliance with NPPF.
Assemblage of Birds	District	1.Loss of habitats; 2. Fragmentation of habitats.	Slight Adverse	1. New woodland, hedges, ditches and grassland will provide replacement habitats. Neglected woods to be brought into active conservation management, thereby increasing their capacity to support breeding birds. 2. Location of new habitats is designed to create large blocks of habitat and restore continuity. See secondary woodland and hedgerows or plot	Adequate compensation agreed, therefore in compliance with NPPF.

VBR	Value	Residual impact(s) / Trigger points	Level of significance	Agreed compensation / remedial measures (Planning (P) or Highways (H) Plot No. used for residual impact compensation	Policy compliance
				numbers.	
Barn Owls	Local – District	Road kill. If monitoring surveys record one or more barn owl fatality.	Slight Adverse	Barn owl boxes to be located 1km from road. The width of the grass verge will be minimised to reduce the availability of hunting habitat within close proximity to the carriageway. Where a grass verge is present, this will be kept short to reduce its suitability for small mammals, the favoured prey items of barn owls, thus discouraging barn owls hunting close to the road.	Population likely to be maintained, therefore in compliance with NPPF
Badgers	Local	1.Closure of two main setts, one annex sett, one subsidiary setts and thirteen outlying setts; 2.Loss of foraging area, 3. Fragmentation of territories.	Slight Adverse	1 and 2. Two replacement setts to be situated within 18.9 ha foraging area, within plots: P1/2, H3/7, H3/8 3. Maintain habitat links and connectivity with the use of landscape planting, over and under bridges with 'badger friendly' access (i.e. bridges with low intensity use where special crossing features are not required). The following bridges will have overpasses incorporated into them: Woodsgate Park Road bridge, Ninfield Road bridge, Glovers Farm bridge, Actons bridge, Adams Farm bridge, and Crowhurst Road bridge. The following bridges will have underpasses incorporated into them: Combe Haven bridge, Watermill Stream bridge, Powdermill Valley bridge, Powdermill Stream bridge, and Decoy Pond bridge. Dedicated badger underpasses will also be created at the following locations: Ch780, Ch1200, Ch1550,	Compensation agreed, therefore in compliance with NPPF.

VBR	Value	Residual impact(s) / Trigger points	Level of significance	Agreed compensation / remedial measures (Planning (P) or Highways (H) Plot No. used for residual impact compensation	Policy compliance
				Ch2900, Ch3700, Ch4300, Ch5100 4. Baiting of the sett with food and bedding to encourage use by badgers would be undertaken by the EcoW on a weekly basis for the duration of the construction period. Clearance of vegetation or spoil that may be blocking any of the holes. 5. Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be affecting use of crossing points by badgers e.g. bolstering of linear habitat features through supplementary planting to strengthen connectivity between crossing points and areas of suitable foraging habitat and/or known setts. 6. Check the condition of the badger fence along its entire length. Where necessary, repair or modify badger exclusion fencing. Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be affecting use of crossing points by badgers e.g. bolstering of linear habitat features through supplementary planting to strengthen connectivity between crossing points and areas of suitable foraging habitat and/or known setts.	
		4. If post-construction monitoring indicates that badgers are not using artificial setts 24 or 55. 5. If monitoring surveys indicate that badgers are avoiding multi-species crossing points (e.g. due to an absence of field signs at crossing points), or are not following connective habitat linking the crossing points to the wider countryside (e.g. due to an absence of field signs along connecting hedgerows). 6. If annual monitoring surveys record one or more badger road traffic fatality in any one year.			
Great crested newts	Local – District	1. Loss of foraging habitat. Fragmentation of habitats.	Slight Adverse	1. Two replacement ponds to be created and two existing ponds to be restored / enhanced. 0.863ha of habitat within 50m of breeding ponds to be created enhanced or reinstated. 15.29ha of	Compensation agreed with NE and in compliance with NPPF.

VBR	Value	Residual impact(s) / Trigger points	Level of significance	Agreed compensation / remedial measures (Planning (P) or Highways (H) Plot No. used for residual impact compensation	Policy compliance
		2. If the Habitat Suitability Index score for any of the monitored ponds (ponds 5, 13, 15, 16, 17, 20 or 29) drops below the score recorded in Year 1, or drops below the score recorded in any previous monitoring years.		habitat within 50 – 250m of breeding ponds to be created enhanced or reinstated. 26.37ha of habitat within 250 – 500m of breeding ponds to be created enhanced or reinstated. All bridges crossing water courses will be single span, set back at least 2m from edge of the watercourse to maintain riparian habitat connectivity underneath the road. The access bridges which cross the road will be single tracks with verges and the adjacent landscape planting will be designed to come as close as practicable to the bridge to minimise the length of open habitat between opposite sides. Provision of a 'green' bridge at Adam's Farm. 2. Pond assessments to identify the reasons behind the falling HSI score and whether this can be attributed to the Scheme or management regime. Where necessary, alterations to the management regime of newly created or restored habitats (aquatic and terrestrial) to ensure maximum benefits to GCN. Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be affecting GCN presence (e.g. shading, fish presence, reduction in macrophyte presence, pollution, loss of connectivity etc.)	
Bats	Regional and	1.Loss of one roost	Large Adverse	1. The barn in which bats roost at Adams farm is to be relocated although the existing roosting features	Compensation agreed with

VBR	Value	Residual impact(s) / Trigger points	Level of significance	Agreed compensation / remedial measures (Planning (P) or Highways (H) Plot No. used for residual impact compensation	Policy compliance
	County	2 Severance of flight lines and loss of foraging habitat.		within it will be retained when the barn is reconstructed; two hotboxes and supplementary roost features will also be constructed within the barn. Three Schwegler 2F bat boxes will be installed on trees in the vicinity of Adam's Farm. Ninfield Bridge is to be reconstructed and will incorporate roost features, as described in the submission for Condition 6b. All work affecting roosts will be done in compliance with NE licence. 2. Planting and on-going management of 8674 m^2 of new hedges strategically located to create a network. Hedgerow plants will be selected to maximise foraging potential. The creation of 12.5ha linear woodland and scrub along road embankments, providing connecting habitat. See secondary woodland and hedgerow VBR's. Severed hedgerows are to be linked via linear planting which would extend along the full length of the carriageway. Where major commuting hedgerows are severed scrub and tree planting will be extended across the linear planting on both sides of the road and across the verge so as to narrow the gap across the carriageway. The 'tongue' of planting extending across the verge on opposite sites of the road will comprise mature specimen shrubs as well as a number of mature feathered specimen field maple and oak. This mature planting would be linked back to the severed hedgerow. This would narrow the road crossing point and create an immediate corridor that bats may utilize. Linear roadside planting adjacent to the Watermill Stream and Powdermill Stream underbridges will	NE and in compliance with NPPF.

VBR	Value	Residual impact(s) / Trigger points	Level of significance	Agreed compensation / remedial measures (Planning (P) or Highways (H) Plot No. used for residual impact compensation	Policy compliance
				extend as close to the entrance of the bridge as possible. This would have the effect of guiding bats towards the entrance of the bridge thereby crossing the road beneath rather than over the road. 3. Undertake habitat management works to address habitat deficiencies that may potentially be affecting roost use (e.g. provision of secondary scrub, hedgerow or woodland planting to bolster connectivity). Repair or provision of bat boxes, roost features or bat access points to further enhance retained habitats or to compensate for post-construction changes to existing roosts. 4. Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be affecting use of crossing points by bats e.g. bolstering of linear habitat features through supplementary planting to strengthen connectivity between crossing points and areas of suitable foraging habitat and/or known roosts. 5. 3m high bat fences will be installed in specific locations along the scheme where commuting lines are fragmented by the road and the risk of bat mortality is high.	
		3. If monitoring surveys of existing roosts and bat boxes identify changes that would negatively affect bat occupation e.g. blockage of access points, loss/inappropriate management of connecting habitat, increased light/noise disturbance, damage caused by vandalism etc. 4. If monitoring surveys indicate that bats are avoiding multi-species crossing points, or are not following connective habitat linking the crossing points to the wider countryside/roost sites. 5. Mortality due to collision with traffic.			
Dormice	County	1.Loss of habitats for feeding, breeding and shelter; 2. Severance of	Large Adverse	1.Planting and ongoing management of new hedges and woodland, using species designed to maximise foraging and shelter opportunities. Planting and management of existing woodland and hedges that are to be retained; 2. Location of new hedges and woodland to ensure	Compensation agreed with NE and in accordance with NPPF.

VBR	Value	Residual impact(s) / Trigger points	Level of significance	Agreed compensation / remedial measures (Planning (P) or Highways (H) Plot No. used for residual impact compensation	Policy compliance
		movement corridors; 3. If monitoring surveys indicate that dormice are avoiding crossing points, or are not using connective habitat linking the crossing points to the wider countryside; 4. If monitoring surveys identify any new hedgerow, woodland or scrub planting that is damaged, dead or diseased.		that a new habitat network is formed. See secondary woodland and hedgerow VBR's. Provision of dormouse walkways at twelve road or watercourse crossings. Habitat enhancement and creation to assist with dormouse crossing. 3. Where necessary, undertake habitat management works to address habitat deficiencies that may potentially be affecting use of crossing points by dormice (e.g. bolstering of linear habitat features through supplementary planting to strengthen connectivity between crossing points and areas of suitable habitat; provision of nest boxes within habitat connected to crossing points). 4. Replacement planting would be undertaken in the next appropriate planting season, as per the habitat management plan.	
Reptiles	Local	1. Loss of foraging habitats 2. If the number of reptiles released into any one receptor site exceeds 50 / ha (i.e. greater than the maximum threshold size for a 'low' population of reptiles as defined by HGBI, 1998).	Slight Adverse	1. Reptiles will be able to utilise the replacement open and scrub habitats, including the 18.9 ha grassland foraging area, 9.5 ha of species-rich neutral grassland and 22.92 ha of neutral grassland and scrub. See neutral grassland and scrub VBR's. 2. Increasing the carrying capacity of the receptor sites in the short-term by controlling the amount of scrub/bracken/ruderal vegetation. Scrub/bracken cover should not exceed 15% on the site and this should be in small patches rather than large stands. Scrub should be controlled by hand cutting, with the arisings piled and composted on site. Consideration will be given to releasing reptiles into additional receptor sites at locations B and C. In this instance, two hibernacula will be constructed at each	Compensation in accordance with NPPF.

VBR	Value	Residual impact(s) / Trigger points	Level of significance	Agreed compensation / remedial measures (Planning (P) or Highways (H) Plot No. used for residual impact compensation	Policy compliance
				additional receptor site and appropriate habitat management works would be undertaken to increase the carrying capacity of the respective site.	
Invertebrates	Local	1.Death and damage to individuals along the route; 2. Loss of foraging habitats	Slight adverse	1. The 18.9 ha grassland foraging area, 9.5 ha and 22.92 ha blocks of grassland and scrub will provide ample opportunities for invertebrate populations to return to current conservation status. See neutral grassland and scrub VBR's.	Compensation in accordance with NPPF.

Appendix B - Environmental Master Plan

Refer to the following drawings:

- Environmental Master Plan drawings B129700-PH2/3000.01a/0050-0064

Appendix C - European Protected Species Licence Method Statement – dormice

Refer to Natural England licence reference EPSM-2012-5175A.

Refer to the following documents within the licence application:

- Application for a Dormouse Licence with Respect to Development: Method Statement 1. Background and Supporting Information. Document reference: B1297000/Dormouse/EPSLicence/01.
- Application for a Dormouse Licence with Respect to Development: Method Statement 2. Delivery Information. Document reference: B1297000/Dormouse/EPSLicence/02.
- Figure 6. Dormouse Mitigation. Drawing number: B1297000/Ecology/Dormouse/06/Rev B.
- Figure A. Walkway Design. Drawing number: B1297000/Ecology/Dormouse/FigureA/Rev 0.
- Figure B. Adams Farm Green Bridge Illustration. Drawing number: B1297000/Ecology/Dormouse/FigureB.

Appendix D - European Protected Species Licence Method Statement – bats

Refer to Natural England licence reference EPSM-2012-5299A.

Refer to the following documents within the licence application:

- Bat Licence Application – Method Statement, Part 1. Document reference: B1297000-PH2/3000.06a/0013
- Bat Licence Application – Method Statement, Part 2. Document reference: B1297000-PH2/3000.06a/0014

Appendix E - European Protected Species Licence Method Statement – great crested newts

Refer to Natural England licence reference EPSM2012-4719A.

Refer to the following documents within the licence application:

- B1297000.GCN Licence Method Statement. RevA.
- B1297000.GCN Licence MS_Appendix. RevA.
- B1297000. BHLR. Additional Supporting Information. RevA.
- Figure E2_Fig5a. Receptor Sites. Drawing number: B1297000/Ecology/GCN/Licence/05a
- Figure E2_Fig5b. Receptor Sites. Drawing number: B1297000/Ecology/GCN/Licence/05b
- Figure E3.1_Fig 6a to 6c. Habitat Enhancement. Drawing number: B1297000/Ecology/GCN/Licence/06a to 06a, 06b, 06c/Rev1
- Figure E3.1_Fig7. Indicative Plan and Section of Proposed Newt Ponds. Drawing number: B1297000/Ecology/GCN/Licence/07
- Figure E3.3_Fig8. Habitat Connectivity. Drawing number: B1297000/Ecology/GCN/Licence/08
- Figure E3.3_Fig8a. Decoy Pond Underbridge General Arrangement. Drawing number: B1297000-PH1/1600.01A/1401/Rev2.
- Figure E3.3_Fig8b. Adams Farm Green Bridge Illustrations. Drawing number: B1287000_GBI_001
- Figure E4a_Fig9. Capture and Exclusion. Drawing number: B1297000/Ecology/GCN/Licence/09/Rev1
- Figure E4a_Fig9b. Capture and Exclusion. Drawing number: B1297000/Ecology/GCN/Licence/09/Rev1

Appendix F - Badger development licence application, method statement and mitigation strategy

Refer to Natural England licence WLM/2012/2077.

Refer to the following documents within the licence application:

- Method statement for badger licence application.
- Badger Activity Records 2012 And Proposed Sett Closures. Drawing numbers: B1297000/3000/400/01 – 05

Appendix G - Locations of reptile mitigation

Refer to the following drawings for locations of reptile mitigation:

- Reptile Mitigation Strategy. Drawing reference: B1297000/Ecology/Reptile/0/Rev 1.
- Fencing drawings: B129700-PH2/3000.01a/0020-0024

Appendix H - Fencing drawings

Refer to drawings B1297000-PH2/3000.01a/0000-0032.

Appendix I - Drainage drawings

Refer to drawings submitted for discharge of planning condition 26.

Appendix J - Planting and seeding plans

Refer to the following documents:

- B1297000-PH2/3000.01a/0000-0014.
- B1297000-PH2/3000.01a/0030-0043

Appendix K - Series 3000

Refer to the following document:

- B1297000-PH2/3000.02a/0001/R3

Appendix L - Planning Conditions

Planning Conditions 5, 7, 14, 23, 24 and 25

5. Notwithstanding the details already submitted, no development shall commence, except mitigation and compensation works and archaeological evaluation, until details of the design and materials for the construction of the railway crossing and all under-bridges and over-bridges, including railings, parapets, surface finishes, fencing together with the reuse of any materials salvaged from the demolished existing railway bridges, have been submitted to and approved in writing by the Head of Planning. Bridge structures over water shall include a clear span, with abutments set back from the watercourse on both banks to provide a bank width of 2 metres beneath the bridge, and a soft bank solution beneath the bridges with shade tolerant planting, as outlined in the submitted Figure 3 Indicative sketch of soft bank engineering solution Revision A dated September 2008. The bridges shall be carried out in accordance with the approved details unless otherwise agreed in writing by the Head of Planning.

Reason: For the avoidance of doubt and in the interests of visual amenity and usability in accordance with Policies CC1 and BE1 of the South East Plan 2009. The use of clear-spanning bridges will maintain the river corridor and allow the movement of both the river and associated wildlife, minimising the loss of connectivity of habitats within this landscape, in accordance with Policy NRM5 of the South East Plan 2009 and Article 10 of the Habitats Directive, and PPS9.

7. Development shall not commence until details of a scheme for the free passage and/or protection of animals by means of highway underpasses, bridges and any other means has been submitted to and approved in writing by the Head of Planning and the link road shall not be brought into public use until the approved scheme has been fully implemented unless otherwise agreed in writing by the Head of Planning.

Reason: To maintain appropriate access for animals in accordance with Policies CC1, CC2, NRM4, NRM5, NRM7, C4 and BE6 of the South East Plan 2009.

14. Before the commencement of each phase of the development, plans and full details of both hard and soft landscaping works, substantially in accordance with the details shown on planting plans 208:31:21; 208:31:22; 208:31:23; 208:31:24; 208:31:25; 208:31:26 and 208:31 :27 dated April 2007, shall have been submitted to and approved in writing by the Head of Planning. These details shall include:

Hard Landscaping

- Proposed finished contour levels at 0.5 metre vertical intervals covering all areas from back to the highway verge to undisturbed landform.
- Maximum and minimum crest heights and gradients to land form changes.
- Means of enclosure
- Car parking layouts
- Other vehicle and pedestrian access and circulation areas
- Hard surfacing materials
- Minor artefacts and structures (e.g. furniture, play equipment, etc)
- Proposed and existing functional services above and below ground (e.g. drainage power, communications cables, pipelines etc indicating lines, manholes, supports etc.)
- Retained historic landscape features

- Proposals for restoration, where appropriate

Soft Landscaping

- Plans to a scale of 1:500 confirming detailed vegetation clearance and tree retention proposals throughout the route, to establish appropriate protection and clear boundaries on the ground, supported by detailed arboriculture recommendations for all tree surgery. All in accordance with BS 5837, 2005, Trees in Relation to Construction and BS 3998, Tree Work.
- Contour plans to a 1:500 scale indicating the levels of all the engineered landforms at 500mm intervals incorporating the Greenway, and the interface between the proposed landforms and noise attenuation fencing
- Arrangements for the reinstatement of agricultural land temporary taken out of use including its aftercare for a period of at least 5 years.
- Planting plans
- Written specifications (including cultivation and other operations associated with plant and grass establishment
- Schedules of plants, noting species, plant sizes and proposed numbers/densities where appropriate
- Implementation and maintenance programme

Reason: To integrate the development effectively into the surrounding environment and to comply with Policies CC1, CC2, NRM4, NRM5, NRM7, C4, BE1 and BE6 of the South East Plan 2009.

23. Development shall not commence until there has been submitted to and approved in writing by the Head of Planning a detailed scheme, to include the proposals in the Environmental Statement and subsequent addenda, for mitigation and compensatory habitat creation/restoration (including connectivity between habitats) and these works shall be carried out as approved. The details of the scheme shall include:

a) A clear statement of the purpose, aims and objectives for the scheme.
b) A review of the site's ecological potential and any constraints.
c) Description of mitigation, habitats and species appropriate for the site.
d) Selection of appropriate strategies for mitigation measures and creating/restoring habitats or enhancing species populations.
e) Selection of specific techniques and practices for establishing vegetation.
f) Sources of native provenance (local if possible) habitat materials (e.g. plant stock) or species individuals.
g) Method statement for site preparation and establishment of target features.
h) Extent and location of proposed works.
i) Links to the habitat management plan.
j) The personnel responsible for the work
k) Timing of the works.
l) Links to the ecological monitoring scheme.
m) Disposal of wastes arising from the works.

All mitigation and habitat creation/restoration works shall be carried out in accordance with the approved details, unless otherwise approved in writing by the Head of Planning.

Reason: To ensure that the ecological mitigation and compensation arrangements comply with Policies NRM2, NRM4, NRM5, NRM7, C4 and BE6 of the South East Plan 2009: To provide compensation and mitigation for the impact of the development on the Combe Haven Valley environment where it has a potentially

severe impact on its ecological value. To meet Government policy in Planning Policy Statement 9 – "Biodiversity & Geological Conservation" (PPS9) recognising that this proposal has the potential for significant detrimental ecological effects, notably with regard to the loss of wetland habitats and connectivity of landscape and habitats. To provide two-for-one compensatory habitat and enhancements to existing habitats and to implement proposals as soon as possible in order to allow for the movement of flora and fauna during construction, and the establishment of new habitats.

24. Development shall not commence until there has been submitted to and approved in writing by the Head of Service-Planning a habitat management plan for the application area and all mitigation and compensation features both during construction and then during the operation of the development for the lifetime of the road. The plan shall include:

a) A clear statement of the purpose, aims and objectives of management.
b) Description and evaluation of the features to be managed.
c) Ecological trends and constraints on site that may influence management.
d) Appropriate management options for the achieving aims and objectives.
e) Prescriptions for management actions.
f) A work schedule to include a five year project register, an annual work plan and the means by which the plan will be rolled forward annually.
g) Personnel responsible for implementation of the plan.
h) Links to the ecological monitoring scheme and remedial/contingency measures that may be triggered by the monitoring.

The plan shall be carried out as approved, unless amended in accordance with the written agreement of the Head of Planning.

Reason: To ensure that the ecological mitigation and compensation arrangements comply with Policies NRM2, NRM4, NRM5, NRM7, C4 and BE6 of the South East Plan 2009.

25. Development shall not commence until there has been submitted to and approved in writing by the Head of Planning a scheme of monitoring to show the actual effects of the scheme on the ecology of the area both during construction and then during the operation of the development for the lifetime of the road. The scheme shall include:

a) A clear statement of the purposes, aims and objectives for monitoring.
b) Details and justification for selection of baseline data and any changes or thresholds that, if occurring or reached, will trigger remedial measures.
c) Details of positive conservation targets along with any associated performance standards or success criteria that will indicate that targets have been reached.
d) Details of the parameters that are to be monitored along with any appropriate "indicators" for monitoring.
e) Methods for sampling and analysis, including the timetable and locations for field sampling.
f) Submission of a report on the monitoring to the Head of Planning and at quarterly intervals from the commencement of construction works until the end of the seven year contract maintenance period and thereafter annually, or as otherwise approved in writing by the Head of Planning, including a report on actual or anticipated changes in communities or populations, the reasons for the changes and any remedial measures considered to be necessary to modify the changes.
g) Procedures to be put in place to enable the monitoring reports to be considered by the Head of Planning in consultation with the developer.

Should the County Planning Authority consider that additional or different ecological remedial measures are necessary as a result of considering the monitoring report and any consultation responses under the arrangements above they shall give written notice to the developer. Within one month of receiving such written notice from the Head of Planning the developers shall submit a scheme of remedial measures which shall include the further mitigation and/or changes to any approved mitigation schemes and/or changes to working practices and a programme of implementation for the approval of the Head of Planning. The approved remedial measures shall be implemented in accordance with the approved scheme and programme unless otherwise approved in writing by the Head of Planning.

Reason: To ensure that the ecological mitigation arrangements comply with Policies NRM2, NRM4, NRM5, NRM7, C4 and BE6 of the South East Plan 2009.

Appendix M - Habitat Descriptions

Grassland

Combe Haven Site of Special Scientific Interest (SSSI)

Combe Haven SSSI borders the south side of the site for the link road in the floodplain between Bexhill and Hastings. The SSSI contains a diversity of habitat types dominated by alluvial meadows and drainage ditches which are remnants of a more extensive marshland.

The meadows vary in composition and most are poorly drained. Reed sweet grass (*Glyceria maxima*) dominates large areas and its association with Reed Canary Grass (*Phalaris arundinacea*) and Marsh Bedstraw (*Galium palustris*) is a nationally uncommon habitat type. Tussock Grass (*Deschampsia cespitosa*), Rushes (*Juncus* species) and Creeping Bent grass (*Agrostis stolonifera*) occur commonly. Corky-fruited Water Drop-wort (*Oenanthe pimpinelloides*) and Common Meadow Rue (*Thalictrum flavum*) are two unusual species.

Wintering birds such as lapwing, teal and snipe are found on the alluvial meadows and the site is important for passage birds including large flocks of thrushes, finches, warblers and buntings.

Grassland Within the Site Boundaries

The link road and associated landscape areas skirts to the north avoiding Combe Haven SSSI and crossing fields where the majority of the land is agriculturally improved with low species diversity. The Scheme will affect a few fields that have developed a wider variety of species. These are at locations F9, F16, F17, F29, G6, G13 and G20, as identified on Figures 12.1A and 12.1B in Volume 3 of the Environmental Statement. It will only be possible to retain and protect a significant portion of the grassland habitats in G20 and limited areas of G13 that lie inside the scheme boundaries. Areas G13 and G20 are labelled on the Environmental Masterplan, on Drawings B1297000-PH2/3000.01a/0058 – 0060 in Appendix B.

G13 - Part of this area lies outside the scheme boundary to the north, part of it will be lost to the cutting for the road (near CH4700), and part of it to the south will be crossed by Greenways leaving limited areas that could be retained if they are considered to be of significant ecological value.

This field is flat in the east but falls increasingly steeply to the southwest. The biodiversity increases with the gradient. In the east it is largely MG6 with species such as Meadow Barley *(Hordeum secalinum)* and Sweet Vernal grass (*Anthoxanthum odoratum*). These grasses and Common Bent *(Agrostis capillaris)* increase and the amount of Rye-grass (*Lolium perenne*) decreases down the slope, Broadleaved plants, notably Common Knapweed, Agrimony *(Agrimonia eupatoria),* Meadow Buttercup (*Ranunculus acris)* and clovers (including Zig-zag Clover, *Trifolium dubium*) increase down the slope.

G20 - This area is a mosaic of scrub, scrub woodland and grassland, which has developed between the southwest edge of the Marline Wood SSSI and Queensway. The link road will cross this area partly on embankment and partly in cutting, but extensive areas of grassland and scrub inside the Scheme boundaries to the north

and south will be protected during construction. The sub-areas described below are not shown on the EMP drawings but are shown on ES Figure 12.3F – Habitats Present and Habitats Lost in the Rural Section.

The area was surveyed in 2004 when it was described as follows:

G20.1 is a 2-3m verge of sown rye-grass behind which is a band of W21a Hawthorn-Ivy scrub, Ivy – Stinging Nettle sub-community with Bramble more-or-less dominant at ground level. There are young Pedunculate Oak and slightly older Ash, with some semi-mature trees, together with Hazel, Blackthorn and occasional Sweet Chestnut. Stinging Nettle is frequent and there is an open area of varied MG1.

G20.2 is broadly similar to G20.1 above but without woody plants apart from scattered Blackthorn, Grey Willow and Hawthorn.

G20.3 consists of W23 Gorse (*Ulex europaeus*) – Bramble scrub beyond which is weedy, disturbed MG1 grassland with dense young tree regeneration further up the slope. Bramble is abundant throughout.

G20.4 consists of MG1 grassland with scattered young Ash, Dog Rose, Hawthorn and Bramble.

G20.5 is a plantation of semi-mature Grey Alder (*Alnus incana*) and Ash.

G20.6 is disturbed MG1 with abundant Ground-ivy, which is indicative of rabbit-grazing. There is a scattering of tree seedlings including ash and field maple.

G20.7 is a mixed band of rough grass and Blackthorn forming a transition between the woodland edge and the grassland of area 4. Creeping Thistle and Black Nightshade (*Solanum nigrum*) are abundant.

G20.8 is MG6 short turf dominated by Common Bent and Rye-grass. There is Yorkshire Fog at the edges and a scattering of Marsh Cudweed in the rutted areas, together with Common Mouse-ear (*Cerastium fontanum*), White Clover (*Trifolium repens*) and Red Fescue.

G20.9 is a Bramble-dominated edge within occasional Ash. There is disturbed ground with plants like Red Dead-nettle (*Lamium purpureum*), and Creeping Thistle plus patches of Bracken on the drier ground.

G20.10 is a Hazel and Hawthorn hedge with an edge dominated by Bramble. Sycamores have been planted along the east side. It can all be ascribed to W21a.

G20.11 is a small area of grassland between two bands of W21a and is divided-up by ditches.

G20.12 is fundamentally the same type of MG7 as G20.4 but is □tilize□□lus□ by patches of Nettle, Common Thistle (*Cirsium lanceolata*), Annual Meadow-grass (*Poa annua)* and Common Ragwort (*Senecio jacobea*).

G20.13 is a patch of more-or-less uniform W24 Bramble-Yorkshire Fog underscrub (W24). In the open fringes there are willowherbs (*Epilobium* sp), Creeping Buttercup, Smooth Sow-thistle (*Sonchus oleraceus*), Common Fleabane, Curled Dock, Common Knapweed and Bents.

G20.14 is a bank of dense, over-mature Gorse of the W23 community. G20.15 is dense Ash regeneration.

G20.16 is a mixture of the Bracken U20 community and scrub with patches of MG7 including Creeping Buttercup, Rye-grass, Common Bent, Red Fescue and White Clover with a gradual transition to G20.17. Within the latter, Elder and Grey Willow overlie Bracken and there is a rough grass edge with Common Knapweed and Creeping Thistle. Abundant Self-heal (*Prunella vulgaris*) indicates that the area has been over-grazed.

G20.18 – Bracken dominates much of this area, with Hawthorn mainly on the lower slope and Silver Birch (*Betula pendula*) on the upper, with larger birch towards the south. There are patches of MG6 grassland and bare ground dominated by species like Marsh Cudweed (*Gnaphalium uliginosum*). The Pedunculate Oak at the south edge is bigger than most other trees present.

G20.19 - At the centre of this area there is a group of mature Pedunculate Oak with scattered Elder and Bracken around them.

G20.20 consists of bands of Bracken and MG6 grassland.

G20.21 is dense Bracken with scattered Elder and occasional Bramble.

G20.22 - On the low ground there is Gorse and patches of Bramble together with Field Maple, Hawthorn and Elder, but also wetter ground indicated by Water-pepper, Marsh Cudweed and Yorkshire Fog. There are fragments of weedy MG7 grassland.

G20.23 is largely the same as area 6 but has patches dominated by mosses, together with Common Sedge (*Carex nigra*), Field Woodrush (*Luzula campestre*) and patches of Sorrel.

G20.24 is a Bramble-dominated edge to the Marline Valley Woods SSSI with frequent Marsh Thistle, Bracken, Gorse and Grey Willow with patches of MG1.

G20.25 is predominantly Bracken with a single large clump of Elder and patches of MG1 and Yorkshire Fog at the edge.

G20.26 is largely Gorse with Elder and scattered trees.

G20.27 - The centre of the strip of this woodland is dominated by Ash with occasional Oak. At the edges there are Field Maple, Hawthorn, Ash, birch, Pedunculate Oak, Holly, Crab Apple (*Malus sylvestris*), Elder and Dog Rose plus occasional Sweet Chestnut (*Castanea sativa*) and Goat Willow. The ground flora has abundant ferns (notably Male Fern), Honeysuckle (*Lonicera periclymenum*), Ivy and Dog's-Mercury. Bracken is most frequent towards the edges. Overall, the woodland can be broadly ascribed to W8.

G20.28 is a scattering of mainly Hawthorn shrubs within G20.23.

G20.29 is W8 woodland with Sweet Chestnut, Oak and Ash and a ground flora with Bracken, Dog's-mercury and Honeysuckle. There is frequent Grey Willow alongside the railway line.

G20.30 is Creeping Thistle-dominated MG7

G20.31 is Bracken of the U20 community.

G20.32 is Elder scrub with patches of Bracken.

G20.33 is a shaw that contains oak standards and abandoned Hazel coppice with Sweet Chestnut and Holly, plus occasional Hornbeam and Birch. The edge is dominated by Bracken and Bramble scrub. Locally, there are denser areas with frequent Common Fleabane. The presence of Meadow Barley and Burnet Saxifrage may indicate that the grassland is long-established.

The area was revisited in 2007 and found to have changed little apart from the development of a more closed sward in the open areas so that the frequency of species like Marsh Cudweed was greatly reduced

Woodland

Woodland Areas are identified on the Environmental Master Plan (Drawings B1297000-PH2/3000.01a/0050 – 0064), using the same identifying numbers that are in the Nature Conservation Chapter of the Environmental Statement (W1, W2 etc. Woodlands in urban areas of Bexhill have the prefix UA, as in UA35, UA48 etc. Areas of scrub and woodland on the line of the disused railway have the prefix DR. Other areas of scrub have the prefix G. At Adam's Farm the habitat types are very mixed and include woodland, scrub, grassland and ornamental planting, all described under G10.

Combe Haven SSSI

W18 – Decoy Pond Wood, part of the SSSI is included within the Scheme boundary, and is identified as ancient semi-natural woodland. It has developed on wet ground around a pond which is drying up. White Willow (*Salix alba*), Crack Willow (*Salix fragilis*), Alder (*Alnus glutinosa*) and Sallow (*Salix cinerea)* occur above a ground flora of Cyperus Sedge (*Carex pseudocyperus*), Wood Bittercress (Cardamine flexuosa), Yellow Flag (*Iris pseudacorus*) and Purple Loosestrife (*Lythrum salicaria*). Ash, Oak and English Elm (*Ulmus procera*) occur on the drier margins and Early Purple Orchid (*Orchis mascula*) and Twayblade (*Listera ovata*) occur in the ground flora.

The present ponds appear to be post-war. They have a blanket of Common Duckweed with marginal vegetation dominated by Bulrush (*Typha latifolia*). There is frequent Gypsywort (*Lycopus europaeus*), Hemlock Water-dropwort (*Oenanthe crocata*), patches of Greater Pond-sedge (*Carex riparia*), Yellow Loosestrife (*Lysimachia vulgaris*), Yellow Flag (*Iris pseudacorus*), Lesser Spearwort (*Ranunculus flammula*), Jointed Rush (*Juncus articulatus*) and Water-plantain (*Alisma □tilize□-aquatica*). At the margins and elsewhere within the wood there are patches of wet ground plants such as Pendulous Sedge and Tufted Hair-grass (*Deschampsia cespitosa*). Spoil tips created by construction of the ponds have dense Hazel coppice and Holly is frequent. The ancient woodland ground flora comprises mainly Bluebell in the drier areas and Ramsons on the lower ground. Yellow Archangel is also locally frequent. Around the ponds there is frequent White Willow, Grey Willow and Alder.

The principal trees on the drier ground are Pedunculate Oak and Ash, but along the east edge there is a row of mature Sycamore and frequent semi-mature Wych Elm (*Ulmus glabra*). There is no evidence of Dutch Elm Disease. At the north side of the wood there is a plantation of semi-mature Ash and Cherry (*Prunus avium*) with a ground layer of rough grass and nettles. On the east side there is a partially

overgrown track separating the wood from **Decoy Pond Shaw** along the course of Decoy Pond Stream, but the woody vegetation is effectively continuous.

DR2 – Dense scrub woodland is growing on the railway embankments of the viaduct (now demolished) of the disused Crowhurst to Bexhill West Railway. This wooded remnant of embankment is within the SSSI and within the Scheme boundary. The scrub consists of Hawthorn (*Crataegus monogyna*), Wild Privet (*Ligustrum vulgare),* Gorse (Ulex europaeus), Broom (*Cytisus scoparius),* Oak and Sallow. Open patches include fenland species such as the Purple Small-reed (*Calamagrostis canescens*), and species associated with the chalk substrate used in the construction of the embankment. The latter group includes Mullein (*Verbascum thapsus*), Bladder Campion (*Silene vulgaris*) and Wild Mignonette (*Reseda lutea).*

Marline Valley Woods SSSI

This wood forms part of the SSSI which includes a series of connected plots of ancient semi-natural woodland. At the south end site the narrow pointed end of the SSSI lies under the line of the bridge that will take the link road over the Southern Railway. Park Wood is also a local nature reserve, however the reserve boundaries do not extend quite as far south as the boundary of the SSSI. The woodland at Park Wood/Marline Wood consists of the nationally uncommon Oak-Hornbeam (Birch-Hazel variant) type. Standards of Oak (*Quercus robur*) are widespread throughout above a coppice of Hornbeam (*Carpinus betulus*) and less commonly, Hazel (*Corylus avellana)* or Sweet Chestnut (*Castanea sativa).*

The western arm of the wood (near the route of the link road) consists of abandoned coppice of Hornbeam and Hazel. Oak standards are present, as is a wet flush dominated by Alder (*Alnus glutinosa*). The NVC type is W10c, the ivy sub-community of pedunculate oak – bracken – bramble woodland.

An area of scrubland adjacent to the south-west tip of Marline Wood (just outside the SSSI) was examined in detail. The end of the wood is mainly Hornbeam coppice with a Bracken-dominated ride with Enchanter's Nightshade (*Circea lutetiana*) and Stinging Nettle. There is some Hazel and Holly in addition to Hornbeam. The SSSI ends at a fence, but apparent ancient woodland extends beyond. On level ground there is Yellow Pimpernel (*Lysimachia vulgaris*) and Primrose plus frequent Bluebell and Common Dog –violet. The railway embankment abuts it on the west side and extends to a ditch with Bluebell, Enchanter's Nightshade, oak and Holly.

Site of Nature Conservation Importance - (SNCI) Disused Railway, Bexhill

The track bed, cuttings and embankments support a variety of habitats, including secondary woodland, scrub, grassland and tall herbs linking adjacent areas of ancient woodland and scrub. This is an important semi-natural habitat on the edge of town, acting as a link between small areas of woodland.

W5 – This is a triangular wood within the SNCI (but outside the scheme boundary) with the disused railway on the south side and a track and ditch on the north-east side. The principal woody plants are Crack, Goat and Grey Willow (*Salix fragilis, S. caprea, S. cinerea*), Alder *(Alnus glutinosa*) and Elder (*Sambucus nigra*). There is a fringe of Goat Willow (*Salix caprea*) and Hazel (*Corylus avellana*) along the ditch. There is another ditch on the east side with extensive Crack Willow (*Salix fragilis*), Alder (*Alnus glutinosa*), Silver Willow (*Salix alba sericea*) and Downy Birch (*Betula pubescens*). It is likely that most of the wood is ancient woodland as it has diverse ground flora.

In the section of disused railway north of Combe Haven (which includes the portion immediately north of the cutting for the link road), there are a number of wooded areas with Hornbeam, Pedunculate Oak, Ash, Birch, Willow and Hawthorn, and a ground flora that includes Enchanter's Nightshade, Wood-avens and Male-fern. Patches of grassland have frequent Yarrow, Agrimony, Wild Carrot (*Daucus carota*) and occasional Pyramidal Orchid (*Anacamptis pyramidalis*) established on the base-rich ballast. Dog Rose, Gorse and Blackthorn are encroaching on these areas. Elsewhere, the tree and shrub cover now comprise mainly Field Maple, Hawthorn, Ash, Holly, Blackthorn and oak with patches of Stinging Nettle, Dog and Field Rose, Ivy, Wood Sedge, Dog's-mercury, Bramble and Hedge Woundwort.

W11 - Site of Nature Conservation Importance - (SNCI) Woodland Complex at Buckholt Farm.
This ancient semi-natural woodland lies quite close outside the Scheme boundary. At the south end of the SNCI, Great Henniker Wood is dominated by mature Oak standards and overgrown Hornbeam coppice with a ground flora of Bluebell, Wood Anemone and in places a shrub layer of Elder, Holly, Hazel and Dogwood. A number of ancient coppice stools are present on an old bank.

Undesignated Woodlands
W3 - This narrow strip of ancient semi-natural woodland adjacent to and just outside the scheme boundary contains four ponds, one of which supports amphibians. The ponds are shaded and largely dry in summer. There are patches of Alder and Grey Willow around the edges. Wet areas away from the ponds have Cuckoo-flower (*Cardamine pratensis*) and Pendulous Sedge (*Carex pendula*). There is also a small amount of Yellow Flag (*Iris pseudacorus*) and Unbranched Bur-reed (*Sparganium emersum*).

Around the edges of the wood and in open areas within, there is abundant Stinging Nettle with Hogweed (*Heracleum sphondylium*), Teasel (*Dipsacus fullonum*), Bramble, Field Rose (*Rosa arvensis*), Dog Rose, Ivy and Dog's Mercury as well as coarse grasses, notably Cock's-foot (*Dactylis glomerata*), False Oat-grass and Yorkshire Fog. At the southeast corner there is a more varied area adjacent to a fringe of Blackthorn (*Prunus spinosa*). Within the wood there is frequent Bluebell, Soft Shield-fern, Yellow Archangel, Wood Melick, Primrose, Early Dog- Violet (*Viola reichenbachiana*) and Wood Meadow-grass.

W8 - Wood 8 is a small wood close to the route of the link road within the scheme boundary. It has a varied edge with a canopy and shrub layer of Alder, Hazel, Ash and Common Sallow also called Grey Willow (*salix cinerea*), together with lesser amounts of Hawthorn, Holly, Spindle *(Euonymus europaeus)* and Dog Rose. The centre of the wood is dominated by pole-stage Ash. Toward the west there is Ash and Hazel coppice with Alder in patches and along a wet flush through the wood. The wood contains several ancient woodland indicator plants including Bluebell, Yellow Archangel, Wood Sedge, Early Purple Orchid and Wood Millet. At the edge there is an open ditch with Crack Willow.

W19 - The Bog This area of wet wood within the Scheme boundary is identified as ancient semi-natural woodland and is dominated by Alder with occasional Ash. It falls slightly from a dry bank at the west edge which has Ash, Grey Willow, Birch and Hazel. There is a gradient of moisture from northwest to south and south east where it borders Decoy Pond Stream, so that while the water table is high throughout the wood, it is above the surface at the south end for most of the year. This wettest area has a fringe of Common Reed (*Phragmites australis),* and Soft Rush (*Juncus effusus*) behind which there is Pendulous Sedge (*Carex pendula*) and

Tussock Sedge *(Carex paniculata).* Within the wood there is a tall herbaceous layer of Hemlock Water-dropwort, Yellow Loosestrife, Yellow Flag, Meadowsweet, Female Fern (*Athyrium filix-femina*), Broad Buckler Bern and occasional Narrow Buckler Fern *(dryopteris carthusiana)*,

Guelder Rose (*Viburnum opulus*), Opposite-leaved Golden Saxifrage (*Carex strigosa*), Thin-spiked Wood Sedge and Wood Sedge are present around the edges of the wood. The dry bank has abundant Yellow Archangel, Wood Anemone and Bluebell.

W23 - Chapel Wood. Chapel Wood is a large ancient semi-natural wood on a hillside, bounded on the northwest side by Decoy Pond Stream, and by Crowhurst Road to the north and east. The southern edge is within the scheme boundary close to the cutting for the link road. This edge is very varied with Pedunculate Oak, Ash, Crab Apple (*Malus sylvestris*), Hornbeam, Field Maple and Sweet Chestnut standards and frequent Hazel and a ground flora that includes Yellow Archangel, Wood Speedwell, Soft Shield-fern and Red Campion, together with Hedge Woundwort and Enchanter's Nightshade, Honeysuckle and Male-fern. Dog Rose is also present.

The Hornbeam that dominates the central part of the wood gives way to Hazel and at the top there is frequent Holly, Bluebell, Soft Shield-fern and some quite large Ash stools ending in an edge of Cow Parsley (*Anthriscus sylvestris*). Although the east end and part of the west end of the edge is rather abrupt, there is a central section of soft edge with Bramble scrub.

At the southeast corner where the ground dips there is Bramble-Yorkshire Fog underscrub interspersed with rough grassland. A few Holly and a single Ash are present at the edge and a large area of Broom (*Cytisus scoparius*). Within the scrub and rough grass Scaly Male-fern (*Dryopteris affinis*), Bird's-foot Trefoil, Creeping Bent, Stinging Nettle, Rye-grass, Rough Meadow-grass, Hedge Bedstraw (*Galium mollugo*), Common Knapweed and Yorkshire Fog are indicative of the varied conditions and micro-habitats. Immediately north there is a zone of denser scrub with Hawthorn, Blackthorn, Bramble, Elder and patches of Bracken. Down the west side there is a band of Gorse outside the wood.

W24 - Close to the site for the bridge over the railway this consists of secondary scrub woodland with Ash, Field Maple and Oak and a ground layer of (NVC W24) Bramble-Yorkshire Fog underscrub.

W25 and W26 - The link road will cross the Southern Railway just north of these woodlands which are on steep rail-side cuttings just outside the Scheme boundary. Pedunculate Oak dominates them, although Ash, Turkey Oak (*Quercus cerris*) and Sweet Chestnut are also present. There is an intermittent shrub layer, principally of Hawthorn. Ivy dominates the ground layer in the shaded areas and Male-fern is frequent. The more open areas have dense Bramble and Stinging Nettle.

Nearer the railway line there is a band of vegetation cut on a two-year cycle with frequent Hazel plus Dog's Mercury, Ivy and Stinging Nettle. The herbaceous vegetation extends into the areas nearer the track that are cut annually. Angelica (*Angelica sylvestris*), Field Horsetail and thistles are common, as are plants of dry banks like Bush Vetch (*Vicia cracca*). There are occasional wet flushes with Hemp Agrimony, Pendulous Sedge and Butterbur (*Petasites hybridus*). In these more open conditions, woodland plants such as Bluebell and Broad-leaved Helleborine

(*Epipactis helleborine*) can be found. Scrambling plants, notably Wild Clematis (*Clematis vitalba*) and Hedge Bindweed, are frequent.

W34 and Attached Un-maintained Hedgerow H120 - Much of this woodland within the Scheme area and bounded by proposed greenways has been felled. There is a ground flora of Rosebay Willowherb, thistles, Common Sow-thistle (*Sonchus oleraceus*), Creeping Buttercup and Singing Nettle. Bracken is dominant in several areas and the principal surviving woody plants are Hazel, Ash, Holly and Blackthorn. At the north end there is a quite dense, soft edge of Holly, Ash and Hazel.

W55 - The Environmental Statement does not include a record of this area of ancient semi-natural woodland immediately north of the link road but outside the scheme boundary, west of and close to the Southern Railway.

G10 - This area at Adam's Farm contains a variety of woodland, scrub, grassland, residential garden and buildings all within the boundary of the Scheme. It is convenient to describe all of it in one section. From the house at the centre of the property the land rises south-eastwards to two barns between two improved Rye-grass dominated fields. From the barns the land falls to a triangular-shaped area which includes fragments of woodland, mature trees and semi-natural vegetation, mown lawns and ornamental planting. Around the house and to the south the landscapes are more ornamental, but to the north and east near the approach track to the house there is a long, narrow disused quarry with a clearing at the south end. A bank extends south-south westwards from the clearing towards the house. Surrounding the clearing the wooded margins are varied, with Ash, Pedunculate Oak, Field Maple (*Acer campestre*), Bracken and abundant climbers including Black Bryony (*Tamus communis*).

The link road will cross Powdermill Stream close by to the south. Requiring the relocation of the grade 2 listed barn and causing the loss of some of the trees on the southern edge of the triangular area. Other trees habitats at the property will be retained and protected during the works as shown on the EMP and planting drawings.

Around the barns the grassland is mainly improved. On the east side of the triangular area there are mature trees, notably Pedunculate Oak (*Quercus robur*) and Beech (*Fagus sylvatica*) plus patches of Hazel (*Corylus avellana*), and blackthorn (*Prunus spinosa*) and occasional Holly (*Ilex aquifolium*). The shaded bank at the top of the slope has abundant Ivy (*Ilex aquifolium*), but also Soft Shield-fern (*Polystichum setiferum*), Red Campion (*Silene dioica*) and Wild Arum (*Arum maculatum*) in addition to weed species such as Cleavers (*Galium aparine*) and Ground Elder (*Aegopodium podagraria*). Slightly damper areas have Burdock (*Arctium minus*), Hemp Dead-nettle (*Galeopsis tetrahit*), Yorkshire Fog, Hogweed, Nettle, Herb Robert, Pendulous Sedge (*Carex pendula*) and Black Nightshade (*Solanum nigrum*). Common dog violet (*Viola riviniana* and possibly other Viola species) is present, together with a small amount of Giant Fescue (*Festuca □tilize□□*). Other species present include Yellow Archangel (*Lamium galeobdolon*), Wood Melick (*Melica uniflora*), Polypody Fern (*Polypodium vulgare*), Hazel, Ribwort Plantain (*Plantago lanceolata*), Common Vetch (*Vicia sativa)*, Hogweed (*Heracleum sphondylium*), Primrose (*Primula vulgaris*), Wood Anemone (*Anemone nemorosa*) and Sweet Vernal-grass. The native Bluebell (*Hyacinthoides non-scripta*) is present.

The quarry has a range of vegetation, exposed sandstone faces and faces covered with Ivy. There is an intermittent cover of Hazel, Ash, Grey Willow (*Salix cinerea*), Goat Willow (*Salix caprea*), Hornbeam and occasional Pedunculate Oak. Beneath

there are the following ancient woodland indicators: Tutsan (*Hypericum androsaemum*), Wood Speedwell (*Veronica montana*), Soft Shield-fern, Spurge-laurel (*Daphne laureola*), Wood Brome, Wood Melick (*Melica uniflora*), Wood Sedge (*Carex sylvatica*) Bluebell and Wood Anemone. Frequent secondary woodland and disturbed ground plants include Wood Avens (*Geum urbanum*), Wild Arum, Ground Ivy, Herb Robert (*Geranium robertianum*), Dog's-Mercury (*Mercurialis perennis*) and Hedge Woundwort (*Stachys sylvatica*).

G20 - The sloping field at the eastern end of the Scheme between the railway and the B2092 Queensway has been left uncultivated in recent years and has developed a varied ground flora of scrub and grassland. Woody species include Gorse, Blackthorn, Hawthorn, Grey Willow, Goat Willow, Pedunculate Oak, Ash, Dog Rose, Hazel, Silver Birch, Elder, Field Maple, Sweet Chestnut, Honeysuckle (*Lonicera periclymenum*), Ivy and plentiful Bramble. There is a small shaw (copse) that contains oak standards and abandoned hazel coppice with Sweet Chestnut and Holly, plus occasional Hornbeam and Birch.

Although the route will cross the area with an embankment and cutting, the vegetation in remaining areas to the north and south will be protected and retained.

UA31 - This is a scrubby area of old garden/orchard near the disused railway in Bexhill. It has a mosaic of dense overgrown patches and trampled and eroded areas. There are several quite old stools of Hazel, suckers of Cherry (*Prunus avium*), old apple trees and patches of Blackcurrant (*Ribes nigrum).*

UA34 - Hawthorn and Ivy dominated scrub woodland adjacent to ESCC Depot, both on and close to the footprint of the link road.

UA48 and UA49 - **West and East Sides of Railway Cutting from Ninfield Road Bridge to Glover's Farm Bridge.** This is largely dense secondary woodland with abundant Sycamore and Ash. The ground flora is dominated by Ivy where the canopy is closed and there are patches of bramble and grass underscrub where it is open. Ferns, notably Male Fern and Hart's-tongue Fern (*Phyllitis scolopendrium*) are frequent. There is a small amount of Soft Shield-fern (*Polystichum setiferum*). The latter two are ancient woodland indicators, as is the Bluebell (*Hyacinthoides non scripta*) which is also present but the banks are certainly not ancient woodland. Secondary woodland plants predominate. Spanish Bluebell (*Hyacinthoides hispanica*) is more frequent than the native species. There are eroded patches of ground behind the gardens abutting the railway and common ruderals and weeds can be found at the edges of these. Other woody species present are Blackthorn, Hawthorn, Horse Chestnut (*Aesculus hoppocastanum*) seedlings, and Pedunculate Oak.

Alder Wood Compensatory Habitat

Alder Wood approximately 2 hectares in area. Two small streams run along the embanked boundary of the wood draining into the ghyll stream (Decoy Pond Stream) within Marline Valley Woods SSSI. The canopy comprises dominant Pedunculate Oak (Quercus robur) with frequent Sweet Chestnut (Castanea sativa) and occasional Alder (*Alnus glutinosa*) and Hornbeam (*Carpinus betulus*). The understorey is dominated by coppiced Hazel (*Corylus avellana*) and Holly (*Ilex aquifolium*). The field layer is sparse with patches of Yellow Archangel (*Lamiastrum galeobdolon*), Bracken (*Pteridium aquilinum*) and frequent dead wood with lichens. The whole of Alder Wood is protected by a group Tree Preservation Order. Any tree works in this wood will be subject to approval from Hastings Borough Council.

Brickyard Shaw Compensatory Habitat
Brickyard Shaw is a small ridge woodland dominated by Oak, Hornbeam and Downy Birch (*Betula pubescens*), with an understorey of Hazel. There is a shallow pond (not suitable for newts) in the centre of the wood. The wood is connected to Alder Wood by a gappy hedge with mature trees. The whole of Brickyard Shaw is protected by a group Tree Preservation Order. Any tree works in this wood will be subject to approval from Hastings Borough Council.

Hedges

Appendix 12-C – Habitats and Plant Communities of the Environmental Statement identifies some of the hedges in the site area as H1, H2, H3 etc and others as OA500, OA501, OA502 etc. Vegetation along stream banks such as at Combe Haven, Watermill Stream and Powdermill Stream are identified and described as ditches. Accounts of the woody vegetation on these streams are included here, identified as D2, D14&18 etc. The hedges are graded using the HEGS hedgerow evaluation and grading system to identify those that are likely to be of greatest benefit to wildlife. Grade 1 is high value, grade 2 is moderately high to high value, grade 3 is moderate value and grade 4 is low value. The grades are further defined as 1+, 1 and 1- , 2+, 2 and 2- etc. Grade 1+ is a very high value and grade 4- is a very low value. The hedges to be retained in the Scheme are identified on the EMP drawings with the grading shown in brackets.

The ES notes that there is a high concentration of good quality hedges linked to copses and woodland in five areas of which the following three are most relevant to the link road project:

- From Chapel Wood south to the floodplain
- Around Adams Farm
- Around Byne's and Hillcroft Farms

Hedge OA509 (grade 2) is a hedge and ditch on the boundary between the floodplain and the hillside south of Hillcroft farm. It will be severed by the link road (CH3350 approx) and associated landscape earthworks. A portion of it will remain, enclosing a balancing pond on the north side. The hedge has intermittent woody vegetation comprising a clump of scrub Oak, Hawthorn, Goat Willow, Dog Rose and Holly. The bank has False Oat-grass, Stinging Nettle, Great Willowherb, Redshank (*Persicaria hydropiper*), Smooth Sow-thistle (*Sonchus oleraceus*) and disturbed areas with Oak-leaved Goosefoot (*Chenopodium glaucum*). There is a dense growth of Hedge Bindweed, Stinging Nettle, Bramble, Bittersweet, Creeping Bent and patches of MG1 and Soft Rush on the banks, plus frequent Great Willowherb, Soft Rush and Gipsywort at the upper edges of the ditch which is over 2m wide with at least 0.5m standing water.

A sample section of the ditch has:
Typha latifolia
Sparganium erectum
Carex riparia
Lysimachia vulgaris
Lycopus europaeus
Salix cinerea
Epilobium hirsutum
Rubus fruticosus
Agrostis stolonifera

Water-plantain (*Alisma □tilize□-aquatica*), Purple Loosestrife (*Lythrum salicaria*), Floating Sweet-grass (*Glyceria fluitans* sl), Common Duckweed, Blanketweed (*Cladophora* sp), Purple Loosestrife, Grey Willow, Marsh Woundwort, Bittersweet, Creeping Thistle (*Galeopsis tetrahit*), Yellow Loosestrife (*Lysimachia vulgaris*) and a small amount of Reed Sweet-grass are present.

Other species present include Ivy, Rough Meadow-grass, Bittersweet (*Solanum nigrum*), Soft Rush, Yorkshire Fog, Greater Bird'sfoot-trefoil and Sorrel.

Hedge OA521 (grade 2) is a shrub/hedge-lined ditch east of and parallel to Decoy Farm stream and connecting with the corner of Decoy Pond Wood in Combe Haven SSSI. It will by severed by the link road (CH4450 approx) with a further portion of it lost to accommodate landscape earthworks and a highway drainage lagoon. Although the whole hedge/ditch is rated grade 2, there appears to be little vegetation in the southern portion crossed by the link road compared to the denser cover on the stretch that will remain to the north.

Hedge OA500 (grade 2-) The link road and landscape earthworks will sever hedge OA500,(grade 2-) that links woodland W3 to the scrub and copses in the SNCI on the disused railway. There are no standard trees in this hedge which is about 1.8m high. It has a variety of shrubs including Blackthorn, Field Maple, Spindle (*Euonymus europaeus*), Gooseberry (*Ribes uva-crispa),* Hazel and Hawthorn. Part of the hedge will remain extending from woodland W3. The proposed planting is extended to link with it.

Hedge OA503/4 (grade 1-) near Actons Farm will be retained and protected within the Scheme boundary at the edge of the landscape earthworks. This is a shaw rather than a hedge. A mixture of oak and Hawthorn with patches of Blackthorn dominates it. Holly, Field Maple, Ash, Elder, Buddleia, Crack Willow, White Willow and Hazel are also present, together with the ancient woodland indicators Hairy-brome and Giant Fescue. It has been used by stock for shelter and there are trampled patches edged by Stinging Nettle. The ditch has Water Pepper, Branched Bur-reed, Hemlock Waterdropwort, Couch Grass, Creeping Bent, Soft Rush and Greater Bird's-foot Trefoil.

Hedge(s) 110 (grade 2+) Crowhurst Lane - The hedges either side of Crowhurst Lane follow a sinuous course northwards from the point where the lane crosses the railway and descends a steep slope around Chapel Wood. The hedges widen towards the bottom covering small abandoned sandstone quarries. The wider areas are largely unmanaged and there is a good range of tree species including Oak standards, Field Maple, Holly, Hornbeam, Hazel, Blackthorn, Bramble and patches of English Elm (*Ulmus minor*) suckers. There is occasional Bracken, a considerable amount of Bluebell and patches of Wood Melick (*Melica uniflora*) and Cleavers as well as Bramble, Dog and Field Roses and Black Bryony. Where it widens out, it is best classed as a copse. The lane will be realigned to pass under the link road further down the hillside, however sections of the original hedgerows shown as retained on the EMP and planting drawings will be retained and protected during the works.

Hedge 154 (grade 2) northwest of Hillcroft Farm encloses the southern edge of fields assigned in this contract as borrow pits to be transformed into fenland. It continues south running parallel to Combe Haven stream. The nearby Hedge 153 is a grade 1- hedge that runs south from the corner of the borrow pit area toward Hillcroft Farm. These hedges have grown out in recent years to become continuous rows of trees and shrubs. They are not described in the ES, but based on their high

HEGS rating they must have a good variety of species and provide continuous good cover for wildlife.

Hedge 86 (grade 2), following the scheme boundary north of Adams Farm is a dense overgrown hedge with Hawthorn, Blackthorn, Hazel and Goat Willow.

Hedge H2 (grade 3) on the scheme boundary at the edge of Bexhill, includes a row of trees that are protected with Tree Preservation Orders. Any works to these trees will require the consent of Rother District Council.

Ditch 2 Main Combe Haven Channel - This section near the link road is a deep, near vertical channel overhung by the vegetation on the banks. There are numerous shrubs comprising intermittent Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus monogyna*), Alder (*Alnus glutinosa*) Pedunculate Oak (*Quercus robur*) and Grey Willow (*Salix cinerea*).

D14 and D18 Watermill Stream - These ditches are the course of Watermill Stream near the link road. The ditch banks have been recently cleared at the crossing point of the link road, but there is one quite sizeable tree (possibly Pedunculate Oak) just inside the Scheme boundary on the north side, plus occasional resurgent clumps of Dog Rose and Grey Willow. Hawthorn and Alder are plentiful further south outside the Scheme boundary.

W37/D37 Powdermill Stream - Vegetation along Powdermill stream near Adam's Farm is identified on the ES habitat plans as W37 but is not detailed in the review of habitats and plant communities in Appendix 12C. The stream and the vegetation along it are described under information for ditch D37. Woody vegetation along the stream is described as follows. The stream flows within a deep channel overarched by Alder, Field Maple, Blackthorn, Ash and Pedunculate Oak.

Decoy Pond Stream - There is plentiful woody vegetation including large trees along Decoy Pond Stream where it crosses the line of the link road between The Bog and Decoy Pond Wood. It is shown on ES Figure 12.1B (Principal Features of the Study Area) as Hedge H134a, but is not described in the review of habitats in Appendix 12-C. However some information is provided in the accounts of the two woods (see above under W18 and W19).