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NATURAL PROGRESSION


Land north of Loxwood Road, Billingshurst, West Sussex

Ecological Impact Assessment

June 2021

Land north of Loxwood Road, Billingshurst, West Sussex

Ecological Impact Assessment

Client:	Loxwood Clay Pits Limited	
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Author: Nick Pincombe BA(Hons) MSc CEnv MIEMA MCIEEM Dr Richard Bickers BSc(Hons) PhD MCIEEM	Proofed: Tim Lees BSc(Hons) MSc MCIEEM	Approved: Nick Pincombe BA(Hons) MSc CEnv MIEMA MCIEEM
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Abbreviations

BoCC	Birds of Conservation Concern
BPPH	Bat Passes Per Hour
CDC	Chichester District Council
CEMP	Construction Environmental Management Plan
CMRF	Construction Materials Recycling Facility
CRoW	Countryside and Rights of Way Act 2000
EcIA	Ecological Impact Assessment
EPS	European Protected Species
ES	Environmental Statement
GCN	Great crested newt <i>Triturus cristatus</i>
HPI	Habitats of Principal Importance
IEF	Important Ecological Features
LEMP	Landscape and Ecological Management Plan
LGS	Local Geological Sites
LWS	Local Wildlife Sites
MAGIC	Multi-agency Geographic Information for the Countryside
MCP	Minimum Convex Polygons
NERC	Natural Environment and Rural Communities Act 2006
NPPF	National Planning Policy Framework
PEA	Preliminary Ecological Appraisal
PGRA	Preliminary Ground-level (tree) Roost Assessment
PPG	Planning Practice Guidance
SAC	Special Areas of Conservation
SBIC	Surrey Biodiversity Information Centre
SPA	Special Protection Areas
SPI	Species of Principal Importance
SSSI	Site Special Scientific Interest
SxBRC	Sussex Biological Records Centre
WCA	Wildlife and Countryside Act 1981
WSCC	West Sussex County Council
Zol	Ecological Zone of Influence

0 Executive Summary

- 0.1.1 This report presents an Ecological Impact Assessment (EcIA) for the site of a proposed minerals and waste development at Land north of Loxwood Road, Billingshurst, West Sussex (Grid Reference: 505115, 132770).
- 0.1.2 The EcIA process was undertaken with reference to relevant parts of the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*, published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018), and in the context of national planning policy and guidance, local planning policy, UK wildlife and animal welfare legislation, and consultation with West Sussex County Council and Chichester District Council.
- 0.1.3 Baseline information was obtained from a series of ecology surveys carried out within the Site by professional ecologists over the period 2019 to 2021, including an ecology desk study, Preliminary Ecological Appraisals (based on extended Phase 1 habitat surveys), and appropriate protected species surveys (including surveys for vegetation communities, great crested newt, breeding and wintering birds, invertebrates, badger, roosting bats, foraging and commuting bats, hazel dormouse, and reptiles).
- 0.1.4 Mitigation designed into the Proposed Development is described in Chapter 5. The assessment of impacts carried out here takes this mitigation into account. No important statutory or non-statutory designated sites of relevance to the Proposed Development were identified.
- 0.1.5 Evaluation of the baseline survey work identified the following Important Ecological Features relevant to the development: Deciduous woodland; Deciduous plantation; Stream; Hedgerows; Ponds; Breeding birds; Wintering birds; Invertebrates; Roosting bats; Foraging and commuting bats; and Reptiles. Following the assessment of impacts of the Proposed Development during its construction and operation/decommissioning phases, additional mitigation is proposed, including:
- ▶ A habitat mitigation and enhancement strategy will be prepared with the objective of translocating or re-creating deciduous and plantation habitat features, both as part of the progressive restoration of completed cells within the Proposed Development Site and to locations outside of the Site but on land within the applicant's control. An outline of the strategy is presented at Appendix B;
 - ▶ Enhanced woodland management on land outside of the Proposed Development Site boundary but within the applicant's control, including conversion of conifer plantation to semi-natural deciduous woodland, thinning and coppicing within existing semi-natural deciduous woodland, rotational management of other areas of broadleaved plantation, and extension of the ride network. Target species intended to benefit from woodland management include breeding and wintering birds, invertebrates, and foraging and commuting bats;

- ▶ An invertebrate mitigation strategy with the objective of translocating or re-creating habitat resources of greatest potential value to invertebrate fauna to locations outside of the Proposed Development Site boundary but on land within the applicant’s control; and
- ▶ A translocation of reptiles from the Proposed Development Site to a receptor site of similar character within the applicant’s control, preceded by habitat enhancements to increase the carrying capacity of the receptor site.

0.1.6 Measures to secure biodiversity net gain in line with national and local planning policy and guidance are proposed in an accompanying Biodiversity Net Gain Assessment.

0.1.7 Detailed method statements for the ecological mitigation and enhancement associated with the Proposed Development will be set out in a Construction Environmental Management Plan and Landscape and Ecological Management Plan, the production of which can be secured by planning conditions.

0.1.8 Nevertheless, significant residual effects are predicted and are summarised in Table 0.1.

Table 0.1: Residual effects

Feature	Significant residual effects		
-	Construction phase	Operation phase	Decommissioning/restoration
Deciduous woodland	Negligible negative effect at the Local level	Minor negative effect at the Local level	Minor positive effect at the Local level
Deciduous plantation	Minor negative effect at the Local level	Negligible negative effect at the Local level	Minor positive effect at the Local level
Stream	Negligible negative effect at the Local level	No significant effect	No significant effect
Species-poor hedgerows	No significant effect	No significant effect	No significant effect
Ponds	No significant effect	No significant effect	No significant effect
Breeding birds	Negligible negative effect at the Local level	Minor negative effect at the Local level	Neutral net effect at the Local level
Wintering birds	Negligible negative effect at the Local level	Minor negative effect at the Local level	Neutral net effect at the Local level
Invertebrates	Negligible negative effect at the County level	Minor negative effect at the County level	Negligible negative effect at the County level
Roosting bats	Uncertain but likely capable of being reduced to a Minor or Negligible negative effect at the Site level	Uncertain but likely capable of being reduced to a Negligible negative effect at the Site level	Uncertain but likely capable of being reduced to a Negligible negative effect at the Site level
Foraging and commuting bats	Negligible negative effect at the Local to County level	Minor negative effect at the Local to County level	Minor positive effect at the Local to County level
Reptiles	Negligible negative effect at the Local level	Minor negative effect at the Local level	Minor positive effect at the Local level

1 Introduction

1.1 Purpose of this Report

1.1.1 Urban Edge Environmental Consulting was commissioned by the applicant, Loxwood Clay Pits Ltd, to produce an Ecological Impact Assessment (EcIA) Report for the site of a proposed minerals and waste development at Land north of Loxwood Road, Billingshurst, West Sussex (Grid Reference: 505115, 132770). Nicholas Pincombe BA(Hons) MSc CEnv MIEMA MCIEEM is the principal author of this report.

1.1.2 This standalone report was commissioned in order to provide a single document containing the ecological baseline and assessment information as part of the wider Environmental Statement (ES) for the Proposed Development. It identifies features of ecological importance (including legally protected sites and species), specifies mitigation requirements for the Proposed Development, and supports the implementation of national biodiversity strategies and national planning policies for the preservation of biodiversity whilst enabling sustainable development.

1.2 Objectives of this Report

1.2.1 The objectives of the Ecological Impact Assessment are:

- ▶ To identify and describe all likely significant ecological effects associated with the Proposed Development;
- ▶ To set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any significant effects;
- ▶ To identify how mitigation measures will be secured;
- ▶ To provide an assessment of the significance of any residual effects;
- ▶ To identify appropriate enhancement measures; and
- ▶ To set out the requirements for post-construction monitoring of likely effects identified.

1.3 Site Description

1.3.1 The Site is located on the old Pallinghurst Estate approximately 1.5km to the east / north east of the village of Loxwood in the Chichester district of West Sussex and includes the Site of the Proposed Development and its proposed access from Loxwood Road as shown in red on Figure 1.1.

1.3.2 The Site comprises c.8.26ha of land currently dominated by woodland including semi-natural deciduous, and deciduous plantation woodland. The access route comprises an existing

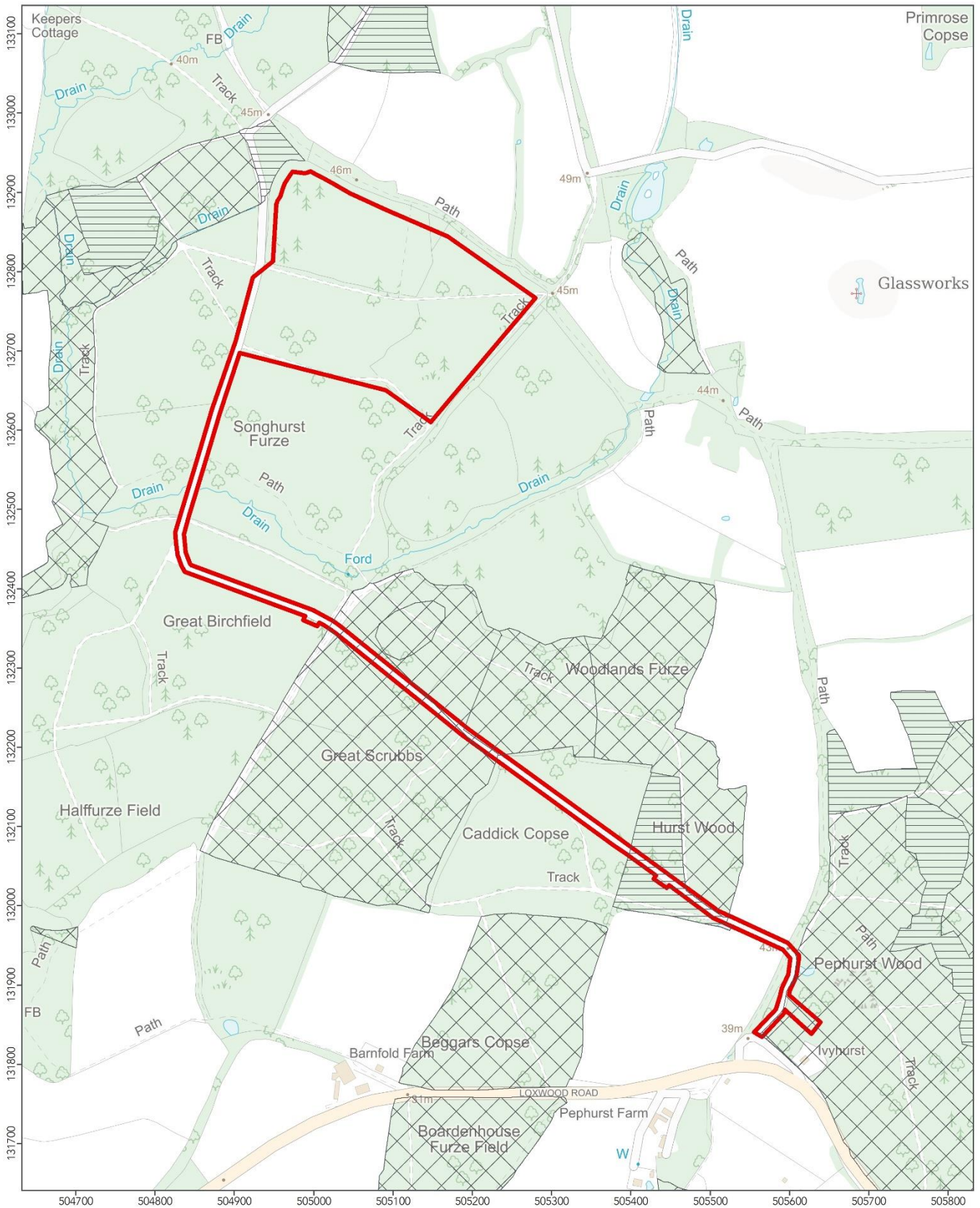
c.1.33km aggregate surfaced forest track with adjoining verges and ditches². The survey area is adjoined by areas of semi-natural and ancient deciduous woodland, relatively recently planted deciduous plantation, mature coniferous plantation, scrub, hedgerows and improved grassland.

- 1.3.3 The wider landscape is characterised by a patchwork of woodland and arable and grassland fields, set within a network of hedgerows. There are scattered farms and houses as well as small settlements. Twelve ponds lie within 500m of the extraction site, with a further four lying alongside the proposed access route.




1.4 Proposed Development

- 1.4.1 Planning consent is sought for the extraction of approximately 400k tonnes of clay to be used in brick making and other construction/industrial applications. Following clay extraction, the Site will be sequentially restored with suitable treated imported materials which will be sourced from the proposed on-site construction materials recycling facility (CMRF). The restoration scheme has been designed for nature conservation with water bodies, wetland habitats and interim species rich seeded grassland to be replaced with plantation broadleaved woodland.

² An alternative access from Loxwood Road was also explored along a c.420m alignment of unsurfaced track passing through semi-natural deciduous woodland from approximately 505295,131768 before joining the primary route at approximately 505305,132137. This was investigated principally in relation to its use by foraging and commuting bats and forms part of the bat survey transect.



Loxwood Clay Pits, West Sussex

-  Red line boundary
-  Ancient Semi-Natural Woodland
-  Plantation on Ancient Woodland



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Ordnance Survey 0100031673

Scale: 1:5,000 Created by: AD
Date: May 2021 Reviewed by: NP

Drawing number:
UE0363ECO-Site210521

Figure 1.1: Site location plan

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2 Planning Policy and Legislation

2.1 Introduction

2.1.1 This section briefly summaries planning policy, legislation and related issues which are relevant to the Proposed Development. The following text does not constitute legal or planning advice.

2.2 National Planning Policy

National Planning Policy Framework

2.2.1 The National Planning Policy Framework (NPPF; MHCLG, 2019) outlines the Government's commitment to the conservation of wildlife and natural features. Section 15 aims to conserve and enhance the natural environment by avoiding, adequately mitigating or compensating for significant harm to biodiversity, and delivering net gains for biodiversity (Paragraphs 170, 174, 175). The planning system is required to (Paragraph 170):

- ▶ *“Protect and enhance valued landscapes, sites of biodiversity or geological conservation value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
- ▶ *“Recognise the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;*
- ▶ *Maintain the character of the undeveloped coast, while improving public access to it where appropriate;*
- ▶ *“Minimise impacts on and provide net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current & future pressures;*
- ▶ *“Prevent new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
- ▶ *“Remediate and mitigate despoiled, degraded, derelict, contaminated and unstable land, where appropriate.”*

2.2.2 The NPPF requires that local plans should: “distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value...; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries” (Paragraph 171). To protect and enhance biodiversity and geodiversity, the NPPF states that planning policies should (Paragraph 174):

- ▶ *“Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*
- ▶ *“Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.”*

2.2.3 When determining planning applications, local planning authorities should aim to protect and enhance biodiversity by applying the following principles (Paragraph 175):

- ▶ *“If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- ▶ *“Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- ▶ *“Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- ▶ *“Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.”*

2.2.4 At Paragraph 176 it is stated that: “the following wildlife sites should be given the same protection as habitats sites:

- ▶ *“Potential Special Protection Areas and possible Special Areas of Conservation;*
- ▶ *“Listed or proposed Ramsar sites; and*
- ▶ *“Sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.”*

2.2.5 At Paragraph 177 it is stated that: “the presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site” [commonly referred to as Habitats Regulations Assessment].

2.2.6 In Paragraph 180 the NPPF states that “planning policies and decisions should ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In so doing they should... limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation”. This applies to protected species that are a material consideration in the planning process including bats and may also apply to other light sensitive species.

2.2.7 The policies within the NPPF (and accompanying guidance) are a material planning consideration.

Planning Policy Guidance

2.2.8 The online Planning Practice Guidance³ (PPG) accompanies the NPPF and provides detailed guidance on plan making and the determination of planning applications. Its section on the natural environment⁴ addresses: agricultural land, soils and brownfield land; green infrastructure; biodiversity, geodiversity and ecosystems; and landscape. In relation to biodiversity, it presents details on minimising impacts, delivering net gains, plan making, decision taking, protected sites and species, and irreplaceable habitats including ancient woodland.

2.2.9 The ODPM Circular 06/2005 provides further detailed guidance on the application of the law relating to planning and nature conservation in England. It complements the expression of national planning policy in the NPPF and PPG. The Circular includes guidance on internationally and nationally designated sites, habitats and species outside of designated sites, and protected species. The PPG and Circular 06/2005 are a material planning consideration.

2.2.10 Paragraph 98 of Circular 06/2005 advises that the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. Local authorities should hence “consult Natural England before granting planning permission. They should consider attaching appropriate planning conditions or entering into planning obligations under which the developer would take steps to secure the long-term protection of the species. They should also advise developers that they must comply with any statutory species’ protection provisions affecting the site concerned...”

2.2.11 Paragraph 99 of Circular 06/2005² advises that “it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the Proposed Development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted.”

³ Ministry of Housing, Communities and Local Government (2016): *Planning Practice Guidance*. Accessed online [07/01/2021] at: <https://www.gov.uk/government/collections/planning-practice-guidance>

⁴ Ministry of Housing, Communities and Local Government (2016): *Planning Practice Guidance: Natural environment*. Accessed online [07/01/2021] at: <https://www.gov.uk/guidance/natural-environment>

- 2.2.12 In addition, Natural England offers ‘Standing Advice’⁵ on protected sites and species which contains information on potentially significant impacts, and provides advice to planners on deciding if there is a reasonable likelihood of protected species being present. It also addresses recommended survey effort, timing and methods with regard to protected species, together with appropriate mitigation measures, in relation to planning applications. The Standing Advice is a material consideration in planning decisions. The Chartered Institute of Ecology and Environmental Management (CIEEM) also provide guidance for delivering net biodiversity gain through developments (CIEEM, 2016; CIEEM, 2019).

2.3 Local Planning Policy

Adopted Minerals Local Plan

- 2.3.1 The West Sussex Joint Minerals Local Plan 2033 (adopted July 2018) provides the basis for making decisions about planning applications for mineral activities in West Sussex, including in the South Downs National Park. Policies of relevance to ecology are described below:

Policy M17: Biodiversity and Geodiversity

Proposals for minerals development will be permitted provided that:

(a) There is no significant harm to wildlife species and habitats, or significant harm is effectively mitigated where it cannot be avoided, or (as a last resort) there is suitable compensation where there is still significant residual harm;

(b) There are no unacceptable impacts on areas or sites of national biodiversity or geological conservation importance unless the benefits of the development clearly outweigh both the impact on the features of interest, and on the wider network of such designated areas or sites;

(c) There are no unacceptable impacts on areas, sites or features of regional or local biodiversity or geological conservation importance unless the benefits of the development clearly outweigh both the impact on the features of interest and on the wider network of such designated areas or sites;

(d) There is no loss or deterioration of irreplaceable habitats, including Ancient Woodland and aged or veteran trees, unless the benefits of the development clearly outweigh the loss;

(e) Where possible, there are net gains in biodiversity, including, the creation, enhancement, and management of habitats, ecological networks, geodiversity and ecosystem services shall be secured consistent with wider environmental objectives, including Biodiversity Opportunity Areas and the South Downs Way Ahead Nature Improvement Area; and

(f) Where necessary, the investigation, evaluation, and recording of important sites, areas and features is undertaken and, where appropriate, representative examples are preserved.

⁵ Natural England (2016): *Planning and Development: Protected Sites and Species*. Accessed online [07/01/2021] at: <https://www.gov.uk/topic/planning-development/protected-sites-species>

Policy M24: Restoration and Aftercare

Proposals for mineral extraction and temporary minerals infrastructure development will be permitted provided that they are accompanied by comprehensive restoration and aftercare schemes that:

- (a) Ensure that land is restored at the earliest opportunity including, where appropriate, by phased, or progressive restoration;*
- (b) Make provision for high quality and practicable restoration, management, and aftercare;*
- (c) Are appropriate to their locations, maximising benefits taking into account local landscape character, the historic environment, biodiversity gain, priority habitat creation, and wider environmental objectives;*
- (d) Where appropriate, re-instate, and/or re-route, and where possible, improve public rights of way and maximise public amenity benefits;*
- (e) Provide for the removal of all buildings, machinery and plant when no longer required in connection with the principal use unless their removal conflicts with the agreed restoration scheme;*
- (f) Ensure that soil resources are retained, conserved and handled appropriately during operations and restoration;*
- (g) Preserve, maintain and where appropriate, manage, hydrogeological and hydrological conditions to prevent unacceptable impacts on groundwater conditions or increased flood risk.*

Adopted Waste Local Plan

- 2.3.2 The West Sussex Joint Waste Local Plan 2031 (adopted April 2014) provides the basis for making decisions about planning applications for waste management facilities in West Sussex, including in the South Downs National Park. Policies of relevance to ecology are described below:

Policy W14: Biodiversity and Geodiversity

Proposals for minerals development will be permitted provided that:

- (a) areas or sites of international biodiversity importance are protected unless there are no appropriate alternative solutions and there are overriding reasons which outweigh the need to safeguard the value of sites or features, and provided that favourable conservation status is maintained;*
- (b) there are no adverse impacts on areas or sites of national biodiversity or geological conservation importance unless the benefits of the development clearly outweigh the impact on the objectives of the designation and on the wider network of such designated areas or sites;*

(c) there are no adverse impacts on areas, sites or features of regional or local biodiversity or geological conservation importance unless the benefits of the development clearly outweigh the impact on the objectives of the designation;

(d) where development would result in the loss of or adversely affect an important area, site or feature, the harm is minimised, mitigated, or compensated for, including, where practicable, the provision of a new resource elsewhere which is of at least equivalent value;

(e) where appropriate, the creation, enhancement, and management of habitats, ecological networks, and ecosystem services is secured consistent with wider environmental objectives including Biodiversity Opportunity Areas and the South Downs Way Ahead Nature Improvement Area; and

(f) where necessary, the investigation, evaluation, and recording of important sites and features is undertaken and, where appropriate, representative features are preserved.

Adopted Local Plan

2.3.3 The Chichester Local Plan: Key Policies 2014-2029 (adopted July 2015) provides the broad policy framework and a long-term strategy to manage development, protect the environment, deliver infrastructure and promote sustainable communities within Chichester District (excluding the area within the South Downs National Park). Policies of relevance to ecology are described below:

Policy 48 Natural Environment

Planning permission will be granted where it can be demonstrated that all the following criteria have been met:

1) There is no adverse impact on:

- The openness of the views in and around the coast, designated environmental areas and the setting of the South Downs National Park; and,*
- The tranquil and rural character of the area.*

2) Development recognises distinctive local landscape character and sensitively contributes to its setting and quality;

3) Proposals respect and enhance the landscape character of the surrounding area and site, and public amenity through detailed design;

4) Development of poorer quality agricultural land has been fully considered in preference to best and most versatile land; and,

5) The individual identity of settlements, actual or perceived, is maintained and the integrity of predominantly open and undeveloped land between settlements is not undermined.

Policy 49 Biodiversity

Planning permission will be granted for development where it can be demonstrated that all the following criteria have been met:

- 1) The biodiversity value of the site is safeguarded;*
- 2) Demonstrable harm to habitats or species which are protected or which are of importance to biodiversity is avoided or mitigated;*
- 3) The proposal has incorporated features that enhance biodiversity as part of good design and sustainable development;*
- 4) The proposal protects, manages and enhances the District's network of ecology, biodiversity and geological sites, including the international, national and local designated sites (statutory and non-statutory), priority habitats, wildlife corridors and stepping stones that connect them;*
- 5) Any individual or cumulative adverse impacts on sites are avoided;*
- 6) The benefits of development outweigh any adverse impact on the biodiversity on the site. Exceptions will only be made where no reasonable alternatives are available; and planning conditions and/or planning obligations may be imposed to mitigate or compensate for the harmful effects of the development.*

Draft Local Plan Review

- 2.3.4 Chichester District Council consulted on the Local Plan Review: Preferred Approach 2016-2035 during winter 2018/2019. Policies of relevance to ecology and/or the local context are described below:

Policy S19: North of the Plan Area

Provision will be made for development in the North of the Plan area through Neighbourhood Plans and/or Development Plan Documents, in accordance with Policies S3 and S5.

The Council will encourage and support development proposals and other initiatives that:

- Conserve and enhance the rural character of the area, the quality of its landscape and the natural and historic environment;*
- Safeguard existing local facilities and expand the range of local facilities; and*
- Improve accessibility to facilities in nearby centres outside the North of the Plan area and the recreational opportunities available in the South Downs National Park.*

Policy S26: Natural Environment

The Council will continue to work with partner authorities and organisations to protect and enhance the natural environment of the Plan Area. In relation to development proposals this will include:

- *Ensuring that distinctive local landscape character and sensitivity is protected in accordance with Policy DM28.*
- *Ensuring there is no adverse impact on the openness of views in and around the coast, designated environmental areas and the setting of the South Downs National Park. See Policies DM19, DM20 and DM28.*
- *Protecting the biodiversity value of the site and its environment in accordance with Policy DM29; and*
- *Considering the quality of the agricultural land, with the development of poorer quality agricultural land being preferred to the best and most versatile land.*

Policy DM28: Natural Environment

The impact of proposals will be carefully assessed to ensure the protection, conservation and enhancement of the landscape of the Plan area. Planning permission will be granted where it can be demonstrated that all the following criteria have been addressed:

1. *There is no adverse impact on:*

- *The openness of the views in and around the coast, designated environmental areas and the setting of the South Downs National Park; and*
- *The tranquil and rural character of the area.*

2. *Development recognises distinctive local landscape character and sensitively contributes to its setting and quality;*

3. *Proposals respect and enhance the landscape character of the surrounding area and site, and public amenity through detailed design;*

4. *Development of poorer quality agricultural land has been fully considered in preference to best and most versatile land; and*

5. *The individual identity of settlements, actual or perceived, is maintained and the integrity of predominantly open and undeveloped land between settlements is not undermined.*

Policy DM29: Biodiversity

Planning permission will be granted for development where it can be demonstrated that all the following criteria have been addressed:

1. *The biodiversity value of the site is safeguarded;*
2. *Demonstrable harm to habitats or species which are protected or which are of importance to biodiversity is avoided or mitigated;*
3. *The proposal has incorporated features that enhance biodiversity as part of good design and sustainable development, and identifies and pursues opportunities for achieving a net gain in biodiversity;*
4. *The proposal protects, manages and enhances the plan area network of ecology, biodiversity and geological sites, including the international, national and local designated sites (statutory and non-statutory), priority habitats, wildlife corridors and stepping stones that connect them;*
5. *Any individual or cumulative adverse impacts on sites are avoided;*
6. *The benefits of development outweigh any adverse impact on the biodiversity on the site. Exceptions will only be made where no reasonable alternatives are available; and planning conditions and/or planning obligations may be imposed to mitigate or compensate for the harmful effects of the development.*

Policy DM31: Trees, Hedgerows and Woodlands

Development proposals will be granted where it can be demonstrated that all of the following criteria have been addressed;

1. *Proposals conserve and, where appropriate, enhance existing valued trees, hedgerows and woodlands;*
2. *The felling of protected trees, groups of trees or woodland will only be permitted in exceptional circumstances and in accordance with the relevant legislation, policy and good practice recommendations. Where protected trees are subject to felling, a replacement of an appropriate number, species and size in an appropriate location will be required;*
3. *A proposed loss or damage of non-protected but valued trees, woodland or hedgerows should be avoided, and if demonstrated as being unavoidable, appropriate mitigation measures are provided;*
4. *A minimum buffer of 15 metres will be required between the development and ancient woodland or veteran trees; and*
5. *Development proposals must demonstrate that appropriate protection measures are in place prior to any work on site throughout the development process as part of a comprehensive landscaping plan, and that suitable opportunities for the restoration, enhancement or planting of trees, woodland, and hedgerows are identified and incorporated.*

Chichester District Local Biodiversity Action Plan

- 2.3.5 The Chichester District Local Biodiversity Action Plan 2020-2024 does not contain lists of habitats and species of District importance, but instead focuses on a series of actions to improve the understanding, protection and enhancement of biodiversity, across the following themes:
- ▶ Creating an Accurate Picture (data collection/collation);
 - ▶ Protecting, Maintaining, Restoring and Creating;
 - ▶ Advice and Funding;
 - ▶ Planning;
 - ▶ Awareness and Promotion; and
 - ▶ Updating and Reporting.

Local Wildlife Sites

- 2.3.6 Local Wildlife Sites (LWS) are areas of land with wildlife value of significance at the district or county scale. LWS support both locally and nationally threatened wildlife, and many sites contain Habitats or Species of Principal Importance (HPI/SPI) listed under section 41 of the Natural Environment and Rural Communities Act 2006 in England. LWS are protected within the local planning system and are a material consideration in the determination of planning applications. A similar system of Local Geological Sites (LGS) operates in relation to features of district/county geological significance.

B-Lines

- 2.3.7 B-Lines is a landscape scale initiative to enhance declining pollinator populations by connecting up the best remaining wildflower-rich habitats through the creation or restoration of wildflower habitats. B-Lines was identified as a method to reverse pollinator declines in the National Pollinator Strategy's Implementation Plan⁶, by aiding their movement across the fragmented landscape. B-Lines are 3km corridors within which wildflower habitat restoration and creation can be focused and co-ordinated to maximise gains for pollinators. Habitat can be delivered by organisations, landowners, businesses, communities or individuals. Contribution to the B-Lines can be achieved through a variety of wildflower enhancement methods, such as habitat restoration (e.g. scrub clearance/re-introducing management/green haying), wildflower meadow creation in species poor grasslands, wildlife gardens, landowners entering agri-environment schemes, orchard planting, disturbance management and brownfield habitat creation, bee friendly formal planting, living roofs, etc.
- 2.3.8 Where relevant, development proposals in or around B-Lines should consider what they can contribute towards expanding the resources of pollinators in B-Lines. This will help to ensure that mitigation proposals align with ongoing work in the surrounding area for pollinators. It is important to note, however, that planning applications should seek to protect and enhance the

⁶ Defra (2015): National Pollinator Strategy: Implementation Plan. Accessed online [13/01/2021] at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/474386/nps-implementation-plan.pdf

wildlife interests of all taxonomic groups and habitats, not pollinators and their requirements in isolation. The Proposed Development Site lies outside but adjacent to a B-Line.

2.4 Legislation

General

- 2.4.1 The main legislative instruments for ecological protection in England and Wales are the Wildlife and Countryside Act 1981 (WCA; as amended), Countryside and Rights of Way Act 2000 (CRoW; as amended), Natural Environment and Rural Communities Act 2006 (NERC) and the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations; as amended). The Environment Bill (reintroduced to parliament in 2020) is expected to make significant changes to the legislative provisions when enacted.
- 2.4.2 WCA 1981 consolidated and amended pre-existing national wildlife legislation in order to implement the Bern Convention and the European Union Wild Birds Directive (Council Directive 2009/147/EC). It complements the Habitats Regulations, offering protection to a wider range of species than the latter. The Act also provided for the designation and protection of nationally important conservation sites of value for their floral, faunal or geological features, termed Sites of Special Scientific Interest (SSSI). Schedules of the act list protected species of flora and fauna, as well as invasive species, and detail the possible offences that apply to these species.
- 2.4.3 The CROW Act 2000 amended and strengthened existing wildlife legislation detailed in the WCA. It placed a duty on government departments & the National Assembly for Wales to have regard for biodiversity, provided increased powers for the protection and maintenance of SSSI, and created a right of access to parts of the countryside. The Act contained lists of habitats and species (Section 74) for which conservation measures should be promoted, in accordance with the recommendations of the Convention on Biological Diversity (Rio Earth Summit) 1992.
- 2.4.4 The NERC Act 2006 consolidated and replaced aspects of earlier legislation. Section 40 of the Act places a duty upon all local authorities and public bodies in England and Wales to have regard to the purpose of conserving biodiversity in exercising all of their functions, including by restoring or enhancing habitats and species populations. Sections 41 (England) and 42 (Wales) list habitats and species of principal importance to the conservation of biodiversity (otherwise known as priority habitats/species as listed in the now superseded UK Biodiversity Action Plan). These lists supersede Section 74 of the CRoW Act 2000. These species and habitats are a material consideration in the planning process.
- 2.4.5 The Habitats Regulations 2017 are the principal means by which the European Union Habitats Directive (Council Directive 92/43/EEC) was transposed into English and Welsh law, and place a duty upon the relevant authority of government to identify sites which are of importance to the habitats and species listed in Annexes I and II of the Habitats Directive. Those sites which meet the criteria in Europe are designated as Sites of Community Importance by the European Commission, and subsequently identified as Special Areas of Conservation (SAC) by the European Union member states. Since the UK's departure from the European Union the European Commission no longer has a role in designating SACs in the UK. The Conservation of

Habitats and Species (Amendment) (EU Exit) Regulations 2019 establish a single stage designation process, where the appropriate authority is the decision maker. The selection and designation of SACs is based on the criteria set out in Annex III of the Habitats Directive insofar as it applies to the UK, and having regard to the advice of the appropriate nature conservation body.

- 2.4.6 The 2019 Amendment Regulations have created a new national site network on land and at sea in the UK, including both the inshore and offshore marine areas. The national site network includes existing SACs, existing Special Protection Areas (SPA) originally designated as a result of Council Directive 2009/147/EC on the Conservation of Wild Birds, and any new SACs and SPAs designated under the 2019 Regulations. SACs and SPAs in the UK therefore no longer form part of the EU's Natura 2000 ecological network.
- 2.4.7 The Habitats Regulations also provide for the protection of individual species of fauna and flora of European conservation concern listed in Schedules 2 and 5 respectively (European Protected Species (EPS)). Schedule 2 includes species such as otter and great crested newt for which the UK population represents a significant proportion of the total European population. It is an offence to deliberately kill, injure, disturb or trade in these species. Schedule 5 plant species are protected from unlawful destruction, uprooting or trade under the regulations. Under the Habitats Regulations disturbance includes any activity which is likely to: impair the ability of a EPS to survive, breed, reproduce, or rear/nurture its young; impair the ability of a EPS to migrate or hibernate; or significantly affect the local distribution or abundance of the species.
- 2.4.8 When enacted, the Environment Bill is expected, among other things, to: establish an Office for Environmental Protection; mandate all new development requiring planning permission to achieve a net gain for biodiversity (expected to be at least 10%); amend the NERC Act duty to conserve biodiversity by explicitly adding a duty to enhance; and require local authorities to produce local nature recovery strategies.

Amphibians

Great crested newt (Triturus cristatus; GCN)

- 2.4.9 GCN is fully protected by the WCA and the Habitats Regulations and is a species of principal importance. The legislation makes it an offence, *inter alia*, to:
- ▶ Intentionally kill, injure or take a GCN (including its eggs).
 - ▶ Possess or control a live or dead GCN, any part of, or anything derived from a GCN.
 - ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a GCN uses for shelter or protection.
 - ▶ Intentionally or recklessly disturb a GCN while it is occupying a structure or place that it uses for shelter or protection.
- 2.4.10 Other native amphibians also receive varying degrees of legal protection. Natterjack toad *Epidalea calamita* and pool frog *Pelophylax lessonae* are Habitats Regulations schedule 2 species, partially protected under the WCA and are species of principal importance. Common toad *Bufo bufo* is partially protected under the WCA and a species of principal importance.

Smooth and palmate newt *Lissotriton vulgaris* and *L. helveticus* are partially protected under the WCA.

Birds

- 2.4.11 All wild birds are protected by the WCA and 49 species are of principal importance. The legislation makes it an offence to intentionally kill, injure or take away any wild bird. It is also an offence to take, damage or destroy the nest of any wild bird while it is in use or being built or to take or destroy the egg of any wild bird. In addition, certain species are listed on Schedule 1 of the WCA (such as kingfisher *Alcedo atthis*). This makes it an additional offence to intentionally or recklessly disturb the adults while they are in and around their nest or intentionally or recklessly disturb their dependent young. Such species are considered to be in greater need of legal protection or of high nature conservation priority.
- 2.4.12 Birds of Conservation Concern ("BoCC4) are included on Red and Amber lists (Eaton et al., 2015). Birds on the Red list are those of highest conservation priority due significant and sustained population decreases and/or range contractions (e.g. house sparrow *Passer domesticus* and starling *Sturnus vulgaris*). Birds on the Amber list are the next most critical group and include species whose population/range have shown moderate declines, or which have recovered to some extent from historical decline, such as dunnock *Prunella modularis*.

Invertebrates

- 2.4.13 Three invertebrate species in the UK are European Protected Species (large blue butterfly, Fisher's estuarine moth and little ramshorn whirlpool snail) and are afforded the same level of protection as bats, GCN, dormouse and otter. In addition around 400 further species are variously protected under the WCA and NERC section 41.

Mammals

Badger (*Meles meles*)

- 2.4.14 Badgers are listed under Schedule 6 of the Wildlife and Countryside Act which grants them partial protection. This protection is extended by the Protection of Badgers Act 1992 (Badger Act) which makes it an offence to take, injure or kill a badger, interfere with a sett, sell or possess a live badger, or mark or ring a badger without a licence. Under the Act disturbance is illegal without a licence. Natural England has published guidelines to be adopted when determining whether an activity is 'disturbing' i.e. a licence is required when, for example, using heavy machinery (generally tracked vehicles) within 30m of any entrance to an active sett. Licences are not normally issued during the badger breeding season (December – June inclusive).

Bats

- 2.4.15 Bats and their roosts are fully protected by the WCA and the Habitats Regulations, and seven species of bats are species of principal importance. The legislation makes it an offence, *inter alia*, to:
- ▶ Intentionally kill, injure or take a bat.

- ▶ Possess or control a live or dead bat, any part of a bat, or anything derived from a bat.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a bat uses for shelter or protection. This is taken to mean all bat roosts whether bats are present or not.
- ▶ Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.
- ▶ Make a false statement in order to obtain a licence for bat work.

Hazel dormouse (Muscardinus avellanarius)

2.4.16 Hazel dormouse is fully protected by the WCA and the Habitats Regulations and is a species of principal importance. The legislation makes it an offence, *inter alia*:

- ▶ Intentionally kill, injure or take a hazel dormouse.
- ▶ Possess or control a live or dead hazel dormouse, any part of, or anything derived from a hazel dormouse.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a hazel dormouse uses for shelter or protection.
- ▶ Intentionally or recklessly disturb a hazel dormouse while it is occupying a structure or place that it uses for shelter or protection.

Otter (Lutra lutra)

2.4.17 Otter is fully protected by the WCA and the Habitats Regulations and is a species of principal importance. The legislation makes it an offence, *inter alia*:

- ▶ Intentionally kill, injure or take an otter.
- ▶ Possess or control a live or dead otter, any part of, or anything derived from an otter.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that an otter uses for shelter or protection.
- ▶ Intentionally or recklessly disturb an otter while it is occupying a structure or place that it uses for shelter or protection.

Water vole (Arvicola amphibious)

2.4.18 Water vole is fully protected by the WCA and is a species of principal importance. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take a water vole.
- ▶ Possess or control a live or dead water vole, any part of, or anything derived from a water vole.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a water vole uses for shelter or protection.

- ▶ Intentionally or recklessly disturb a water vole while it is occupying a structure or place that it uses for shelter or protection.

2.4.19 Various other mammals are also species of principal importance, including hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus* and harvest mouse *Micromys minutus*.

Reptiles

2.4.20 The four common species (slow-worm *Anguis fragilis*, common lizard *Zootoca vivipara*, adder *Vipera berus* and grass snake *Natrix natrix*) are partially protected under the WCA and are species of principal importance. They are protected, *inter alia*, against intentional killing and injuring. The handling and translocation of these reptiles does not require a licence.

2.4.21 Smooth snake *Coronella austriaca* and sand lizard *Lacerta agilis* are fully protected by the WCA and the Habitats Regulations and are species of principal importance. The legislation affords them the same level of protection as bats, GCN, dormouse and otter.

Wild mammals

2.4.22 The Wild Mammals (Protection) Act 1996 (as amended) makes provision for the protection of wild mammals from certain cruel acts, making it an offence for any person to intentionally cause suffering to any wild mammal. In the context of development sites, for example, this may apply to rabbit *Oryctolagus cuniculus* burrows and fox *Vulpes vulpes* dens.

Native flora

2.4.23 There are nine Habitats Regulations schedule 5 (EPS) plant species native to the UK, while many others are protected under schedule 8 of the WCA. Many more are NERC section 41 species of principal importance.

Invasive non-native species

2.4.24 Under the WCA it is an offence to release, or to allow to escape into the wild, any animal which is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state or is listed under Schedule 9 of the Act. Strictly speaking, this makes it an offence to return to the wild any animal listed on Schedule 9, even if inadvertently captured. It is also an offence to plant or otherwise cause to grow in the wild invasive non-native plants listed on Schedule 9. This effectively means that it is an offence to cause the spread of such plants as a result of development operations.

Hedgerows

2.4.25 The Hedgerow Regulations 1997 protect important hedgerows in the countryside by controlling their removal through a system of notification, and by defining criteria under which a hedgerow is classified as "important". The criteria relate to the value of hedgerows from an archaeological, historical, wildlife and landscape perspective.

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3 Methodology

3.1 Consultation

- 3.1.1 An EIA Scoping Report was submitted to West Sussex County Council (WSCC) on 28 January 2020. An EIA Scoping Opinion was received on 29 April 2020 including comments from WSCC, Chichester District Council (CDC) and Forestry Commission ecology officers on the potentially significant effects of the Proposed Development, and these have been addressed in the EcIA.

3.2 Assessment Methodology

- 3.2.1 The EcIA has been prepared with reference to the Chartered Institute of Ecology and Environmental Management's (CIEEM; 2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*.

3.3 Scope of the Assessment

Ecological Zone of Influence

- 3.3.1 The ecological zone of influence (Zoi) was initially defined as the Site, as described at section 1.3. The Zoi has subsequently been refined through a review of the ecological baseline information in the context of the Proposed Development. It has also been informed by liaison with consultees and other specialists involved in assessing the effects in other disciplines of the project, as considered within the ES and other supporting documents. The Zoi is defined as follows:
- ▶ For the majority of ecological features the Zoi coincides with the Proposed Development Site and its proposed access route, including adjacent land up to 30m from the Site/access; features within this zone are likely to be directly affected by biophysical changes resulting from construction and operation activities.
 - ▶ Features on adjacent land may be affected by noise, dust, artificial light, hydrological changes or human activity during construction and operation.
 - ▶ One-off incidents and accidents (e.g. fuel leaks, erosion and sediment run-off) could potentially affect nearby watercourses, including downstream impacts.

Temporal scope

- 3.3.2 It is expected that site preparation works and establishment of on site access infrastructure and construction of the CMRF will commence in 2022 and complete in 2023. Operation of the first phase of clay extraction would commence in 2023 with extraction cells 1 and 2, and restoration would start in 2024 always following two cells behind the excavation. The overall extraction period is anticipated to be around 31 years, but the final phases of restoration (including removal of the CMRF) will be undertaken in the 12-24 months following completion of the extraction. The

total period of development will therefore be approximately 33 years. Impacts on ecological features are assessed in the context of how the baseline conditions within the ecological zone of influence may be liable to change between the survey dates and the timings of construction.

3.4 Desk Study

3.4.1 A desk-based study was undertaken in 2019⁷ to examine published information and biological records from within the search area. The scope of the desk study reflects the sensitivity and value of potential ecological receptors and enables the requirements of mobile species to be considered (e.g. for breeding, foraging, roosting, shelter, migration and dispersal), while providing contextual information to assist with determining and evaluating the baseline. Ecological features to be considered include designated sites of nature conservation interest, habitats and species of principal importance, protected species and legally controlled species. To that end, the following desk study search radii were established:

- ▶ Statutory nature conservation sites of international importance within a 5km radius of the Site (extended to 10km for any statutory site designated for bats);
- ▶ Statutory sites of national importance within a 2km radius; and
- ▶ Non-statutory sites and protected/notable species records within a 1km radius.

3.4.2 This information was collected from the following sources:

- ▶ The 'MAGIC' (Multi-agency Geographic Information for the Countryside) website: www.magic.gov.uk;
- ▶ Surrey Biodiversity Information Centre (SBIC); and
- ▶ Sussex Biological Records Centre (SxBRC).

3.5 Field Surveys

3.5.1 A range of baseline ecological surveys were undertaken to inform and influence the design and layout of development, and form the basis of the EcIA. For reasons of clarity, and due to the quantity of baseline ecological information collated during the assessment, the detailed methods, weather conditions, personnel, limitations and results of each baseline survey are contained in Appendix A to the EcIA. In summary, the following were undertaken:

- ▶ Preliminary Ecological Appraisal⁸ of the proposed development site (reported separately);
- ▶ Preliminary Ecological Appraisal⁹ of the proposed access route (reported separately);
- ▶ National Vegetation Classification survey;
- ▶ Biodiversity Net Gain assessment survey¹⁰ (reported separately);

⁷ Middlemarch Environmental (2019): *Woodland East of Loxwood, West Sussex: Preliminary Ecological Appraisal*.

⁸ *Ibid.*

⁹ Urban Edge Environmental Consulting (2020): *Land east of Loxwood, West Sussex: Preliminary Ecological Appraisal Report*.

¹⁰ Urban Edge Environmental Consulting (2021): *Land north of Loxwood Road, Billingshurst, West Sussex: Biodiversity Net Gain Assessment*.

- ▶ Presence/absence survey for great crested newt;
- ▶ Breeding bird survey;
- ▶ Wintering bird survey;
- ▶ Invertebrate survey;
- ▶ Badger survey;
- ▶ Preliminary Ground-level (tree) Roost Assessment (PGRA);
- ▶ Bat activity survey;
- ▶ Presence/absence survey for hazel dormouse; and
- ▶ Presence/absence survey for reptiles.

3.5.2 Baseline ecological surveys undertaken to inform the assessment covered the Zol defined above i.e. Proposed Development Site and its proposed access route (as described at section 1.3), including adjacent land up to 30m from the Site/access. The survey area took into account the likely extent of development activities and such adjacent land as might foreseeably be affected, directly or indirectly, to provide contextual information and further inform the assessment.

3.6 Limitations

3.6.1 Appendix A contains a full review of applicable limitations to each baseline survey, however, the principal limitations are listed below. Where relevant any such limitations have been factored into the assessment process. All surveys were undertaken in the appropriate season by suitably qualified and licensed surveyors with reference to industry guidance and during suitable weather conditions, albeit that short periods of suboptimal weather affected a small number of surveys.

Pond access

3.6.2 Twelve ponds lie within 500m of the extraction site, with a further four lying alongside the proposed access route. All 16 ponds were initially targeted for survey, however, a range of access limitations applied and these are listed in full at Appendix A. Most of the ponds were able to be assessed for habitat suitability during the PEA (UEEC, 2020) with the exception of P9 and P11 where access was denied. All ponds holding water during spring 2020 were subsequently subject to presence/absence surveys, with the exception of P9, P10 and P11 where access was denied, albeit that some ponds were started late due to landowner concerns regarding COVID-19. Nevertheless, in the context of the survey results the access constraints are not considered to be a significant limitation.

3.7 Ecological Impact Assessment

Important Ecological Features

3.7.1 A first step in EcIA is to determine which ecological features (habitats, species, ecosystems and their functions/processes) are important. Important Ecological Features (IEF) should then be subject to detailed assessment if they are likely to be impacted by the Proposed Development.

It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts such that there is no risk to their viability.

- 3.7.2 Ecological features can be important for a variety of reasons and the rationale used to identify importance is explained below. Importance may relate, for example, to the quality or extent of designated sites or habitats, to habitat/species rarity, to the extent to which they are threatened throughout their range, or to their rate of decline.
- 3.7.3 The importance of an ecological feature should be considered within a defined geographical context. The following frame of reference is used in this case:
- ▶ International and European e.g. SAC, SPA and Ramsar sites;
 - ▶ National (England) e.g. SSSI and National Nature Reserves;
 - ▶ County (Sussex) e.g. Local Wildlife Sites, Local Nature Reserves, ancient woodlands;
 - ▶ District (Chichester District) e.g. species rich and/or extensive habitats, or moderate population sizes, or species assemblages of moderate to high diversity; and
 - ▶ Local (Loxwood parish) e.g. common and widespread species with relatively moderate populations or assemblages of relatively limited diversity; and
 - ▶ Site – within the immediate zone of influence of the Site e.g. common and widespread species with small populations and limited diversity.
- 3.7.4 In certain circumstances particular receptors may be valued below the Site level. In these instances they are described as being of Negligible value.

Impact assessment

- 3.7.5 The process of impact assessment involves:
- ▶ Identifying and characterising impacts;
 - ▶ Incorporating measures to avoid and mitigate (reduce) the impacts;
 - ▶ Assessing the significance of any residual effects after mitigation;
 - ▶ Identifying appropriate compensation measures to offset significant residual effects; and
 - ▶ Identifying opportunities for ecological enhancement.
- 3.7.6 It is only necessary to assess and report significant residual effects (those that remain after mitigation measures have been taken into account). However it is good practice for the EclA to make clear both the potential significant effects without mitigation and the residual significant effects following mitigation. This process of assessment without mitigation helps to identify necessary and relevant mitigation measures that are proportionate to the extent, magnitude and duration anticipated impacts.
- 3.7.7 The assessment only needs to describe those characteristics of impacts that are relevant to understanding the ecological effect and determining its significance. It should consider, as appropriate: direct, indirect, secondary and cumulative impacts and whether the impacts and their effects are short, medium, long-term, permanent, temporary, reversible, irreversible,

positive or negative. The assessment of impacts then takes into account the baseline conditions to describe:

- ▶ How baseline conditions within the Zol will change as a result of the Proposed Development and associated activities; and
- ▶ Cumulative impacts of the Proposed Development and those arising from other developments within the Zol.

Characterising and quantifying impacts

3.7.8 The term 'impact' relates to changes resulting from Proposed Development activities, for example the removal of habitat.

3.7.9 The CIEEM (2018) guidelines state that ecological impacts and effects should be characterised in terms of ecosystem structure and function and reference should be made, as required, to: positive, negative or neutral effects; extent; magnitude; duration; frequency and timing; reversibility; and cumulative effects. The guidelines provide a list of 'aspects of ecological structure and function to consider when predicting impacts and effects' (CIEEM, 2018, Box 17).

3.7.10 For the purposes of this EcIA, the duration of impacts is defined as:

- ▶ Short-term – Less than two years i.e. during site preparation, establishment of on site access infrastructure, construction of the CMRF, and cells 1 and 2 of the clay extraction (2022—2023);
- ▶ Medium-term – Two to 31 years i.e. during clay extraction operations and progressive restoration;
- ▶ Long-term – 31 to 33 years i.e. during the final phases of restoration (including removal of the CMRF); or
- ▶ Permanent – Greater than 33 years.

3.7.11 However, it should be noted that these terms are considered in the assessment relative to each habitat or species affected and their respective successional processes or life-cycles. For example, six weeks for one species may represent a single generation time period, but for another it may be a few weeks in a life lasting several years.

Determining significant effects

3.7.12 The term 'effect' relates to the outcome of an impact, for example population displacement or decline due to habitat loss.

3.7.13 Following the characterisation of impacts, an assessment of the ecological significance of an effect is made. Applying the principles promoted in the guidelines, significant effects encompass impacts on the structure and function of a defined site, habitat or ecosystem, and/or the conservation status of habitats and species populations at an appropriate geographic scale. However, the scale of significance of an effect may not be the same as the geographic context in which the feature is considered important. For example, an effect on a species of principal importance in England may not have a significant effect on its national population and therefore

not be of national significance for that species. Hence the value of the feature that will be significantly affected is used to determine the implications, in terms of legislation and or policy (CIEEM, 2018), and proportionate means of mitigation.

- 3.7.14 Significance is a concept related to the weight that should be attached to effects when decisions are made. For the purpose of this assessment, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for important ecological features. A significant effect is simply an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. The EcIA guidelines (CIEEM, 2018, p41) state that "*a significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects can be lawfully permitted following EIA procedures*" – particularly where the mitigation hierarchy has been applied effectively as part of the decision-making process. The assessment of significance is based on professional judgement, guided by independently established significance criteria where available and appropriate (e.g. in relation to atmospheric pollution impacts).

Cumulative effects

- 3.7.15 Cumulative effects are assessed with respect to the potential for collectively significant impacts to arise upon Important Ecological Features relevant to the Proposed Development. There are no other known projects planned or ongoing within the ZoI which could lead to collectively significant impacts, other than continued forestry management operations within surrounding woodland.

Mitigation

- 3.7.16 Where significant impacts or effects are predicted, the mitigation hierarchy is taken into account as recommended in the guidelines, which set out a sequential approach of avoiding impacts where possible, applying mitigation measures to minimise unavoidable impacts, and then compensating for any remaining impacts. Once avoidance and mitigation measures, and any necessary compensation measures, have been applied, and opportunities for enhancement are incorporated, residual impacts and effects are then identified. This approach is reflected across UK planning policy at a country level.
- 3.7.17 Where mitigation and/or compensation is proposed, this is proportionate to the geographical scale at which an effect is significant, "*for example, mitigation and compensation for effects on a species population significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved*" (CIEEM, 2018, p41).
- 3.7.18 In addition to identifying mitigation measures, this section also addresses relevant legal requirements, for example in relation to protected or invasive non-native species.

4 Baseline Ecological Conditions

4.1 Introduction

4.1.1 This chapter summarises the baseline ecological conditions determined through the course of desk-based and field-based investigations described in Chapter 3. In particular, this section identifies and evaluates those ecological features/receptors that lie within the Site’s potential Zone of Influence and are relevant in the context of the Proposed Development.

4.1.2 Full accounts of the results desk-based and field-based investigations are presented at Appendix A. For the purpose of this chapter summary evaluations are included below.

4.2 Statutory and Non-statutory Site Designations

4.2.1 No Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Ramsar sites are located within a 5km radius of the Proposed Development Site; see Figure 4.1. No Sites of Special Scientific Interest (SSSI) are located within a 2km radius of the Proposed Development Site. No locally designated non-statutory sites are located within a 1km radius of the Proposed Development Site.

4.2.2 However, the Proposed Development Site falls within a SSSI Impact Risk Zone for Chiddingfold Forest SSSI and The Mens SSSI which are located approximately 2.70km north-west and 6.50km south, respectively. Planning applications for minerals extraction within this zone will require the LPA to consult with Natural England prior to determination.

4.2.3 Furthermore, in relation to bats for which an extended desk study search zone of 10km was established, there are nine SSSI and two SAC within 10km of the Proposed Development Site. One SSSI and both SAC are notified for bat populations, as summarised in Table 4.1 and shown in Figure 4.1.

Table 4.1: Statutory sites within 10km designated for bat populations

Site name	Location*	Description**
Ebernoe Common SSSI	7.95km south-west	Ebernoe Common is of national importance for colonies of barbastelle <i>Barbastella barbastellus</i> and Bechstein’s <i>Myotis bechsteinii</i> bats, which use trees as summer maternity roosts where the female bats gather to give birth and rear their young. The bats also use the site as a foraging area and as flight paths for dispersal to their foraging territories both within and outside of the SSSI.
Ebernoe Common SAC	7.95km south-west	The site is designated under article 4(4) of the Habitats Directive (92/43/EEC) as it supports the following species listed in Annex II: barbastelle bat <i>Barbastella barbastellus</i> , Bechstein’s bat <i>Myotis bechsteinii</i> . The barbastelle maternity colony utilises a range of tree roosts in the site, usually in dead tree stumps, but the species appears to be present throughout the year, with individuals utilising a range of roost sites in tree holes and under bark. The site also holds a maternity colony of

Site name	Location*	Description**
		Bechstein's bats, mainly roosting in old woodpecker holes in the stems of live mature sessile oak trees. While Bechstein's feed exclusively in the woodland, barbastelles commute into the surrounding countryside using the woodland corridors which branch out from the site.
The Mens SAC	6.50km south	The site is designated under article 4(4) of the Habitats Directive (92/43/EEC) as it supports the following species listed in Annex II: barbastelle bat <i>Barbastella barbastellus</i> . The Mens SAC has been selected for its maternity colony of barbastelles which utilise a range of tree roosts; usually in dead tree stumps. The species appears to be present throughout the year; but it is not clear how many bats hibernate at the site. Barbastelles roost within the woodland but tend to forage outside of the site, commuting along woodland corridors into the wider countryside.

* Approximate distance and bearing from the site.

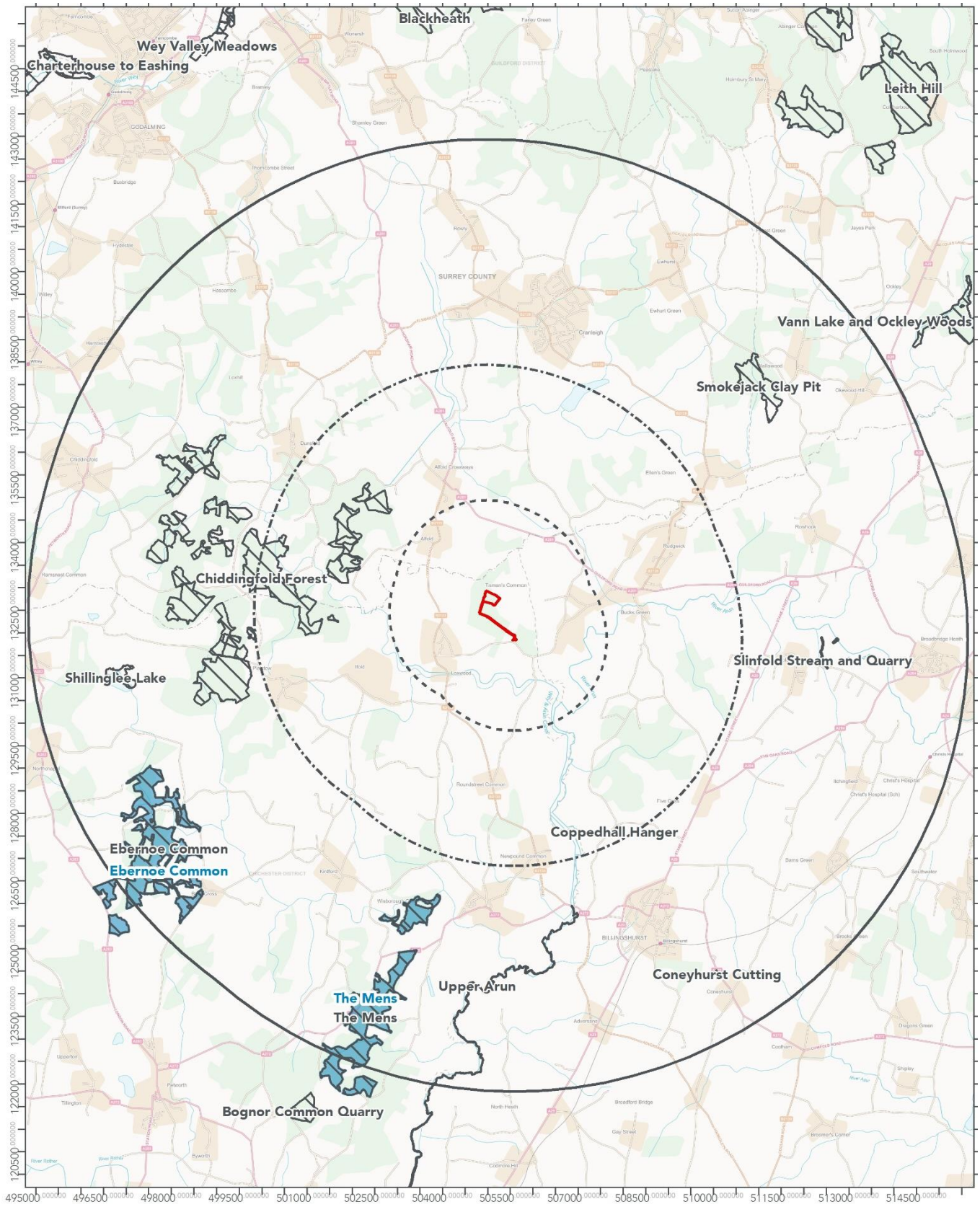
** Only the chiropteran interest is listed above, other interest features are also present.

4.3 Priority Habitats







4.3.1 Priority habitats include those listed on local Biodiversity Action Plans and habitats of principal importance (HPI) listed under section 41 of the NERC Act. SxBRC and a search of the MAGIC database returned the following data on priority and other habitats within the 1km desk study search area: Traditional Orchard, Deciduous Woodland, and Ancient Woodland. Deciduous Woodland, and Ancient Woodland are present within and adjacent to the Site.

4.4 Protected, Rare and Notable Species

4.4.1 Biological records were obtained for the 1km search area and are summarised in Appendix A.



Loxwood Clay Pits, West Sussex

- | | | | |
|---|--------------------------------------|---|------------------|
|  | Red line boundary |  | Site Buffer 2km |
|  | Sites of Special Scientific Interest |  | Site Buffer 5km |
|  | Special Areas of Conservation |  | Site Buffer 10km |



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Ordnance Survey 0100031673

Scale: 1:87,500 **Created by:** AD
Date: May 2021 **Reviewed by:** NP

Drawing number:
UE0363ECO-DesignatedSites210524

Figure 4.1: Designated sites

4.5 Habitats and Vegetation Communities Evaluation Summary

4.5.1 A summary evaluation of the habitats and vegetation communities present within and adjacent to the extraction site and access route is set out at Table 4.2 and Table 4.3.

Table 4.2: Summary of habitat evaluation - extraction site

Habitat	Importance	Rationale
Deciduous Woodland DW1, DW2, DW3, R1, R2 and R3	At least <u>Local</u>	All of the deciduous woodland areas surveyed are considered to represent relatively high quality Lowland Mixed Deciduous Woodland Priority Habitat (HPI), based on their structure and species composition.
Deciduous Plantation P3, P4 and P5	At least <u>Local</u>	The more recent plantations cannot currently be identified as Priority Habitat, largely because of the poorly developed canopy, although they are developing towards such habitat and could be viewed as temporary open areas or clearings within the wider woodland. Includes Ancient Replanted Woodland at P4 which is defined as an irreplaceable habitat under the NPPF.
Deciduous Plantation P1 and P2	<u>Local</u>	The established broadleaved plantations probably meet the Lowland Mixed Deciduous Woodland Priority Habitat (HPI) definition, though they are relatively species poor and structurally homogenous examples, and consequently of less importance.

Table 4.3: Summary of habitat evaluation - proposed access route

Habitat	Importance	Rationale
Deciduous Woodland DW4, DW5, R3 and R4	At least <u>Local</u>	All of the deciduous woodland areas surveyed are considered to represent relatively high quality Lowland Mixed Deciduous Woodland Priority Habitat (HPI), based on their structure and species composition. Includes Ancient Woodland in parts of DW4 which is defined as an irreplaceable habitat under the NPPF.
Deciduous Plantation P6 and P7	<u>Local</u>	The more recent plantations cannot currently be identified as Priority Habitat, largely because of the poorly developed canopy, although they are developing towards such habitat and could be viewed as temporary open areas or clearings within the wider woodland.
Stream at DW5	<u>Local</u>	Part of a relatively natural woodland watercourse.
Coniferous Plantation C1	<u>Site</u>	Closed canopy mature conifer plantation with scattered shrubs and extensive bare ground.
Species poor hedge H1/H2	<u>Site</u>	The double hedgerow H1/H2 located alongside the proposed access route between the two main woodland blocks (grid ref: 505560, 131965), although species-poor, qualifies as Hedgerow Priority Habitat (HPI) and is also Important under the Hedgerow Regulations 1997.
Ponds P13, P14, P14a, P15	<u>Site</u>	Small extent and limited richness in plant species and communities; unlikely to qualify as Priority Habitat; support populations of smooth

Habitat	Importance	Rationale
		and palmate newt which are partially protected under schedule 5 of the WCA.

4.6 Faunal Evaluation Summary

4.6.1 A summary evaluation of the animal populations present within and adjacent to the extraction site and access route is set out at Table 4.4.

Table 4.4: Summary of faunal evaluation - extraction site & access route

Species	Importance	Rationale
Great crested newt	<u>Site</u>	The Site contains no aquatic habitat but a relatively large area of good quality terrestrial habitat. However, GCN is likely to be absent from the Site. Good quality terrestrial habitat is extensively available adjacent to the access route also but the track itself is of negligible value to the species due to the general absence of vegetation cover. Four ponds are present close to the access route (P13, P14, P14a and P15) but GCN was found to be absent from these ponds.
Breeding birds	At least <u>Local</u>	Quite a rich breeding assemblage of woodland bird species, including 22 of the 34 species used for the England woodland bird indicator, six Red and Amber List species of conservation concern, and four Species of Principal Importance (SPI) under the NERC Act.
Wintering birds	<u>Local</u>	Quite a rich assemblage of birds typical of the habitats present, including eight Red and Amber List species of conservation concern, four SPI and two species listed on schedule 1 of the WCA.
Invertebrates	<u>County (medium)</u>	A moderately diverse woodland invertebrate fauna is present and includes a high proportion (10.4%) of scarce species indicative of niche woodland features such as heartwood rot and woodland edge. Includes three SPI and several observations of wood white which is rare in Sussex and nationally and is partially protected under schedule 5 of the WCA.
Badger	<u>Site</u>	The Site contains a relatively large area of habitat suitable for foraging and sett creation. However, no active setts were identified.
Roosting bats	<u>Site (provisional)</u>	The Site contains no buildings but 38 mature trees exhibited potential roost features.
Foraging and commuting bats	<u>Local to County</u>	The survey area contains a relatively large area of good quality habitat for foraging and commuting bats. At least nine species were recorded, including at least four SPI and barbastelle which is rare in Sussex and nationally.
Hazel dormouse	<u>Site</u>	The Site contains a relatively large area of good quality habitat for hazel dormouse. However, hazel dormouse is likely to be absent from the Site.
Reptiles	<u>Local</u>	The Site contains a relatively large area of good quality habitat for reptiles. <u>Low</u> populations of common lizard and grass snake and an

Species	Importance	Rationale
		<u>exceptional</u> population of slow worm were recorded. All three are SPI.

4.7 Baseline Hydrological Conditions

- 4.7.1 A relatively natural woodland watercourse was recorded within the survey area, located at 504850, 132525 where it passes beneath the proposed access route to the extraction site. The ES Water Chapter¹³ (Caulmert, 2020, p17) describes the surrounding area of the site as characterised by surface water drains and channels through the woodland with the exception of a deep valley containing an unnamed drain to the west of the site. The following hydrological features and conditions were observed during a water feature survey undertaken by Caulmert (2020, p12) in July 2020: *“Whilst the major forest tracks have shallow drainage channels along the boundaries, there were no apparent discharge points from the site other than a culvert (location 12 Water Feature Survey) beneath the road to the south of the site [this was dry at the time of survey and discharges into a channel through the woodland to the south before eventually connecting with the stream upstream (east) of its crossing of the access route] and a second culvert on the western boundary (location 32 /33 on Water Feature Survey). This western culvert discharged into a steep sided (vertical) narrow (<0.5m) flat bottomed channel which initially ran straight. It is considered that this is likely to be a man-made channel.”* The drainage channel that arises to the west of the site was deeply incised and dry at the time of inspection. Shallow standing water was observed in over deepened hollows/pools and other erosional features. The banks of the drainage channels were near vertical. Erosional features comprising over deepened pools and steep eroded sides were common throughout the drainage channels. However, the channel appears to widen with shallower banks with distance from the site.
- 4.7.2 Approximately 280m west of the site there is a confluence between this channel and a separate drain flowing from to the north and west of the site. Caulmert (2020, p13) traced the route of the channel c.255m southward and notes that *“this main drainage channel is present within a deep localised valley which is not apparent from the regional OS contours. It is estimated that the base of the valley is 5-8m below the ground level in the adjacent fields and woodland in a relatively steep sided valley (Image 37/38). This drainage channel was dammed in the 1900s and evidence of the sluice system remains in place. These structures have some significant erosion features around the concrete footings. The base of the valley is relatively flat and in the former fishpond locations the course of the drainage channel is braided, meandering and littered with woodland debris. Water was only observed in erosional features with the majority of the channel being dry and firm underfoot.”* At this point there is a confluence between the drain arising from the western site boundary and the stream which passes under the access route at 504845, 132530. The confluence is located at 504710, 132495, approximately 145m downstream of the track crossing. The drain eventually joins Loxwood Stream at 504390, 131270, approximately 1.34km south of the confluence. Loxwood Stream becomes the River Lox flowing alongside the Wey and Arun Canal before its eventual confluence with the River Arun.

¹³ Caulmert Ltd (2020): *Loxwood Clay Pit Development: Chapter 10: Water.*

4.7.3 Overall the water feature survey concluded (Caulmert, 2020, p13) that “the drainage channels were ephemeral with no flow during the dry summer months. The presence of numerous erosional features suggests that flow is characterised by high energy short duration events such as flash flood. This would concur with the permeability geological setting [Wealden clay] resulting in rapid runoff rather than infiltration into underlying soils.”

4.8 Baseline Evolution in the absence of Proposed Development

4.8.1 Site preparation works including removal of vegetation, establishment of Site access infrastructure and construction of the CMRF, are expected to start in 2022, with clay extraction operations commencing from 2023. It is considered likely that the majority of habitats present at the Site will be in a similar condition in 2022, albeit that minor changes may have occurred such as storm damage to trees. Similarly it is considered likely that, for the majority of species present at the Site, their abundance and distribution in relation to the Site will be in a similar condition when construction starts, albeit that minor changes may have occurred in highly mobile species such as bats and birds.

4.9 Important Ecological Features

4.9.1 Of the designated sites, habitats and species listed in sections 4.2 to 4.6 above, those included in Table 4.5 are evaluated as being of importance and have the potential to be affected by the Proposed Development.

Table 4.5: Important Ecological Features with potential to be affected by Proposed Development

IEF	Rationale
Deciduous woodland	Semi-natural deciduous woodland, including areas of <u>Lowland Mixed Deciduous Woodland Priority Habitat (HPI)</u> , was evaluated as of at least <u>Local</u> importance and may be directly and indirectly affected by the Proposed Development.
Deciduous plantation	Plantation deciduous woodland, including irreplaceable <u>Ancient/Replanted Woodland</u> , was evaluated as of at least <u>Local</u> importance and may be directly and indirectly affected by the Proposed Development.
Stream	The stream which passes under the access route at DW5 (grid ref: 504845, 132530) was evaluated as of <u>Local</u> importance, forming part of a relatively natural woodland watercourse. It is vulnerable to, for example, sedimentation impacts result from the Proposed Development.
Species-poor hedgerow	The double hedgerow H1/H2 located alongside the proposed access route (grid ref: 505560, 131965) was evaluated as of importance at the <u>Site</u> level but qualifies as <u>Hedgerow Priority Habitat (HPI)</u> and is Hedgerow Regulations <u>Important</u> .
Ponds	The small ponds P13, P14, P14a, P15 adjacent to the access route were evaluated as of importance at the <u>Site</u> level but support populations of two WCA <u>schedule 5</u> species.

IEF	Rationale
Breeding birds	The breeding bird assemblage was evaluated as of at least <u>Local</u> importance, included six <u>Red/Amber</u> list species and four <u>SPI</u> , and may be directly and indirectly affected by the Proposed Development.
Wintering birds	The winter bird assemblage was evaluated as of <u>Local</u> importance, included eight <u>Red/Amber</u> list species, four <u>SPI</u> and two WCA <u>schedule 1</u> birds, and may be directly and indirectly affected by the Proposed Development.
Invertebrates	The invertebrate assemblage was evaluated as of <u>County (medium)</u> importance, included three <u>SPI</u> and one WCA <u>schedule 5</u> species, and may be directly and indirectly affected by the Proposed Development.
Roosting bats	The Site contains 38 mature trees exhibiting potential roost features and was provisionally evaluated as of importance at the <u>Site</u> level.
Foraging and commuting bats	The foraging and commuting bat assemblage was evaluated as of <u>Local</u> to <u>County</u> importance, included at least four <u>SPI</u> and nine Habitats Regulations <u>schedule 2</u> species, and may be directly and indirectly affected by the Proposed Development.
Reptiles	The reptile assemblage was evaluated as of <u>Local</u> importance, included three <u>SPI</u> and three WCA <u>schedule 5</u> species, and may be directly and indirectly affected by the Proposed Development.

4.9.2 Of the designated sites, habitats and species listed in sections 4.2 to 4.6 above, those included in Table 4.6 are evaluated as not being of importance in the context of this assessment, meaning either that they are not considered of conservation importance or they do not have the potential to be affected by the Proposed Development. These features are scoped out of the assessment.

Table 4.6: Ecological Features not considered Important within this analysis

Feature	Rationale
Statutory designated sites for bats within 10km of the Site	Ebernoe Common SSSI/SAC and The Mens SAC are designated in part for their populations of barbastelle and Bechstein’s bats. Barbastelle and <i>Myotis spp.</i> bats were recorded in relatively low numbers during the bat activity surveys (approximately 0.9% and 1.4%, respectively, of bat passes per hour recorded during remote monitoring at the Site). According to Natural England ¹⁴ (2019) the barbastelle’s foraging range extends up to 5km from the roost, while for Bechstein’s the foraging range is 1—2.5km. The draft Sussex Bat SAC Planning Protocol ¹⁵ states that the key conservation area for these species is 6.5km (which falls short of the Site) but creates a wider consultation zone of 12km. However, Greenaway ¹⁶ (2008) derived core sustenance zones for barbastelle around the two SAC using minimum convex polygons (MCP) from radio tracking studies. This shows the MCP for barbastelles from The Mens as falling just short of Bucks Green (east of the Site)

¹⁴ Natural England (2019): *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features: Ebernoe Common Special Area of Conservation (SAC), Site Code: UK0012715*. 11 February 2019.

Natural England (2019): *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features: The Mens Special Area of Conservation (SAC), Site Code: UK0012716*. 11 February 2019.

¹⁵ South Downs National Park Authority (undated draft): *Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol*.

¹⁶ Greenaway F. (2008): *Barbastelle Bats in the Sussex West Weald 1997 – 2008*.

Feature	Rationale
	but mainly following the Arun valley to the south, while the MCP for Ebernoe Common does not extend further north-east than Plaistow (west of the Site). These data suggest the Site is not within the core migratory range of barbastelles forming part of the SAC/SSSI populations. Furthermore, the EIA scoping opinion for the Proposed Development confirmed that <i>"the Site is not within or near any known flightlines for bats from Ebernoe Common SAC or The Mens SAC."</i>
Coniferous plantation	The relatively small area of closed canopy mature conifer plantation with scattered shrubs and extensive bare ground located adjacent to the access track at C1 is considered to be of importance at the <u>Site</u> level and is unlikely to be significantly affected by the Proposed Development.
Great crested newt	Likely to be absent from the Site.
Badger	No active setts were identified and there was very little evidence of badgers using the Site.
Hazel dormouse	Likely to be absent from the Site.

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5 Proposed Development

5.1 Land Use

- 5.1.1 Planning consent is sought for the extraction of clay to be used in brick making and other construction/industrial applications. Following clay extraction, the Site will be sequentially restored with suitable treated imported materials which will be sourced from the proposed on-site construction materials recycling facility (CMRF).

5.2 Quantum

- 5.2.1 The development targets the extraction of approximately 400k tonnes of clay. The annual inputs/outputs at the Site are planned to be:
- ▶ Approximately 12,500 tonnes clay / siltstone output;
 - ▶ Approximately 25,000 tonnes construction materials throughput for treatment, of which;
 - 12,500 tonnes used for restoration; and
 - 12,500 tonnes recycled (output).

5.3 Timeframe

- 5.3.1 It is expected that site preparation works including removal of vegetation, establishment of on-site access infrastructure and construction of the CMRF will commence in 2022. Operation of the first phase (cells 1 and 2) of clay extraction would commence in 2023. The overall extraction period is anticipated to be around 31 years, but the Site will be worked and restored progressively such that the area of disturbed or un-restored land is minimised. The final phases of restoration (including removal of the CMRF) will be undertaken in the 12-24 months following completion of the extraction. The total period of development will therefore be approximately 33 years.

5.4 Proposed Construction Activities

- 5.4.1 The proposed clay pit design is shown at Figure 5.1. Construction phase activities will focus on tree felling and vegetation removal within cells 1 to 10 and within the footprint of the surface water lagoon and other site infrastructure, formation of access, establishment of the weighbridge, site office and staff welfare facilities, and construction of the CMRF.
- 5.4.2 Site access will be taken from a layby on Loxwood Road (approximate grid ref: 505557,131836) and utilise existing forestry tracks through the woodland, entering the extraction site approximately halfway along the western boundary (approximate grid ref: 504932,132805). The proposed access route is currently in relatively good condition and passable by forestry vehicles including HGVs. The track will be maintained at its existing width using DoT Type 1 40mm gritstone, basalt or granite limestone in conjunction with a 3D containment system that includes

edge protection. It is proposed to widen the access in two locations to enable two HGVs to pass. Each passing place will measure approximately 7.5m in width and 20m in length. A replacement bridge over the woodland stream will also be installed over a new box culvert. The bridge will be constructed with a maximum internal width of 6m and maximum internal height of 3m. The access road over the bridge will be 6m wide and approach ramps will be constructed on either side at a 1 in 10 gradient. Minor and localised works may also be required at certain locations along the forestry track, for example clearance of existing gullies to improve drainage. Access to the CMRF and extraction cells will be via the existing forestry track approximately halfway along the western boundary, and will turn north to the CMRF and site office where a turning head will be created.

- 5.4.3 The CMRF and extraction cells will extend to approximately 6.75ha. The CMRF will be constructed in the north-west corner of the Site. This will comprise a prefabricated shell on shallow foundations and measuring approximately 40m by 35m and 8m height. All waste processing, materials recovery and handling of fine sediments will take place within the CMRF to minimise noise, light and dust pollution. A water-based Mist Air system will completely remove dust from the atmosphere inside the building. The weighbridge, site office and staff welfare facilities will occupy porta-cabins at the north-western corner of the Site. An area in the central-north of the Site will be used for stockpiling of soils, overburden and stock.

5.5 Proposed Operation and Decommissioning Activities

- 5.5.1 Extraction will take place in a series of phases with each pair of cells being worked sequentially, starting with cells 1 and 2 and ending with 29 and 30 as shown in the clay pit design at Figure 5.1.
- 5.5.2 Prior to extracting the clay, each phase area will be felled of trees and stripped of topsoil and subsoil. Wherever possible, topsoil including younger trees and shrubs, the ground flora and seedbank will be translocated to a restoration cell to maintain the character and composition of vegetation over the long term. In the earliest phases or when a restoration cell is not available, soil, ground flora, seedbank and deadwood will be translocated to woodland compartments 29, 31 and/or 37 outside of the Site, in line with the mitigation and enhancement strategy (section 5.7).
- 5.5.3 The depth of the clay deposit is variable across the site and hence the extraction void will generally be between approximately 6m to 8m below ground level. Extraction of the carboniferous brick shale and fireclay reserve will be undertaken by hydraulic excavators loading into dump trucks or inclined conveyors. The inclined conveyors and/or dump trucks will then transport the clay from the extraction face to an area on site where it will be stockpiled for a short time prior to sale. Any superficial siltstone layers may be crushed within the working area using a mobile crusher and screener. The Mist Air system will, where practicable, also be deployed at each excavation cell to minimise dust pollution during extraction. Localised groundwater has not been identified within the upper 4.6m at the site (Caulmert, 2020). Due to the nature of the clay deposits, significant groundwater ingress to the void is not considered likely. Water management will be dominated by the potential for surface water runoff to enter the void which will be pumped to the on-site lagoon for sediment settling and attenuation.

- 5.5.4 Clay would be stockpiled in the area shown on Figure 5.1. All fines removed from the CMRF for restoration of the clay pit would be stored in enclosed steel containers. Backfilling of the voids will be implemented more or less concurrently with the extraction operations, always following two cells behind the excavation, to a topography that is similar to that of the natural pre-development landform. Restoration will comprise infilling with inert waste, compaction and levelling, initially seeded with a wildflower grass mix to prevent erosion by wind or surface water. Subsequently each cell will be restored to woodland cover using materials (topsoil, seedbank, field layer and small trees/shrubs) translocated from elsewhere on site, supplemented by native trees and shrubs as required. Upon completion of the restoration earthworks, the surface water lagoon will be converted to a pond and the Site will be managed for nature conservation with water bodies, wetland habitats, broadleaved woodland, scrub and flower rich grassland.
- 5.5.5 Operational hours are planned to be 08:00 to 18:00 Mondays to Fridays. Saturday operations between 08:00 and 13:00 may also be considered if demand dictates, but no off-site vehicle movements will be permitted on Saturdays. Extraction operations will not be artificially lit outside these hours in order to keep any potential light pollution to a minimum. There are no plans to artificially light the access route. During the operational hours it is anticipated that vehicle movements would occur at a maximum rate of 42 movements each day (21 vehicles travelling to/from the Site). The maximum vehicle size will be a four-axle 32 tonne GVW rigid tipper, with an overall maximum length of 10m. Throughout the 33-year development operation, mud and debris will be prevented from being taken onto the public highway through the use of a Wheel Washer.

5.6 Embedded Mitigation

- 5.6.1 The consultant ecologist has provided input to the design phases of the Proposed Development which has enabled a range of primary ecological mitigation to be designed into the layout. Such primary mitigation is an integral part of the Proposed Development and is viewed as such in the following assessment of potential effects. Where potential effects are mitigated during the design process, this is stated below and no further detailed consideration is provided.
- 5.6.2 Embedded primary ecological mitigation includes:
- ▶ Formation of a 10m buffer around retained deciduous woodland at the north, west and east boundaries of the extraction site. Woodland, trees and ground flora within the buffer will be retained and protected for the duration of development. A gap in the buffer will enable site access to be taken at the west boundary.
 - ▶ Formation of a 15m buffer around retained Ancient Replanted Woodland at the north-west corner of the extraction site. Woodland, trees and ground flora within the buffer will be retained and protected for the duration of development.
 - ▶ Formation of a 50m buffer around retained Ancient Replanted Woodland at the north-west corner of the extraction site. The CMRF is sited within this zone, thereby avoiding deep excavations in close proximity, and preventing changes in ground water hydrology or impacts to root systems within the Ancient Replanted Woodland.

- ▶ Passing places have been sited to avoid impacts on mature trees or habitat used by important invertebrate species.
- 5.6.3 The buffers are shown on the Phase 1 habitats plan of the Site included at Appendix I to the results of the ecological site surveys (see Appendix A).
- 5.6.4 In addition a Construction Environmental Management Plan (CEMP) will detail procedures for the avoidance of various environmental impacts during the construction phase of the Proposed Development. This will include measures to: protect retained vegetation such as woodland and trees; avoid the pollution of waterbodies; avoid impacts on birds, nests or eggs during vegetation clearance; protect individual bats during arboricultural works to low suitability trees; and avoid the killing and injury of reptiles during vegetation clearance. Where the potential effects are mitigated by adopting such measures, this is stated in the following assessment of potential effects and no further detailed consideration is provided.
- 5.6.5 A Landscape and Ecological Management Plan (LEMP) will ensure that mitigation proposals and the habitats within them, such as trees, woodland, deadwood habitats, grassland and scrub are managed and maintained in the long-term. The LEMP will outline the aims and objectives, management principles, and maintenance operations to ensure that the objectives of the ecological mitigation strategy can be met.
- 5.6.6 In relation to surface water management and hydrological impacts, the ES Water Chapter (Caulmert, 2020, p16) identifies the following package of measures to mitigate the risk of sedimentation or pollution impacts:
- ▶ Maintaining existing drainage channels around the perimeter of the site.
 - ▶ Minimising the open void areas and the construction of dedicated surface water storage lagoons will be employed to reduce the volume of water entering the excavations.
 - ▶ Discharge of surface water from the site will be limited to green field runoff or better in line with current planning guidance.
 - ▶ Silt settling ponds will be constructed to minimise the transport of silt offsite. Water collecting in the base of the excavations will be pumped to these silt settling ponds prior to discharge.
 - ▶ A secondary and temporary silt pond may be constructed in the base to maximise the potential to remove silt from the surface water discharge.
- 5.6.7 It is considered that the above measures will be a prerequisite of environmental permitting and can hence be relied upon as embedded mitigation in the impact assessment which follows.

5.7 Additional Mitigation

- 5.7.1 Additional mitigation and enhancement measures are proposed and are outlined at Appendix B. These focus on habitat creation and management interventions on land within the applicant's control but outside of the Proposed Development Site. An extensive series of measures is envisaged both to mitigate the effects of development on important habitats and species, and

to enhance the extent, structure and condition of retained habitats for the benefit of the plant and animal species they support, and includes:

- ▶ Enhanced woodland management on land outside of the Proposed Development Site boundary but within the applicant's control, including conversion of conifer plantation to semi-natural deciduous woodland, thinning and coppicing within existing semi-natural deciduous woodland, rotational management of other areas of broadleaved plantation, and extension of the network of rides. Target species intended to benefit from woodland management include breeding and wintering birds, invertebrates, and foraging and commuting bats;
- ▶ An invertebrate mitigation strategy with the objective of translocating or re-creating habitat resources of greatest potential value to invertebrate fauna to locations outside of the Proposed Development Site boundary but on land within the applicant's control; and
- ▶ A translocation of reptiles from the Proposed Development Site to a receptor site of similar character within the applicant's control, preceded by habitat enhancements to increase the carrying capacity of the receptor site.

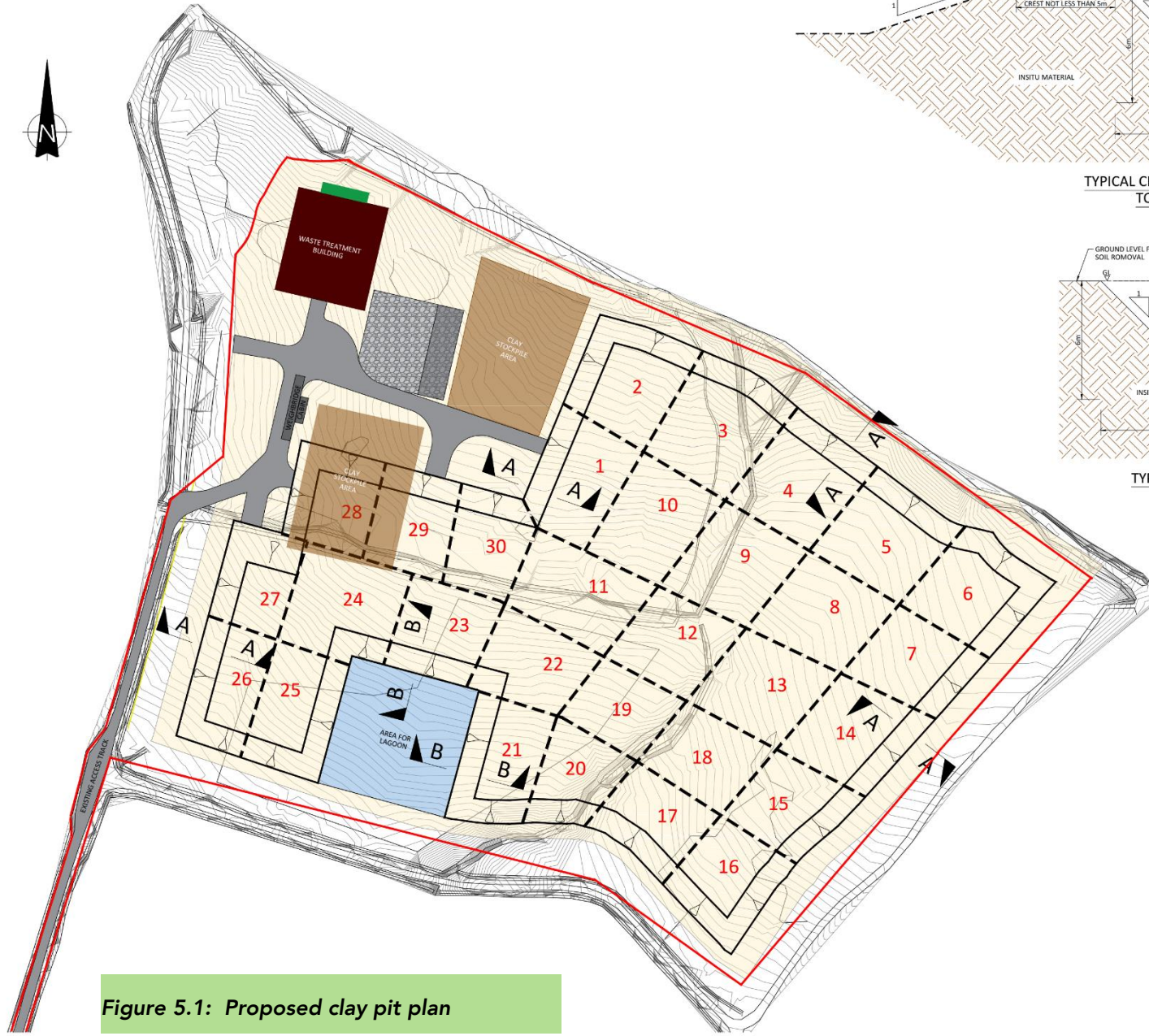
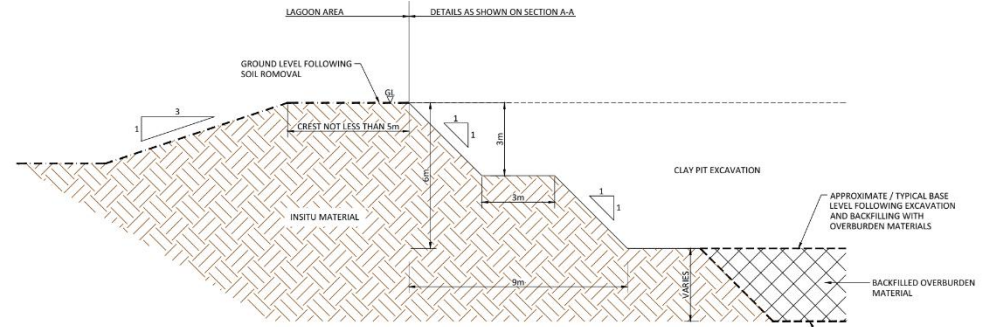
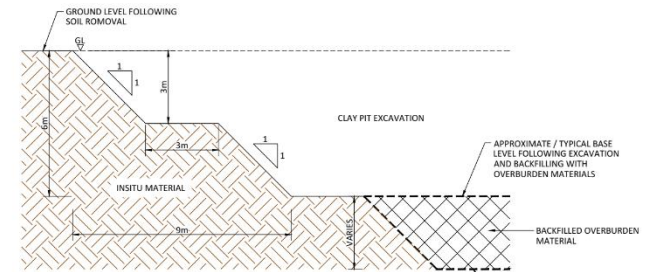


Figure 5.1: Proposed clay pit plan



TYPICAL CROSS SECTION IN PROXIMITY TO THE LAGOON AREA
(SECTION B-B)
1:100



TYPICAL CROSS SECTION OF THE PERIMETER CUT SLOPES
(SECTION A-A)
1:100

NOTES

1. SURVEY AND CONTOUR DETAILS ARE TAKEN FROM SURVEY INFORMATION SUPPLIED BY PROTREAT LIMITED ON 16/02/2021 REF:20409-3D.DWG

LEGEND

- PROPOSED DEVELOPMENT AREA FOR WASTE TREATMENT, CLAY EXTRACTION AND RESTORATION
- EXISTING CONTOURS (SEE NOTE 1)
- AREA DESIGNATED FOR LAGOON DEVELOPMENT
- ACCESS TRACK AND INTERNAL ROADS
- WEIGHBRIDGE AND WEIGHBRIDGE CABIN
- WASTE TREATMENT BUILDING
- WELFARE AND OFFICE UNITS (STACKED)
- AREAS PROPOSED FOR CLAY STOCKPILES
- TEMPORARY STORAGE AREA AND ACCESS FOR CONTAINERISED SCREENED FINES FROM THE WASTE TREATMENT
- TYPICAL LINE OF SECTION
- CLAY PIT PERIMETER SLOPE AREA
- PROPOSED EXTRACTION AND RESTORATION PHASE NUMBER
- APPROXIMATE BOUNDARY BETWEEN EXTRACTION AND RESTORATION PHASES

PO1	ISSUED FOR INFORMATION	DA	JRC	JRC	21.04.21
REV	MODIFICATIONS	BY	RE	AP	DATE
PURPOSE OF ISSUE					STATUS
FOR INFORMATION					S2

CLIENT:
PROTREAT LIMITED

PROJECT:
LOXWOOD CLAY PIT

TITLE:
PROPOSED SITE LAYOUT

DESIGNED BY	DRAWN BY	REVIEWED BY	AUTHORISED BY
JRC	DA	JRC	JRC
DATE	SCALE @ A1	JOB REF:	REVISION
21.04.2021	1:750	4788	P01

DRAWING NUMBER
4788-CAU-XX-XX-DR-C-1800



Registered Office: Int'l. Pars, Mural, Bangor, Gwynedd, LL57 4RG Company Registered No: 057181319

6 Impact Assessment

6.1 Introduction

6.1.1 This section identifies the potential impacts of the Proposed Development before making an assessment of significant effects on each IEF, taking account of embedded mitigation. It goes on to consider cumulative effects before determining residual impact.

6.2 Potential Effects

6.2.1 Whilst exact details of the construction methods to be used cannot be determined with certainty at this time, a number of assumptions and parameters have been fixed for the purposes of this assessment and are described in Chapter 5. Potentially significant effects on important ecology and nature conservation features resulting from the construction, operation and decommissioning phases of the Proposed Development are listed in Table 6.1.

Table 6.1: Potential significant effects resulting from construction, operation and decommissioning phases of Proposed Development

Effect	Impact causes/mechanisms
Construction	
Habitat loss/damage	Direct clearance, soil stripping or digging necessitating the felling of trees, removal or disturbance of vegetation by heavy plant, materials storage / stockpiling etc.
Habitat degradation: pollution	Pollution by artificial light, dust, emissions, fuels, lubricants, hydraulic fluid, cement or silt resulting in toxic effects to plants / habitat composition / aquatic organisms, or damage to soils or vegetation by soil compaction (resulting in changes in flora).
Habitat fragmentation	Severance of habitat corridors or isolation of patches of habitats (e.g. by severance of hedgerows or the removal/felling of woodland).
Killing/injury of animals	Digging, vegetation removal, movement of vehicles/heavy plant, and entrapment of animals in trenches, pits or pipes.
Displacement of animals	Visual, noise or vibration-related disturbance from vehicles/heavy plant or excavation machinery. Habitat degradation (see above) may also displace resident animals.
Operation and decommissioning	
Habitat loss/damage	Direct clearance or digging necessitating the felling of trees, removal or disturbance of vegetation by heavy plant, materials storage / stockpiling etc.
Habitat degradation: pollution	Pollution by artificial light, dust, emissions, fuels, lubricants, hydraulic fluid, cement or silt resulting in toxic effects to plants / habitat composition / aquatic organisms, or damage to soils or vegetation by soil compaction (resulting in changes in flora).

Effect	Impact causes/mechanisms
Habitat degradation: hydrology	Artificial changes in the water table caused by deep excavations and de-watering, resulting in excess desiccation of top- and sub-soils in surrounding locations, physiological stress to trees and other vegetation and loss of micro-scale surface water features.
Habitat fragmentation	Severance of habitat corridors or isolation of patches of habitats (e.g. by severance of hedgerows or the removal/felling of woodland).
Killing/injury of animals	Digging, vegetation removal, movement of vehicles/heavy plant, and entrapment of animals in trenches, pits or pipes.
Displacement of animals	Visual, noise or vibration-related disturbance from vehicles/heavy plant, digging or piling. Habitat degradation (see above) may also displace resident animals.

6.3 Effects during the Construction Phase

6.3.1 In Table 6.2 likely significant effects resulting from construction are detailed for each of the Important Ecological Features identified previously in section 4.9 and the impacts are characterised, where appropriate, in terms of their extent, magnitude, duration, frequency, timing and reversibility. This evaluation takes into account embedded mitigation (as described at section 5.6), which is also referred to in Table 6.2. All necessary additional mitigation is also described.

Table 6.2: Likely significant effects resulting from construction, considered for each Important Ecological Feature

IEF: Deciduous woodland (includes Priority Habitat)
Potential effect:
<ol style="list-style-type: none">1. Habitat loss/damage2. Habitat degradation
Proposed development activity:
The construction phase will focus on site preparation works, including the felling of plantation and deciduous woodland habitat (P1, P3 and part of DW1) to facilitate the first phase of works and removal of associated vegetation cover (including within extraction cells 1 to 10), formation of access infrastructure, establishment of the weighbridge, site office and staff welfare facilities, and construction of the CMRF and water storage and silt settlement lagoon. During site preparation c.3.03ha of plantation and deciduous woodland, and their component scrub and grassland will be removed. Access works during the construction stage are expected to focus on the layby on Loxwood Road, formation of access and turning head within the extraction site, and formation of two passing places within plantation woodland along the access route, each measuring approximately 7.5m in width and 20m in length.
Characterisation of impact, taking account of embedded mitigation:
Partial removal of high-quality deciduous woodland (Priority Habitat) during the construction phase represents a minor magnitude (relative to the operation phase) negative impact. The impact will occur during the short term (1—2yrs) but the effect is a permanent reduction in the available extent of deciduous woodland in this location. The impact is irreversible and is of significance at the Local level. Formation of a parking area in Pephurst Wood (Ancient Woodland) close to the Loxwood Road layby will be contained within an existing concrete foundation and is not expected to result in physical damage to the woodland. The following boundary features will, however, be retained and protected for the duration of development as part of the embedded mitigation which will provide some continuity of habitat resource availability: deciduous woodland at the north, west, and east boundaries. Potential damage to and degradation of these retained features as a result of mechanical damage to tree and shrub root systems, pollution, dust, soil compaction and local alterations to hydrology, will be avoided through implementation of a 10m buffer zone and by best practice techniques within the CEMP, including: <ul style="list-style-type: none">- Tree protection fencing- Restrictions on the operation of heavy plant required for construction to within the footprint of the proposed new access track into the development site
Scale of effect:
Minor negative effect at the Local level

IEF: Deciduous woodland (includes Priority Habitat)

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's deciduous woodland

Additional mitigation required, including means of securing implementation:

A habitat mitigation and enhancement strategy will be prepared with the objective of translocating or re-creating deciduous woodland habitat features of greatest potential value to locations outside of the Proposed Development Site boundary but on land within the applicant's control. The main elements of the mitigation strategy during the construction phase will include:

- Approximately 1.0ha of conifer plantation within compartment 37a, and c.1.8ha of conifer plantation within compartment 29b, which are outside the Proposed Development Site boundary but within the applicant's control, will be converted to semi-natural deciduous woodland.
- Conifers will be removed and deciduous woodland will be allowed to develop through natural regeneration, supplemented where appropriate with materials (smaller trees (<c.150mm dbh), shrubs and soils, including field layer flora) translocated from the extraction site which cannot be accommodated on site in the construction phase.
- Deadwood habitats, where present in the construction phase footprint, will be removed and repositioned within compartment 31, which is outside the Proposed Development Site but within the applicant's control.
- A management prescription of selective thinning and subsequent rotational coppicing will be implemented within existing deciduous woodland to benefit the field layer flora within compartments 31 and parts of 36 and 42, which are outside the Proposed Development Site but within the applicant's control.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

Significance of residual effect:

Long term to permanent Negligible negative effect within the Site on habitat structure and species composition of importance at the Local level

IEF: Deciduous plantation (includes Ancient Replanted Woodland)

Potential effect:

1. Habitat loss/damage
2. Habitat degradation

Proposed development activity:

The construction phase will focus on site preparation works, including the felling of plantation and deciduous plantation habitat (P1, P3 and part of DW1) to facilitate the first phase of works and removal of associated vegetation cover (including within extraction cells 1 to 10), formation of access infrastructure, establishment of

IEF: Deciduous plantation (includes Ancient Replanted Woodland)

the weighbridge, site office and staff welfare facilities, and construction of the CMRF and water storage and silt settlement lagoon. During site preparation c.3.03ha of plantation and deciduous plantation, and their component scrub and grassland will be removed. The CMRF will be constructed in the north-west corner of the extraction site within the 50m buffer around the Ancient Replanted Woodland (but outside the 15m buffer) and will comprise a prefabricated shell on shallow foundations. Access works during the construction stage are expected to focus on the layby on Loxwood Road, formation of access and turning head within the extraction site, and formation of two passing places within plantation woodland along the access route, each measuring approximately 7.5m in width and 20m in length.

Characterisation of impact, taking account of embedded mitigation:

Partial removal of moderate-quality deciduous plantation during the construction phase represents a moderate magnitude (relative to the operation phase) negative impact resulting in a permanent reduction in the available extent of deciduous plantation habitat during the short term (1—2yrs). The impact is of significance at the Local level. This loss of structure and function is reversible during Site restoration, however, the effect on ground flora richness will be more difficult to reverse within the Site. None of the Ancient Replanted Woodland adjacent to the extraction site will be directly affected. The formation of two passing places, each measuring approximately 7.5m in width and 20m in length, within plantation woodland along the access route is unlikely to result in any significant habitat damage. The easternmost of these falls within Ancient Replanted Woodland but is within coniferous plantation (not an IEF) and both passing places have been sited to avoid impacts on mature trees.

The following boundary features will be retained and protected for the duration of development as part of the embedded mitigation which will provide some continuity of habitat resource availability: Ancient Replanted Woodland at the north-west corner. Potential damage to and degradation of this retained feature as a result of mechanical damage to tree and shrub root systems, pollution, dust, soil compaction and local alterations to hydrology, will be avoided through implementation of the 15m buffer zone and by best practice techniques within the CEMP, including:

- Tree protection fencing
- Restrictions on the operation of heavy plant required for construction to within the footprint of construction works

Scale of effect:

Moderate negative effect at the Local level

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's plantation woodland

IEF: Deciduous plantation (includes Ancient Replanted Woodland)

Additional mitigation required, including means of securing implementation:

A habitat mitigation and enhancement strategy will be prepared with the objective of translocating or re-creating deciduous woodland habitat features of greatest potential value to locations outside of the Proposed Development Site boundary but on land within the applicant's control. The main elements of the mitigation strategy during the construction phase will include:

- Approximately 1.0ha of conifer plantation within compartment 37a, and c.1.8ha of conifer plantation within compartment 29b, which are outside the Proposed Development Site boundary but within the applicant's control, will be converted to semi-natural deciduous woodland.
- Conifers will be removed and deciduous woodland will be allowed to develop through natural regeneration, supplemented where appropriate with materials (smaller trees (<c.150mm dbh), shrubs and soils, including field layer flora) translocated from the extraction site which cannot be accommodated on site in the construction phase.
- A management prescription of selective thinning and subsequent rotational coppicing will be implemented within existing deciduous plantation within compartment 25 and/or 34, which are outside the Proposed Development Site but within the applicant's control, to maintain and extend the area of open mosaic habitats of coarse grassland, scrub and trees.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

Significance of residual effect:

Medium to long term minor negative effect on habitat extent, structure and function at the Local level, permanent negative effect on species composition

IEF: Stream

Potential effect:

Habitat degradation: pollution

Proposed development activity:

Access works during the construction stage are expected to focus on the layby on Loxwood Road and formation of access and turning head within the extraction site. The formation of two passing places, each measuring approximately 7.5m in width and 20m in length, within plantation woodland along the access route is unlikely to result in any significant risk of pollution to the stream. The weighbridge, site office and staff welfare facilities are to be accommodated in portacabins at the north-western corner of the extraction site. The CMRF will also be constructed in the north-west corner and will comprise a prefabricated shell on shallow foundations. None of these works are in the immediate vicinity of the woodland stream. However, in order to facilitate the movement of HGVs to and from the extraction site, a replacement bridge over the woodland stream will be installed over a new box culvert. The bridge will be constructed with a maximum internal

IEF: Stream

width of 6m and maximum internal height of 3m. The access road over the bridge will be 6m wide and approach ramps will be constructed on either side at a 1 in 10 gradient.

Characterisation of impact, taking account of embedded mitigation:

The surrounding area of the Site is characterised by surface water drains and channels through the woodland with the exception of a deep valley containing an unnamed drain to the west of the Site. The drainage channels were considered by Caulmert¹⁷ (2020) to be ephemeral with no flow during the dry summer months. Two discharge points from the extraction site were noted. The first is a culvert beneath the track to the south of the site which was dry at the time of survey and discharges into a channel through the woodland to the south before eventually connecting with the stream upstream (east) of its crossing of the access route. The second is a culvert on the western boundary which discharges into a channel, also mainly dry during the survey and flowing south-west. It eventually joins the stream at a confluence located approximately 535m downstream to the south-west of the Site. Although this is a direct hydrological connection between the extraction site and the stream, the distance from the site and influence of overland flows and other drains also discharging into the stream dilutes the connection.

During the construction phase there is a short-duration minor risk of sedimentation or pollutants reaching the Site's southern or western discharge, potentially resulting in toxic effects to plants and aquatic organisms within the stream. However, the likelihood of this significantly affecting biophysical conditions within the stream is considered to be low to moderate and limited to during site clearance and construction phase activities given the relatively long distance hydrological connection, especially via the western discharge. Furthermore, the short-duration minor risk will be prevented through the implementation of embedded mitigation including the CEMP and surface water storage and silt settling lagoon.

Works to construct the new bridge and approach ramps, including land re-profiling, installation of a new box culvert and formation of the bridge deck, will result in a short-term, temporary risk of pollution impacts to the stream, including via sedimentation and pollution from chemicals and concrete pouring. The effects of such an impact may include smothering of downstream in-channel vegetation or biochemical changes in water quality. This would constitute a minor magnitude, short-term impact of significance at the Local level, but would be largely prevented by embedded mitigation in the form of a CEMP.

Scale of effect:

Minor negative effect at the Local level, short-term

Cumulative effects:

None – no other approved or potential developments are expected to affect the stream

¹⁷ Caulmert Ltd (2020): *Loxwood Clay Pit Development: Chapter 10: Water.*

IEF: Stream

Additional mitigation required, including means of securing implementation:

In order to further reduce the likelihood of significant impacts, bridge components will if possible be prefabricated off-site, including the box culvert and bridge deck. This will reduce the need for concrete pouring in-situ.

Significance of residual effect:

Negligible negative effect at the Local level, short-term

IEF: Species-poor hedgerows H1/H2 (Priority Habitat, Hedgerow Regulations Important)

Potential effect:

Habitat degradation: pollution

Proposed development activity:

No construction phase works are specifically planned to take place adjacent to hedgerows H1/H2. Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out) but this maximum level is not expected to occur until the operation phase.

Characterisation of impact, taking account of embedded mitigation:

The double hedgerow H1/H2 is located alongside the proposed access route at 505560, 131965 where the track passes through grazing pasture between the east and west woodland blocks (Pephurst and Hurst Woods). The total length of both hedgerows is approx. 125m and the distance between the hedgerows is approx. 10m. The width of the track is approx. 4m with the remainder formed of semi-improved grassland verge inside the hedge lines. The hedgerows themselves are species-poor being dominated by blackthorn *Prunus spinosa* with occasional willow *Salix sp.* and rose *Rosa sp.* and rarely holly *Ilex aquifolium*. The northern hedgerow includes some goat willow *Salix caprea* trees. Both hedgerows appeared to be regularly cut and were considered to be of Site level importance, notwithstanding their status as Priority Habitat and Hedgerow Regulations Important. The ground flora associated with hedgerows and grass verge is also species-poor, containing common and widespread species such as rough meadow grass *Poa trivialis*, Yorkshire fog *Holcus lanatus*, common bent *Agrostis capillaris*, perennial rye grass *Lolium perenne*, creeping buttercup *Ranunculus repens*, cinquefoil *Potentilla sp.* and cuckoo flower *Cardamine pratensis* with a prominent ruderal element, including broadleaved dock *Rumex obtusifolius*, creeping thistle *Cirsium arvense*, nettle *Urtica dioica* and cleavers *Galium aparine*.

There is a theoretical risk of traffic caused dust pollution smothering the vegetation adjacent to the track but during the construction phase the effect is expected to be negligible and of short duration.

IEF: Species-poor hedgerows H1/H2 (Priority Habitat, Hedgerow Regulations Important)

Scale of effect:

No significant effect

Cumulative effects:

n/a

Additional mitigation required, including means of securing implementation:

n/a

Significance of residual effect:

No significant effect

IEF: Ponds P13, P14, P14a, P15

Potential effect:

Habitat degradation: pollution

Proposed development activity:

No construction phase works are specifically planned to take place adjacent to ponds P13/P14/P14a/P15. Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out) but this maximum level is not expected to occur until the operation phase.

Characterisation of impact, taking account of embedded mitigation:

Ponds P13, P14, P14a, P15 lie close to the existing forestry track which will form the access route for development; P13 and P14 are c.5m from the track edge, P14a and P15 are slightly further back at c.15m. P14/P14a/P15 form a group within Pephurst Wood and are similar in character, being small, mostly shallow, often sinuous woodland ponds under heavy shade and with little or no submerged or emergent vegetation. P13 at the south-east corner of Hurst Wood is also small and shaded from the north and west but more open to the south and east where the more open conditions have allowed some aquatic and marginal vegetation, including water starwort *Callitriche sp.* and flote grass *Glyceria fluitans*. None of the four ponds were found to support great crested newt or other species of principal importance, but all four supported populations of smooth and palmate newt (which are protected against trade under the WCA).

During the construction phase there is a theoretical risk of traffic caused dust or pollutants reaching ponds P13/P14/P14a/P15, potentially resulting in toxic effects to plants and aquatic organisms, but the impact is expected to be negligible and of short duration.

IEF: Ponds P13, P14, P14a, P15

Scale of effect:

No significant effect

Cumulative effects:

n/a

Additional mitigation required, including means of securing implementation:

n/a

Significance of residual effect:

No significant effect

IEF: Breeding birds (including six Red/Amber list species and four species of principal importance)

Potential effect:

1. Habitat loss/damage
2. Habitat degradation
3. Killing/injury of animals, including destruction/damage to active nests
4. Displacement of animals, including disturbance to active nests

Proposed development activity:

The construction phase will focus on site preparation works, including the felling of plantation and deciduous woodland habitat (P1, P3 and part of DW1) to facilitate the first phase of works and removal of associated vegetation cover (including within extraction cells 1 to 10), formation of access infrastructure, establishment of the weighbridge, site office and staff welfare facilities, and construction of the CMRF and water storage and silt settlement lagoon. During site preparation c.3.03ha of plantation and deciduous woodland, and their component scrub and grassland will be removed. Access works during the construction stage are expected to focus on the layby on Loxwood Road, formation of access and turning head within the extraction site, and formation of two passing places within plantation woodland along the access route, each measuring approximately 7.5m in width and 20m in length.

Characterisation of impact, taking account of embedded mitigation:

Partial removal of c.3.03ha of deciduous woodland and broadleaved plantation habitats will reduce the availability of both habitats for breeding birds within the extraction site. The impact will take place over the short term (1 to 2 years). The effect on breeding birds of the loss of deciduous woodland – which will be a

IEF: Breeding birds (including six Red/Amber list species and four species of principal importance)

reduction in the number of breeding territories – is irreversible and is of significance at the Local level. The effect on breeding birds of the loss of broadleaved plantation will continue over the medium term and is also of significance at the Local level, but is reversible during restoration.

Potential damage to and degradation of adjacent retained features as a result of mechanical damage to tree and shrub root systems, pollution, dust, soil compaction and local alterations to hydrology, will be avoided through implementation of best practice techniques within the CEMP.

Risk of killing and injuring birds and of damaging or disturbing active nests (which is unlawful under the WCA) will be avoided by removing vegetation outside the bird breeding season of March to August inclusive, which will be specified in the CEMP.

Disturbance to breeding birds from construction activities, including people and vehicle movements, noise and vibration, within the extraction site and along the proposed access route has the potential to cause reductions in breeding bird territory occupancy and density in adjacent areas and loss of some breeding species.

The combined effects of habitat loss and disturbance will result in a reduction in breeding territories, and potential loss of some breeding species, including Red/Amber Listed species such as nightingale, particularly from within the extraction site.

Scale of effect:

Minor negative effect at the Local level. The effect on breeding birds of loss of deciduous woodland habitat would be permanent. The effect on breeding birds of loss of broadleaved plantation is reversible in the medium to long term. Disturbance effects would be temporary and limited to the construction period.

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's breeding bird assemblage.

Additional mitigation required, including means of securing implementation:

Measures proposed through the habitat mitigation and enhancement strategy will also contribute towards mitigating the negative effect of development on breeding birds. In addition the following measures will be implemented specifically to mitigate the impacts on breeding birds:

- Approximately 2.8ha of conifer plantation within compartments 37a and 29b, which are outside the Proposed Development Site boundary but within the applicant's control, will be converted to semi-natural deciduous woodland to provide additional breeding habitat for affected bird species.
- For the duration of the development, selective thinning and subsequent rotational coppicing will be implemented within existing deciduous woodland in compartments 25 and parts of 31/35/36/42, which are outside the Proposed Development Site but within the applicant's control, to provide additional breeding habitat for impacted species, including nightingale.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

Significance of residual effect:

Negligible negative effect at the Local level.

IEF: Wintering birds (including eight Red/Amber list species, four species of principal importance and two WCA schedule 1 birds)

Potential effect:

1. Habitat loss/damage
2. Habitat degradation
3. Displacement of animals

Proposed development activity:

The construction phase will focus on site preparation works, including the felling of plantation and deciduous woodland habitat (P1, P3 and part of DW1) to facilitate the first phase of works and removal of associated vegetation cover (including within extraction cells 1 to 10), formation of access infrastructure, establishment of the weighbridge, site office and staff welfare facilities, and construction of the CMRF and water storage and silt settlement lagoon. During site preparation c.3.03ha of plantation and deciduous woodland, and their component scrub and grassland will be removed. Access works during the construction stage are expected to focus on the layby on Loxwood Road, formation of access and turning head within the extraction site, and formation of two passing places within plantation woodland along the access route, each measuring approximately 7.5m in width and 20m in length.

Characterisation of impact, taking account of embedded mitigation:

Partial removal of c.3.03ha of deciduous woodland and broadleaved plantation habitats will reduce the availability of both habitats for wintering birds within the extraction site. The impact will take place over the short term (1 to 2 years). The effect on wintering birds of the loss of deciduous woodland is irreversible and is of significance at the Local level. The effect on wintering birds of the loss of broadleaved plantation will continue over the medium term and is also of significance at the Local level, but is reversible during restoration.

Potential damage to and degradation of adjacent retained features as a result of mechanical damage to tree and shrub root systems, pollution, dust, soil compaction and local alterations to hydrology, will be avoided through implementation of best practice techniques within the CEMP.

Disturbance to wintering birds from construction activities, including people and vehicle movements, noise and vibration, within the extraction site and along the proposed access route has the potential to reduce use of available habitats and resources in adjacent areas and consequently reduce the abundance and diversity of wintering birds.

The combined effects of habitat loss and disturbance will result in a reduction abundance and diversity of wintering birds, including Red/Amber Listed species, particularly from within the extraction site.

Scale of effect:

Minor negative effect at the Local level. The effect on wintering birds of loss of deciduous woodland habitat would be permanent. The effect on wintering birds of loss of broadleaved plantation is reversible in the medium to long term. Disturbance effects would be temporary and limited to the construction period.

IEF: Wintering birds (including eight Red/Amber list species, four species of principal importance and two WCA schedule 1 birds)

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's wintering bird assemblage.

Additional mitigation required, including means of securing implementation:

Measures proposed through the habitat mitigation and enhancement strategy will also contribute towards mitigating the negative effect of development on wintering birds. In addition the following measures will be implemented specifically to mitigate the impacts on wintering birds:

- Approximately 2.8ha of conifer plantation within compartments 37a and 29b, which are outside the Proposed Development Site boundary but within the applicant's control, will be converted to semi-natural deciduous woodland to provide additional winter habitats and resources for affected species.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

Significance of residual effect:

Negligible negative effect at the Local level.

IEF: Invertebrates (including three species of principal importance and one WCA schedule 5 species)

Potential effect:

1. Habitat loss/damage
2. Habitat degradation
3. Habitat fragmentation
4. Killing/injury of animals
5. Displacement of animals

Proposed development activity:

The construction phase will focus on site preparation works, including the felling of plantation and deciduous woodland habitat (P1, P3 and part of DW1) to facilitate the first phase of works and removal of associated vegetation cover (including within extraction cells 1 to 10), formation of access infrastructure, establishment of the weighbridge, site office and staff welfare facilities, and construction of the CMRF and water storage and silt settlement lagoon. During site preparation c.3.03ha of plantation and deciduous woodland, and their component scrub and grassland will be removed. Access works during the construction stage are expected to focus on the layby on Loxwood Road, formation of access and turning head within the extraction site, and formation of two passing places within plantation woodland along the access route, each measuring approximately 7.5m in width and 20m in length.

IEF: Invertebrates (including three species of principal importance and one WCA schedule 5 species)

Characterisation of impact, taking account of embedded mitigation:

The survey area supports a moderately diverse woodland invertebrate fauna that includes a high proportion of scarce species indicative of niche woodland features such as heartwood rot and woodland edge. Habitat resources considered to provide particularly favourable conditions during the invertebrate assessment included scrub fringe (28 species), flower rich woodland and openings (26 species including small heath *Coenonympha pamphilus*, species of principal importance), bark and sapwood decay (includes the nationally rare beetle *Dasytes niger*), and heartwood decay which, although limited in extent owing largely to the lack of very old and degenerate trees, includes the Red Data Book 3 *Microrhagus pygmaeus* beetle. The sapwood and heartwood decay resource is found throughout the site but is most abundant along the northern and eastern side of the site, where mature trees are more abundant and possess deadwood features; these features will be partly retained by the embedded mitigation (see below). The presence of a suite of woodland butterflies is of particular note, the most noteworthy being wood white *Lepidea sinapsis* (WCA schedule 5 and species of principal importance) and white admiral *Limenitis camilla* (species of principal importance).

During the construction phase (1—2yrs) approximately 3.03ha of semi-natural and plantation deciduous woodland will be removed, including its component scrub fringe, rides and openings and deadwood habitats and the invertebrate fauna they support. The following boundary features will, however, be retained and protected for the duration of development as part of the embedded mitigation which will provide some continuity of habitat resource availability for invertebrates: deciduous woodland at the north, west, and east boundaries (including a 10m buffer), and Ancient Replanted Woodland at the north-west corner (including a 15m buffer). The extent of deciduous woodland and plantation proposed to be removed represents a minor negative impact of relatively short duration. The effect will be a permanent reduction in the diversity and abundance of invertebrate fauna within the extraction site, and likely displacement of invertebrates from adjacent habitats.

Following infill each excavation cell will be restored, initially seeded with a wildflower grass mix to prevent erosion by wind or surface water, and subsequently with native species trees and shrubs to reinstate the site's woodland cover (see operation phase impact assessment). Within a period of approximately 10-15yrs restored cells are likely to be structurally similar to the existing broadleaved plantation within the extraction site, and will hence provide a habitat resource to invertebrates of scrub fringe habitats in particular. Nevertheless, flower rich woodland rides and openings and deadwood habitats (bark and sapwood decay) will take much longer to re-establish meaning that invertebrates associated with these resources may be permanently lost from the site.

There is also a risk of construction traffic movements along the access route leading to direct (as a result of driving over) and indirect (as a result of smothering by dust pollution) damage to vegetation adjacent to the track. This is likely to have a greater effect on the ground flora and associated invertebrate fauna than on trees and woodland which are more resilient. However, wood white (WCA schedule 5 (protected against trade) and species of principal importance) and white admiral (species of principal importance) in particular were noted using access tracks and adjacent habitats and are particularly vulnerable to the effects of dust as well as killing/injury or displacement and habitat damage/fragmentation as a result of the increase in traffic movements. The wood white population appears to be centred along the existing access track and into adjacent open clear-felled areas (particularly around Great Birchfield where the track bends north towards the extraction site, and between Caddick copse and Hurst wood). The white admiral similarly can be found, sometimes in abundance, along the tracks and also small glade areas along the eastern edge of the extraction site.

IEF: Invertebrates (including three species of principal importance and one WCA schedule 5 species)

Passing places have been sited specifically to avoid habitat used by important invertebrate species. Impacts on wood white associated with vehicle movements during the construction phase are predicted to be of low to moderate magnitude over a short duration. Additional mitigation is required to adequately reduce the displacement and fragmentation effects, as well as impacts on individuals and population abundance. However, to account for a potentially lengthy process of establishment of mitigation measures for wood white, implementation of mitigation required for operation phase impact will be front-loaded to the construction stage as well to maximise its effectiveness.

Overall the effect of Proposed Development on the invertebrate assemblage recorded in the survey area is likely to be a permanent reduction in the diversity and abundance of invertebrate fauna within the extraction site and using the access track, likely displacement of invertebrates from adjacent habitats, and possible fragmentation of habitats used by butterflies, in particular wood white and white admiral.

Scale of effect:

Minor negative effect at the County level.

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's invertebrate fauna.

Additional mitigation required, including means of securing implementation:

An invertebrate mitigation strategy will be prepared with the objective of translocating or re-creating habitat resources of greatest potential value to the Site's invertebrate fauna to locations outside of the Proposed Development Site boundary but on land within the applicant's control. It will not, however, be possible to translocate the individual species populations, meaning that the mitigation strategy will be reliant on species populations dispersing into translocated or newly created habitats and features. Many of the measures will therefore be targeted towards compartments 31 in the first instance (adjacent west to the extraction site) but will also be applied in other compartments contributing to the wider mitigation strategy. The main elements of the invertebrate mitigation strategy will include:

- Creation and maintenance of short turf and bare ground habitats, both within rides and elsewhere
- Planting and maintenance of flowering swards
- Creation and maintenance of scrub fringe habitat
- Retention, translocation or replication of deadwood and rot
- Placement of deadwood and sectioning timber
- Retention, creation and maintenance of woodland rides and glades, to increase the extent and connectivity of habitats for wood white and white admiral
- Ensuring sufficient juxtaposition between scrub, woodland edge and open habitats

IEF: Invertebrates (including three species of principal importance and one WCA schedule 5 species)

The above measures will be implemented alongside the habitat enhancement/conversion and management measures proposed to mitigate impacts on other ecological features, including for example conversion of compartments 37a and 29b from conifer plantation to deciduous woodland, and thinning/coppicing within compartments 31 and parts of 35, 36 and 42.

An early priority will be to target mitigation for the wood white population. The mitigation strategy will aim to deliver an increase in the amount and connectivity of suitable habitat through ride widening. It will provide enhanced management of plantations adjoining the access track (especially compartments 34 and 40 where many observations were recorded) to increase the availability of larval foodplants and draw the species further away from the track edge, to reduce killing/injury risk from vehicle movements. The ride network will be extended to provide additional suitable habitat away from the access route. Suitable habitat is characterised as being warm, sheltered and damp, where both larval foodplants and nectar sources are in abundance. Foodplants include bird's-foot trefoil *Lotus spp.*, bitter vetch *Lathyrus linifolius*, and tufted vetch *Vicia cracca*. Nectar sources include a variety of wildflowers including bramble *Rubus fruticosus*, bugle *Ajuga reptans*, ragged robin *Lychnis flos-cuculi* and birds-foot trefoil. This part of the mitigation strategy will be implemented before the operational phase commences to ensure habitat availability in locations not at risk of direct or traffic-related impacts is secured prior to impacts taking place. This will require removal of trees, shrubs and bramble scrub and thinning of conifer cover on land adjoining the track, and in locations where the ride network is extended or widened, supplemented with plug planting of larval foodplants to accelerate the establishment of suitable habitat. An appropriate maintenance and management regime will then be implemented for the duration of the development.

Mitigation measures for deadwood habitats will similarly be an early priority, including translocation of and works to replicate deadwood and rot habitats, to ensure continuous availability of habitats for this group. Compartment 31 will be the focus of measures to translocate and replicate deadwood habitats as it is in close proximity to the extraction site (and therefore potentially accessible by target species with short dispersal ranges) and provides comparable habitat conditions.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

Significance of residual effect:

Negligible negative effect at the County level.

IEF: Roosting bats**Potential effect:**

1. Habitat loss/damage
2. Killing/injury of animals
3. Displacement of animals

IEF: Roosting bats

Proposed development activity:

The construction phase will focus on site preparation works, including the felling of plantation and deciduous woodland habitat (P1, P3 and part of DW1) to facilitate the first phase of works and removal of associated vegetation cover (including within extraction cells 1 to 10), formation of access infrastructure, establishment of the weighbridge, site office and staff welfare facilities, and construction of the CMRF and water storage and silt settlement lagoon. During site preparation c.3.03ha of plantation and deciduous woodland, and their component scrub and grassland will be removed. Access works during the construction stage are expected to focus on the layby on Loxwood Road, formation of access and turning head within the extraction site, and formation of two passing places within plantation woodland along the access route, each measuring approximately 7.5m in width and 20m in length.

Characterisation of impact, taking account of embedded mitigation:

The majority of trees within the extraction site are young or early mature, either self-seeded or part of recently replanted plantation. However, 21 mature trees mainly within the south-western quarter of the extraction site exhibited potential roost features for bats. Felling or arboricultural works to these trees could result in destruction of a bat roost or present a risk of killing, injury or disturbance if bats are present during the works, which would constitute an offence under the WCA and Habitats Regulations.

Trees with roosting bat potential on the northern and eastern boundaries of the extraction site will be retained and protected via embedded mitigation, but within the extraction site the following will be directly or indirectly affected over the short term (1—2yrs):

- Moderate suitability trees T6, T7, T12 and T18, and low suitability trees T5, T11, T14, T16, T21, T22 and T23, which will either be felled or exposed as a result of felling as part of vegetation removal to enable construction and extraction of cells 1 to 10; and
- Moderate suitability trees T13, T15 and T19, and low suitability tree T17, which will either be felled or exposed as a result of felling as part of vegetation removal to enable the water storage and settlement lagoon.

None of the four moderate suitability trees or three low suitability trees alongside the access route is currently expected to be directly affected.

Presence/absence surveys for bats roosting in high and moderate suitability trees were not carried out in 2020 because no trees with roosting bat potential were identified in the north-west quadrant of the extraction site which is intended to be the focus of construction activity over the short term (1—2yrs). Furthermore, the low to moderate levels of bat activity recorded within the extraction site during the transect surveys would indicate that bat roosts of high conservation significance are unlikely to be present. In addition, bats' usage of tree roost habitats is dynamic and changeable throughout the year and between years, which could render the survey data out of date by the time subsequent phases are addressed. However, the final proposals for site access and the drainage lagoon are likely to affect moderate suitability trees T6, T7, T12, T13, T15, T18 and T19 at the outset, and tree climbing and aerial inspection surveys are being undertaken in 2021.

Low suitability trees are not required to undergo further surveys. Arboricultural works to low suitability trees will be undertaken in accordance with a Non-Licensed Method Statement to reduce the risk of killing/injury to bats, which will be specified in the CEMP.

IEF: Roosting bats

Scale of effect:

Uncertain but potentially up to a Moderate negative effect at the Site level. The impact (loss of mature trees with potential roost features) is irreversible over the medium to long term, however, the effect (loss of available roosting habitat) is capable of mitigation.

Cumulative effects:

None – no other approved or potential developments are expected to affect roosting bats at the Site.

Additional mitigation required, including means of securing implementation:

Additional mitigation will need to be designed and specified according to the species of roosting bats recorded (if any), roost type and status, and abundance of individual roosting bats. Mitigation may include careful removal and translocation of roost features to retained trees in suitable habitat outside of the site on land within the applicant's control, provision of artificial roost boxes, and/or exclusion of bats from their roosts prior to works.

Additional mitigation, if required, will be specified and secured in a mitigation licence to be obtained from Natural England prior to commencement. This is anticipated to include measures for the prevention of killing/injury/disturbance to individual bats and creation of replacement roost sites proportionate to the conservation significance of bat roosts affected during the construction phase (if any).

Significance of residual effect:

Uncertain but likely capable of being reduced to a Minor or Negligible negative effect at the Site level.

IEF: Foraging and commuting bats (including at least four species of principal importance and nine Habitats Regulations schedule 2 species)

Potential effect:

1. Habitat loss/damage
2. Habitat degradation
3. Habitat fragmentation
4. Displacement of animals

Proposed development activity:

The construction phase will focus on site preparation works, including the felling of plantation and deciduous woodland habitat (P1, P3 and part of DW1) to facilitate the first phase of works and removal of associated vegetation cover (including within extraction cells 1 to 10), formation of access infrastructure, establishment of the weighbridge, site office and staff welfare facilities, and construction of the CMRF and water storage and silt settlement lagoon. During site preparation c.3.03ha

IEF: Foraging and commuting bats (including at least four species of principal importance and nine Habitats Regulations schedule 2 species)

of plantation and deciduous woodland, and their component scrub and grassland will be removed. Access works during the construction stage are expected to focus on the layby on Loxwood Road, formation of access and turning head within the extraction site, and formation of two passing places within plantation woodland along the access route, each measuring approximately 7.5m in width and 20m in length.

Characterisation of impact, taking account of embedded mitigation:

The majority (96.9%) of all bat calls recorded during passive monitoring within the extraction site and along the access route were from pipistrelle bats, with common pipistrelles registering an average of 376.79 bat passes per hour (BPPH), soprano pipistrelles registering an average of 64.21 BPPH, and Nathusius' pipistrelles registering an average of 0.04 BPPH. Of the remaining bat passes, those of *Myotis* spp. (1.4% or 5.77 BPPH) were the next most frequently recorded, followed by barbastelle (0.9% or 3.77 BPPH), *Nyctalus* spp. (0.5% or 2.19 BPPH), serotine (0.2% or 0.83 BPPH) and finally brown long-eared bats (0.02% or 0.08 BPPH). Features which appeared to be particularly favoured by foraging and commuting bats during observations made during transect surveys within the extraction site included the recent plantation clearings in the north-west and south-east, the narrow band of broadleaved woodland at the northern boundary, and the access tracks and rides within and around the extraction site. Features which appeared to be particularly favoured during transect surveys along the access route included the track passing through the cow field between Pephurst wood and Hurst wood which is bounded by hedgerows H1/H2 and recent plantation clearings, particularly those close to Hurst wood and around Great Birchfield.

During the construction phase (1—2yrs) approximately 3.03ha of semi-natural and plantation deciduous woodland will be removed, including its component scrub fringe and openings. The reduced availability of both habitats for foraging and commuting bats within the extraction site, with a consequent reduction in cover and the abundance of invertebrate prey, is likely to displace foraging and commuting bats from the site and adjoining land. The effect on foraging and commuting bats of the loss of deciduous woodland is irreversible and is of significance at the Local to County level. The effect on foraging and commuting bats of the loss of broadleaved plantation will continue over the medium term and is also of significance at the Local to County level, but is reversible during restoration.

The following boundary features will, however, be retained and protected for the duration of development as part of the embedded mitigation which will provide some continuity of habitat resource availability and connectivity for foraging and commuting bats: deciduous woodland at the north, west and east boundaries, and Ancient Replanted Woodland at the north-west corner. Potential damage to and degradation of adjacent retained features as a result of mechanical damage to tree and shrub root systems, pollution, dust, soil compaction and local alterations to hydrology, will be avoided through implementation of best practice techniques within the CEMP.

No direct or indirect effects are predicted for foraging and commuting bats using the access route. Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out) but this maximum level is not expected to occur until the operation phase. Artificial lighting will not be used within the extraction site outside of the hours 08.00 to 18.00. There are no plans to artificially light the access route.

The combined effects of habitat loss and displacement will result in a reduced abundance and diversity of foraging and commuting bats from within the extraction site.

IEF: Foraging and commuting bats (including at least four species of principal importance and nine Habitats Regulations schedule 2 species)

Scale of effect:

Minor negative effect at the Local to County level. The effect on foraging and commuting bats of loss of deciduous woodland habitat would be permanent. The effect on foraging and commuting bats of loss of broadleaved plantation is reversible in the medium to long term.

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site’s assemblage of foraging and commuting bats.

Additional mitigation required, including means of securing implementation:

Measures proposed through the habitat mitigation and enhancement strategy will also contribute towards mitigating the negative effect of development on foraging and commuting bats. In addition the following measures will be implemented specifically to mitigate the impacts on foraging and commuting bats:

- Approximately 2.8ha of conifer plantation within compartments 37a and 29b, which are outside the Proposed Development Site boundary but within the applicant’s control, will be converted to semi-natural deciduous woodland to provide additional foraging habitat for affected species.
- For the duration of the development, selective thinning and subsequent rotational coppicing will be implemented within existing deciduous woodland in compartments 25 and parts of 31/35/36/42, which are outside the Proposed Development Site but within the applicant’s control, to provide additional foraging habitat for impacted species.
- Extensions to the amount and connectivity of ride habitat which will targeted towards mitigating effects on wood white will also increase the extent of available foraging and commuting habitat for bats.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

Significance of residual effect:

Negligible negative effect at the Local to County level.

IEF: Reptiles (including three species of principal importance and three WCA schedule 5 species)

Potential effect:

1. Habitat loss/damage
2. Killing/injury of animals
3. Displacement of animals

IEF: Reptiles (including three species of principal importance and three WCA schedule 5 species)***Proposed development activity:***

The construction phase will focus on site preparation works, including the felling of plantation and deciduous woodland habitat (P1, P3 and part of DW1) to facilitate the first phase of works and removal of associated vegetation cover (including within extraction cells 1 to 10), formation of access infrastructure, establishment of the weighbridge, site office and staff welfare facilities, and construction of the CMRF and water storage and silt settlement lagoon. During site preparation c.3.03ha of plantation and deciduous woodland, and their component scrub and grassland will be removed. Access works during the construction stage are expected to focus on the layby on Loxwood Road, formation of access and turning head within the extraction site, and formation of two passing places within plantation woodland along the access route, each measuring approximately 7.5m in width and 20m in length.

Characterisation of impact, taking account of embedded mitigation:

Low populations of common lizard (peak count of 3 adults) and grass snake (peak count of 2 adults), and an exceptional population of slow worm (peak count of 29 adults) were present within the survey area during the 2020 survey season. Reptiles were most abundant within the recent plantation clearings in the extraction site, but slow worm and common lizard were also recorded in similar habitats along the access route.

During the construction phase (1—2yrs) approximately 3.03ha of semi-natural and plantation deciduous woodland will be removed. The loss of component scrub fringe and openings will result in reduced availability of shelter and foraging habitats for reptiles within the extraction site, while loss of deciduous woodland will reduce the extent of suitable hibernation habitat. Although the impact will occur in the short term, its effect will be experienced over the medium term, but is reversible during restoration. The impact is of significance at the Local level.

Potential damage to and degradation of retained features adjacent to the extraction site as a result of mechanical damage to tree and shrub root systems, pollution, dust, soil compaction and local alterations to hydrology, will be avoided through implementation of best practice techniques within the CEMP.

Reptiles present within the extraction site will also be at risk of killing and injury during site clearance and construction works, which would constitute an offence under the WCA. No reptiles were recorded within the proposed passing places along the access route but it is possible that vehicle movements could result in a risk of incidental killing and injury to reptiles using trackside habitats.

The combined effects of killing/injury and habitat loss will result in a reduction in the abundance and distribution of reptiles, particularly within the extraction site.

Scale of effect:

Minor negative effect at the Local level. The effect on reptiles of loss habitats is reversible in the medium to long term. The risk of killing and injury would be temporary and limited to the construction period.

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's reptile assemblage.

IEF: Reptiles (including three species of principal importance and three WCA schedule 5 species)

Additional mitigation required, including means of securing implementation:

A Method Statement will be produced for a phased translocation of the site's population of reptiles to a suitable receptor site prior to vegetation clearance or development works commencing. The Method Statement and translocation can be secured via an appropriately worded planning condition.

The translocation phasing will be as follows:

- Prior to commencement of the construction phase, land required for access infrastructure within the extraction site, construction of the weighbridge, site office, staff welfare facilities and CMRF, and for extraction cells 1 to 10 will be enclosed with permanent reptile fencing to prevent reptiles from ranging onto the site during the translocation or subsequent development works. The translocation will then be undertaken in accordance with the agreed Method Statement which will remove the majority of reptiles from this phase. Prior to the removal of habitat within this phase, the site will be destructively searched for any reptiles remaining after the translocation, the methods for which will be specified in the Method Statement. The permanent reptile fencing will be left in situ and regularly checked/repared until this phase is fully restored.

The Method Statement will include reasonable avoidance measures to prevent killing/injury without translocation in the following locations:

- During small scale clearance of habitat within the footprint of passing places; and
- During clearance of woodland habitat with low suitability for reptiles during the active season (but still suitable for hibernation) within the footprint of the water storage and silt settlement lagoon.

The site's population of reptiles will be translocated to c.5.1ha of land in woodland compartments 25a, 25b and 26, which are outside the Proposed Development Site boundary but within the applicant's control. These areas are currently dominated by recent broadleaved plantation with patchy and locally dense scrub and self-seeded trees, with scattered mature or semi-mature trees. They are therefore similar in character to habitats within the extraction site which currently support reptiles. Given the similarities, it is likely that compartments 25a, 25b and 26 already support a population of reptiles, and so the translocation will need to be informed by population estimate surveys within compartments 25a, 25b and 26 to establish their carrying capacity, and to devise appropriate habitat enhancements to increase their carrying capacity. Alternatively or as a supplementary measure, conifer plantation within woodland compartment 40 (outside of the Proposed Development Site but within the applicant's control) will be converted to suitable reptile habitat comprising a mosaic of coarse grassland and dense scrub alongside measures to enhance this area for wood white butterfly.

Significance of residual effect:

Negligible negative effect at the Local level.

6.4 Effects during the Operation and Decommissioning Phases

6.4.1 In Table 6.3 likely significant effects resulting from operation and decommissioning are detailed for each of the Important Ecological Features identified previously in section 4.9 and the impacts are characterised, where appropriate, in terms of their extent, magnitude, duration, frequency, timing and reversibility. This evaluation takes into account embedded mitigation (as described at section 5.6), which is also referred to in Table 6.3. All necessary additional mitigation is also described.

Table 6.3: Likely significant effects resulting from operation and decommissioning, considered for each Important Ecological Feature

IEF: Deciduous woodland (includes Priority Habitat)
Potential effect:
<ol style="list-style-type: none">1. Habitat loss/damage2. Habitat degradation
Proposed development activity:
Excavation of extraction cells is expected to reach a depth of approximately 6m to 8m and will take place in a series of phases with each pair of cells being worked sequentially, starting with cells 1 and 2 and ending with 29 and 30 as shown in the clay pit design. Each cell is expected to occupy approximately 2,000m ² , and at any one time two cells are expected to be operational, one being extracted and the other being restored. Restoration will comprise infilling with inert waste, compaction and levelling, initially seeded with a wildflower grass mix to prevent erosion by wind or surface water. Construction of storage areas and access routes or tracks through the extraction site will also be necessary, for example between extraction cells and storage and processing areas/CMRF. In year 10, once extraction in cells 1 to 10 is complete, approximately 0.5ha of deciduous woodland DW1 and 0.8ha of deciduous plantation P5 will be removed to enable extraction of cells 11 to 22. In year 22 approximately 0.8ha of deciduous woodland DW1 will be removed to enable extraction of cells 23 to 30.
Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out), however, movement of vehicles, including heavy plant, within the Proposed Development Site may be more frequent.
Characterisation of impact, taking account of embedded mitigation:
Removal of c.1.5ha of high-quality deciduous woodland (Priority Habitat) habitat during the operation phase represents a moderate magnitude negative impact resulting in an overall reduction in permanent reduction in the available extent of deciduous woodland habitat during the medium to long term (3 to 32 years). The impact is irreversible and is of significance at the Local level.
The following boundary features will be retained and protected during the medium to long term (3 to 33 years) for the duration of development as part of the embedded mitigation which will provide some continuity of habitat resource availability: deciduous woodland at the north, west, and east boundaries. Potential damage to and degradation of these retained features or deciduous woodland adjoining the extraction site and proposed access route, as a result of mechanical

IEF: Deciduous woodland (includes Priority Habitat)

damage to tree and shrub root systems, pollution, soil compaction and local alterations to hydrology, will be avoided through implementation of a 10m buffer zone and by best practice techniques within the CEMP, including:

- Tree protection fencing
- Restrictions on the operation of heavy plant required for construction to within the footprint of the proposed new access track into the development site

The ES Water Chapter¹⁸ (Caulmert, 2020, p17) states: *“No groundwater has been identified within the upper 4.6m of the Weald Clay which would suggest that the adjacent woodland is not sustained by a shallow groundwater body. Therefore, the potential impact from the site on groundwater levels is considered to be negligible due to the absence of a water table. Due to the nature of the deposits, it is unlikely that a significant groundwater body would be encountered during the extraction operations to a maximum of 10m depth.”* Significant hydrological impacts are not therefore expected.

Scale of effect:

Moderate negative effect at the Local level.

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site’s deciduous woodland.

Additional mitigation required, including means of securing implementation:

A habitat mitigation and enhancement strategy will be prepared with the objective of translocating or re-creating deciduous woodland habitat features of greatest potential value to locations outside of active extraction cells. The main elements of the mitigation strategy during the operation/decommissioning phase will include:

- Field layer vegetation, soils and smaller trees and shrubs from deciduous woodland in cells 15 to 27 will be translocated to a receptor area within cells 1 to 10, in two phases (years 10 and 22), once extraction in cells 1 to 10 is completed and the ground has been suitably prepared.
- Approximately 5.1ha of deciduous woodland habitat will be created within the extraction site. This habitat will be created progressively in tandem with the operation and subsequent restoration of cells 11 to 30.
- Within this area 30-40% will be formed of open successional habitat comprised of a mosaic of dense scrub, coarse grassland and individual trees which are left to mature.
- The deciduous woodland habitat will be created by using natural regeneration from seed sources in retained adjoining woodland, supplemented with additional native species planting where necessary and appropriate.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

¹⁸ Caulmert Ltd (2020): *Loxwood Clay Pit Development: Chapter 10: Water.*

IEF: Deciduous woodland (includes Priority Habitat)

Significance of residual effect:

Long term to permanent Minor negative effect within the Site on habitat structure and species composition of importance at the Local level as a result of operation of the Proposed Development. On completion of decommissioning and restoration, including implementation of all additional mitigation, Minor positive effect on habitat extent and function at the Local level

IEF: Deciduous plantation (includes Ancient Replanted Woodland)

Potential effect:

1. Habitat loss/damage
2. Habitat degradation

Proposed development activity:

Excavation of extraction cells is expected to reach a depth of approximately 6m to 8m and will take place in a series of phases with each pair of cells being worked sequentially, starting with cells 1 and 2 and ending with 29 and 30 as shown in the clay pit design. Each cell is expected to occupy approximately 2,000m², and at any one time two cells are expected to be operational, one being extracted and the other being restored. Restoration will comprise infilling with inert waste, compaction and levelling, initially seeded with a wildflower grass mix to prevent erosion by wind or surface water. Construction of storage areas and access routes or tracks through the extraction site will also be necessary, for example between extraction cells and storage and processing areas/CMRF. In year 10, once extraction in cells 1 to 10 is complete, approximately 0.5ha of deciduous woodland DW1 and 0.8ha of deciduous plantation P5 will be removed to enable extraction of cells 11 to 22. In year 22 approximately 0.8ha of deciduous woodland DW1 will be removed to enable extraction of cells 23 to 30.

The CMRF will be located in the north-west corner of the extraction site within the 50m buffer around the Ancient Replanted Woodland (but outside the 15m buffer) and will house all waste processing, materials recovery and handling of fine sediments to minimise noise, light and dust pollution. Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out), however, movement of vehicles, including heavy plant, within the Proposed Development Site may be more frequent.

Characterisation of impact, taking account of embedded mitigation:

Partial removal of moderate-quality deciduous plantation during the operation phase represents a minor magnitude (relative to the construction phase) negative impact resulting in a permanent reduction in the available extent of deciduous plantation habitat during the medium to long term (3 to 32 years). None of the Ancient Replanted Woodland will be directly affected. The impact is of significance at the Local level.

The following boundary features will be retained and protected for the duration of development as part of the embedded mitigation which will provide some continuity of habitat resource availability: Ancient Replanted Woodland at the north-west corner. Potential damage to and degradation of the retained feature or

IEF: Deciduous plantation (includes Ancient Replanted Woodland)

deciduous plantation adjoining the extraction site and proposed access route, as a result of mechanical damage to tree and shrub root systems, pollution, soil compaction and local alterations to hydrology, will be avoided through implementation of the 15m and 50m buffer zones and by best practice techniques within the CEMP, including:

- Tree protection fencing
- Restrictions on the operation of heavy plant required for construction to within the footprint of the proposed new access track into the development site

The ES Water Chapter¹⁹ (Caulmert, 2020, p17) states: *“No groundwater has been identified within the upper 4.6m of the Weald Clay which would suggest that the adjacent woodland is not sustained by a shallow groundwater body. Therefore, the potential impact from the site on groundwater levels is considered to be negligible due to the absence of a water table. Due to the nature of the deposits, it is unlikely that a significant groundwater body would be encountered during the extraction operations to a maximum of 10m depth.”* Significant hydrological impacts are not therefore expected.

Scale of effect:

Minor negative effect at the Local level.

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site’s deciduous woodland.

Additional mitigation required, including means of securing implementation:

A habitat mitigation and enhancement strategy will be prepared with the objective of translocating or re-creating deciduous woodland habitat features of greatest potential value to locations outside of active extraction cells but on land within the applicant’s control. The main elements of the mitigation strategy during the operation/decommissioning phase will include:

- Approximately 5.1ha of deciduous woodland habitat will be created within the extraction site. This habitat will be created progressively in tandem with the operation and subsequent restoration of each clay extraction cell.
- Within this area at least 40% will be formed of open successional habitat comprised of a mosaic of dense scrub, coarse grassland and individual trees which are left to mature i.e. similar in character to existing young plantation.
- The deciduous woodland habitat will be created by using natural regeneration from seed sources in retained adjoining woodland, supplemented with additional native species planting where necessary and appropriate.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

¹⁹ Caulmert Ltd (2020): *Loxwood Clay Pit Development: Chapter 10: Water.*

IEF: Deciduous plantation (includes Ancient Replanted Woodland)

Significance of residual effect:

Negligible negative effect at the Local level as a result of operation of the Proposed Development. On completion of decommissioning and restoration, including implementation of all additional mitigation, Minor positive effect on habitat extent, structure and function at the Local level

IEF: Stream

Potential effect:

Habitat degradation: pollution

Proposed development activity:

Excavation of extraction cells is expected to reach a depth of approximately 6m to 8m and will take place in a series of phases with each pair of cells being worked sequentially, starting with cells 1 and 2 and ending with 29 and 30 as shown in the clay pit design. Each cell is expected to occupy approximately 2,000m², and at any one time two cells are expected to be operational, one being extracted and the other being restored. Restoration will comprise infilling with inert waste, compaction and levelling, initially seeded with a wildflower grass mix to stabilise the soil surface and prevent erosion by wind or surface water.

Characterisation of impact, taking account of embedded mitigation:

As noted during the construction phase impact assessment, two water discharge points from the extraction site are present. The first is a culvert beneath the track to the south of the site which was dry at the time of survey and discharges into a channel through the woodland to the south before eventually connecting with the stream upstream (east) of its crossing of the access route. The second is a culvert on the western boundary which discharges into a channel, also mainly dry during the survey and flowing south-west. It eventually joins the stream at a confluence located approximately 535m downstream to the south-west of the site. Although this is a direct hydrological connection between the site and the stream, the distance from the site and influence of overland flows and other drains also discharging into the stream dilutes the connection.

During the operation/decommissioning phase there is a medium- to long-duration moderate risk of sedimentation or pollutants reaching the extraction site's southern or western discharge, potentially resulting in toxic effects to plants and aquatic organisms within the stream. The increased magnitude is more likely to significantly affect biophysical conditions within the stream due to the duration and nature of works when compared to the construction phase, although the relatively long distance hydrological connection, especially via the western discharge, moderates the risk. However, the medium- to long-duration moderate risk will be prevented through the implementation of embedded mitigation including the CEMP and surface water storage and silt settling lagoon.

Scale of effect:

No significant effect

IEF: Stream

Cumulative effects:

n/a

Additional mitigation required, including means of securing implementation:

n/a

Significance of residual effect:

No significant effect

IEF: Species-poor hedgerows H1/H2 (Priority Habitat, Hedgerow Regulations Important)

Potential effect:

Habitat degradation: pollution

Proposed development activity:

Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out).

Characterisation of impact, taking account of embedded mitigation:

During the operational phase there is a medium- to long-duration risk of dust pollution smothering the vegetation adjacent to the track caused by up to 42 daily traffic movements. This is likely to have a greater effect on the associated ground flora of the grassland verge than on the hedgerows themselves, however, the ground flora is species-poor and dominated by common and widespread species of low conservation significance. The woody vegetation of the hedgerows is likely to be more resilient to dust pollution, both inherently and due to its slightly greater distance and elevation from the track surface, and deposited dust is at least to some extent likely to be reversed by precipitation. Despite their Priority Habitat status, the hedgerows are also species-poor and do not contain species of individual conservation significance. Overall a low magnitude impact is predicted but this is considered to be adequately mitigated by best practice techniques implemented through the CEMP and wheel washing.

Scale of effect:

No significant effect

IEF: Species-poor hedgerows H1/H2 (Priority Habitat, Hedgerow Regulations Important)

Cumulative effects:

n/a

Additional mitigation required, including means of securing implementation:

n/a

Significance of residual effect:

No significant effect

IEF: Ponds P13, P14, P14a, P15

Potential effect:

Habitat degradation: pollution

Proposed development activity:

Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out).

Characterisation of impact, taking account of embedded mitigation:

During the operational phase there is a medium- to long-duration risk of dust or pollutants reaching ponds P13/P14/P14a/P15, potentially resulting in toxic effects to plants and aquatic organisms, caused by up to 42 daily traffic movements. The increased length of exposure is more likely to significantly affect biophysical conditions within the ponds when compared to the construction phase. Nevertheless, none of the ponds presently supports a rich flora and although they support amphibian populations these are common and widespread species which are not of significant conservation concern (smooth and palmate newt are protected under the WCA against trade only). A medium- to long-duration low magnitude impact is predicted but this will be adequately mitigated by best practice techniques implemented through the CEMP including wheel washing.

Scale of effect:

No significant effect

Cumulative effects:

n/a

IEF: Ponds P13, P14, P14a, P15

Additional mitigation required, including means of securing implementation:

n/a

Significance of residual effect:

No significant effect

IEF: Breeding birds (including six Red/Amber list species and four species of principal importance)

Potential effect:

1. Habitat damage
2. Habitat degradation
3. Displacement of animals, including disturbance to active nests

Proposed development activity:

Excavation of extraction cells is expected to reach a depth of approximately 6m to 8m and will take place in a series of phases with each pair of cells being worked sequentially, starting with cells 1 and 2 and ending with 29 and 30 as shown in the clay pit design. Each cell is expected to occupy approximately 2,000m², and at any one time two cells are expected to be operational, one being extracted and the other being restored. Restoration will comprise infilling with inert waste, compaction and levelling, initially seeded with a wildflower grass mix to prevent erosion by wind or surface water. Construction of storage areas and access routes or tracks through the extraction site will also be necessary, for example between extraction cells and storage and processing areas/CMRF. In year 10, once extraction in cells 1 to 10 is complete, approximately 0.5ha of deciduous woodland DW1 and 0.8ha of deciduous plantation P5 will be removed to enable extraction of cells 11 to 22. In year 22 approximately 0.8ha of deciduous woodland DW1 will be removed to enable extraction of cells 23 to 30.

The CMRF will be located in the north-west corner of the extraction site within the 50m buffer around the Ancient Replanted Woodland (but outside the 15m buffer) and will house all waste processing, materials recovery and handling of fine sediments to minimise noise, light and dust pollution. Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out), however, movement of vehicles, including heavy plant, within the Proposed Development Site may be more frequent.

Characterisation of impact, taking account of embedded mitigation:

Phased removal of c.1.3ha of deciduous woodland and c.1.6ha of broadleaved plantation habitats will reduce the availability of both habitats for breeding birds within the extraction site, which will reduce the number of breeding territories during the medium to long term (3 to 31 years). The effect on breeding birds of the

IEF: Breeding birds (including six Red/Amber list species and four species of principal importance)

loss of deciduous woodland is irreversible and is of significance at the Local level. The effect on breeding birds of the loss of broadleaved plantation is reversible in the medium term and is also of significance at the Local level.

Potential damage to and degradation of adjacent retained features as a result of mechanical damage to tree and shrub root systems, pollution, dust, soil compaction and local alterations to hydrology, will be avoided through implementation of best practice techniques within the CEMP.

Risk of killing and injuring birds and of damaging or disturbing active nests (which is unlawful under the WCA) will be avoided by removing vegetation outside the bird breeding season of March to August inclusive, which will be specified in the CEMP.

Disturbance to breeding birds from construction activities, including people and vehicle movements, noise and vibration, within the extraction site and along the proposed access route has the potential to cause reductions in breeding bird territory occupancy and density in adjacent areas and loss of some breeding species.

The combined effects of habitat loss and disturbance will result in a reduction in breeding territories, and potential loss of some breeding species, including Red Listed species such as nightingale, particularly from within the extraction site. However, the site's progressive restoration will enable woodland habitats to be re-established which will to some extent provide replacement breeding opportunities as the new habitat develops.

Scale of effect:

Moderate negative effect at the Local level. The effect on breeding birds of loss of deciduous woodland habitat would be permanent. The effect on breeding birds of loss of broadleaved plantation is reversible in the medium to long term. Disturbance effects would be temporary and limited to the operational period.

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's breeding bird assemblage.

Additional mitigation required, including means of securing implementation:

Measures proposed through the habitat mitigation and enhancement strategy will also contribute towards mitigating the negative effect of development on breeding birds, including progressively creating c.6.3ha of new or translocated deciduous woodland habitat within the extraction site as extraction cells become available for restoration. In addition the following measures will be implemented specifically to mitigate the impacts on breeding birds:

- Approximately 2.8ha of conifer plantation within compartments 29 and 37, which are outside the Proposed Development Site boundary but within the applicant's control, will be converted to semi-natural deciduous woodland to provide additional breeding habitat for affected bird species.
- For the duration of the development, selective thinning and subsequent rotational coppicing will be implemented within existing deciduous woodland in compartment 34, which is outside the Proposed Development Site but within the applicant's control, to provide additional breeding habitat for impacted species, including nightingale.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

IEF: Breeding birds (including six Red/Amber list species and four species of principal importance)

Significance of residual effect:

Minor negative effect at the Local level as a result of operation of the Proposed Development. On completion of decommissioning and restoration, including implementation of all additional mitigation, Neutral net effect at the Local level.

IEF: Wintering birds (including eight Red/Amber list species, four species of principal importance and two WCA schedule 1 birds)

Potential effect:

1. Habitat damage
2. Habitat degradation
3. Displacement of animals

Proposed development activity:

Excavation of extraction cells is expected to reach a depth of approximately 6m to 8m and will take place in a series of phases with each pair of cells being worked sequentially, starting with cells 1 and 2 and ending with 29 and 30 as shown in the clay pit design. Each cell is expected to occupy approximately 2,000m², and at any one time two cells are expected to be operational, one being extracted and the other being restored. Restoration will comprise infilling with inert waste, compaction and levelling, initially seeded with a wildflower grass mix to prevent erosion by wind or surface water. Construction of storage areas and access routes or tracks through the extraction site will also be necessary, for example between extraction cells and storage and processing areas/CMRF. In year 10, once extraction in cells 1 to 10 is complete, approximately 0.5ha of deciduous woodland DW1 and 0.8ha of deciduous plantation P5 will be removed to enable extraction of cells 11 to 22. In year 22 approximately 0.8ha of deciduous woodland DW1 will be removed to enable extraction of cells 23 to 30.

The CMRF will be located in the north-west corner of the extraction site within the 50m buffer around the Ancient Replanted Woodland (but outside the 15m buffer) and will house all waste processing, materials recovery and handling of fine sediments to minimise noise, light and dust pollution. Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out), however, movement of vehicles, including heavy plant, within the Proposed Development Site may be more frequent.

Characterisation of impact, taking account of embedded mitigation:

Phased removal of c.1.3ha of deciduous woodland and c.1.6ha of broadleaved plantation habitats will reduce the availability of both habitats for wintering birds within the extraction site during the medium to long term (3 to 31 years). The effect on wintering birds of the loss of deciduous woodland is irreversible and is of significance at the Local level. The effect on wintering birds of the loss of broadleaved plantation is reversible in the medium term and is also of significance at the Local level.

IEF: Wintering birds (including eight Red/Amber list species, four species of principal importance and two WCA schedule 1 birds)

Potential damage to and degradation of adjacent retained features as a result of mechanical damage to tree and shrub root systems, pollution, soil compaction and local alterations to hydrology, will be avoided through implementation of best practice techniques within the CEMP.

Disturbance to wintering birds from construction activities, including people and vehicle movements, noise and vibration, within the extraction site and along the proposed access route has the potential to reduce use of available habitats and resources in adjacent areas and consequently reduce the abundance and diversity of wintering birds.

The combined effects of habitat loss and disturbance will result in a reduction in the number and diversity of wintering birds, including Red/Amber Listed species, particularly from within the extraction site. However, the site's progressive restoration will enable woodland habitats to be re-established which will to some extent provide replacement foraging opportunities as the new habitat develops.

Scale of effect:

Moderate negative effect at the Local level. The effect on wintering birds of loss of deciduous woodland habitat would be permanent. The effect on wintering birds of loss of broadleaved plantation is reversible in the medium to long term. Disturbance effects would be temporary and limited to the operational period.

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's wintering bird assemblage

Additional mitigation required, including means of securing implementation:

Measures proposed through the habitat mitigation and enhancement strategy will also contribute towards mitigating the negative effect of development on wintering birds, including progressively creating c.6.3ha of new or translocated deciduous woodland habitat within the extraction site as extraction cells become available for restoration. In addition the following measures will be implemented specifically to mitigate the impacts on wintering birds:

- Approximately 2.8ha of conifer plantation within compartments 29 and 37, which are outside the Proposed Development Site boundary but within the applicant's control, will be converted to semi-natural deciduous woodland to provide additional winter habitats and resources for affected species.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

Significance of residual effect:

Minor negative effect at the Local level as a result of operation of the Proposed Development. On completion of decommissioning and restoration, including implementation of all additional mitigation, Neutral net effect at the Local level.

IEF: Invertebrates (including three species of principal importance and one WCA schedule 5 species)

Potential effect:

1. Habitat damage
2. Habitat degradation
3. Habitat fragmentation
4. Displacement of animals

Proposed development activity:

Excavation of extraction cells is expected to reach a depth of approximately 6m to 8m and will take place in a series of phases with each pair of cells being worked sequentially, starting with cells 1 and 2 and ending with 29 and 30 as shown in the clay pit design. Each cell is expected to occupy approximately 2,000m², and at any one time two cells are expected to be operational, one being extracted and the other being restored. Restoration will comprise infilling with inert waste, compaction and levelling, initially seeded with a wildflower grass mix to prevent erosion by wind or surface water. Construction of storage areas and access routes or tracks through the extraction site will also be necessary, for example between extraction cells and storage and processing areas/CMRF. In year 10, once extraction in cells 1 to 10 is complete, approximately 0.5ha of deciduous woodland DW1 and 0.8ha of deciduous plantation P5 will be removed to enable extraction of cells 11 to 22. In year 22 approximately 0.8ha of deciduous woodland DW1 will be removed to enable extraction of cells 23 to 30.

The CMRF will be located in the north-west corner of the extraction site within the 50m buffer around the Ancient Replanted Woodland (but outside the 15m buffer) and will house all waste processing, materials recovery and handling of fine sediments to minimise noise, light and dust pollution. Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out), however, movement of vehicles, including heavy plant, within the Proposed Development Site may be more frequent.

Characterisation of impact, taking account of embedded mitigation:

Over the 31-year duration of the operation/decommissioning phase approximately 1.3ha of deciduous woodland and c.1.6ha of broadleaved plantation will be removed in two phases (years 10 and 22), including their component scrub fringe, openings and deadwood habitats and the invertebrate fauna they support. The following boundary features will, however, be retained and protected for the duration of development as part of the embedded mitigation which will provide some continuity of habitat resource availability for invertebrates: deciduous woodland at the north, west and east boundaries, and Ancient Replanted Woodland at the north-west corner. In addition, following infill each excavation cell will be planted, initially wildflower grass mix, and subsequently with native species trees and shrubs to enable the site's restoration to woodland. Within a period of approximately 10-15yrs restored cells are likely to be structurally similar to the existing broadleaved plantation within the Site, and will hence provide a habitat resource to invertebrates of scrub fringe habitats in particular. Nevertheless, flower rich woodland rides and openings and deadwood habitats (bark and sapwood decay) will take much longer to re-establish meaning that invertebrates associated with these resources may be permanently lost from the Site. The extent of deciduous woodland and plantation proposed to be removed during the operation phase

IEF: Invertebrates (including three species of principal importance and one WCA schedule 5 species)

represents a moderate magnitude negative impact of medium- to long-duration. The effect will be a permanent reduction in the diversity and abundance of invertebrate fauna in these locations, and likely displacement of invertebrates from adjacent habitats.

During the operational phase there is a medium- to long-duration risk of dust pollution smothering the vegetation on land adjacent to the working area caused by excavations and vehicle movements within the extraction site. This is likely to have a greater effect on the ground flora and its associated invertebrate fauna than on trees and woodland which are more resilient to dust pollution, and deposited dust is at least to some extent likely to be reversed by precipitation. The consequent deterioration in habitat quality and food availability on land adjacent to the working area may result in a medium- to long-duration displacement of invertebrates in these locations. Invertebrate fauna associated with the retained Ancient Replanted Woodland at the north-west corner of the site will, however, be protected from the impacts of dust via both the 15m and 50m buffer zone during the operational phase and the internal handling of materials inside the CMRF. The impact of dust pollution on invertebrates adjacent to the extraction site is predicted to be of low magnitude but this is considered likely to be adequately mitigated by best practice techniques implemented through the mist system, CEMP and wheel washing.

As noted during the construction phase impact assessment, there is also a medium- to long-duration risk of dust pollution smothering the vegetation adjacent to the track caused by up to 42 daily traffic movements. Again this is likely to have a greater effect on the ground flora and associated invertebrate fauna than on trees and woodland which are more resilient. However, wood white (WCA schedule 5 (protected against trade) and species of principal importance) and white admiral (species of principal importance) in particular were noted as using access tracks and adjacent habitats and are particularly vulnerable to the effects of dust as well as killing/injury or displacement and habitat fragmentation as a result of the increase in traffic movements. The wood white population appears to be centred along the existing access track and into adjacent open clear-felled areas (particularly around Great Birchfield where the track bends north towards the extraction site, and between Caddick copse and Hurst wood). The white admiral similarly can be found, sometimes in abundance, along the tracks and also small glade areas along the eastern edge of the extraction site.

The rate of operational traffic movements equates to 4.2 movements per hour between 08.00 and 18.00, and artificial lighting will not be used within the extraction site outside of these hours. There are no plans to artificially light the access route. Impacts on wood white associated with vehicle movements during the operational phase are predicted to be of moderate magnitude over a medium- to long-duration. Additional mitigation is required to adequately reduce the displacement and fragmentation effects, as well as impacts on individuals and population abundance. As noted during the construction phase impact assessment, to account for a potentially lengthy process of establishment of mitigation measures for wood white, implementation will be front-loaded to the construction stage to maximise its effectiveness.

Overall the effect of Proposed Development on the invertebrate assemblage recorded in the survey area is likely to be a permanent reduction in the diversity and abundance of invertebrate fauna within the extraction site and using the access track, likely displacement of invertebrates from adjacent habitats, and possible fragmentation of habitats used by butterflies, in particular wood white and white admiral.

Scale of effect:

Moderate negative effect at the County level

IEF: Invertebrates (including three species of principal importance and one WCA schedule 5 species)

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's invertebrate fauna

Additional mitigation required, including means of securing implementation:

An invertebrate mitigation strategy will be prepared with the objective of translocating or re-creating habitat resources of greatest potential value to the Site's invertebrate fauna to locations outside of the Proposed Development Site boundary but on land within the applicant's control. For the wood white population in particular, the mitigation strategy will aim to deliver an increase in the amount and connectivity of suitable habitat through ride widening. It will provide enhanced management of plantations adjoining the access track to increase the availability of larval foodplants and draw the species further away from the track, to reduce killing/injury risk from vehicle movements. These measures are further described at Appendix B.

Significance of residual effect:

Minor negative effect at the County level as a result of operation of the Proposed Development. On completion of decommissioning and restoration, including implementation of all additional mitigation, Negligible negative effect at the County level.

IEF: Roosting bats

Potential effect:

1. Habitat damage
2. Habitat degradation
3. Displacement of animals

Proposed development activity:

In year 10, once extraction in cells 1 to 10 is complete, approximately 0.5ha of deciduous woodland DW1 and 0.8ha of deciduous plantation P5 will be removed to enable extraction of cells 11 to 22. In year 22 approximately 0.8ha of deciduous woodland DW1 will be removed to enable extraction of cells 23 to 30.

The CMRF will be located in the north-west corner of the extraction site within the 50m buffer around the Ancient Replanted Woodland (but outside the 15m buffer) and will house all waste processing, materials recovery and handling of fine sediments to minimise noise, light and dust pollution. Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out), however, movement of vehicles, including heavy plant, within the Proposed Development Site may be more frequent.

IEF: Roosting bats

Characterisation of impact, taking account of embedded mitigation:

Trees with roosting bat potential on the northern and eastern boundaries of the extraction site will be retained and protected via embedded mitigation, but within the extraction site the following will be directly or indirectly affected over the medium to long term (3—33yrs):

- Moderate suitability trees T6, T7, T9 and T12, and low suitability trees T8, T10, T11 and T23 which, if still standing, will be felled as part of vegetation removal in year 10 to enable extraction of cells 11 to 22; and
- Moderate suitability tree T25 and low suitability trees T14, T16, T20, T22 and T24 which, if still standing, will either be felled or exposed as a result of felling as part of vegetation removal in year 22 to enable extraction of cells 23 to 30.

Felling or arboricultural works to these trees could result in destruction of a bat roost or present a risk of killing, injury or disturbance if bats are present during the works, which would constitute an offence under the WCA and Habitats Regulations. None of the four moderate suitability trees or three low suitability trees alongside the access route is currently expected to be directly affected. The rate of operational traffic movements equates to 4.2 movements per hour between 08.00 and 18.00, and artificial lighting will not be used within the Proposed Development Site outside of these hours. There are no plans to artificially light the access route.

Subject to the findings of tree climbing and aerial inspection surveys in 2021, further assessment of the site's potential to support tree roosting bats will be undertaken prior to tree felling phases which are planned for years 10 and 22. Low suitability trees are not required to undergo further surveys. Arboricultural works to low suitability trees will be undertaken in accordance with a Non-Licensed Method Statement to reduce the risk of killing/injury to bats, which will be specified in the CEMP.

Scale of effect:

Uncertain but potentially up to a Minor negative effect at the Site level. The impact (loss of mature trees with potential roost features) is irreversible over the medium to long term, however, the effect (loss of available roosting habitat) is capable of mitigation.

Cumulative effects:

None – no other approved or potential developments are expected to affect roosting bats at the Site.

Additional mitigation required, including means of securing implementation:

Additional mitigation will need to be designed and specified according to the species of roosting bats recorded (if any), roost type and status, and abundance of individual roosting bats. Mitigation may include careful removal and translocation of roost features to retained trees in suitable habitat outside of the site on land within the applicant's control, provision of artificial roost boxes, and/or exclusion of bats from their roosts prior to works.

IEF: Roosting bats

Additional mitigation, if required, will be specified and secured in a mitigation licence to be obtained from Natural England prior to commencement. This is anticipated to include measures for the prevention of killing/injury/disturbance to individual bats and creation of replacement roost sites proportionate to the conservation significance of bat roosts affected during the construction phase (if any).

Significance of residual effect:

Uncertain but likely capable of being reduced to a Negligible negative effect at the Site level.

IEF: Foraging and commuting bats (including at least four species of principal importance and nine Habitats Regulations schedule 2 species)

Potential effect:

1. Habitat damage
2. Habitat degradation
3. Habitat fragmentation
4. Displacement of animals

Proposed development activity:

In year 10, once extraction in cells 1 to 10 is complete, approximately 0.5ha of deciduous woodland DW1 and 0.8ha of deciduous plantation P5 will be removed to enable extraction of cells 11 to 22. In year 22 approximately 0.8ha of deciduous woodland DW1 will be removed to enable extraction of cells 23 to 30.

The CMRF will be located in the north-west corner of the extraction site within the 50m buffer around the Ancient Replanted Woodland (but outside the 15m buffer) and will house all waste processing, materials recovery and handling of fine sediments to minimise noise, light and dust pollution. Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out), however, movement of vehicles, including heavy plant, within the Proposed Development Site may be more frequent.

Characterisation of impact, taking account of embedded mitigation:

Over the 31-year duration of the operation/decommissioning phase approximately 1.3ha of deciduous woodland and c.1.6ha of broadleaved plantation will be removed in two phases (years 10 and 22), including their component scrub fringe, openings and deadwood habitats. The reduced availability of both habitats for foraging and commuting bats within the extraction site, with a consequent reduction in cover and the abundance of invertebrate prey, is likely to displace foraging and commuting bats from the site and adjoining land. The effect on foraging and commuting bats of the loss of deciduous woodland is irreversible and is of significance at the Local to County level. The effect on foraging and commuting bats of the loss of broadleaved plantation will continue over the medium to long term and is also of significance at the Local to County level, but is reversible during restoration. The following boundary features will, however, be retained and

IEF: Foraging and commuting bats (including at least four species of principal importance and nine Habitats Regulations schedule 2 species)

protected for the duration of development as part of the embedded mitigation which will provide some continuity of habitat resource availability: deciduous woodland at the north, west and east boundaries, and Ancient Replanted Woodland at the north-west corner.

Following infill each excavation cell will be planted, initially wildflower grass mix, and subsequently with native species trees and shrubs to enable the site's restoration to woodland. Within a period of approximately 10-15yrs restored cells are likely to be structurally similar to the existing broadleaved plantation within the Site, and will hence provide a habitat resource for foraging bats. However, the effect of lost habitat resources experienced during the construction phase will continue into the medium term and, while this phase will then begin to recover, the effect of lost habitat resources experienced in years 10 and 22 of operation will continue throughout the medium to long term.

Potential damage to and degradation of adjacent retained features as a result of mechanical damage to tree and shrub root systems, pollution, soil compaction and local alterations to hydrology, will be avoided through implementation of best practice techniques within the CEMP.

No direct or indirect effects are predicted for foraging and commuting bats using the access route. The rate of operational traffic movements equates to 4.2 movements per hour between 08.00 and 18.00, and artificial lighting will not be used within the extraction site outside of these hours. There are no plans to artificially light the access route.

Scale of effect:

Moderate negative effect at the Local to County level. The effect on foraging and commuting bats of loss of deciduous woodland habitat would be permanent. The effect on foraging and commuting bats of loss of broadleaved plantation is reversible in the long term.

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's assemblage of foraging and commuting bats.

Additional mitigation required, including means of securing implementation:

Measures proposed through the habitat mitigation and enhancement strategy will also contribute towards mitigating the negative effect of development on foraging and commuting bats, including progressively creating c.6.3ha of new or translocated deciduous woodland habitat within the site as extraction cells become available for restoration. In addition the following measures will be implemented specifically to mitigate the impacts on foraging and commuting bats:

- Approximately 2.8ha of conifer plantation within compartments 29 and 37, which are outside the Proposed Development Site boundary but within the applicant's control, will be converted to semi-natural deciduous woodland to provide additional foraging habitat for affected species.
- For the duration of the development, selective thinning and subsequent rotational coppicing will be implemented within existing deciduous woodland in compartment 34, which is outside the Proposed Development Site but within the applicant's control, to provide additional foraging habitat for impacted species.

IEF: Foraging and commuting bats (including at least four species of principal importance and nine Habitats Regulations schedule 2 species)

- For commuting bats in particular, the ride network will be extended within retained deciduous woodland within the applicant's control to deliver an increase in the amount and connectivity of suitable habitat through ride widening.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

Significance of residual effect:

Minor negative effect at the Local to County level as a result of operation of the Proposed Development. On completion of decommissioning and restoration, including implementation of all additional mitigation, Minor positive effect at the Local to County level.

IEF: Reptiles (including three species of principal importance and three WCA schedule 5 species)

Potential effect:

1. Habitat damage
2. Habitat fragmentation
3. Displacement of animals

Proposed development activity:

In year 10, once extraction in cells 1 to 10 is complete, approximately 0.5ha of deciduous woodland DW1 and 0.8ha of deciduous plantation P5 will be removed to enable extraction of cells 11 to 22. In year 22 approximately 0.8ha of deciduous woodland DW1 will be removed to enable extraction of cells 23 to 30.

Traffic movements associated with the development are not expected to exceed 42 daily movements (21 in and 21 out), however, movement of vehicles, including heavy plant, within the Proposed Development Site may be more frequent.

Characterisation of impact, taking account of embedded mitigation:

Over the 31-year duration of the operation/decommissioning phase approximately 1.3ha of deciduous woodland and c.1.6ha of broadleaved plantation will be removed in two phases (years 10 and 22). The loss of their component scrub fringe and openings will result in reduced availability of shelter and foraging habitats for reptiles within the extraction site, while loss of deciduous woodland will reduce the extent of suitable hibernation habitat. Although the impact will occur in the medium term, its effect will be experienced over the medium to long term, but is reversible during restoration. The impact is of significance at the Local level.

Potential damage to and degradation of retained features adjacent to the extraction site as a result of mechanical damage to tree and shrub root systems, pollution, soil compaction and local alterations to hydrology, will be avoided through implementation of best practice techniques within the CEMP.

Reptiles present within the extraction site will also be at risk of killing and injury during site clearance and construction works, which would constitute an offence under the WCA. The rate of operational traffic movements equates to 4.2 movements per hour between 08.00 and 18.00 which is considered to be a low magnitude

IEF: Reptiles (including three species of principal importance and three WCA schedule 5 species)

impact. Nevertheless, this could result in incidental risk of killing and injury (which would be unlawful under the WCA) and disturbance (not unlawful) to reptiles using trackside habitats, and lead to habitat fragmentation and displacement of animals along the access route, resulting in reduced abundance and distribution of reptiles.

Scale of effect:

Moderate negative effect at the Local level. The effect on reptiles of loss habitats is reversible in the medium to long term. The effect on reptiles of killing/injury, displacement and fragmentation is reversible but would continue over the medium to long term

Cumulative effects:

None – no other approved or potential developments are expected to affect the Site's reptile assemblage.

Additional mitigation required, including means of securing implementation:

A Method Statement will be produced for a phased translocation of the site's population of reptiles to a suitable receptor site prior to vegetation clearance or extraction works commencing. The Method Statement and translocation can be secured via an appropriately worded planning condition.

The translocation phasing will be as follows:

- Prior to commencement of vegetation clearance within cells 11 to 21, the land will be enclosed with permanent reptile fencing to prevent reptiles from ranging onto the site during the translocation or subsequent development works. The translocation will then be undertaken in accordance with the agreed Method Statement which will remove the majority of reptiles from this phase. Prior to the removal of habitat within this phase, the site will be destructively searched for any reptiles remaining after the translocation, the methods for which will be specified in the Method Statement. The permanent reptile fencing will be left in situ and regularly checked/repared until this phase is fully restored.

The Method Statement will include reasonable avoidance measures to prevent killing/injury without translocation in the following locations:

- During clearance of woodland habitat with low suitability for reptiles during the active season (but still suitable for hibernation) within the footprint of cells 23 to 27.

The site's population of reptiles will be translocated to c.5.1ha of land in woodland compartments 25a, 25b and 26, which are outside the Proposed Development Site boundary but within the applicant's control. These areas are currently dominated by recent broadleaved plantation with patchy and locally dense scrub and self-seeded trees, with scattered mature or semi-mature trees. They are therefore similar in character to habitats within the extraction site which currently support reptiles. Given the similarities, it is likely that compartments 25a, 25b and 26 already support a population of reptiles, and so the translocation will need to be informed by population estimate surveys within compartments 25a, 25b and 26 to establish their carrying capacity, and to devise appropriate habitat enhancements to increase their carrying capacity. Alternatively or as a supplementary measure, conifer plantation within woodland compartment 40 (outside of the Proposed

IEF: Reptiles (including three species of principal importance and three WCA schedule 5 species)

Development Site but within the applicant's control) will be converted to suitable reptile habitat comprising a mosaic of coarse grassland and dense scrub alongside measures to enhance this area for wood white butterfly.

In addition, measures proposed through the habitat mitigation and enhancement strategy will also contribute towards mitigating the negative effect of development on reptiles, including progressively creating c.6.3ha of new or translocated deciduous woodland habitat within the site as extraction cells become available for restoration. Within a period of approximately 10-15yrs restored cells are likely to be structurally similar to the existing broadleaved plantation within the extraction site, and will be capable of providing foraging and shelter habitat resources for reptiles. In addition the following measures will be implemented specifically to mitigate the impacts on reptiles:

- Enhanced management of plantations adjoining the access track (especially compartments 34 and 40 where many reptile observations were recorded) to increase the availability of suitable habitats and draw reptiles further away from the track edge, to reduce killing/injury risk from vehicle movements.
- The ride network will be extended within retained deciduous woodland within the applicant's control to deliver an increase in the amount and connectivity of suitable habitat through ride widening.

The mitigation strategy will form part of the LEMP and can be secured via an appropriately worded planning condition.

Significance of residual effect:

Minor negative effect at the Local level as a result of operation of the Proposed Development. On completion of decommissioning and restoration, including implementation of all additional mitigation, Minor positive effect at the Local level.

6.5 Summary of Residual Effects

6.5.1 Table 6.4 outlines the residual effects following the implementation of additional mitigation measures not already embedded in the design of the Proposed Development and identifies whether these are significant in relation to national and local planning policy.

Table 6.4: Residual effects

Feature	Significant residual effects		
	Construction phase	Operation phase	Decommissioning/restoration
-			
Deciduous woodland	Negligible negative effect at the Local level	Minor negative effect at the Local level	Minor positive effect at the Local level
Deciduous plantation	Minor negative effect at the Local level	Negligible negative effect at the Local level	Minor positive effect at the Local level
Stream	Negligible negative effect at the Local level	No significant effect	No significant effect
Species-poor hedgerows	No significant effect	No significant effect	No significant effect
Ponds	No significant effect	No significant effect	No significant effect
Breeding birds	Negligible negative effect at the Local level	Minor negative effect at the Local level	Neutral net effect at the Local level
Wintering birds	Negligible negative effect at the Local level	Minor negative effect at the Local level	Neutral net effect at the Local level
Invertebrates	Negligible negative effect at the County level	Minor negative effect at the County level	Negligible negative effect at the County level
Roosting bats	Uncertain but likely capable of being reduced to a Minor or Negligible negative effect at the Site level	Uncertain but likely capable of being reduced to a Negligible negative effect at the Site level	Uncertain but likely capable of being reduced to a Negligible negative effect at the Site level
Foraging and commuting bats	Negligible negative effect at the Local to County level	Minor negative effect at the Local to County level	Minor positive effect at the Local to County level
Reptiles	Negligible negative effect at the Local level	Minor negative effect at the Local level	Minor positive effect at the Local level

6.6 Biodiversity Net Gain

6.6.1 Mitigation and enhancement measures further to that which is embedded in the Proposed Development, referred to as additional mitigation, is listed in Table 6.2 and Table 6.3 and outlined in further detail at Appendix B. In addition to mitigation, and in line with the guidelines (CIEEM, 2018) and national and local policy objectives, recommendations for biodiversity net gain are set

out in the accompanying *Biodiversity Net Gain Assessment*²⁰. It is anticipated that detailed method statements for implementing these measures will be contained in a Landscape and Ecological Management Plan, secured by planning condition.

6.7 Monitoring

6.7.1 The 2017 EIA Regulations introduce a requirement for the monitoring of residual significant negative environmental effects. To address this requirement the following monitoring measures are proposed:

- ▶ Monitoring the extent, condition and richness of newly created or converted habitats;
- ▶ Monitoring the population and distribution of affected species including breeding birds, wintering birds, invertebrates, roosting bats, foraging and commuting bats, and reptiles;
- ▶ Monitoring surveys to be completed every 3yrs during construction and the first 10yrs of operation, and every 5yrs thereafter including for two cycles following completion of site restoration;
- ▶ Monitoring results will be reviewed to enable adjustments to be made to recommended habitat management measures to maximise their effectiveness.

²⁰ UEEC (2021): *Land north of Loxwood Road, Billingshurst, West Sussex: Biodiversity Net Gain Assessment*.

7 Summary and Conclusion

- 7.1.1 An Ecological Impact Assessment was prepared for the site of a proposed minerals and waste development at Land north of Loxwood Road, Billingshurst, West Sussex (Grid Reference: 505115, 132770).
- 7.1.2 The EclA process was undertaken with reference to relevant parts of the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*, published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018), and in the context of national planning policy and guidance, local planning policy, UK wildlife and animal welfare legislation, and consultation with West Sussex County Council and Chichester District Council.
- 7.1.3 Baseline information was obtained from a series of ecology surveys carried out within the Site by professional ecologists over the period 2019 to 2021, including an ecology desk study, Preliminary Ecological Appraisals (based on extended Phase 1 habitat surveys), and appropriate protected species surveys (including surveys for vegetation communities, great crested newt, breeding and wintering birds, invertebrates, badger, roosting bats, foraging and commuting bats, hazel dormouse, and reptiles).
- 7.1.4 Mitigation designed into the Proposed Development is described in Chapter 5. The assessment of impacts carried out here takes this mitigation into account. No important statutory or non-statutory designated sites of relevance to the Proposed Development were identified.
- 7.1.5 Evaluation of the baseline survey work identified the following Important Ecological Features relevant to the development: Deciduous woodland; Deciduous plantation; Stream; Hedgerows; Ponds; Breeding birds; Wintering birds; Invertebrates; Roosting bats; Foraging and commuting bats; and Reptiles.
- 7.1.6 Following the assessment of impacts of the Proposed Development during its construction and operation/decommissioning phases, additional mitigation is proposed, including:
- ▶ A habitat mitigation and enhancement strategy will be prepared with the objective of translocating or re-creating deciduous and plantation habitat features, both as part of the progressive restoration of completed cells within the Proposed Development Site and to locations outside of the Site but on land within the applicant's control. An outline of the strategy is presented at Appendix B;
 - ▶ Enhanced woodland management on land outside of the Proposed Development Site boundary but within the applicant's control, including conversion of conifer plantation to semi-natural deciduous woodland, thinning and coppicing within existing semi-natural deciduous woodland, rotational management of other areas of broadleaved plantation, and extension of the network of rides. Target species intended to benefit from woodland management include breeding and wintering birds, and foraging and commuting bats;

- ▶ An invertebrate mitigation strategy with the objective of translocating or re-creating habitat resources of greatest potential value to invertebrate fauna to locations outside of the Proposed Development Site boundary but on land within the applicant's control; and
- ▶ A translocation of reptiles from the Proposed Development Site to a receptor site of similar character within the applicant's control, preceded by habitat enhancements to increase the carrying capacity of the receptor site.

7.1.7 Measures to secure biodiversity net gain in line with national and local planning policy and guidance are proposed in an accompanying Biodiversity Net Gain Assessment.

7.1.8 Detailed method statements for the ecological mitigation and enhancement associated with the Proposed Development will be set out in a CEMP and LEMP, the production of which is anticipated to be subject to planning conditions.

7.1.9 Nevertheless, significant residual effects are predicted and are summarised in Table 6.4.

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Appendix A: Results of Surveys for Flora & Fauna

Please refer to the following document which forms Appendix A to this EcIA:

Urban Edge Environmental Consulting (2021): *Land north of Loxwood Road, Billingshurst, West Sussex: Results of Surveys for Flora and Fauna*. Document ref: UE0363_EcoSurveys_2_210618

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Appendix B: Outline Mitigation and Enhancement Strategy

Introduction

Mitigation and enhancement measures in relation to habitats and species or species groups are outlined below. The location of the proposed mitigation measures, where appropriate, are illustrated in Appendix C. Detailed mitigation strategies and a Landscape and Ecology Management Plan / Biodiversity Mitigation and Enhancement Plan will be prepared, which will include detailed method statements for each the different mitigation measures.

Habitats

Deciduous woodland

Translocation

In order to attempt to conserve some of the botanical interest of the existing deciduous woodland within the extraction site, such as the field layer vegetation, soils and smaller trees and shrubs from deciduous woodland in cells 15 to 27 will be translocated to a receptor area within cells 1 to 10, in two phases, once extraction in cells 1 to 10 is completed and the ground has been suitably prepared. An area of approximately 1.5ha of deciduous woodland (the donor site) lies within cells 15 to 27 of the extraction site (after excluding c.0.45ha of this habitat within the footprint of the drainage lagoon, which will be removed at the outset) and salvaging of small trees, shrubs and soils will be attempted from the whole of this area. However, some loss of material is expected, so the receptor site is predicted to be smaller than the donor site at c.1.2ha.

The receptor site will be located in the north east of the development site (Appendix C). On completion of cells 1 to 10 it will be prepared to match as closely as possible the environmental conditions, including soil, hydrology etc., of the donor site. Translocation will take place during autumn, i.e. September to November. Translocation of small trees and shrubs will comprise coppicing, excavation, transport to the receptor site and planting. As far as possible soils will be translocated as turves, although given the presence of tree roots etc, some disturbance/mixing is expected.

Replacement Deciduous Woodland

At the end of the operational life of the development an area of c.5.1ha within the development site area will be planted as new or replacement deciduous woodland and will be allowed to develop by natural regeneration. The trees and shrubs used for planting will reflect the species composition of the existing deciduous woodland within the development site. Approximately 30-40% of this area will be maintained as open habitat comprising flower-rich coarse grassland and scrub i.e. similar in character to existing young plantation but without planted trees, resulting in c.3.3ha of woodland and c.1.8ha of open habitat.

Consideration will be given to the potential for contract growing of trees and shrubs for planting, derived from seed and cuttings collected from within the development site and/or the applicant's wider landholding.

Thinning and Coppicing

For the duration of the development approximately 10ha across three areas of deciduous woodland within the applicant's wider landholding (parts of compartments 31, 35/42 and 36, Appendix C) will be thinned and coppiced. This will have beneficial effects on the woodland field layer through increased light penetration, while also providing benefits for breeding birds and invertebrates including wood white.

Coniferous Plantation

Conversion

Two areas of existing coniferous plantation within the applicant's wider landholding (compartments 29 and 37), comprising a total of 2.8ha, will be converted to semi-natural deciduous woodland (Appendix C). Both areas are identified as having been woodland or largely woodland on late 19th Century Ordnance Survey maps. Conifers in these areas will be removed and deciduous woodland will be allowed to develop through natural regeneration, supplemented where appropriate with materials translocated from the extraction site which cannot be accommodated on site in the early stages. Levels of regeneration will be monitored after removal of conifers and if found to be inadequate, for example as a result of deer browsing, measures will be put in place to address this.

Deciduous Plantation

At the end of the operational life of the development, in order to replicate the habitat of the more recently planted deciduous plantations currently present, c.1.8ha within development site (approximately 30-40% of the replacement deciduous woodland habitat area) will be maintained as permanent open habitat, comprising glades and/or rides, with species and flower rich grassland, some scattered scrub and trees and deadwood features.

Stream

The ES Water Chapter (Caulmert, 2020, p16) identified measures to mitigate the risk of sedimentation or pollution impacts. However, in addition, to reduce the risk of soil erosion following removal of woodland cover, cleared areas will be sown with wildflower grassland seed mix to stabilise the soil surface during the period in which each cell awaits excavation. Once established, the grass cover will need to be regularly managed to prevent its potential colonisation by protected species in advance of extraction.

Where possible bridge components such as deck, supports and box culvert will be prefabricated off site to minimise the need for concrete mixing in proximity to the stream.

Compound

A compound will be located beside the access track at its south western end, close to the layby beside the B2133 Loxwood Road. Although identified as part of a larger area of Ancient Woodland (Pephurst Wood)

the area used would be limited to the footprint of an existing concrete surface and would not extend into the adjoining woodland.

Passing Places

Two passing places of 10m length with 5m tapers and 7.5m in width will be constructed on the south side of the access track in areas currently supporting mature coniferous plantation and young deciduous plantation. Although the easterly location is within Plantation on Ancient Woodland, the locations have been selected to avoid or mitigate impacts on important features, such as breeding habitat for the wood white butterfly and larger mature trees.

Species

Breeding Birds

Thinning and Coppicing

Thinning and coppicing of three areas of deciduous woodland within the applicant's wider landholding (compartments 31, 35/42 and 36, Appendix C), as well as alongside the east-west section of the access track, will provide additional breeding habitat outside the development site with a suitable structure for a range of breeding birds species, including red listed nightingale and marsh tit and amber listed dunnock.

Nightingale

As recorded in 2020 habitat use by nightingale within the development site, as well as the applicant's wider landholding, was largely confined to areas of young deciduous plantation. Specifically, areas of dense natural regeneration within them provided nesting habitat with suitable structural characteristics. If left unmanaged such habitat will become, in time, less suitable for breeding nightingale. To address this, areas of such habitat will be periodically and rotationally cut/coppiced to provide a continuity of suitable breeding habitat (compartments 25, 26 and 34, Appendix C).

Wintering Birds

Conversion of c.2.8ha of coniferous plantation within the applicant's wider landholding (compartments 29 and 37) to deciduous woodland will increase resources available to wintering birds outside the development site, and coppicing and thinning of c.10ha of woodland (parts of compartments 31, 35/42 and 36, Appendix C) will increase structural diversity.

Invertebrates

General

The main elements of the invertebrate mitigation strategy will include:

- Creation and maintenance of short turf and bare ground habitats, within rides, glades and elsewhere;
- Creation and maintenance of flower rich grassland swards;
- Creation and maintenance of scrub fringe habitat;
- Retention, translocation or replication of deadwood and rot habitats;

- Placement of deadwood and sectioned timber;
- Retention, creation and maintenance of woodland rides and glades, to increase the extent and connectivity of such habitats, for example for wood white and white admiral butterflies; and
- Ensuring sufficient juxtaposition between scrub, woodland edge and open habitats.

Compartment 31 will be a focus for receiving translocated and creating new deadwood and rot habitats (Appendix C).

Wood White Butterfly

Specifically, the following will be undertaken to safeguard the existing population of wood white (Appendix C).

- Removal of most planted and self-sown trees from the plantation areas adjacent to the access route (compartments 34 and western part of 40) in order to maintain them as open glades supporting suitable habitat for wood white.
- Targeted tree and scrub removal on the banks adjacent to the western part of east-west section of the access track.
- Ride widening along the east-west section of the access track to an average of c.12m.
- Removal of conifers and other (smaller) trees either side of the access route in Hurst Wood Plantation on Ancient Woodland Site (PAWS, eastern part of compartment 40).
- Sowing of a suitable grassland seed mixture (containing seed of larval foodplants) in recently cleared/opened areas, such as that available through the High Weald Landscape Partnership <https://highwealdlandscapetrust.org/wildflower-seed-harvesting> and/or plug planting of larval foodplants (e.g. greater birds foot trefoil, birds foot trefoil, meadow vetchling, tufted vetch).
- Expansion of the area of suitable habitat away from the access track by the creation of new rides and glades.
- Appropriate ongoing ride and 'glade' management to comprise rotational cutting in autumn or winter every 2 to 4 years, i.e. a quarter to a half of the total habitat area cut every year, with this spread across the total habitat area so that not all the habitat in one area is cut in a single year. Associated or adjoining scrub, where present, should be rotationally cut approximately every 4 to 8 years.

Roosting Bats

Mitigation and compensation for loss of roosting habitats, if required, may include careful removal and translocation of roost features to retained trees in suitable habitat outside of the site on land within the applicant's control, and/or provision of artificial roost boxes. Further enhancements can include provision of artificial roost boxes and accelerated veteranisation of mature trees to increase the availability of potential roost features.

Foraging Bats

Conversion of c.2.8ha of coniferous plantation to deciduous woodland, coppicing and thinning of c.10ha of woodland, maintenance of areas of young deciduous plantation as permanent open areas and widening and extending of the ride network (Appendix C), all within the applicant's wider landholding, will increase resources available to foraging bats outside the development site.

Reptiles

It is proposed that an area of young deciduous plantation within the applicant's wider landholding (approximately 5.1ha in compartments 25 and 26, Appendix C) will be used as a receptor site for reptiles translocated from the development site, subject to the results of future reptile population estimate surveys in these areas. This area will be maintained as suitable habitat and enhanced for reptiles through the removal of planted and some self-sown trees and scrub and periodic rotational cutting and creation of hibernacula. However, some areas of dense trees and scrub will be retained and managed as habitat for breeding birds, particularly nightingale.

Alternatively or as a supplementary measure, conifer plantation within woodland compartment 40 (outside of the Proposed Development Site but within the applicant's control) will be converted to suitable reptile habitat comprising a mosaic of coarse grassland and dense scrub alongside measures to enhance this area for wood white butterfly.

Other measures proposed through the habitat mitigation and enhancement strategy will also contribute towards mitigating the negative effect of development on reptiles, including progressively creating c.6.3ha of new or translocated deciduous woodland habitat within the site as extraction cells become available for restoration. Within a period of approximately 10-15yrs restored cells are likely to be structurally similar to the existing broadleaved plantation within the extraction site, and will be capable of providing foraging and shelter habitat resources for reptiles. In addition the following measures will be implemented specifically to mitigate the impacts on reptiles:

- Enhanced management of plantations adjoining the access track (especially compartments 34 and 40 where many reptile observations were recorded) to increase the availability of suitable habitats and draw reptiles further away from the track edge, to reduce killing/injury risk from vehicle movements.
- The ride network will be extended within retained deciduous woodland within the applicant's control to deliver an increase in the amount and connectivity of suitable habitat through ride widening.

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Appendix C: Outline Mitigation Plan

Please see insert.

Urban Edge Environmental Consulting Ltd

Unit 5 | Westergate Business Centre | Brighton | BN2 4QN

T: 01273 68 67 66 | E: enquiries@ueec.co.uk

www.ueec.co.uk |  @UrbanEdgeEnviro | **TEMA**

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Urban Edge Environmental Consulting Ltd

Unit 5 | Westergate Business Centre | Brighton | BN2 4QN

T: 01273 68 67 66 | E: enquiries@ueec.co.uk

www.ueec.co.uk |  @UrbanEdgeEnviro

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