ENVIRONMENTAL STATEMENT

AN APPLICATION FOR PLANNING PERMISSION FOR A CLAY QUARRY AND CONSTRUCTION MATERIALS RECYCLING FACILITY (CMRF) FOR CD&E WASTES INCLUDING THE USE OF AN EXISTING ACCESS FROM LOXWOOD ROAD, THE EXTRACTION AND EXPORTATION OF CLAY AND RESTORATION USING SUITABLE RECOVERED MATERIALS FROM THE CMRF TO NATURE CONSERVATION INTEREST INCLUDING WOODLAND, WATERBODIES AND WETLAND HABITATS

AT

LAND WITHIN PALLINGHURST WOODS TO THE EAST OF LOXWOOD IN WEST SUSSEX

Report Reference: LCP/LOX/LX_20A/ES

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Protreat accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Protreat beforehand. Any such party relies upon the report at their own risk.

PART 1 PROPOSED DEVELOPMENT - INTRODUCTION

1. Introduction

1.1 Protreat are commissioned by Loxwood Clay Pits Limited to prepare this application for planning permission for a clay quarry and construction materials recycling facility (CMRF) for non-hazardous construction, demolition and excavation (CD&E) wastes including the use of an existing access from Loxwood Road, the extraction and exportation of clay and restoration using suitable recovered materials from the CMRF to nature conservation interest including woodland, waterbodies and wetland habitats on land situated in woodland known as Pallinghurst Woods, to the north east of Loxwood in West Sussex.

1.2 The information narrative contained in this document is supplementary to that provided on the completed planning application forms and is to be regarded as forming part of the application. The information contained in this statement is also intended to assist the Planning Authority in determination of the proposals. The proposed development covers an area of approximately 8 hectares and the proposals fall under Schedule 2 to the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (EIA Regs). The application for planning permission is accompanied by an Environmental Statement (ES) based on a thorough Environmental Impact Assessment (EIA) scoped in agreement with West Sussex County Council.

1.3 This document outlines the nature of the proposed development, and how it accords with both planning policies and its immediate environment. It therefore sets out the context within which it is believed that the site is suitable for the development.

1.4 Loxwood Clay Pits Limited (LCP) is controlled by one of the Danhash family that has owned 122 hectares (300 acres) of Pallinghurst Woods (part of the former Pallinghurst Estate), north east of the village of Loxwood, Billingshurst, West Sussex, for the last 30 years.

1.5 LCP was incorporated in April 2017, with the intention of extracting clay from the periphery of Pallinghurst Woods on a small commercial scale, like the small-scale clay extraction and brick making activities that have previously taken place within the Pallinghurst Estate over 100 years ago. These activities are common in this area, such as the former Rudgwick clay pit and brick works located just 5 miles east of Pallinghurst Woods.

1.6 Subject to this development going ahead, LCP would then pursue a further project elsewhere in West Sussex, for the establishment of a small-scale hand produced brick works to supply bricks to the local market, that are of a type and style that is appropriate to the local character and built environment.

1.7 Pallinghurst Woods is situated low down in the Ludwick Low Weald clay vale landsape setting, within the Low Weald Hills of West Sussex. The geology is derived from Weald Clay formation, with clay shale, mudstone, discrete sandstone beds and superficial deposits. See **Figure PS1**. (Note: Figures denoted PS are to be found in the Planning Statement).

1.8 The Weald clay formation is a main clay resource for brick making and is a related resource for traditional building materials including cement, concrete blocks and other building raw materials used in a wide variety of construction activities, including house building and flood alleviation schemes. There is a shortage of clay in West Sussex, with the brick works at West Hoathly and Pitsham respectively due

to run out of clay in less than 10 years and 20 years' time. National planning policy requires each county to maintain at least 25 years supply for each brick works.

1.9 Based on the proposed rate of clay extraction, the clay available at the proposed development site in Pallinghurst Woods will run out in approximately 30 years. Including the time required to excavate the first phase and to complete the restoration after the excavation has finished, the project will last for 33 years overall.

1.10 To provide for the continued output of clay during the 30-year period, LCP have identified that the proposed site in Pallinghurst Woods is suitable for brick making. In addition, the chemical and physical properties demonstrate that the clay could be used for producing cement, which could then be used for making concrete blocks, which are also used for house building. The clay could also be used for flood defence purposes.

1.11 The clay pit void will be restored using suitably inert materials derived from the processing of CD&E wastes, processed inside a building located next to the clay pit. The waste processing activity will be permitted by the Environment Agency to separate the restoration materials and, subject to the terms of an approved Waste Recovery Plan, use the materials that have been certified for use as inert materials, for the restoration of the clay pit void. The other waste materials recovered from the construction and demolition waste will be transported off site for further recycling and use e.g., in aggregates and reclaimed bricks. This related activity will commence in year 2 or 3 and cease activity after 33 years from commencement of the clay extraction.

1.12 Moreover, the establishment of a clay pit with 30 years of clay reserves, would replace the loss of the 30-year clay reserve (from 2012 until 2042) at the former Rudgwick clay pit and brickworks close to LCP's site. This former clay pit and brickworks was designated as a safeguarded site in the 2003 West Sussex Minerals Local Plan and in minerals planning policy terms, should not have been granted planning permission for restoration of that clay pit 30 years earlier than originally intended.

1.13 West Sussex County Council's April 2020 Scoping Opinion suggested that the planning application should be based on the Rochdale Envelope. The Planning Inspectorate's Rochdale Envelope advice note states that this approach applies to certain projects to which The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 applies. This typically applies to NSIPs that are the subject of outline applications where a Development Consent Order is sought from PINS / Secretary of State and is more akin to onshore / offshore wind projects. The approach taken to this planning application is as prescribed in the EIA Regs. The Environmental Statement assesses the worst-case scenario in the manner set out in the EIA, taking into account the environmental information, which is sufficient to assess the likely environmental impact of the proposal.

1.14 For developments other than onshore and offshore wind projects, the Rochdale Envelope is not an exact science. For example, when assessing the noise emission and hence the noise impact, from this proposed development, the worst case would be from the on-site generation of electricity. However, it would obviously be sensible to try and reduce the noise by supplying mains electricity to the site. Overhead 11kV cables are commonplace in and around Pallinghurst Woods, Loxwood and Tismans Common etc., but additional overhead cables would have some landscape and visual impact. Even a de minimis landscape and visual impact would represent the worst case from that perspective. But that does not mean that

the planning application should be made on the basis of the worst-case noise impact if the noise level can be reduced by using mains supplied electricity instead of onsite generation. However, this does mean that a judgment must be made as to whether landscape and visual impact is more important than noise or vice versa.

2. Site location and description

2.1 **Figure PS2** shows the boundary of the proposed development site including the access route to the nearest highway, which is approximately 8 hectares in total, of which approximately 6 hectares is planned for clay extraction. The total redline area is too large for a standard 1:2500 scale planning drawing.

2.2 **Figure PS3** shows the boundary of the proposed development site without the access route to the nearest highway, this is a 1:2500 scale drawing.

2.3 The proposed site is located at National Grid Reference TQ 05090 32831, in a rural wooded Low Weald clay vale landscape setting, on land to the north of Loxwood Road. It comprises an area of 8 hectares of woodland and scrub, 6 hectares of which would be progressively excavated for clay in small phases, before then being sequentially backfilled and restored.

2.4 The development site is on land leased by LCP from the Danhash family and is bounded on three sides by dense woodland and, to the north, open farmland and further woodland.

2.5 The proposed development site is currently a mixture of woodland and recently replanted woodland/scrub which will need to be cleared to allow for construction of the CMRF and claypit operations. As can be seen in **Figure PS4**, much of the site contains little of any arboricultural significance, with area 1 being mainly scrubland with sapling trees being planted approximately 5 years ago, and area 2 being planted approximately 20 years ago. According to the historical forestry records, area 3 was planted approximately 95 years ago, though it also contains a few older individual trees. These areas will all be felled in phases during the life of the project in order to allow efficient development to take place whilst helping to conserve existing habitats and facilitate habitat translocation. Any useful wood resources produced as a result of this clearance will be marketed through the normal forestry channels to ensure that resources are not wasted. The development area within the land owned by the developer was chosen specifically because of the relative immaturity of the majority of trees in the plot and its peripheral location in Pallinghurst Woods, to minimise environmental, ecological and climate change impacts.

2.6 The ecological work undertaken on the proposed development site has shown that the scrubland areas are populated by reptilian species, in particular slow worms. Reptile fencing (approximately 1m high) will therefore be erected around the perimeter of the site during site construction following reptile translocation by trained ecologists. This is to keep reptiles such as slow worms out of the area once construction activities are underway. This is explained in more detail in the mitigation section of the ecological chapter in the ES. There are currently no plans to erect any security fencing around the 6-hectare clay pit, apart from paled fencing around the surface water lagoon. The site's isolated location 1.6km from the nearest public highway and gated access (at the layby) should act as suitable security.

2.7 This sequential restoration approach differs from older traditional claypits, in which the whole pit is normally excavated, leaving large voids in the land, before restoration at a final stage. The staged restoration planned for this project will mean that each claypit cell will be excavated and restored to original ground levels within a period of approximately 2 years. The cells can then be overplanted, thus avoiding the more intrusive visual and landscape impacts associated with a traditional claypit.

2.8 In addition to the progressive restoration advantage, the annual volume of clay will be removed from a pit approximately 40m x 50m in size, around 1/3 the size of a football pitch annually, so the project can be described as almost artisanal in size compared to a traditional claypit excavation.

2.9 The proposed lorry access route from Loxwood road layby northwards, would follow the route of the existing woodland access road for timber extraction, i.e., an existing access track for lorries, from Loxwood Road through Caddick's Copse, to the development site, approximately 1.6km distant. The vehicles entering and leaving site at the layby will predominantly travel from/to the east along the eastern section of Loxwood road, to the A281 Horsham-Guildford road junction at Bucks Green.

2.10 The proposed development site is approximately 1.6 km to the northeast of Loxwood, 1.5 km southeast of Alfold, 1.2 km east of Alfold Bars, 2.7 km west of Bucks Green, 1.5 km west of Tisman's Common, 3 km west of Rudgwick, and 6.4 km south of Cranleigh. The land is approximately 2 km north of the Wey and Arun Canal, which flows westwards, south of the site, through the village of Loxwood. The site lies due south of the County Boundary between Sussex and Surrey and south of the Sussex Border Path. In fact, the north west corner of the land in common ownership is immediately adjacent to the Sussex Border Path. The County boundary thus lies quite close to the north of the site. The A281 is 1.3km directly to the north of the site at its closest point.

2.11 In a wider context the site is in an undesignated landscape area, within the Low Weald NCA 121, and in the Low Weald Hills West Sussex Local Landscape Character Area LW4 (West Sussex County Council Landscape Character Assessment 2007).

2.12 The site is located within a dense area of mature mixed deciduous woodland, with some coniferous compartments. Part of the land in the central area of the development site has been replanted within the last 5 years. The site comprises semi mature shaws and trees, along the site's northern and eastern margins, with some ancient woodland near to the immediate west. These wooded areas with mature trees act as a significant visual buffer for the site. The tree species on the proposed development site are a mixture of broadleaved native trees and shrub species, including Oak and Hazel, and in the woodland beyond there are more blocks of mature mixed native broadleaved woodland which completely enclose the proposed development to all but immediate views.

2.13 The accompanying Landscape and Visual Impact Assessment (LVIA) appended to the Environmental Statement (ES), provides more detail.

2.14 The development site itself is in an undesignated landscape area with no historic, ecological, landscape or other designations. No Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Ramsar sites are located within a 5km radius of the proposed development Site. No Sites of Special Scientific Interest (SSSI) are located within a 2km radius of the proposed development. Similarly, no locally designated non-statutory sites are located within a 1km radius of the proposed development. However, the proposed development does fall 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. There is more information on this in the Environmental Statement.

2.15 There are several areas of Ancient Woodland designated by Natural England within the 300 or so acres surrounding the development site, but none of these woodlands

are directly affected by the proposal, and no designated ancient woodland will need to be developed or removed.

2.16 Historically the development has been either woodland or agricultural (arable) land going back many years, and as such it has no planning history. The site was historically part of the Pallinghurst Estate and had been used as a commercial coniferous forestry plantation until the current owners began to restore the 300 acres to native woodland some 25-30 years ago. These deciduous plantations now form designated 'priority habitat' of local importance and there is more on this in the Environmental Statement. The historical background of the development is further detailed in the archaeological report within the EIA section appended to the Environmental Statement.

3. Scoping and the approach to the application

3.1 The Environmental Impact Assessment (EIA) of the proposed development has been carried out in accordance with The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 ("the EIA Regs") and EIA guidance produced by the Department for Communities and Local Government has been considered.

3.2 The effects on the environment should be taken into account at the earliest possible stage in all technical planning and decision-making processes.

3.3 The EIA Regs differentiate between those projects that will and those projects that may be the subject of an EIA. Schedule 1 of the EIA Regs lists the projects for which it is mandatory to carry out an EIA and Schedule 2 of the EIA Regs lists the projects for which an EIA may be necessary. As the proposed quarry development is less than 25 hectares and the proposed CMRF is a waste recovery operation not a disposal operation with a capacity that does not exceed 100 tonnes per day the development does NOT fall within development descriptions 10 or 19 of Schedule 1 of the EIA Regs. However, the proposed quarry development does fall within development description 2(a) of Column 1 of Schedule 2 of the EIA Regs - 'extractive industries' section, which apples to *"all development except the construction of buildings or other ancillary structures where the new floorspace does not exceed 1,000 square metres"*. The proposed waste recovery development does exceed 0.5 hectares but as it is not for the disposal of waste it does NOT fall within development description 11(b) of Column 1 of Schedule 2 of the EIA regs.

3.4 Whilst the waste recovery operation does not require an EIA it has been agreed that the EIA should also include this part of the development in order to be thorough and capture all applicable environmental impacts from the overall development.

3.5 In accordance with best practice the scope and the level of detail of the information to be provided in the Environmental Statement was determined by consultation with statutory authorities and interested parties chosen by West Sussex County Council (WSCC). A Scoping Report was produced which included plans to sufficiently identify the land, a brief description of the nature and purpose of the proposed development and the proposed scope of the EIA including an explanation of the likely significant effects. A request for a Scoping Opinion together with the Scoping Report was submitted to WSCC on 28 January 2020. The request and the Scoping Report are shown as **Appendix ES A**. A Scoping Opinion was provided by WSCC on 29 April 2020. A copy of the Scoping Opinion and all consultee responses is shown as **Appendix ES B**. The Scoping Request was processed under Regulation 15 of the EIA Regs. The Environmental Statement must include all of the necessary information outlined in Regulations 4 and 18 and Schedule 4 of the EIA Regs as is reasonably required to assess the effects of the project.

3.6 WSCC's Scoping Opinion stated that the information and analysis set out in the Scoping Report was appropriate. In accordance with Regulation 18(4) of the EIA Regs, WSCC's Scoping Opinion provided advice on any additional requirements which should be included in the Environmental Statement to satisfy the opinions put forward by statutory consultees and the requirements of the EIA Regs. As a result of the scoping process it has been determined that an assessment of the potential effects of the proposed development associated with pollution in terms of the public rights of way, traffic and transport, landscape and visual impact, hydrogeology and hydrology – flood risk, noise and vibration, land contamination, archaeology and cultural heritage, soil resources, arboricultural, air quality assessment, ecology and nature conservation, socio economic impacts and climate

change should be considered in the EIA. A summary of the issues raised in the Scoping Opinion together with a summary of how these have been addressed in the Environmental Statement is presented as **Table ES 1**.

3.7 WSCC's Scoping Opinion also suggested that the planning application should be based on the Rochdale Envelope. The Planning Inspectorate's Rochdale Envelope advice note states that this approach applies to certain projects to which The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 applies. This typically applies to NSIPs that are the subject of outline applications where a Development Consent Order is sought from PINS / Secretary of State and is more akin to onshore / offshore wind projects. The approach taken to this planning application is as prescribed in the EIA. The Environmental Statement assesses the worst-case scenario in the manner set out in the EIA, taking into account the environmental information, which is sufficient to assess the likely environmental impact of the proposal.

3.8 The Environmental Statement presents the information that has been obtained, the results of the investigations, the proposed development and the results of the EIA. The positive and negative effects of the proposed development are explained.

3.9 Part 1 of the Environmental Statement presents an introduction to the proposed development and an explanation of the intended purpose. The EIA approach is summarised and information on the site setting is presented. Part 2 describes the principles of the proposed development together with a description of the relevant reasonable alternatives.

3.10 Part 3 of the Environmental Statement presents the baseline studies together with the assessment of the environmental effects. The baseline studies include desk based studies and site surveys and an outline of the evolution of the baseline without the development going ahead which for the majority of the 120+ hectares of woodland surrounding the proposed development would be a discontinuation of the woodland management practices that have been followed during the last 30 years. The baseline studies provide the basis against which the assessments of environmental impacts are made. The impacts are assessed against the baseline conditions reported from the studies taking into consideration the design and operational procedures for the proposed development along with the restoration proposals. For each impact subject area, a description and justification of the assessment is presented together with an evaluation of the significance and scale of impact. The assessments have been undertaken by competent experts as set out in **Appendix ES C**.

3.11 Each technical environmental chapter in Part 3 of the Environmental Statement describes the methods and evidence used to identify and assess the significant effects on the environment including any difficulties compiling information or uncertainties involved. Impact assessments evolve through a cyclic design and review process to conclude the design of the mitigation measures. Where possible negative impacts are reduced by amending the design and/or operational techniques. Where impacts cannot be reduced mitigatory measures are provided. A description of the mitigation measures to avoid, prevent, reduce or offset any identified significant adverse effects on the environment is provided in Part 2 & 3 of the Environmental Statement and where appropriate at the end of each technical environmental chapter. Where appropriate, monitoring proposals are also considered.

3.12 Detailed technical information is presented in the appendices to the Environmental Statement and cross referenced in the assessments of environmental effects (**Table ES 1**). A non-technical summary of the Environmental Statement is provided. A reference list of the sources used in the assessments is provided where necessary.

3.13 Consultation with the local community has been undertaken in respect of the proposals and the details of that process, which took place during the Covid social distancing measures from August to December 2020, prior to the submission of the application, is presented in the Statement of Community Consultation which is presented as **Appendix ES D**. LCP are committed to continued liaison with the local community, parish council and the local authority regarding the proposed operations at the site in Pallinghurst Woods, Loxwood.

PART 2 PROPOSED DEVELOPMENT PRINCIPLES

4. Proposed quarry design and restoration scheme principles

4.1 The main characteristics of the site that influenced the design are; the location on the periphery of Pallinghurst Woods, the route of the existing woodland access road, the location of the existing access to Pallinghurst Woods at the layby entrance to Loxwood Road, the location of existing infrastructure, hedgerows, treelines and woodland, the proximity of receptors to the site, the quality of the clay, the local demand for waste recovery and recycling, the hydrology and hydrogeology of the site and the lack of visibility of the site from the surrounding area.

4.2 The lateral extent of the clay extraction area has been determined based on the boundary of the land currently available to LCP and the extent of the workable clay identified by the site investigation carried out in 2017, existing land drains, established hedgerows and trees, the presence of archaeological remains of local interest and the location of receptors. The proposed extraction area is shown on **Figure PS5**. A standoff of at least 10m will be retained between the limit of the extraction area and habitats along the eastern, western and southern boundaries with a minimum 15m standoff along the northern and north west boundaries. There will be a minimum 75m standoff from the nearest ancient woodland.

4.3 During the archaeological assessment of the proposed development site and the access road through Pallinghurst Woods, it was identified that a small part of the northern boundary and the eastern boundary of the development site plus the land beneath the entrance from the layby on Loxwood Road, may be of local archaeological importance. The northern and eastern boundaries have since been amended to exclude clay excavation in those areas and to retain the archaeological features. If necessary, bog mats will be used near the entrance to Pallinghurst Woods. A Written Scheme of Investigation (WSI) will be prepared and during soil stripping operations archaeological mitigation will be implemented where necessary as specified in the WSI.

4.4 Clay present at the development site that is suitable for the proposed uses is present on average 0.5m below ground level underlying the soil and overburden. The clay that will be extracted at the site for exportation is on average 6m thick with a maximum thickness of approximately 8m to 9m. The overlying soils will be translocated elsewhere in Pallinghurst Woods to preserve the habitats and the overburden will be excavated and retained on site for use in the restoration of the site. The extracted clay will be stockpiled for weathering and then transported off site for sale using Heavy Goods Vehicles (HGVs) up to 32 tonnes Gross Vehicle Weight (GVW). The base of the extraction will be at a level of between approximately 32m and 35m AOD.

4.5 Clay extraction will generate approximately 375,000 tonnes of clay for use and based on a mineral extraction rate of 12,500 tonnes per annum it is estimated that mineral extraction operations will be completed in 30 years.

4.6 Mineral extraction operations will be undertaken in a series of 30 Phases and will commence in the middle of the site and will initially progress in the north eastern corner of the site during the first 10 years before moving into the south eastern corner for the subsequent 10 year period and then finishing in the south western corner for the final 10 year period. **Figure PS6** provides more details. Most of the trees are located in the south western corner so most of the tree felling to facilitate clay extraction will take place between half and two thirds into the project, i.e. 15 to 20 years. However, the surface water lagoon will also be located in the south

western corner of the site and the trees in this area will need to be felled at the outset of the project. The phasing is shown in **Figure PS4**.

4.7 As there is no groundwater present on the site, there is no potential for the base of the excavation to heave because of groundwater pressure. As the clay mineral is extracted from the site any surface water ingress to the void will be controlled by a series of sumps and trenches excavated in the base of the site as the extraction progresses. Pumps will dewater the working area into a segregated area in the surface water lagoon. Surface water run off from rainfall on the rest of the site will be channelled to the clean section of the surface water lagoon. Where possible surface water from the lagoon will be treated and used in the mist air system to remove airborne dust from inside the CMRF building and when waste recovered materials are used to restore the claypit void. Any water discharge from the site into the adjacent controlled waters will be subject to a water discharge permit obtained from the Environment Agency.

4.8 Without mitigation measures, the operations at the site will only be visible from rights of way close to the northern boundary of the site. The operations will have an acceptable noise impact on neighbouring properties. The large clay stockpile to the east of the CMRF will help to attenuate noise from the activities inside that building. However, noise impacts have been modelled without considering any attenuation from clay stockpiles. No bunds will be required to prevent surface water from running on to the site because the existing northern boundary bund will be left completely intact due to the minimum 15m offset from that boundary.

4.9 On grant of planning permission, advanced planting and gapping up of hedgerows will be carried out on the existing perimeter hedgerows that line the northern, north-eastern and western part of the site. The advanced planting will form part of the overall restoration scheme for the site.

4.10 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 broad leaved woodland. The proposed restoration scheme is shown in **Figure PS7**. Restoration materials will be available from the CMRF from the processing of CD&E wastes, which together with the overburden will be used to achieve the proposed restoration profile at current levels as shown in **Figure PS8**. It is anticipated that up to 210,000m^3 of restoration materials will be used from the CMRF during the 33 years required to complete the proposed restoration profile (30 years excavation plus 3 years). It is proposed that the importation of restoration materials will commence when clay extraction progresses into Phase 3 (year 2).

4.11 The CMRF and clay pit restoration using processed CD&E wastes will be a combined waste recovery activity governed by a bespoke environmental permit issued by the Environment Agency. This permit will specify which waste materials will be imported for processing in the CMRF and which of the recovered materials from that activity can be classified as suitably inert in accordance with Waste Acceptance Procedures, a Waste Recovery Plan and an Environmental Management System, for the restoration of the clay pit.

4.12 Overburden stripped during the clay excavation will either be stored in the clay stockpiles area or along the northern edge of cell phases 2 to 6 or on the area designated for excavation the following year. Clay stockpiles for weathering prior to exportation will not exceed 4.5m in height and the overburden stockpiles will not exceed 3m in height. The 4.5m high stockpile located on Phase 28 will only be required during the first two years.

4.13 The CMRF's permitted input capacity for CD&E wastes will be 25,000 tonnes per annum and dependent on the density of the recovered suitably inert materials, up to 12,500 tonnes will be used for the restoration of the clay pit. The materials used for the restoration of the clay pit will have a dry density that is lower than the dry density of the extracted clay. The exported weathered clay will have a density that is higher than the drier extracted clay.

4.14 The partitioned surface water lagoon will be converted to a fishing lake and a habitats pond at the end of the restoration period.

4.15 It is proposed that Footpath 792_1 is temporarily diverted during the operational lifetime of the clay pit to assist with out of hours site security arrangements. The footpath would be diverted at the junction with bridleway 801, to follow the route of the bridleway to the Sussex Border Path before continuing as Footpath 792_1 before joining Footpath 797. This would effectively close the small stretch of Footpath 792_1 between its junctions with bridleway 801 and Footpath 797.

4.16 It is also proposed that where Footpath 795 runs parallel to the Private Right of Way in a north westerly direction from bridleway 3240, for personnel safety reasons, a fence is constructed between the footpath and the private right of way.

5. Proposed site infrastructure

5.1 Access to the claypit would be gained by a dedicated site access road beginning from the layby just east of the junction of Loxwood Road and Bridleway 3240, some 1.6km to the south east of the proposed development site and continuing along the old forestry road through the original Pallinghurst Estate, which has been in use since the beginning of the 20th Century. This gravelled single lane road has been used throughout the history of the Pallinghurst Estate to remove felled trees, as part of its commercial woodland past, so is known to be capable of use by HGVs. It is proposed to widen this access road in two strategic areas to ensure it is wide enough to allow two HGVs to pass. Each of these wider sections will be 7.5m wide along a short 20m stretch of the access road. These passing areas will be outside the areas of ancient woodland through which the road currently traverses albeit the eastern passing place will be in an area of Plantation on Ancient Woodland. LCP's appointed ecologists have recommended this location rather than a more westerly location that is frequented by wood white butterflies.

5.2 The proposed site and intended access route with HGV passing places and public rights of way can be seen in **Figure PS9**.

5.3 Access to the site will be primarily along Loxwood Road to the nearest part of the Lorry Route Network commencing from the junction of Loxwood Road with the A281 at Bucks Green.

5.4 Gates are located at the main entrance on Loxwood Road and further traffic control barriers will be located at the crossing to bridleway 3240 and at the entrance to the development site. The compound situated 100m from the main entrance will be used for car parking and the area surfaced with a DoT Type 1 stone material. The layout of the compound including the wheel wash and car park will be agreed with the planning authority pursuant to a condition of the planning permission. Water for the wheel wash will be from a new mains water supply taken from Loxwood Road and will be recirculated. Downward facing external lighting will be provided in the compound area as necessary, either side of the main entrance to Loxwood Road, and along the south and eastern sides of the CMRF building. The lighting will only be used during operational hours and only during early morning and early evening during the months of October to March.

5.5 The two-storey site office and amenity building measuring 18m x 4m and 6m high will be positioned along the northern face of the CMRF. The weighbridge will be positioned inside the western boundary to the proposed development site and the wheel wash will be located 100m inside the entrance from the layby on Loxwood Road.

5.6 All the access roads through Pallinghurst Woods will be maintained in a condition which is consistent with minimising noise and dust emissions and mud on the public highway. The DoT Type 1 stone aka MoT Type 1 will be 40mm granite limestone, basalt or gritstone used in conjunction with a 3-D containment system that includes edge restraints. For more details see Section 17 of the ES.

5.7 HGVs associated with the extraction of clay and the outbound movement of recyclates from the CMRF will essentially be 32 tonne GVW to transport 20 tonne loads. These vehicles will have unfettered priority along the access route from the development site to the layby entrance on Loxwood Road. HGVs associated with the importation of CD&E wastes to the CMRF will be a mixture of 18 tonne GVW rigid vehicles to transport max 10 tonne loads (for construction and demolition wastes) and 32 tonne GVW rigid vehicles for 20 tonne loads of excavation wastes.

The inbound 32 tonne GVW vehicles may also be used to backload the outbound movements of clay and recyclates, thereby minimising the overall number of vehicle movements. A traffic management system will limit the inbound vehicles in transit through Pallinghurst Woods to max 2, with the inbound vehicles using the passing places to give way to the outbound vehicles that will have priority. All vehicles will be weighed in and out of the development site.

5.8 Power to the development site will be provided by a generator and foul water will be self-contained. Fuel will be stored in a bunded mobile fuel storage tank. Power to the eastern access to Pallinghurst Woods (for access barriers, wheel wash and the traffic management system), just off the layby on Loxwood Road, will be a combination of mains electricity, battery power and solar power. In due course, the power to the main development site will be mains electricity with a new grid connection via overhead cables. See **Figure PS10** for more details. The new mains supply to the main development site will be agreed with the planning authority pursuant to a condition of the planning permission or will be subject to a further planning application.

5.9 The preliminary design of the bridge (location shown in **Figure PS9**) is shown in **Figure PS11**. This is not materially different to the existing bridge, which is also designed for HGVs, but the new bridge is designed to take the additional number of daily vehicle movements over a 30 year period. The detailed design of the bridge, including the means of construction / access during construction, will be submitted to the planning authority for approval pursuant to a condition of the planning permission.

5.10 The bridge will be constructed with a maximum internal width of 5m and maximum internal height of 3m. The access road over the bridge will be 3.5m wide and approach ramps will constructed on either side at a max 1 in 14 gradient. The access road and approach ramps will be surfaced with an asphalt layer laid over sub-base with kerbs on the approach ramps. A continuous safety barrier will be installed at the edge of the access road along the approach ramps and over the bridge. The surface under the bridge will be concrete. Parapets will be installed into the reinforced concrete slab. It is anticipated that bridge construction works will commence at least 6 months before the commencement of clay extraction operations in Phase 1. Due to the location of the bridge and its low-lying position over the land drain, the bridge will not be visible to users of the nearest public rights of way.

5.11 The CMRF building shape, size and elevation is shown in **Figure PS12**. The building will have a 40m x 35m footprint with a height of 7m to the eaves and 8.5m to the apex. The steel frame cladded building will have a 1 in 12 roof slope with a 6m wide x 5m high fast action roller shutter door to the south side of the building with an adjacent pedestrian door. The fast action roller shutter door will only be opened to allow HGVs to enter and leave the building. The external wall, door and roof cladding will be black ash with alternate clear roof panels to maximise daylight inside the building. The floor of the building will be a reinforced concrete slab with 4m high internal concrete push walls around the perimeter of the building. All of the process equipment will be located and operated inside the building. The noise model is based on the worst case and assumes that an internal dust extraction system operating with large electric fans will extract the dust generated inside the building for filtration in a static bag filter plant prior to recirculation and/or exhaust. However, the dust extraction and ventilation system will be replaced by a water-based Mist Air system that will completely remove dust from the atmosphere inside the building. The machinery and electric lighting will initially be powered by the

electricity generator, switching to mains supply in due course. Building construction would commence within 6 months of planning permission being issued or before clay excavation commences, whichever occurs last.

5.12 The outside temporary storage area adjacent to the CMRF building will consist of a concrete slab measuring 35m x 8m with a stone laid area in front of the concrete slab measuring 27m x 35m. Recovered waste fractions that are produced from the CMRF will be stored in lidded steel hook lift containers measuring up to 8m long x 2.5m wide x 1.5m high. The containers will be filled inside the building and quarantined for analysis before being used for the clay pit restoration. The filled containers will be stored on the outside concrete slab, which will be able to accommodate up to 10 of the lidded steel containers. The stone area next to the concrete slab is to enable hook lift vehicles to manoeuvre to load/unload the containers.

5.13 The layby adjacent to the site access on Loxwood Road will be reconfigured in accordance with the terms of a Section 106 Agreement to the satisfaction of the planning authority. The proposed new road layout and junction is shown as **Figure PS13**.

6. Proposed site operations

6.1 The proposed development falls into two distinct but synergistic operations:

- A 6-hectare clay pit, which will provide 375,000 tonnes of clay for local building and construction needs over a 30-year period, and;
- A Construction Materials Recycling Facility (CMRF) which will take in 25,000 tonnes per annum of CD&E waste for recycling back into useful aggregates and other recyclates, including the use of suitably inert materials for the restoration of the clay pit. Soils and overburden from the extraction area will also be used to restore the clay pit site.

6.2 All of the proposed activities will be operated by LCP. Clay will be extracted from the site and phases will be restored between 0800 to 1800hrs Monday to Friday and 0800 to 1300hrs on a Saturday. Materials will only be imported into and exported from the site during the same hours Monday to Friday. The gates at the access to the site will be locked shut when the site is unmanned. There will be no working except pumping of water and essential maintenance outside the operational hours. Any temporary changes to the operational hours will be agreed in writing with the planning authority.

6.3 Wherever possible, vegetation will be removed outside the months of March to August, which includes the breeding bird season. If it is necessary to remove vegetation during the breeding bird season then all works will be preceded by a nesting survey carried out by a qualified ecologist. Prior to the felling of any trees the trees will be reassessed and where necessary bat surveys will be undertaken to check for any new roosts. If bats are identified mitigation under licence from Natural England will be carried out.

6.4 All of the trees that will be retained on site will be protected for the duration of the works according to BS5837 as far as it is practicable. Protection measures will include the implementation of appropriate Root Protection Zones.

6.5 Translocated soils will be stripped prior to the construction of clay pit haul roads and the commencement of extraction in each phase. Soil will only be stripped when the soils are in a dry and friable condition to prevent damage to the soil structure during handling. Soil handling will cease during rain or when it is likely that wind conditions will create significant airborne dust.

6.6 Overburden and soils will be transported using a tracked dumper or other alternative plant. The clay will be extracted using long reach excavators working from the surface of the clay or from a clay bench in the excavation. The slopes excavated around the periphery of Phases 1 to 7, 14 to 17 and 20 to 30 will be 1 to 1 with a 3m wide bench at 3m depth intervals. Cross sections are shown in **Figure PS5**. The excavators will be used to load the clay onto stockpiles and to load HGVs. All mobile plant used at the site will be diesel powered and fitted with appropriate silencers and noise attenuation.

6.7 HGV movements will not exceed 42 movements per day from 21 vehicles. This worst-case scenario is based on most of the movements being from 18 tonne GVW rigid vehicles. On some days, vehicle movements may be 50% lower than this, due to the use of more 32 tonne GVW rigid vehicles. The different scenarios are shown in **Figure PS14**.

6.8 HGVs will be restricted to the surfaced roads on the main development site and the access road. These roads will be maintained in a condition that prevents the

movement of mud onto the road beyond the site entrance on Loxwood Road and minimising the generation of noise and dust. This will be achieved by the installation of mud control grids and a wheel wash. If necessary, a road sweeper will be used to remove mud from the layby on Loxwood Road.

6.9 It is proposed that a liaison committee is established with attendance by representatives of the local parish council, the planning authority and LCP to discuss the site operations, work undertaken since the last meeting, and work proposed. The liaison committee meetings will provide an opportunity for the local community and LCP to discuss the operations, identify any concerns and quickly resolve any issues. It is proposed that meetings are held every 6 months.

7. Proposed working and restoration sequence

7.1 The clay at the site will be extracted in a series of 30 Phases / cells. Phases 1 & 2 will be extracted in year 1 with the remaining 28 Phases extracted in years 2 to 29. The extracted clay will be exported off site during years 2 to 32. The proposed phasing of the clay extraction is shown in **Figure PS5** and the sequence of working and restoration is shown in **Figure PS6**. The restoration of Phase 1 will commence in year 2 when the extraction commences in Phase 3. At any stage, 3 phases will be work in progress but only the area equivalent to two phases will actually be excavated. The working of 3 phases is shown in **Figure PS15**. Restoration of the 30 Phases will take place over 30 years commencing in year 2 and finishing in year 31. The final restoration work will be carried out during years 32 and 33, which will include the decommissioning of the CMRF building and the conversion of the surface water lagoon to a partitioned fishing lake and habitats pond.

7.2 On the grant of planning permission, the new development site roads, the CMRF building, amenity building, adjacent container storage pad, weighbridge, new bridge and wheel wash will be constructed. Soil stripping and the first phase of the tree felling will commence prior to Phases 1 & 2. The overburden will be stripped progressively in advance of the clay extraction operations and stored for restoration.

7.3 Mineral extraction will continue as shown in **Figure PS6**. The clay stockpile area is sufficient to store 25,000 tonnes of clay for weathering, which is equivalent to two years of exportation. This will reduce to 12,500 tonnes by the end of year 2. The new bridge and layby junction will be constructed in year 0 and will take a maximum of 6 months. Clay extraction could start before the bridge construction starts i.e., once the excavator and dumper truck have been delivered to site. All other construction work would commence after the bridge and layby junction has been completed.

7.4 Restoration will continue as shown in **Figures PS6** and **PS7** with the restoration phase always 2 phases behind the extraction phase. Due to the lower density, when measured in tonnes, the amount of compacted material required for restoration may be less than 12,500 tonnes per annum or less than 375,000 tonnes during the lifetime of the project. However, when measured in cubic metres, the amount of material required for restoration will be the same as the amount of clay extracted from the clay pit. The final restoration ground levels will be the same as the initial ground levels prior to excavation.

7.5 Advanced planting that forms part of the landscaping plan will commence in year 0 for completion by year 2. The landscaping plan is shown as **Figure PS7**.

7.6 The areas of the site subject to restoration with broad leaved tree plantation will be subject to a 10-year aftercare period from the completion of the restoration. Aftercare schemes will be submitted to the planning authority for approval pursuant to conditions of the planning permission.

7.7 There will be extensive mitigation in place to compensate for the loss of the trees needing to be removed, and the habitats affected, particularly those in area 3 shown in **Figure PS4**, through the biodiversity net gain plan and through the mitigation recommended in the Ecological Impact Assessment (EcIA) report, which are produced as appendices to the Environmental Statement and summarised in the ecology chapter in the Environmental Statement. This mitigation is possible as LCP's majority investor and his family also owns the surrounding 300 acres of woodland, which can be utilised for a variety of mitigation purposes, not just

arboricultural but also ecological. This will be covered by appropriate Section 106 agreements. The proposed mitigation measures are shown in **Figure PS16**.

8. Alternatives

8.1 As part of LCP's owners' development of the minerals and waste sectors of their business portfolio, LCP requires a source of clay shale and interdependent arrangement for the recovery of suitably inert materials for the restoration of the clay pit void space and for the recycling of the other fractions recovered from the CD&E wastes in accordance with the Circular Economy policies and objectives. The Need for both aspects of the proposed development is presented in Section 8 & 9 of the Planning Statement. At the proposed clay extraction rate the clay reserves at the proposed development site on the periphery of Pallinghurst Woods will be exhausted in approximately 30 years and the recovery and recycling of CD&E wastes with the related restoration of the clay pit will be completed in approximately 33 years. The proposed site on the periphery of Pallinghurst Woods provides the opportunity for LCP to secure a long-term supply of clay shale to support the development of a hand made brick works elsewhere in West Sussex and/or the sale of clay shale into the local market, along with the development of a waste recovery and recycling activity in accordance with the post Brexit Circular Economy objectives.

8.2 In accordance with Schedule 4 of the EIA Regs a description of the reasonable alternatives in terms of do nothing, alternative sites and site design as relevant to the proposed development and any specific characteristics is provided in this section of the Environmental Statement. The main reasons for selecting the proposed development as set out in Sections 4 to 7 of this Environmental Statement are shown along with a comparison of the environmental effects.

Do nothing

8.3 The 'do nothing' option relates to the evolution of the site environment without the proposed development taking place. Via a series of Section 106 Agreements, the family that controls LCP and owns the 110+ hectares of woodland surrounding the proposed development site, is prepared to fully mitigate any residual ecological impacts from LCP's proposed development by using a large part of the surrounding woodland to provide a significant biodiversity gain, which would evolve in parallel with the proposed development and provide quantifiable benefits to the local community that has access to Pallinghurst Woods via the network of public rights of way. Furthermore, at the end of the clay pit restoration period, all of the current scrubland / whole of the clay pit site will have been replanted with deciduous broadleaved woodland and the site lagoon partitioned into a small fishing lake and a pond suitable for local habitats e.g., great crested newts.

8.4 If the development does not proceed, the biodiversity gain opportunities will be lost, along with the socio-economic benefits arising from the supply of clay and clay products to the local economy and along with the lost opportunities from the recycling of CD&E wastes in accordance with the Circular Economy policies and objectives. Furthermore, if the development does not proceed, the landowners' will need to review their woodland management practices employed during the last 30 years.

8.5 The woodland before the 1960s was sustainably managed by the Pallinghurst Estate and post 1960 by Tilhill Forestry. There was extensive planting of conifers, mainly Norway spruce, from 1961 up to 1984, replacing up to a third of the original oak woodland. Since 1984, native broadleaves have been the species of choice, reflecting the changing objectives from commercial timber production to

conservation. This woodland management ethos has been maintained by the current owners since they purchased the woodlands in 1993.

8.6 The woodland has throughout its current ownership been sustainably managed to produce a range of products including biomass, firewood, softwood, and hardwood timber to supply local markets. The aim is to maintain and develop the biodiversity of the whole woodland to create a sustainable, balanced, and dynamic forest ecosystem in line with the UK Woodland Assurance Standard (UKWAS). The woodland has been managed through multiple Forestry Commission approved management plans since Tilhill have managed the woods. An updated 2020/21 plan is currently being written to ensure that sustainable forestry management within the woodland is up-to-date. All felling within the woodland has been approved through a felling license application signed off by the Forestry Commission to ensure legality and sustainability. Forestry works have been backed by the English Woodland Grant Schemes in the past and are to be put into the current Countryside Stewardship Scheme in 2021. With the ongoing gradual conversion to broadleaves, oak stands have been managed through intermediate thinning and harvested using a coup felling system (small felling blocks of no more than 0.25ha). This enables continuous cover forestry in the historic broadleaf compartments, enabling landscape and habitat values to be maintained.

8.7 Conifer stands have been clear-felled and restocked with mixed broadleaves (primarily oak) to bring the native woodland cover back and carry out habitat restoration in the Plantation on Ancient-Woodland Sites (PAWS). Clear-felling is being undertaken in phases to limit ecological and landscape impact and the remaining conifers are proposed to be felled over the next ten years and restocked with native broadleaves. Hazel coppice regimes were introduced in 1999 with perimeter deer fencing installed to discourage deer browsing of newly coppiced shoots. This management prescription enabled considerable benefit to the butterfly populations in the woods. Further hazel coppice is proposed to increase wildlife habitat in the updated Forestry Commission woodland management plan currently being written. Two-zone ride management has also been annually maintained to allow for multiple habitat types along the internal ride system for invertebrates. Inaccessible areas have been designated as long-term retention for nature reserves; which are managed primarily for biodiversity, with work being undertaken as opportunities arise, and the long-term objective of maintaining or converting to native species. Deadwood provides an important habitat and its provision is important for maintaining biodiversity within the forest. On-going management has allowed for the retention of standing and fallen deadwood where it does not pose a hazard. Seed trees have been identified to retain to promote future natural regeneration.

8.8 Veteran trees throughout the woodland have been identified and halo thinned to allow for their canopies to remain healthy without competition. These veteran trees provide huge habitat potential and create impressive landmarks throughout the woodland. Bi-annual tree safety surveys take place to ensure the public rights of way and public highways are safe from and potentially dangerous trees. Remedial works ensure the safety of walkers in the woodland and passing traffic. The Countryside and Rights of Way Act 2000 meant new responsibilities for those who own and manage woodlands. The management of this type of woodland is very different to a large-scale commercial forestry operation, such as fast-growing Sitka Spruce.

8.9 The evolution of the site environment without the implementation of the development has been considered in each of the technical sections of the Environmental Statement (Sections 17 and 19). If the development does not proceed, it will be necessary for the landowner to reduce some of the annual woodland management expenditure thereby allowing areas that are visible but legally inaccessible to the public, to become overgrown, which will reduce the amount of natural light that currently penetrates through to the woodland access road and the glades surrounding paths and tracks. The replacement of conifers would need to stop. During the next 10 to 20 years this would have a detrimental impact on the landscape character and amenity and the natural habitat for some species such as the woodland white butterfly.

8.10 It is important to recognise that the proposed development on the periphery of Pallinghurst Woods represents an opportunity in West Sussex for the supply of clay suitable for brick making and construction products for approximately 30 years, which should be seen in context with the recent closure of other brick works in the county e.g. Rudgwick, and the dwindling clay reserves at Pitsham and West Hoathly. Furthermore, the development also represents an opportunity to realise an interdependent waste recovery and recycling activity that is in accordance with the post Brexit Circular Economy policies and objectives, at a time post the Covid pandemic, when other allocated waste sites are not being developed and there is a proliferation of unpermitted waste sites in West Sussex, many of which are larger than that being proposed by LCP and may currently be operating under the radar without the benefit of planning permission.

8.11 The do nothing option does not meet the objectives of the NPPF in terms of encouraging sustainable development that promotes economic benefits, in terms of employment and vibrant communities and in terms of the secure supply of clay for the manufacture of valuable products for use in the building industry without resulting in significant environmental impacts.

Alternative sites

8.12 As set out in Sections 8 & 9 of the Planning Statement there are no other suitable clay extraction sites, and many of the allocated waste sites have either not been developed or planning permission has been given for another type of development. There are no other sites more suitable for development for the proposed interdependent uses in West Sussex.

Alternative site design

8.13 The design of the proposed site has progressed from the original 2017 ground investigation, as the EIA has been undertaken. The original shallower excavation design followed the northern boundary of the site immediately adjacent to Footpath 792_1 and 40m further eastwards beyond the private eastern boundary track. The archaeological, arboricultural and ecological impact assessments required a change to the size of the clay pit and its northern, north-western and eastern boundaries, and the entire footprint was moved further southwards with some cells requiring a slightly deeper excavation. In addition to the area of the proposed clay extraction, the final design also considered surface water management, access and restoration.

<u>The area of the site</u>

8.14 The area of Pallinghurst Woods that was considered for LCP's development extends to approximately 121 hectares and LCP's proposed development extends up to 8

hectares which consists of approx. 6 hectares for the clay pit, 1 hectare for the CMRF building, amenity building, clay stockpile and site access for vehicle loading / unloading and 1 hectare for the access road to the nearest highway. The location of the 7 hectares of land on the periphery of Pallinghurst Woods was chosen from the results of the clay survey carried out in 2017 and due to its distance from neighbouring properties re noise and visual impact. The use of an existing access road through Pallinghurst Woods minimises any ecological impact arising from the access to the development site.

8.15 Clay will not be extracted from other smaller areas of the 7 hectare site between the redline boundary and the edge of the clay pit. The area of the proposed clay extraction is shown in **Figure PS5**.

Surface water management

8.16 As there is no groundwater present on the site, there is no potential for the base of the excavation to heave because of groundwater pressure. As the clay mineral is extracted from the site any surface water ingress to the void will be controlled by a series of sumps and trenches excavated in the base of the site as the extraction progresses. Pumps will dewater the working area into a segregated area in the surface water lagoon. Surface water run off from rainfall on the rest of the site will be channelled to the clean section of the surface water lagoon. Where possible surface water from the lagoon will be treated and used in the Mist Air system to remove airborne dust from inside the CMRF building and when waste recovered materials are used to restore the claypit void. Any water discharge from the site into the adjacent land drain that eventually flows into controlled waters will be subject to a water discharge permit obtained from the Environment Agency. No bunds will be required to prevent surface water from running on to the site because the existing northern boundary bund will be left completely intact due to the minimum 15m offset from that boundary. Annual average rainfall at this location is 600mm (min 41mm month and max 69mm month), which equates to 36,000m^3 of rainwater falling on the 6 hectare claypit area. The Mist Air system will require 1,300m^3 / annum of treated rain water.

Access

8.17 During the design stage several alternative access options to the proposed development site were considered. Although the Danhash family land ownership includes several rights of way to the west, east and south, they do not own the land to the north and have no right of way directly northwards along the remainder of the former Pallinghurst estate road to the junction with the A281 opposite R Harrison & Sons and RGH Supplies on the northern side of the carriageway. The northern section of the former Pallinghurst Estate Road passes through or past 7 or more other freehold properties before it joins the A281. These legal restrictions prevent the use of the most direct route to the A281. The alternative access options to the proposed development site are shown in **Figure ES 1** and include:

- Alternative 1 – western access along Pigbush Lane towards Alfold. The lane is too narrow for HGV use in common with other residential users.
- Alternative 2 – eastern access following the bridleway towards Barnsfold Lane and Tisman's Common. Bridleway access rights do not allow widening of the bridleway for HGVs or changes to the surface.
- Alternative 3 – eastern / southern access along the bridleway to join the north western corner of the eastern plot of Pallinghurst Woods and then

on to the layby on Loxwood Road. Bridleway access rights do not allow widening of the bridleway for HGVs or changes to the surface. New route through the eastern plot would need to pass through ancient woodland.

- Alternative 4 – northern access to the A281 along the northern section of the former Pallinghurst estate road. No private right of way along this route.

8.18 For the reasons given above none of the alternatives were viable, so the existing 1.6km south-western section of the Pallinghurst estate road through Pallinghurst Woods to the layby junction with Loxwood Road with a routing agreement to join the A281 at Tisman's Common was chosen as the preferred access route.

Alternative restoration design

8.19 The restoration proposals for the site have been determined by the baseline setting of the site, the ecological mitigation measures and the aspiration to achieve a BioDiversity Net Gain. The NPPF policies for biodiversity net gains and restoration of the woodland support these objectives. Alternatives such as more or less habitats with nature conservation interest or less broadleaved woodland restoration would conflict with the balance that can be delivered.

PART 3 BASELINE AND ASSESSMENT OF ENVIRONMENTAL EFFECTS

9. Cumulative Impacts

9.1 Schedule 4 of the EIA Regs states that the description of the likely significant effects of a development on the environment resulting from the cumulation of effects with other existing and/or approved projects taking into account any existing environmental problems relating to areas of particular environmental importance likely to be effected or the use of natural resources should be included in the Environmental Statement.

9.2 In carrying out the EIA an assessment of the cumulative impacts of the proposed clay extraction and restoration operations plus the recovery and recycling of CD&E wastes plus the committed developments in the vicinity of the site has been undertaken. The committed developments that have been identified for assessment are the recently applied for residential developments in Loxwood, approved by Chichester District Council. Application ref. 20/01617/OUT for 24 residential dwellings on land south of Loxwood Farm Place and application ref. 20/01481/FUL for 50 dwellings on land south west of Guildford Road, Loxwood. As the applications have been approved consideration has been given to the potential for cumulative impacts and is presented as necessary in Part 3 of the Environmental Statement.

9.3 Information regarding the proposals available on WSCC and Chichester District Council's website / planning portal have been reviewed and the potential for cumulative impacts has been assessed with regard to traffic and transport and the other EIA technical issues addressed in Part 3. It is concluded that the cumulative impacts of the proposals at LCP's proposed site and the approved residential developments off Guildford Road, Loxwood will not be significant.

10. Transport, traffic and public rights of way

10.1 A transport and traffic technical note along with a Stage 1 road safety audit, for the existing highway junction at the layby on Loxwood Road, has been prepared by Nick Culhane, Highway Consultant and Fenley Road Safety Limited. Both reports are shown as **Appendices ES E and ES F**. The draft version of the transport and traffic technical note was reviewed by WSCC Highways (**Appendix ES G**) and their recommendations are included in the final version of that report.

Baseline

10.2 The entrance to Pallinghurst Woods is currently accessed by cars, light commercial vehicles and HGVs, via the layby junction on Loxwood Road, which is classified as the C11 and is subject to the National Speed Limit. In the vicinity of the Site it does not benefit from pedestrian footways or street lighting, however, there are very few residential properties within the immediate area.

10.3 There are wide verges on both the northern and southern side of the carriageway, which in the vicinity of the access itself measures some 5.7m. The width of the road at this point allows for two HGV's to safely pass one another at speed. However, the existing layby junction is not in accordance with current design standards to allow for the movement of rigid HGVs, albeit HGVs do currently use it.

10.4 Loxwood Road runs from Loxwood to the west, past the site then northeast through Tismans Common, where it meets the A281 Guildford Road, which is part of the Lorry Route Network. The Guildford Road in turn runs to the northwest where it meets the Alfold Bypass and to the east to Clemsfold. The A281 runs on through Broadbridge Heath where it then connects with the A264 and the A24 Interchange.

10.5 The Guildford Road is subject to a 30-mph speed limit and visibility at the Loxwood Road / A281 junction is in accordance with Manual for Streets. The junction geometry is also such that the junction can accommodate the turning requirements of the vehicles likely to be associated with this operation.

10.6 To the west, Loxwood Road forms a junction with B2133 High Street at Loxwood. The High Street is also subject to a speed limit of 30 mph and visibility at this junction is also in accordance with Manual for Streets. Again, the junction geometry is such that it can easily accommodate the turning requirements of the vehicles likely to be associated with this operation.

10.7 The width of Loxwood Road has been measured in strategic locations and for the majority of its length it varies in width, but for the main it is in excess of 5.5m. There is a small section of Loxwood Road west of Exfold Farm that narrows to 5.1m for a distance of some 80m. This section is straight however with excellent forward visibility.

10.8 Traffic speed and volume surveys were undertaken on Loxwood Road in June 2020 before the end of the first Covid lockdown period when baseline traffic flows were much lower than normal i.e., so the worst-case impact from the proposed development could be ascertained. The Automatic Traffic Counters (ATC's) were installed at three separate locations. ATC 1 and ATC 2 were positioned east and west of the access junction whilst ATC 3 was positioned to the northwest, close to the A281 Guildford Road junction.

10.9 Average daily traffic volumes at Loxwood Road site access were recorded at an average of 1240 vehicles per day, whilst 14 of these were recorded as HGV's. To

the east, traffic volumes were higher with average flows of 1825 vehicles, 36 of which were recorded to be HGV's.

10.10 ATC 1 recorded traffic approaching the site from the west to be 48.1mph when adjusted for wet weather. Traffic approaching the site from the southeast was recorded at 42.5mph, again when adjusted for wet weather. Utilising the Sight Stopping Distance formula taken from Manual for Streets 2, visibility splays of 152m are required to the west and 125m to the southeast.

10.11 In order to determine the extent of the public highway in the vicinity of the access, an extent of public highway search was undertaken. The plan shows that there is a considerable amount of highway verge east and west of the access which can be utilised for the required visibility splays.

10.12 The available visibility at the site access shows that a maximum splay of 2.4m by 150m can be achieved to the west. This is the more critical direction as cars will be approaching the site access on the nearside of the carriageway. To the southeast, a maximum splay of 2.4m by 105m can be achieved to the nearside of the carriageway. Using an offside distance of 4.5m actually increases the visibility splay to 108.9m. The survey also provided the forward visibility for vehicles approaching the access from the east.

10.13 A review of personal injury traffic accidents has revealed that there have been no recorded accidents between the site access and the Loxwood Road junction with the A281 Guildford Road in the last 5 years. It is understood that there has been a recent fatality at Tismans Common, but this is not on the section of Loxwood Road now being proposed. Additionally, the accident was thought to be caused by Dangerous Driving and was not due to any highway deficiencies. The accident is therefore not relevant in this case.

10.14 Based on the PROW survey carried out in August 2020, people parking in the layby on Loxwood Road, to walk the adjoining bridleway with or without dogs, seemingly account for more than 110 vehicle movements per day, which is almost 10% of the traffic passing along that section of Loxwood Road.

10.15 Based on the transport statements submitted with the planning applications considered for cumulative impacts, it is possible to compare the number of vehicle movements along Loxwood Road, with those measured along the section of the B2133 Guildford Road through the village of Loxwood. Compared to the 1,240 to 1,825 movements per day on Loxwood Road (as measured in June 2020), the two planning applications relied on traffic counts respectively taken on Guildford Road in 2014 and 2017, which recorded c. 3,214 movements per day (March 2014) with c. 545 movements during the peak 1-hour periods of 0730/0830hrs and 1700/1800hrs (June 2017). The National Transport Model would now uplift those figures by c. 5% adjusted from 2017 to 2021 but this does not take account of any reduction during the Covid lockdown period.

10.16 If the proposed development is not approved, it is considered that over time there would be a growth in traffic numbers on the wider traffic network in the vicinity of the site in line with national projections. During the last 4 years, the National Transport Model (with adjustments made for local factors derived from the TEMPRO database for the Chichester 002 middle layer super output area (MSOA), which comprises the development site and surrounding area) has reported that growth to be c. 1.2% per annum.

Assessment of environmental effects

10.17 Clay exportation from the proposed site in Pallinghurst Woods and the importation of CD&E wastes to be processed for restoration, is anticipated within 2 years of the clay extraction operations commencing. For the purpose of assessing the traffic numbers the rate of clay exportation is 12,500 tonnes per annum, the rate of CD&E waste importation is 25,000 tonnes per annum and the exportation rate of recovered wastes is 12,500 tonnes per annum. The origin of the imported CD&E wastes cannot be determined at this stage but it is assumed that it will be imported from the east or south of the site. The importation and exportation will average 42 HGV movements per day Monday to Friday 0800 to 1800hrs (21 HGVs in and 21 HGVs out), which is equivalent to 4 HGV movements per hour. All movements could be to/from the east of the main entrance on Loxwood Road to the junction with the A281 at Bucks Green. Employee and visitor car movements are likely to add max 20 movements per day.

10.18 An assessment of the cumulative traffic impact of the proposed development has been carried out. The committed development is described in Section 9 and the transport and traffic technical report is shown as **Appendices ES E and ES F**. For the purpose of the cumulative impact assessment the change in HGV and car movements associated with the proposed operations will be limited to planning approval being granted.

10.19 The approved Thakeham Homes residential development off Guildford Road in Loxwood, is predicted to generate 30 vehicle movements during each of the two morning / late afternoon 1-hour peak periods and the Castle Properties development off Guildford Road in Loxwood, is predicted to generate 119 vehicle movements per day. Both of the transport statements submitted with those applications concluded that the traffic impact would be negligible. It is not known whether the minority or the majority of the vehicles travelling north/south along Guildford Road will also travel east/west along Loxwood Road and it is not known whether the normal traffic levels on Loxwood Road are similar to those on the B2133 Guildford Road i.e., c. 3,200 movements per day or double what was measured on Loxwood Road in June 2020.

10.20 Provided that HGVs do not travel along the western section of Loxwood Road between the entrance to Pallinghurst Woods and Loxwood, the HGV movements can have no cumulative impact on the vehicle movements along the B2133 Guildford Road / Loxwood High Street.

10.21 The site will be serviced by rigid HGVs ranging from 18 tonne GVW to 32 tonne GVW. The existing eastern access onto Loxwood Road will be utilised in an improved form and swept path tracking has been undertaken to test the ability of such vehicles to be able to negotiate this access. The drawings included in Planning Statement **Figure PS 13** demonstrate that the access arrangements are suitable for such vehicles to enter and leave Loxwood Road through this existing access junction without encroaching onto the oncoming carriageway. Following discussions with the Highways Authority, concern was raised that vehicles may park within the access road thereby hindering the ability for vehicles to enter and leave the site. The access road is therefore proposed to be widened to allow for vehicles parking within this area, whilst maintaining adequate manoeuvring room. See Appendix PS 13.

10.22 It is recognised that the most direct route to the strategic highway network (A24) is to the east. Whilst this would allow two lorries to pass one another, some caution

would be required for a distance of some 80m west of Exfold Farm. This section is straight however with excellent forward visibility. Approaching vehicles would therefore have adequate time and distance to take appropriate action.

10.23 The HGV traffic associated with this proposal is likely to increase the recorded vehicular volumes by some 3.2% to the west, at the site access and by just 2.3% at the A281 Guildford Road junction (or 3.4% to 4.7% when including cars). This is not considered to be a material increase when spread throughout the day.

10.24 Whilst the south easterly splay of 108.9m is slightly less than the 114m required from the adjusted measured speeds, vehicles are unlikely to be overtaking at this point, given the alignment of the road. Additionally, given the suggested lorry routeing that will be in place, vehicles will be turning left out of the site and so the critical splay will be to the west, where adequate visibility is available. It is therefore considered that adequate visibility is available at the site access to serve the limited number of traffic movements that the development will produce. Adequate visibility can be provided in accordance with the requirements of Manual for Streets 2.

10.25 The surrounding highway network both east and west of the site is suitable in width to accommodate the traffic likely to be generated, whilst the junctions at the A281 Guildford Road and B2133 The High Street both have adequate junction geometry. The highway implications of the proposal are therefore considered not to cause any demonstrable harm to highway safety. The Stage 1 road safety audit report is provided as **Appendix ES F**.

Footpaths

10.26 It is necessary to temporarily divert a section of Footpath 792_1 that follows the northern boundary of the development site to assist with the security of the site and improve public safety. A 400m section of Footpath 792_1 between its junction with Bridleway 801 and its junction with Footpath 797 would be closed for the duration of the project. The diversion would follow Footpath 792_1 from its junction with Footpath 797 towards the Sussex Border Path before returning south along Bridleway 801 as shown on **Figure ES 2**. The impact of the proposed development on views from public rights of way is shown in Section 11 of the Environmental Statement and **Appendix ES H**. Likewise, it will be necessary to provide a fence between Footpath 795 and the parallel private right of way from Bridleway 3240 to the edge of Hurst Wood. The proposed temporary changes are unlikely to have a significant impact on the users of the footpaths, see Planning Statement **Figure PS 9**. At the end of the restoration period, the footpaths will be reinstated.

10.27 At the end of the restoration period, internal views of the woodland will be enhanced by a new footpath that will follow the western, southern, and eastern boundaries of the proposed development site, from the junction of footpaths 792_1 / 797 to the junction of footpath 792_1 / bridleway 801. This footpath will provide access to the fishing pond that will be provided in part of the area allocated for the surface water lagoon, see **Figure ES 2**.

Mitigation

10.28 The following mitigation measures are proposed to minimise the effects of the proposed development on traffic and the highway network:

- All HGVs will approach the site from the east and leave the site towards the east on Loxwood Road to the junction with the A281 at Bucks Green and this will be subject to a lorry routing agreement.

- HGVs will be restricted to the surfaced roads on the main development site and the access road. These roads will be maintained in a condition that prevents the movement of mud onto the road beyond the site entrance on Loxwood Road and minimising the generation of noise and dust. This will be achieved by the installation of mud control grids and a wheel wash.
- If necessary, a road sweeper will be used to remove mud from the layby on Loxwood Road.
- By agreement with the neighbouring landowners on Loxwood Road, 200m either side of the layby, regular trimming of the hedgerow will be undertaken to maintain the maximum visibility splay.
- The entrance to the layby will be widened as detailed in **Figure PS13** and maintained in accordance with a Section 106 Agreement with signs installed drawing attention to the new road layout.

Conclusion

10.29 There are no material reasons why the proposed development for the exportation of clay, the importation of CD&E wastes and exportation of recovered wastes should not be granted planning permission on highway safety or traffic grounds.

11. Landscape and visual impact assessment (LVIA)

11.1 An assessment of the Landscape and Visual Impacts that the development will have has been professionally undertaken by Landvision South East Ltd. The scope and content of the assessment was guided by the scoping report from WSCC and the methodology followed the Guidelines for Landscape & Visual Impact Assessment, Third Edition, 2013, written by The Landscape Institute & The Institute of Environmental Management & Assessment.

11.2 The LVIA was broadly carried out in the following stages :

- Baseline data collection via desk-top research, consultation and fieldwork.
- Investigation of the baseline landscape character and visual amenity of the site and surrounding area, to identify the relevant landscape and visual receptors (including key viewpoints) and determine their sensitivity to change.
- Identification and assessment of individual landscape features and elements.
- Identification and assessment of landscape character and quality (condition.)
- Assessment of visual amenity for the people who view the landscape.

The full assessment is presented as **Appendix ES H**. A summary of the results from the report are presented here.

Baseline

11.3 The development site is in an undesignated landscape area. It lies in the Low Weald NCA 121, within West Sussex, and in Local Landscape Character Area, LW4 (West Sussex County Council Landscape Character Assessment 2007).

11.4 The Historic Landscape Classification (HLC) map shows there are a variety of HLC woodlands on and surrounding the site. Just outside the northwest tip of the site is "ancient semi-natural woodland", and to the south and east of this wood, the woodland is classified in the HLC as "regenerated wood". To the southwest the woods are listed as "regenerated wood". There is also some further assart woodland to south of the site in addition to "Modern to World War II", coniferous plantation and some ghyll woodland along the stream sides.

11.5 The development area lies north of Loxwood Road and is separated from this road by approximately 1 Km deep mature woodland of Pallinghurst Woods. There are a number of public rights of way between Loxwood Road and the site, in particular, there are two footpaths and one bridleway which run along, or close to, the northern edges of the site, with some views to the site. To the far south there are several footpaths and bridleways which are close to the proposed lorry access route and receptors on these will all experience some changes in views.

11.6 The site is located within a dense area of mature mixed deciduous woodland, with some coniferous woodland on, and near to, the development area. Part of the land on the application site has been replanted within the last 5 years. The site itself comprises semi mature shaws and trees along the northern and eastern margins,

with some ancient woodland to the west, and these wooded areas with mature trees act as a visual buffer for the site. The species on site are a mixture of broadleaved native trees, some self-seeded natural regeneration, of native tree and shrub species giving a varied woodland edge. There are some mature Oak trees, and beyond the site, there are more blocks of mature mixed native broadleaved woodland to north, west and south, as well as to the east of the site, within Pallinghurst Woods. These blocks and strips of interconnecting woodland form one of the key landscape characteristics of the LCA HW4, Low Weald Hills.

11.7 The site is located in the Low Weald, fairly low down in the clay vale landscape, typical of the Ludwick Low Weald landscape of LCA LW4, which stretches west-east, to the south of the Surrey Hills AONB, and to the north of the South Downs National Park, it is also north of the river Arun and the Wey-Arun canal. The woodland surrounding the site is part of one of the largest woodland areas in west LCA LW4. The site lies at a height of approximately 45m Above Ordnance Datum (AOD). The land on the site is gently sloping to 40 metres AOD in the south. Beyond the woodland to the west are fields of improved grassland and arable to north and south of Old Songhurst Farm. The dwellings within 1 Km to the west of the site are mainly isolated farmsteads.

11.8 The geology contributes to the fairly flat to gently sloping clay vale topography of the surrounding landscape. The site itself slopes south-westwards, and is part of an intricate, small scale landscape of clay vale with streams cutting down into the clay. There are ghyll streams with ghyll woodland to the south and west of the site which will be conserved by the proposals and which will not be adversely affected by the proposed clay extraction works. Infilled clay pits are a historic feature of the area.

11.9 The mosaic of woodlands and small fields of pasture is characteristically small scale and typical of this local landscape character area. The site forms part of the large block of woodland which includes Hope Rough, to the north, Great Scrubbs to the south, as well as Woodland Furze to the south east and Halffurze Field to the south west, with Beggars Copse to the south, north of Loxwood Road and Pephurst Farm. Further east are Pephurst Wood and Bullhams Wood. The large block of woodland that surrounds the site is characteristic of LCA LW4 – The Low Weald Hills. This mature woodland forms a buffer on all the site boundaries, with further mature woodland on all sides of the site, and some dense understorey along the western and northern site boundaries. In terms of LVIA, the mature tree belts and woodland blocks of the Pallinghurst Woods are key landscape characteristics and contribute to a strong sense of place. The woodland and mature trees create a resilient landscape with the capacity to accommodate some changes of the scale proposed, both on the site and on the access route.

11.10 Baseline information regarding existing landscape features and potentially sensitive visual receptors, and the likely change in the landscape character and visual amenity of the site and its surroundings, was used to identify the potential LVIA effects and to inform the final development scheme.

11.11 Criteria thresholds for assessing the degree of change as a result of the development were established, and the final layout of the scheme reviewed to ascertain the magnitude of change in both the landscape and in views. Potential visual effects on historic features of interest were also assessed. Cumulative effects of other strategic sites in West Sussex were also assessed in terms of any impacts on the landscape character and visual quality. Landscape Visual Impact Assessment, with Landscape Character Assessment, is key in developing an

understanding of how to conserve, to protect and to enhance the landscape. An assessment of the landscape effects on local landscape character was therefore a key part of the LVIA assessment.

Desk based assessment

11.12 For the purposes of the LVIA, a 2 Km study area from the centre of the site was used as a boundary to assess the effects of the proposals. The study area was considered in acknowledgment of the scale of the proposals, the topography of the site and the landscape around the site, together with the combined effects of intervening topography and mature hedgerows and small woods and shaws in the views. Intervening residential buildings and natural forms such as banks with hedges and the nature of vegetation cover also affects visibility of the site.

11.13 A map showing the developments Zone of Visual Influence (ZVI) was produced in order to map those areas which could potentially have views into site. In the case of this proposed development, the site's ZVI is enclosed and confined to parts of the north, northwest, northeast, and east, because of topography, site levels, existing boundary vegetation and intervening vegetation. The ZVI is shown as **Figure ES 3**.

Resources

11.14 The desktop baseline study of landscape and visual assessment comprised a study of the following data sources:

- The Google Earth website at www.earth.google.com;
- The Multi-Agency Geographical Information for the Countryside website at www.magic.gov.uk;
- National Planning Policy Framework (NPPF); Department for Communities and Local Government (2012)
- Chichester District Local Plan, 2014-2019. Adopted March 2018.
- National Character Area Profile 121: The Low Weald, Natural England, Countryside Commission and English Heritage.
- The West Sussex Landscape Character Guidelines. Local Distinctiveness. The Low Weald Character Area.
- The West Sussex Landscape Management Guidelines Sheet LW4 Low Weald Hills, Low Weald.
- County-wide Landscape Guidelines set out in A Strategy for the West Sussex Landscape (November 2005) published by West Sussex County Council.
- West Sussex Joint Minerals Local Plan (Until 2033).
- West Sussex Minerals and Waste Materials Development Scheme (2020-2033).
- West Sussex Waste Local Plan (2014-2031).

The landscape and visual impact of the development was considered against each relevant policy in the above list, and the results of these assessments are detailed in the full LVIA report.

Methodology

11.15 The LVIA was undertaken by a qualified Landscape Architect with experience of similar types of development. The assessment was undertaken in accordance with best practice outlined in the following published guidance:

- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (2013) Landscape Institute and the Institute for Environmental Management and Assessment.
- Landscape Character Assessment Guidance for England and Scotland (2002); The Countryside Agency and Scottish Natural Heritage; and
- Guidelines for Environmental Impact Assessment (2004); Institute for Environmental Management and Assessment.
- West Sussex Historic Landscape Characterisation (HLC)- historic landscape character assessment.
- The West Sussex landscape, Character Guidelines, Local Distinctiveness. Guidance Sheet for the Low Weald.
- Land Management Guidelines and key characteristics of the Low Weald Hills, LCA LW4, Low Weald NCA 121.
- The National Planning Policy Framework (NPPF), sections on Good Design and promotion of and reinforcing of local distinctiveness and enhancing biodiversity. Building local distinctiveness into the core of development and land management decisions.

Field based assessment

11.16 The site was visited in September and November 2020 in order to assess the potential effects in both late summer and autumn/winter conditions, and to obtain the following data:

- Photographs from proposed Representative Viewpoints – these were agreed in advance with WSCC.
- A corroboration of the findings of the desktop review.
- To obtain additional information on landscape features, views and localised screening effects of mature vegetation.

Site surveys were undertaken during periods of clement weather from public highways, Public Rights of Way (PROW) in addition to Loxwood Road.

Assessment of Environmental Effects

The LVIA has predicted impacts which are divisible into the effects due to the site, and the effects due to the access route.

Site Impacts

11.17 The impacts on views are concentrated in a narrow visual envelope restricted to the northern edge of the site, with no long-distance impacts on the wider rural

landscape setting. The main visual impacts are restricted to the northern site boundary for walkers on public footpath 792 – 1, from the north-west footpath 797, and for riders from bridleway 801, and footpath 3239, with some views into the north eastern edges of the site. These impacts vary from high to moderate and low depending upon the proximity to the site. The receptors will be walkers on the adjacent footpaths who will have a high sensitivity. Due to the narrow visual envelope(s) and restricted views; the orientation and nature of the footpath, and existing screening from mature trees and woodland, means there will be an overall moderate magnitude of change and medium visual impact on these close-range views for visual receptors. Where this is limited by existing screening there will be a moderate/ high visual impact on these views, until mitigation planting takes effect.

11.18 The main visual impacts and landscape effects of the site buildings and activities will be kept to a narrow visual envelope and experienced only at close range by walkers on two footpaths 792-1, and footpath 797, and one Bridleway 801. At 1km from the site, the site's boundaries are not visible from the wider Low Weald to the west, to the north, nor to east or south. From these areas the site is totally hidden, due to combined effects of changes in land levels, and mature intervening woodland, of interlinking woods and shaws, intervening hedgerows and gently sloping topography. The landscape effects to these areas is therefore described as negligible. There are no views of the site from the Low Weald Listed buildings because of the intervening topography and differing land levels. Woodland cover to the north of the site also means that there are no views from the Sussex Border Path.

Woodland access road impacts

11.19 For the proposed access route to the site, which is already a woodland extraction ride/track associated with the management of Pallinghurst Woods, the magnitude of change will be lower than if the access route were completely new. The proposed access route visual impacts and landscape effects are localised and restricted to the woodland to the far south of the site, with some limited views from Loxwood road of the proposed access route. This is due to the location of the access route, to the location of public rights of way, and also largely due to the enclosed wooded nature of the views, as the access route is proposed along an existing woodland extraction route mostly within a wooded setting. These landscape characteristics produces a relatively narrow visual envelope of changes restricted to views channelled along public rights of way.

11.20 Landscape effects relating to increases in noise will be introduced into the baseline landscape, which is a rural landscape. There are existing suburbanised landscape elements of the baseline landscape at Loxwood layby, adjacent to Loxwood Road. The change in landscape effects will be due to the 42 lorry movements per day, with their associated noise. There would be a further suburbanising effect on the landscape setting of the land at Pephurst Wood, north of the Loxwood Road layby, due to visibility splays, signage and additional vehicle movements. The effects in this area due to these issues would be moderate/ slight adverse. Overall, the magnitude of change to the existing route is likely to be lower due to the sylvan location and existing tree belts. Some footpaths run alongside (BW 3240, FP 795) or cross the access route (BW 3240, and footpath 792). Where this occurs the magnitude of change will be moderate and there will be adverse visual impacts on walkers encountering lorries, and some adverse landscape effects.

11.21 There will be brief views for motorists from Loxwood road, and from the layby, north of Loxwood road, which leads to the bridleway 3240. Motorists are deemed to be a lower sensitivity receptor as their main activity will be driving, and any views will be oblique. The cumulative visual effects on the landscape setting is described as moderate adverse, changing to slight adverse/negligible after mitigation measures have been taken.

11.22 In summary, the LVIA findings are for mostly moderate visual impacts in year 1, on a small number of close-range views, along the nearest public footpaths and bridleways adjacent to the north of the site. There will also be some moderate visual impacts on receptors where these are closest to the adjacent proposed access route with moderate adverse effects. However, there are some long-term slight to moderate beneficial landscape effects and visual impacts after 15 years, once mitigation planting has taken effect. The effects on listed houses and parks and gardens within the landscape can be described as negligible.

Mitigation

11.23 Strategic mitigation measures have been developed in tandem with the proposals to minimise adverse effects as part of an iterative design process. Options for merging the scheme into its landscape setting were investigated and adopted as mitigation measures where appropriate. The proposed mitigation is to screen the site activities, in accordance with LW4 Low Weald Hills Management Guidelines. This would be effected by allowing the present woodland to become dense along the site margins, and for additional planting to soften the views of the clay extraction operation and any site buildings from any receptors on the adjacent rights of way. The mitigation planting will help to lower the visual impacts and landscape effects over time, and to eventually bring some long-term beneficial landscape effects. The plant species used in mitigation will need to reflect the mainly native species found locally in this part of the Low Weald, including planting of species beneficial for woodland and heathland birds, such as Birch and Willow or Willow Tit, as well as planting/ management for other countryside birds, such as Lapwing. This will help to conserve and enhance the site's experiential landscape character and the sylvan landscape setting, and to enable the development to merge with its wider wooded landscape setting in the Low Weald clay vale. As the mitigation planting takes effect some changes will be beneficial in the long term. These include changes for biodiversity as well as in the nature of the views.

11.24 The widening of the proposed access route at the passing places, will have some beneficial impacts on woodland flora and fauna, including butterflies such as Brimstone, and wildflower mixes of local provenance seed will be included in hedgerow and shaw planting schemes. This will conserve and enhance the woodland edge shrub layer species mix for local wildlife and enhance the visual amenity of the local landscape character area. Shrub layer species such as Hazel, Elder and Holly, with Honeysuckle and Dog Rose, will produce new habitats for butterflies. They will enable low level screening of the site and the proposed access route views for receptors on local footpaths and bridleways, as well as at Loxwood Road layby and Loxwood road. All the woodland buffers to the site and the access route, to the north, west, south and east will be protected and retained, and the natural beauty and biodiversity of the ancient woodland site will be protected, as well as any mature trees on the periphery of the site which will be integrated into the mitigation planting to soften views of the proposed buildings and the layout of the proposed clay extraction and recycling operations.

11.25 Mitigation planting for views from Loxwood Road and the bridleway should include a buffer zone of retained mature hedgerow and trees, including gapping up by new planting of native, fast growing deciduous and evergreen native species. It is important to retain the sylvan nature of the views along Loxwood Road looking north towards the access road, and bridleway. This planting will help to conserve the sense of place and to retain the key features of the landscape character of the site within LW4.

11.26 Mitigation for safety; Installation of Kissing gates or similar safety features for walkers, will need to be installed either side of the lorry route access track which crosses footpath 792, to enable walkers to stop and look for approaching lorries before crossing.

Conclusions

11.27 The site is well enclosed in views, by woodland to the north, as well as to south. The site forms a part of the largest woodland block in the far west of the Local Landscape Character Area Low Weald Hills, LW4. The visual impacts and landscape effects on the landscape are lowered by the wooded nature of the views, which are restricted to close range views only.

11.28 The mitigation and enhancements proposed for the site will ensure that the proposals will comply with the NPPF, and with the Chichester District Local Plan Policies for landscape. Protection and conservation of the key features of the LCA LW4, for woodland, soils and ancient woodland, including the peripheral site boundary mature trees, and those along footpaths, will be in line with West Sussex Landscape Character Guidelines, Local Distinctiveness, The Low Weald Landscape Character Area. Also, with the West Sussex Landscape Strategy Land Management Guidelines for the protection of key landscape features in Local landscape Character Area, LW4, the Low Weald Hills.

11.29 The proposed conservation of the green buffer to the site and new planting along the northern site boundary would enable linking from the edges of the site through tree planting, and hedgerow planting, to extend to existing woodland areas, thus reinforcing the locally distinctive landscape patterns. Hence the woodland cover will allow mitigation to reflect the historic pattern and fabric of the woodland and agricultural landscape, and to minimise effects on scenery, nature conservation and recreational land uses.

11.30 The LVIA points out that the local landscape character includes occasional clay pits and quarries with brickworks, and these are in fact a key feature of LW4, especially in the Kingsfold Valley to the east of the site. The layby at the site entrance is itself an infilled clay pit, and there are former brick works associated with it in the adjacent Pephurst Wood. The dense woodland and the occasional clay quarries/pits and brickworks are key historic characteristics of the Local Landscape Character Area LW4 Low Weald

11.31 The findings of the LVIA are that these proposals will comply with the NPPF, and the proposed development will, in the long term, bring beneficial landscape effects and visual impacts, through the proposed landscape protection of ancient woodland and shaws on the boundaries of the site, and the creation of new habitats and restoration to woodland following the traditional land use.

12. Hydrogeology and hydrology - flood risk

12.1 An assessment of the overall water impact including flood risk during operation and following restoration was undertaken by Caulmert Limited. They also carried out the clay pit design work and so they were fully briefed with all aspects of the proposed development. Caulmert are experts in geotechnical, civil & structural engineering, environmental, town planning, digital drafting and modelling and project management. Their report is shown as **Appendix ES I**.

Methodology

12.2 The assessment of the development has been undertaken on a qualitative approach based on professional judgement and statutory guidance. The assessment includes a desk study review of all existing information for the site and its immediate surrounds, the prediction of the potential effects on the geology, hydrology and hydrogeology and the assessment of the likely significance of those effects with regards to magnitude of the effects and the sensitivity of the receiving environment. The assessment utilises the source pathway receptor principle as referenced in Environment Agency, Groundwater Protection: Principles and Practice GP3. The Environment Agency continues to use the source pathway receptor approach to environmental risk assessments. In order for there to be an effect, all three elements must be present.

12.3 Potential sources have been identified through the review and collation of baseline data and includes the size, nature and duration of the proposed development relative to the environmental setting. The receptors which comprise the water resources themselves are also considered within the baseline setting below. The pathways comprise the mechanisms which allow a potential effect to occur. These are reviewed as part of the excavation works, the recovery operations and the post closure (long term) situation.

12.4 The potential impacts to the baseline setting as identified above have been assessed with regard to the excavation, restoration and post closure stages of the development as well as the potential for accidents such as spillage of hazardous substance (fuel hydraulic oils etc.). The review takes into account the magnitude of the impact, the spatial extent of any impact, the likely frequency of the impact, the duration of the impact and the sensitivity of the receiving environment. Mitigation measures have been considered as part of the development as described below. The assessment of the significance of the potential effects of the development on the water environment is based on the magnitude of the effect and the sensitivity of the receiving water body. The magnitude, severity and significance criteria are set out in their report.

12.5 Sensitivity criteria have been developed for the assessment of the sensitivity of the baseline environmental setting. These indicative criteria are broadly based on the importance of the groundwater / surface water as a resource and the ecological status of any habitat present. A significance matrix has been developed to provide a consistent approach for the assessment of the magnitude of the potential effect and the sensitivity of the baseline environmental setting.

Baseline

12.6 To the west of Pallinghurst Woods woodland, two fishing ponds with sluice gates were developed between 1898 and the 1912. By 1960, these were no longer present and are now shown to be marshy ground. The stream is also no longer

shown within this valley but is marked flowing south from the sluice of the former fishing pond.

12.7 The total thickness of the Weald Clay at the site is unproven, however, the nearest published geological log is at Tichbourne Inn, Alfold, which when constructed in 1888 indicated 380 feet of clay above the Paludina Marble, thus confirming a significant thickness present.

12.8 The Weald Clay Formation underlaying the site is defined as unproductive strata. By definition these are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow. The sandstone members identified on the geological map to the west of the site are shown to be Secondary A Aquifer. These have been defined as 'permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.'

12.9 The site is not located within a source protection zone and there are no groundwater source protection zones within 1km of the site. Baseline research has not identified any groundwater quality concerns, in relation to any local activities, that may be predicted.

12.10 There are no licensed groundwater abstractions within 1 km of the site boundary. The Private Water Supply Regulations 2009 place an obligation on Local Authorities to register and inspect private supplies. Horsham District Council, and Waverley District Council have confirmed that they do not monitor any private water supplies within 1km radius of the boundary of the site.

12.11 There is no evidence that any locally persistent groundwater body is present within the proposed excavation boundaries within the proposed excavation depths. The surrounding area of the site is characterised by surface water drains and channels through the woodland. The area surrounding the site is characterised by gentle slopes with the exception of a deep valley containing an unnamed drain to the west of the site. 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 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.

12.12 The two drainage channels that arise to the west of the Site are deeply incised and dry at the time of the inspection. Shallow standing water was observed in over deepened hollows/pools and other erosional features. The banks of the drainage channels are near vertical. Erosional features comprising over deepened pools and steep eroded sides are common throughout the drainage channels.

12.13 There are two ponds to the east of the site. One pond is located 1000m to the east is situated on a slight ridge crest and is at a higher elevation to the site. Therefore, this pond is not considered further with respect to the surface water flows at the site. The second pond is located approximately 500m from the site boundary. A platform has been built on the edge (Location 22). No flow was observed in the culvert feeding the pond nor any flow in the drainage channel discharging from the pond. The base of the pond was exposed in the northern area. This area was devoid of vegetation which may suggest that standing water is frequent in this area. See Water Feature Survey shown as **Figure ES 4**.

12.14 The main drainage channel in the west was traced from the confluence with the drainage channel arising in the west to the foot bridge along the southern boundary of the woods. 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. 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. All drainage channels arising from the woodlands were dry at the time of inspection. No springs were identified.

12.15 Overall the water feature survey concluded 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 resulting in rapid runoff rather than infiltration into underlying soils.

12.16 Based on the Environment Agency's indicative Flood Map, the Site is located within Flood Zone 1 and, therefore, classified as a low risk of flooding according to the National Planning Policy Guidance, where the annual probability of flooding is considered to be < 1 in 1000. The Site does not lie within close proximity to any rivers or other controlled surface waters. In relation to surface water flooding (as a result of rainfall events), the Site is at a Very Low risk of flooding. There is a very small area of land just beyond the eastern extent of the mineral extraction area which is at a high risk of flooding and a very small point beyond the south-western corner of the site boundary at a Low Risk of flooding (likely associated with extreme rainfall events). These areas are coincidental with much localised topographic low points and would not pose a constraint to development.

12.17 The areas of Flood Zone 2 and 3 closest to the site are associated with the Loxwood Stream. This watercourse loops some 2km to the south of the site and is joined by the watercourse from Loxwood village centre. This watercourse is also indicated to be within Flood Zones 2 and 3 in a narrow strip along its length downstream from the B2133 Loxwood Road. Advice from the Flood Risk Management at West Sussex County Council revealed that Loxwood has historically flooded, and that the Parish Council is currently preparing a study to see if any local improvements can be made to reduce the risk of flooding in the village. It is understood that properties within the Burley Close, Oak Grove, and Guildford Road areas are susceptible to fluvial and surface water flooding. The unnamed watercourse from the proposed development joins with the watercourse through Loxwood at a point downstream of the village. It is not considered that the unnamed watercourse from the development site area makes a significant contribution to flooding in the village. It is noted that contemporary hydraulic modelling undertaken for Loxwood Parish Council allows for flows from the unnamed watercourse, although outline flooding solutions are independent of this catchment's contribution.

12.18 There is reference to historic flooding near to the site in the Chichester District Council Level 1 Strategic Flood Risk Assessment. Reference is also made to fluvial flooding in Loxwood in September 1968. There is no record of flooding at the development site. The National Planning Practice Guidance (NPPG) refers planners, developers and advisors to the EA guidance on considering climate change in flood

risk assessments. NPPG indicates the level of technical assessment of climate change impacts on fluvial flooding appropriate for new developments, depending on their scale and location. The application site is wholly within Flood Zone 1 and so there is no requirement in NPPG to assess the impact of climate change in respect of risk of flooding to the development. Nevertheless, climate change will need to be considered in respect of surface water management for the proposed development as part of a detailed design.

Assessment of environmental effects

Operational phase

12.19 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.

12.20 Fuel and oil storage for mobile plant etc. will comply with The Control of Pollution (Oil Storage) (England) Regulations 2001 and associated guidance on Oil Storage Regulations for Businesses issued by the Environment Agency (August 2020). Storage tanks will be suitably double-bunded or comprise integral bunded tanks. Spill kits will be kept in close proximity to the filling points in case of accidental spillages. Standard operating procedures will be employed for the refuelling and maintenance of any plant. This may comprise, for example, the use of spill trays and catch pits. As such, any operations at the Site will have to adhere to strict management practices in relation to fuels and potential accidental spillages. The low permeability afforded by over 100m of in situ Weald Clay will form a barrier against any vertical migration of potential contamination enabling the management and remediation of any spills.

12.21 The excavation will be operated in a phased manner. It is envisaged that three areas will be open at any one time comprising, an area of excavation, an area of backfilling and an area for the storage of surface water during storm events. The latter will be pumped to a silt settling lagoon prior to discharge. This operational approach and consequential landform will effectively ensure that the Site cannot lead to an increase in overall surface water run-off from the Site, either during extraction operations or during restoration activities, thus will not increase flood risk elsewhere off site. The depth of the excavation at circa 4.5-10m would be sufficient to capture site runoff under extreme storm events. The discharge from the site to the surrounding drainage network will be via a dedicated discharge point. The rate of discharge will be managed in accordance with greenfield runoff rates as required by Planning Guidance.

12.22 No placement of recovered soils will be into standing water. If necessary, any standing water in the base of the void will need to be abstracted prior to the restoration process. This water would be discharged via the siltation pond. The placement of recovered soils potentially could result in an increase in fines within any water accumulating in the base of the void. Due to the nature of the recovered soils, no significant contamination which could impact on water quality would be anticipated. This water would be abstracted as part of the quarrying operations and discharged via the silt pond. Additional drainage channels may be required in the base of the excavations to divert any surface water away from the recovered soils.

12.23 To mitigate the risk of the development affecting the flood risk of new development, and that of third parties, sustainable drainage (SuDS) principles should be incorporated where practicable that reconcile the generated runoff with consented discharge limits. The UK SuDS Greenfield runoff rate estimation tool can be used to estimate rates for specific locations. The existing Greenfield runoffs from the developable area of 7.54ha which assume a SOIL type of 4, the estimated Q_{BAR} for the site is 41 litres per second.

12.24 Discharge of surface water from the site will be limited to no more than the Greenfield runoff rate in line with current Planning Guidance. Silt settling ponds will be constructed to allow solids settlement and so limit 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. In order to minimise the volume of water entering the site, existing drainage networks surrounding the site periphery will be maintained.

Post operational phase

12.25 The geological setting of the site is such that there is no discernible groundwater body at an elevation which would be affected by the proposed development. Therefore, there is no significant or residual risk to the groundwater environment.

12.26 Upon restoration, the re-establishment of a managed plantation is not considered to be any different from the existing situation. The construction of a small fishing pond may allow the balancing of additional water during storm events which may serve to improve the existing situation.

12.27 It is recognised that the local area is dominated by clay geology resulting in high runoff rates and high intensity short duration flood events, however it is considered that the Proposed Development is not vulnerable to, or at risk of flooding and is appropriate for the location and will not increase flood risk elsewhere, during the operational period or upon restoration.

12.28 There are no other mineral extraction operations in close proximity to the Site. Therefore, it is considered that there are no cumulative impacts on groundwater. The Proposed Development is not considered to increase surface water flow rates, and it is therefore considered there will be no cumulative adverse effect on surface water drainage.

Mitigation

12.29 Site design to capture all surface water within its boundary. Surface water to be discharged via silt ponds in accordance with greenfield runoff rates.

12.30 Water abstraction from the base of the void will be manual via a pumped sump to the silt ponds. The total discharge from the site will be limited to greenfield runoff rates, consequently abstraction of water in the base of the quarry may be limited during storm events. Maintaining of peripheral drains will prevent offsite runoff reaching the site.

12.31 Fuel storage, supply and maintenance works will be undertaken in compliance with the current regulations and guidance. Best practise operations will be included within the company's environmental management plan.

12.32 Soils to be placed as part of the recovery operation will be regulated via the recovery operation permit. Contaminated loads will be required to be rejected from site prior to processing and any residues used for restoration will be quarantined and tested to confirm they can be used. Contaminated loads will be rejected from site and where present the contaminated material is likely to represent a very small proportion of the restoration material.

12.33 An appropriately sized silt pond will be constructed and maintained such that there is no unacceptable discharge from the site. Silt on access roads will be managed in accordance with industry best practice.

Conclusions

12.34 At each stage of the development, the overall risks are considered to be low. Therefore, the Proposed Development is not expected to pose a risk to groundwater or surface water at the Site. No significant adverse effects are predicted which could pose a constraint to development.

12.35 The Site is not located in a hydrologically sensitive area and local watercourses or controlled waters are unlikely to be significantly adversely affected by proposals in relation to quality or flows. It is not considered that there are any hydrological constraints to development. A water feature survey has been undertaken and no evidence of any groundwater emissions was identified. As a consequence, paragraph 4.52 of the Scoping Opinion (abstraction licence) does not apply.

12.36 The Site lies within a Flood Zone 1 risk area and, therefore, classified as a low risk of flooding according to National Planning Policy Guidance. The surface water discharge from the site will be limited to greenfield runoff in reflection of the hydrological environment.

12.37 The Proposed Development is not vulnerable to, or at risk of flooding and is appropriate for the location and will not increase flood risk elsewhere, during the operational period or upon restoration. The Proposed Development is a 'less vulnerable' classification and does not require a Sequential Test. The Proposed Development remains low risk against future flooding when taking account of climate change.

12.38 The assessment has been undertaken in compliance with Groundwater Protection: Principles and practice GP3 (April 2013). The Report has identified potential sources of contamination during the construction, operation and aftercare period of the development, and identified any potential receptors with respect to the hydrogeological and hydrological regime. No residual risks have been identified in respect to either the hydrogeological or hydrological regime applicable to the Site. Further investigations, mitigation and assessment is not required.

13. Noise and vibration

13.1 An assessment of the effect that noise sources from both the claypit operation and waste operations has been professionally undertaken by Anderson Acoustics. Andersons were selected because they have vast experience in dealing with the potential noise effects from construction projects such as Crossrail, and with blue chip clients such as Balfour Beatty, Arup and Keir. Their report is **Appendix ES J**.

13.2 The measurement and prediction of noise effects is a highly technical discipline, and noise surveys and reports are therefore necessarily technically detailed. However, to try to succinctly convey the results of this assessment of the potential noise effects of the proposal, it is necessary to understand a little about the technical aspects of measuring 'noise'. Noise is measured using a logarithmic scale, called the decibel (dB). Noise is defined as 'unwanted' sound, with the range of audible sound varying from around 0 dB to 140 dB. The human ear is capable of detecting sound over a range of frequencies from around 20 Hz to 20kHz, however the ears response varies depending on the frequency, and is most sensitive to sounds in the mid frequency range of 1 kHz to 5 kHz. Instrumentation used to measure noise is therefore weighted across the frequency bands to represent the sensitivity of the ear. This is called 'A weighting' and is represented as dB(A). LAeq - is the "equivalent continuous A weighted sound pressure level" and is the level of a notional steady sound which has the same acoustic energy as the fluctuating sound over a specified time period. It is often used for measuring all sources of noise in the environment, which can be referred to as the *ambient noise*.

Methodology

13.3 The assessment of the potential impact of noise from a development typically takes the following steps:

- A baseline or background noise survey – to determine the existing noise levels present in locations agreed with the local authority to be 'sensitive receptors' to the potential noise. This baseline measurement is most often taken at residential locations close to the proposed development, which are the likeliest to be most affected.
    - These surveys involve stationing noise measuring devices at the agreed locations over an extended period of time (at least 1 week) in order to give accurate representations of background noise levels.
    - Additional manned noise measurements are also often recommended for other potentially sensitive receptor locations
- Prediction, calculation and modelling of proposed noise sources – utilising sophisticated modelling techniques and software to predict the levels of noise that will be generated by the proposed development. This utilises knowledge of what operations will be carried out on site, what machinery will be used, and data about their likely noise output. These noise sources are combined in the model to give a site-wide noise prediction.
- Evaluation - The results of the modelling assessment are compared to local and national legislation in order to determine if the development complies with the regulations on noise. If this is the case, then it will normally mean that noise from the development will not be a significant

issue. If the evaluation shows that noise impact will exceed the levels allowed within regulations, then it will be necessary for the development to take measures to reduce noise impacts through appropriate mitigation.

- Mitigation – if required, the assessment will recommend actions to be taken to ensure that the noise levels are reduced to an acceptable level from the proposed development. This would be taken through actions such as sound-proofing of the noisier equipment.

Consultation

13.4 Consultation was undertaken by Andersons with both WSCC and CDC, through the scoping process and subsequent email and telephone correspondence. WSCC confirmed that the guidance in the Planning Practice Guidance – Minerals (PPG-M) would be appropriate for the assessment of the site's mineral operations, with the CMRF component being subject to a BS 4142 type assessment (Methods for rating and assessing industrial and commercial sound) - minimising site noise as far as is reasonably practicable to a level not exceeding the representative background sound level, and not exceeding 5 dB above the representative background sound level.

13.5 WSCC also instructed that "*The noise and disturbance caused by the increase in HGVs travelling on the local roads linking to the local lorry route should also be quantified" and that "Consideration should be given, in detail, of the potential scheme impacts upon the setting of the Grade II Listed Pephurst Farmhouse (noise impacts, from the site and use of the access*)." Discussions with CDC centred around the proposed noise survey locations and agreeing the location of the two un-manned baseline noise survey locations. These were agreed with CDC to be stationed outside IvyHurst Cottage close to the layby entrance and outside Old Songhurst Cottage to the west of the proposed site. See **Figure ES 5**.

13.6 Based on consultation with WSCC and the guidance presented in PPG-M, the assessment of noise impacts from the proposed works was deemed to be subject to the following noise limits for the total cumulative noise emission of the site, i.e. combined clay extraction works and CMRF:

- Daytime (07:00 – 23:00) - No more than 55 dB LAeq at residential properties
- Daytime (09:00 – 17:00) - No more than 50 dB LAeq in areas used as outdoor teaching spaces

Baseline

13.7 The nearest noise sensitive receptors are all noted in the report shown as **Appendix ES J**, but in addition to Ivyhurst and Old Songhurst Farm they also include Keepers Cottage approximately 300m northwest of the site. Pephurst Farm, a Grade II listed building, is situated approximately 900m to the south of the site and set back 25m from the carriageway of Loxwood Road. Other listed buildings in the area include Barnsfold (one of the Barnsfold Cottages); Tisman House, Greenhurst Cottage; and Males Farm House. To the north, at a distance of approximately 1.2 km, is the Rikkyo School, a Japanese curriculum boarding primary and secondary school.

13.8 A baseline sound level survey, comprising unattended measurements at the two agreed locations, and short attended measurements at three further locations,

were undertaken to establish the existing sound environment in proximity to the nearby noise sensitive receptors, these are shown in **Figure ES 5**. Observations made during site attendance confirmed the soundscape across and around the site was comprised of sound from local road traffic and typical countryside sounds. The continuous unattended sound level measurements were obtained between approximately 15:00 hrs on Friday 31st July and 12:30 on Thursday 13th August 2020. Measurement Position 1 (MP1) was undertaken near the exit of the access road onto the public highway, near the dwelling Ivyhurst . Measurement Position 2 (MP2) was undertaken at the boundary of Old Songhurst Cottage. In addition to these long term baseline noise measurements, short attended measurements were also undertaken at three further locations. These were -

- Position A1 on the access road near where it enters the proposed site;
- Position A2 near Males Farm house, to the north of the site; and
- Position A3 near Barnsfold Cottages, to the east.

Desk based assessment – noise modelling

13.9 A detailed acoustic model of the site and surrounding area was created to calculate the level of predicted noise from the development at various receptors. The model was generated using CadnaA® noise mapping software and the modelled site layout based upon the drawings provided by Protreat. The topography across the site and the surrounding area was based on 25m Digital Terrain Model (DTM) data across the site and environs. Mapping from Google imagery and OS OpenData was also used.

Assessment of environmental effects

13.10 The assessment of effects has been split into three sections, the effect derived from the claypit operation; the effects from the CMRF operation; and a combined effect taking both into consideration. In each model, a 'Worst Case Scenario' was used, in order to ensure the assessment findings would be robust. For example, whilst 42 HGV movements per day are expected for the combined operation, rather than spread these throughout the day, as a worst case, six vehicle movements in a single peak hour was assumed for use in the model.

Claypit operation

13.11 The mineral works associated with clay extraction were assessed against a criterion of 55dB LAeq with levels above 43 dB LAeq being required to be minimised as far as is reasonably practicable. In relation to the residential receptors identified, the levels were predicted to be below both criteria for all, with Ivyhurst the highest level, where 44 dB LAeq was predicted. This is equal to the lower limit and not, therefore, considered to be significant. For the properties with the highest predicted levels, Ivyhurst (44 dB LAeq) and Pephurst Farm (38 dB LAeq), the primary noise source is predicted to be HGVs on the access route to the site.

13.12 The claypit excavation plant was assumed to be operating at or above ground level for the purposes of modelling. However, as the mineral extraction progresses, the excavator (and some backhoe/dump-truck activity) will often be working *below* site level. In practice, this will provide approximately 5 – 10 dB of noise reduction to those activities for much of the duration of the extraction works; although, this attenuation is not considered within the model, as the model is a worst-case assessment.

CMRF operation

13.13 For works associated with the CMRF, criteria based on the requirements of BS 4142 apply, and noise from these activities should aim to fall below the representative background sound level (following the Sussex Authorities Planning Noise Advice Document) of 33 dB LA_{90} at the nearest noise sensitive receptors, allowing a penalty for notable characteristic, where applicable. The rating level limit for CMRF only operations is proposed as 38 dB, in line with the BS 4142 indication of adverse effects (but not significant adverse) at around 5 dB above the background sound level.

13.14 For static and mobile plant operating within the worksite, a maximum specific sound level of 31 dB LAeq is predicted at Longhurst, to the west. It is noted that due to the topography and foliage effects, levels at Longhurst are marginally higher than at the closer property, Keepers Cottage. A +3 dB acoustic correction feature was proposed for intermittency. Therefore, the rating level is the same as the predicted level of 34 dB, which just exceeds the representative background noise level, but is below the BS 4142 indication of an adverse effect at 5 dB above the background sound level 38 dB.

Cumulative effect – combined operations

13.15 The combined operations of the clay extraction, CMRF and the 42 daily HGV movements (21 each way) were considered against the criterion of 55 dB LAeq. The maximum level predicted of 40 dB LAeq (at Ivyhurst) is below this threshold, such that this criterion is achieved by a significant margin. The peak noise levels during a typical 20-second waste tipping operation within the CMRF building (of which 21 events per day are assumed, which is more than the maximum) are estimated at 45 dB LAeq at the most affected property, Longhurst. At this level, tipping events might be audible but would be significantly below any threshold at which disturbance would reasonably occur.

13.16 Consideration was given to external levels at Rikkyo School. The maximum predicted level of 35 dB LAeq is 15 dB below the target of 50 dB LAeq. This would also be at a level significantly below any equivalent internal noise criteria. It is considered therefore, that the operation of the site would have no significant effect on the teaching amenity of Rikkyo School. The residential component of the school is assessed with the other residential properties above and is also demonstrated to comply with the assessment criteria.

13.17 Noise levels at the nearest section of the Sussex Border footpath have been calculated for information. It is considered that the predicted level of 39 dB LAeq would have no adverse effect on the recreational amenity of passing walkers. Noise levels along the public right of way that borders the site will be highly dependent on where works on site are taking place. As an absolute worst case, with the excavator operating within 10 m of the footpath, a maximum noise level of 83 dB(A) for the short period (less than 30 seconds) taken for walkers to pass the plant might result. For a short duration, this noise level would not generally be unacceptable, with alternate public footpath routes being available for any short duration that this might apply e.g., which would be the case with the diversion of Footpath 792_1.

13.18 In addition to the three models above, consideration was also given to the effects of HGV's travelling along Loxwood Road, either entering or leaving site. Within the noise model, an assumed existing road traffic flow of 20 vehicles per hour including 2 HGVs per hour and 30 mph gives a level of 45 dB LAeq at Ivyhurst, matching the

measured sound level. At Pephurst Farm, this flow also gives an estimated existing level of 45 dB LAeq. The actual road traffic flows as measured in June 2020 during the Covid lockdown were c. 1,240 vehicles per day including 14 HGVs averaging c. 50mph. On adding the site's 42 HGV movements per day, in both directions along Loxwood Road, as a worst-case scenario, the predicted level at these two properties increases by 2 dB. This would be the noise increase expected at any property on Loxwood Road for which the road was their primary noise source, should all 42 movements make use of that road section. Such a change would result in no more than a minor impact in the short term, and negligible over the long-term operational life of the site, with sound levels remaining very low.

Mitigation

13.19 Based on the assumptions used in the noise modelling assessment, which err on the side of worst case, the predicted levels at the noise sensitive receptors are equal to or below the lowest actionable criteria set in local and national policies. For the CMRF operation the predicted noise rating levels at the sensitive receptors are equal to or below the lowest applicable criteria at all but one property. At Longhurst, the predicted rating level exceeds the target criteria by 1 dB but is still below the limit at which any significant impact might occur.

13.20 Accordingly, the noise emissions from the operation of the site are national and local policy compliant and no specific mitigation measures are recommended. Notwithstanding this, the site will seek to minimise noise emissions across all its activities as far as is reasonably practicable, in line with best practice. Some of these practices are outlined below:

- To ensure potential disturbance from the use of the site access road is minimised, it should be inspected at regular intervals (at least once every week) to ensure that the surface remains in good condition. Where defects are identified, these should be rectified within a reasonable time frame.
- Furthermore, HGVs should only use the western side of the layby on Loxwood Road to the entrance to Pallinghurst Woods, thus avoiding passing directly in front of Ivyhurst, and should not park up on the road triangle, for example if waiting for the site to open.
- Retain noisy static plant within the building.
- All waste tipping will be inside the insulated CMRF building.
- Ensuring silencers on plant are effective.
- Using alternative non tonal (white noise) reversing signals on mobile plant.
- All plant and equipment, including HGVs should be shut down, with engines off when not in use.

Conclusions

13.21 A noise assessment was undertaken to assess the impact of noise arising from the proposed clay extraction and CMRF operations on noise sensitive receptors. Sound level measurements were taken at locations representative of the surrounding residential properties to determine the baseline conditions for the area. From the measurements, the representative baseline ambient and background sound levels,

for the site's daytime operational hours, was taken to be 45 dB LAeq and 33 dB LA, respectively.

13.22 Assessment of the maximum predicted sound levels from both the clay extraction and CMRF process to each receptor was undertaken against the guidance from West Sussex Council's Waste Local Plan, the Sussex Authorities Planning Noise Advice Document, BS4142:2014+A1:2019, consultation with Chichester District Council, the Government's Planning Practice Guidance for Minerals (PPG-M) and the criteria for schools given in BB 93. Based on assumptions outlined in this assessment, which err on the side of worst case, the predicted levels at the noise sensitive receptors are equal to or below the lowest applicable criteria. Accordingly, the noise emissions from the operation of the site are considered to be national and local policy compliant.

14. Land contamination

14.1 The history of the site has been assessed by Geotechnical Engineering Limited to determine whether there has been any former contaminative uses at the site or elsewhere in Pallinghurst Woods. Their report is presented as **Appendix ES K**.

Baseline

14.2 An inspection was undertaken on the 13 January 2017 with a follow up inspection to look for specific features on the 24 January 2017. The site reconnaissance report refers to an area of 122 hectares, split into the western plot (87.5 Ha) and the eastern plot (34.5 Ha). Localised made ground was anticipated across the site associated with past brick making and forestry activities.

14.3 Eight historical surface ground workings are recorded within 250m of Pallinghurst Woods. On the western plot, two features recorded as "Fish Ponds" are located along the western boundary and on the eastern plot, four features are recorded in the southwest corner as being "Brick Works" and associated "Clay Pits" with a "Sand Pit". The eastern plot also contains "Pephurst Wood Brick Works", "Pephurst Brick and Tile Works" and "Bulhams Wood Sand Pit". There are also western plot references to "Kiln", "Old Limekiln", "Songhurstkiln Copse", "Smithy", "Saw Pit", "Brickkiln Farm" and "Glass Works". Clay pit and brick making activities took place from 1842 at least until the late 1800s.

14.4 Regulatory enquiries were used to determine potentially contaminative past land uses. There are no entries under the Contaminated Land Register recorded within 500m of the proposed development site, no operational or former landfill sites within 1km of the site and no permitted waste sites are recorded within 500m. However, see **Appendix PSC** in the Planning Statement for the number of waste activities in the Loxwood area that claim to be exempt waste sites. Twelve potentially contaminative industrial sites are recorded up to 250m from Pallinghurst Woods and eight of these are in the woods. Pallinghurst Woods has a proven history of being used for brick making, with additional anecdotal evidence suggesting such activities have occurred on or near the site for at least 175 years.

Assessment of environmental effects

14.5 The subsequent intrusive ground investigation carried out in June 2017 (see Soil Resources section of the Environmental Statement), showed that there is no land contamination in the area of the proposed development site.

Mitigation

14.6 No mitigation measures in respect to land contamination are necessary. For mitigation measures in relation to the former Pephurst Wood Brick Works, see the archaeological section of the Environmental Statement.

Conclusion

14.7 Based on the former uses within Pallinghurst Woods and the findings from the intrusive investigation it is considered that the proposed development will not result in an unacceptable impact associated with land contamination.

15. Archaeology and cultural heritage

15.1 An assessment of archaeology and cultural heritage has been professionally undertaken by Chris Butler Archaeological Services Ltd and a Written Scheme of Investigation has been produced by Wessex Archaeology. Both reports are shown as **Appendix ES L**. The independent archaeological evaluation comprised the study of aerial photographs and LiDAR data plus a desk based assessment and a walk-over survey to determine the archaeological potential of the site.

Baseline

15.2 Archaeological investigations at the site were undertaken utilising desk-based studies, and during a site walkover in August 2020. The archaeologists involved in the investigation used historical maps, LiDAR and other data to inform the assessment of the site, and potential archaeological features prior to the visit. Historic maps show the development area has variously been woodland and arable land going back several hundred years.

15.3 There is evidence for exploitation of the clay resources of the immediate area for brickmaking from at least 1876. Pephurst brickworks and the associated clay pit were shown on maps at that time in the southern edge of Pephurst wood, adjacent to the entrance and the proposed access road. The layby on Loxwood Road was formerly a claypit. The brickworks was opened in 1842, and a kiln and drying sheds are shown on the maps of the time. There is also a brick kiln field and brickyard at Brickkiln Farm c. 500m to the east of the proposed Site. A lime kiln is also identified c. 500m to the west of the Site on maps of that time, and a saw pit is shown to the east of Hurst Wood within Pallinghurst Woods. There is also evidence for clay quarrying and other industry in the broader landscape and some local ponds may actually have originated as a small quarry pits.

15.4 The desk-based assessment initially covered the objectives and scope of the report, then discussed the methodology used in the survey, followed by a review of the archaeological and historical assets located within a 1km radius of the Site centre. Former impacts upon any potential archaeology within the Site were assessed, as was the possible impact of any future development upon potential archaeology. The heritage impact assessment considered the impact of the proposed development on the heritage assets in the vicinity of the Site, whether directly or indirectly impacted by the proposed development.

15.5 The Desk-based Assessment report was prepared in accordance with the requirements of the National Planning Policy Framework (DCLG 2012); the Standards and Guidance for Historic Environment Desk-based Assessment (CIfA 2014); and the Sussex Archaeological Standards (2019).

The research for the Heritage Statement included an analysis of the following resources:

- Chichester District Historic Environment Record (HER)
- West Sussex Historic Environment Record (HER)
- Surrey Historic Environment Record (HER)
- The National Heritage List for England (a list of all nationally designated heritage assets)
- Historic mapping

- West Sussex Record Office (Closed at the time due to Covid19 restrictions)
- Surrey History Centre (on-line access)
- Woodlands O. Rackham 2006 & Ancient Woodlands O. Rackham 2003
- Personal library resources
- British Geological Survey
- LiDAR data (https://www.LiDARfinder.com/)

The following maps were consulted:

- Speed 1610
- Morden 1695 (not reproduced)
- Kitchin 1750 and 1763 (not reproduced)
- Bowen 1756 (not reproduced)
- Yeakell and Gardiner 1778-1783 (not reproduced)
- Budgen 1806 OS Draft map
- Cooper 1808 (not reproduced)
- 1842 Wisborough Green Tithe map (WSRO TD W149)
- 1841 Alfold Tithe Map (SHC 864/1/5)
- 1st Edition OS map (1876)
- 2nd Edition OS map (1897)
- 3rd Edition OS map (1912)
- 4th Edition OS Map (1920)
- 1961 OS map
- 1974 OS map

15.6 As suggested by WSCC, a LiDAR assessment of the development site was undertaken prior to any fieldwork. LiDAR operates by using a pulsed laser beam which is scanned from side to side as the aircraft flies over the survey area, measuring between 20,000 to 100,000 points per second to build an accurate, high resolution model of the ground and the features upon it. Because LiDAR uses light beams it has the potential to penetrate gaps in the woodland canopy and so record the ground surface under the trees. This can reveal features that would not otherwise be seen. Using LiDAR images as an additional survey tool before going out into the field enabled the groundwork to be done faster. The extent and precise geographical location of identified archaeological features can be targeted accurately without the need to carry out a full ground survey. However, some archaeological features do not show up on current LiDAR images, so LiDAR should always be used in conjunction with field work, and 'ground-truthing' through field visits is an essential part of this type of survey. The LiDAR survey data was studied alongside the photographic and map evidence to identify and transcribe potential

features; the results of which were overlaid onto OS mapping as the basis for undertaking the field survey.

15.7 The field survey was undertaken on the 27th August 2020. The survey methodology comprised an initial walk along the access route to the Site from the entrance on Loxwood Road, identifying features noted on the LiDAR and historic mapping, and where necessary investigating potential archaeological features either side of the track and especially at track junctions. The entire perimeter of the Site was then walked, again identifying features noted from the LiDAR and historic mapping, gaining access into the different parts of the Site wherever possible to investigate potential archaeological features, using the LiDAR as a back up to the visual inspection of the ground surface. The transcribed LiDAR overlay was used in conjunction with the historic mapping to identify features and determine their extent. Features previously identified on the LiDAR were targeted to confirm their presence, identity, and current state.

15.8 A written record was made for each earthwork or other site encountered, including information on its dimensions, shape and extent, together with any relationships with other earthworks and sites. Each feature encountered was allocated a sequential number which was used in the report shown as **Appendix ES L** and the site archive. Where possible this information was backed up with sketches and digital photographs. A hand-held GPS (Garmin Etrex20) was used to provide an exact location to an accuracy of +3 to 5m where this could not be established from the LiDAR and OS mapping.

15.9 During the survey, the ground surface was also inspected for archaeological artefacts, however only a few fragments of ceramic building material were noted in the woodland areas, and none was retained. On the site of the old Pephurst brickworks adjacent to the entrance a large amount of material was noted, this was photographed but no artefacts were removed from it.

15.10 Given the evidence accumulated during the preparation of the Desk-based Assessment Report and Heritage Impact Assessment, the probability of finding remains from each of the different archaeological periods is shown in Table 1 below.

Table 1: Archaeological potential for each period

Period	Potential
Palaeolithic	Low
Mesolithic	Low
Neolithic	Low
Bronze Age	Low
Iron Age	Low
Roman	Low
Saxon	Low
Medieval	Low
Post-Medieval	High

15.11 The Desk-based Assessment established that extremely limited human activity took place within the Study Area throughout prehistory and up to medieval times. It seems likely that woodland dominated into the Post medieval period as it was an important resource providing fuel for the nearby glass and iron industries. Although it is unlikely that there is any iron making activity at the Site, it is possible that evidence for glass making could be present on the site, as this is likely to be evidenced by below ground archaeological remains and distributions of waste glass.

No evidence for this was seen during the site visit, but it would not have been obvious given the ground cover and non-intrusive nature of the survey.

15.12 Later Post medieval activity is divided between agricultural and woodland land use and industrial activity in the form of the local brickworks. The evidence shows that much of the agricultural land use was for arable land, with the LiDAR showing remnant ridge and furrow ploughing. This activity is unlikely to leave much in the archaeological record, and within the woodland areas any evidence for earlier ridge and furrow is likely to have been destroyed by the tree planting.

15.13 There is significant evidence for woodland management in the 19th and 20th centuries, predominantly associated with coppicing, there was no evidence seen for saw pits or timber storage areas, which are normally found within managed woodlands of this date. The major features that survive are the woodland boundary banks demarking areas of woodland, and the drainage 'grips', the latter being a feature of late Post medieval woodland management. These are of local archaeological interest.

15.14 The brickworks in Pephurst Wood has significant remains surviving, with potential for other buildings and below ground remains not seen on the survey. Some remains of brickworks, such as timber constructed drying sheds, can be quite ephemeral and not obvious without archaeological excavation. The rubbish dump is also of some potential significance. Whether it is associated with the brickworks or has been imported into the site, it may contain important cultural information.

15.15 Scheduled Monuments, Listed Buildings and Conservation Areas have statutory protection. There is only a single Scheduled Monument within the search area around the Site, this being the medieval moated site and associated pillow mound at Wildwood Copse (DES6677) c. 2.5km to the north of the site in Surrey. The only Conservation Area in the search area is at Alfold, c. 1.5km to the northwest of the Site, in Surrey. There are numerous Listed Buildings in the search area, and these are considered within the archaeological and historical background, and for their setting. There are three Areas of High Archaeological Potential (AHAP) and County Sites of Archaeological Importance (CSAI) within the search area, all of which are in Surrey. These are the AHAP and CSAI of the Wildwood Copse Medieval Moated Site, the AHAPs of Alfold Historic Core and St Nicholas' 12th century church; possible medieval moated site at Alfold; and a Mesolithic flint scatter and Medieval Pottery at Alfold. There are no Archaeological Notification Areas (ANA) within the search area in either Chichester District or Horsham District. There are two ANA's just outside the search area in Horsham District, these being Woodsomes Farm medieval to Post-medieval farmstead (DWS8732) and the medieval moated site and farm at Marshall's Farm (DWS8527), both near Rudgwick.

15.16 Only one Listed Building is located within the vicinity of the Site, the Grade II Listed Pephurst Farmhouse. There are no direct lines of site between the Listed Building and the site, although there is limited visibility between the farm and the proposed access road close to the southern end of its route. The entrance to the site will be through the layby adjacent to the demolished brickworks, and again this is screened from the Listed Building by trees.

15.17 It was not possible to establish whether there is below-ground archaeology present on the Site due to the non-intrusive nature of the survey, and there is limited archaeological knowledge of the Site. Given the available evidence, there is a low probability for archaeology of all periods except the Post medieval period to be present on Site. Apart from the brickworks, the remaining archaeological features

identified during the survey all relate to woodland management and are probably dated to the 18th – 20th centuries. None are considered to be of national or regional importance, but are of local importance, relating to Post medieval land management and activity.

Assessment of environmental effects

15.18 It is recommended that the woodland banks forming the boundary to the site, especially those along its west, north and east sides, which are likely to be the oldest surviving earthworks on the site, are excluded from the development, and are preserved, with a small internal buffer. Thus on reinstatement these earthworks will have survived and will preserve the historic woodland boundary. This is especially important where these banks form part of the associated trackways running along the north and east sides of the site. The banks here form integral parts of these historic routeways and should be preserved in-situ. Preservation of these banks should include provision to ensure they are not accidentally tracked over during operations. It is also recommended that the small V-shaped enclosure on the northern boundary (created between 1897 and 1912) is either preserved in-situ or mitigated through archaeological investigation.

15.19 The development process will involve the felling of trees, followed by the removal of the topsoil. Given that the archaeological knowledge of pre-Post medieval activity at the Site is unknown, and the nature of the survey undertaken has not been able to add to that knowledge, it is recommended that the topsoil strip is monitored. This should enable artefact retrieval and identification of any below-ground archaeological features. The creation of any bunds and storage areas, and the site offices and other facilities, should be located, where possible, to avoid damaging any identified archaeological features.

15.20 The woodland access route is along metalled tracks, along most of its route the bank and ditch alongside the track are of 20th century date and is of limited archaeological interest.

15.21 The brickworks at the entrance is described as 'vulnerable'. Widening of the access road will impact on potential archaeology. The remains of possible kilns and other buildings are located immediately adjacent to the trackway. It is therefore important that the brickworks is properly surveyed and recorded before and during any works undertaken here.

15.22 The nearby rubbish dump is also vulnerable, both to damage from any works or track widening at the entrance to the site, and because it will potentially become more accessible allowing members of the public and collectors to remove items from it, thus reducing its potential contribution to understanding past use of the site. It is recommended that an evaluation trench with 100% recovery to confirm its date, extent, nature (inc the presence of branded items) and whether it has been dug over by bottle diggers. It would also be useful if the potential source of the waste could be established - the brickworks themselves or a nearby domestic site. Dump assemblages have not been studied archaeologically, untouched dumps are therefore of particular interest.

15.23 The noise and vibration of vehicle movement to and from the Site will have some impact, if routed past Pephurst Farm on the Loxwood Road, although the Listed Building is set back behind the farm buildings with no real intervisibility with the road. It should be noted however, that the proposed routing plan does not utilise that section of road outside Pephurst farm, with all traffic entering and leaving to/from the east, so it will remain largely unaffected by the proposal.

15.24 To the west in Loxwood prior to the junction with the B2133 there are two Grade II Listed Buildings, the 17th century 1 & 2 Hillgrove (CD5923), and 15th/16th century Pancake Cottage (CD10077). To the east along Loxwood Road is Crabtree Corner (CD7740) a 17th century or earlier timber framed building, with Hedgecocks Cottage dating from c. 1500 located a little further to the southeast (DWS5653) of the road. Hale Farmhouse (DWS5054) and Rudgewick Grange (DWS5053) are further east along Loxwood Road, and together with a cluster of Listed Buildings at Tismans Common at Bucks Green, may all be impacted by the noise and vibration from an increase in vehicles using Loxwood Road. Other Listed Buildings along Loxwood Road will also receive potential small negative impacts due to the noise and vibration from vehicle movements. The impact of increased traffic on all of the Listed buildings is considered to be less than significant.

Mitigation

15.25 Whilst the woodbanks/trackways are a feature of the local historic landscape, and planning policy sets out the need to avoid harm to heritage assets as far as possible, these woodbanks are not any more or less significant than the internal woodland banks that are recommended for preservation, they are effectively the same features. Preservation in situ is reserved for the most significant elements of the historic environment and whilst these are well preserved legible woodland banks, that is the limit of their archaeological interest in NPPF terms. In relation to the potential archaeology associated with the woodland banks surrounding the site, these will in any case be preserved in-situ. The site perimeter on the eastern and northern sides incorporates a wide exclusion zone for ecology, which also protects the woodland banks referred to in the archaeology study.

15.26 There are other features which have an archaeological interest at the site but their significance is limited to only a local context. In NPPF terms these are non-designated heritage assets and paragraph 197 in the NPPF states that harm to them should be taken into account in weighing the balance with the underlying policy imperative of conserving and enhancing significance of the historic environment. It is believed the need for the mineral resource, the geographical predetermination of its location and the other far weightier (in legislative terms) constraints the site has, establishes a sound argument for a programme of archaeological recording in advance of loss, in accordance with paragraph 199. In light of this, the 'V' shaped enclosure on site, whilst of limited archaeological interest, will be subject to a Written Scheme of Investigation (WSI) if so requested by the county archaeologist. Wessex Archaeology's assessment of this particular feature concluded "*The exact nature of this earthwork is unknown, however it is likely related to later woodland management activities, such as an artificial rabbit mound. Considering the likely later date of this feature, as demonstrated by historic mapping, it is considered to be of limited archaeological interest".* The internal woodland banks and topsoil strip can also similarly be subject to a WSI.

15.27 The entrance to Pallinghurst Woods in Pephurst Wood, just inside the entrance from the layby will be designed, as much as is practicable, so as not to disturb any potential existing structures or the rubbish tip mentioned in the report. There is no requirement to widen the road in this area, and hardstanding already exists which can be utilised for the required operations. Where necessary, bog mats will be used. Again, if any widening or other works are required, as any potential archaeology is only of local importance, a WSI will be undertaken to record and preserve data on any finds which might exist if requested by the county archaeologist.

Conclusions

15.28 The physical archaeological investigations undertaken on the site largely confirmed the results of the desk-based research and LiDAR imaging. Two areas of the site have been identified as being of local archaeological importance – the woodland banks and likely rabbit enclosure on the development site, and the 19th century brickworks in Pephurst Wood.

15.29 There are no visual or contextual connections between the site and designated heritage assets, and the effect of traffic on local assets has been described as being of limited negative impact, hence no mitigation for these cultural and historical assets is required. LCP is committed to minimising the impact of the development on any potential archaeological deposits, as the impact of the extraction of clay at the site on any buried archaeology will be negative and permanent. The importance of any archaeological assets which may be found is however likely to be of local significance only, so can be classified as 'low' significance, and the consequence of any effect could be categorised as 'medium' due to the likely poor condition of any finds, hence it is concluded that the overall potential impact of the development is not significant.

15.30 It is concluded that taking into consideration the baseline conditions, the absence of all but post-medieval interest, and the limited nature of the proposed development, that the mitigation measures proposed will be effective in mitigating the impacts of the scheme and will contribute to local archaeological archives, and there will be no residual effects on known cultural heritage assets.

16. Soil resources

16.1 The proposed development site and other parts of Pallinghurst Woods was surveyed by Geotechnical Engineering Limited in June 2017 and samples were analysed by Lucideon Limited (formerly known as the British Ceramic Research Association), who also produced a number of bricks from the clay samples to confirm the clay's suitability for brick production. Geotechnical's report is shown as **Appendix ES M**.

Baseline

16.2 Ten auger boreholes were excavated in Pallinghurst Woods from 3.4m to 11.5m below ground level (bgl), with the first metre bgl hand dug (apart from one borehole), and six of these were in the immediate area of the proposed clay pit, equivalent to a density of one borehole per clay pit hectare. The approximate location of the boreholes is shown in **Figure PS18**. Shallower boreholes were excavated using the P45 Slope Climbing Rig and the deeper boreholes were excavated using The Pioneer rig. The profile of each borehole is shown in Appendix A to Geotechnical's Report reference 33137 dated 12 July 2017, see **Appendix ES M**. All of the boreholes were free from groundwater and the clay samples were stiff and free from groundwater. There was standing water at one borehole location, which prevented hand digging.

16.3 Strata attributed to the Weald Clay Formation was encountered in all boreholes. The material was typically encountered as a firm to stiff clay, being locally gravelly and often silty. The gravel generally represented drilling disturbed thin bands of siltstone that were recovered in a non-intact state. The clay was often extremely closely fissured. Below 3-4m depth, the clay tended to become stiff and very stiff. The clay tended towards mudstone or contained stiff/very stiff clay and extremely weak mudstone lithorelicts. Distinct siltstone bands and rare sandstone bands up to 400mm thick were observed throughout. These appeared to be discrete, subordinate features but presented an increased resistance to dynamic sample drilling methods. They were frequently recovered in a non-intact state.

16.4 Colouration of the clay was variable in the upper 2-3m in boreholes 3 to 10, with orangish brown and bluish grey clays being mottled greenish grey and purple. The borehole logs show that the clay was consistent from borehole to borehole and at depths beyond 7m bgl, the clay became reddish brown before becoming darker bluish grey at increased depths.

16.5 On the basis of the borehole logs alone it was not sufficient to determine whether or not the site represents a suitable brick clay resource for the West Sussex area. In accordance with Geotechnical's recommendations some of the samples were sent to Lucideon for specialist testing and their report is shown as **Appendix ES N**. Lucideon's report confirmed that the four composite core samples were of silty clay with a chemistry consistent with a brick clay and that the fired strength would appear to be sufficient for the manufacture of bricks.

16.6 The topsoil encountered at each borehole location could not be described as typical topsoil and varied in depth down to 0.1m – 0.3m bgl and described as follows:

- Vegetation over soft brown silty clay
- Very soft brown slightly sandy silty clay
- Vegetation over firm brown slightly sandy clay

- Firm light brown mottled light grey and orange slightly sandy gravelly silty clay

Most of the topsoil showed evidence of rootlets (<2mm in diameter) sometimes in abundance, and borehole 13, which is in the eastern plot of Pallinghurst Woods, revealed made ground down to 1.2m bgl.

16.7 The likely evolution of the baseline environment at the site if clay extraction is not undertaken is that the clay would be retained. It is considered that without the proposed development the site would continue to be managed as woodland.

Assessment of environmental effects

16.8 Topsoil will be stripped prior to the commencement of clay extraction in each phase. This topsoil will be translocated to other allocated sites within Pallinghurst Woods. See the Ecology section of the Environmental Statement for more details.

16.9 The restored landform will be constructed with imported suitably inert restoration materials from the CMRF together with > 0.3m of clay overburden before being seeded with appropriate grass types and then replanted with deciduous broadleaved trees. The site will be restored to woodland and to areas with nature conservation interest including waterbodies and wetland habitats. The clay extraction and restoration will be carried out in a phased manner.

16.10 As a result of the proposed development of the 7 hectares of mixed woodland and scrubland approximately 6.75 hectares will return to more densely planted deciduous woodland with 0.25 hectares for the partitioned fishing pond and habitats pond. When the land has been restored to woodland and nature conservation interest there will be no further significant effects on woodland land quality and soil resources.

Mitigation

16.11 The mitigation measures proposed to minimise the effects on soil resources consist of:

- All available topsoil habitats will be translocated to other parts of Pallinghurst Woods.
- Best practice soil handling and management techniques will be employed during soil stripping, movement, storage and placement.
- Some of the extracted clay will be used for the restoration.
- All imported restoration materials will be certified as being suitable for use in accordance with the terms of a Waste Recovery Permit.
- Full details of the aftercare of the woodland will be submitted to the Mineral Planning Authority for approval pursuant to conditions of any planning permission. The aftercare and drainage scheme will be adhered to during the life of the operations.

Conclusions

16.12 The proposed site at Pallinghurst Woods will be totally restored to a denser deciduous woodland with nature conservation, water bodies and wetland habitats. All of the stripped soils will be used sustainably for translocation in the neighbouring woodland to protect the translocated habitats and the restoration will be to high quality woodland with nature conservation interest. The Planning Statement has

demonstrated that there is an overriding need for the clay from the site for the use in construction materials and there is a demand for Circular Economy policies and objectives which support the use of suitably recovered materials from the CD&E wastes for the restoration of the clay pit and the woodland environment. This outweighs the temporary loss of the mixed woodland and scrubland.

17. Arboricultural

17.1 The proposed development site and the surrounding area of Pallinghurst Woods was surveyed by aboriculturalist Owen Allpress in 2020 and the results of his survey are presented as **Appendix ES O**. The Arboricultural Impact Assessment (AIA) was produced by arboriculturalist Ian Noel of Land Vision South East and their report is presented as **Appendix ES P**.

Baseline

17.2 British Standard 5837:2012 sets out a system of tree evaluation which is a recognised and consistent approach in the arboricultural industry for making informed judgments on development opportunity and constraints. The categorisation process allows a weighting to be given to each tree in respect of arboricultural, cultural, ecological and/or landscape value. BS 5837:2012 is not a rigid or prescriptive system but a tool to inform decisions about tree retention and protection. Attributing a 'high value' to a tree does not necessitate its protection, nor does a 'low value' mean that a tree should not be properly considered, adequately safeguarded, protected and retained, during the development process. The standard recognises that there are many additional factors that will ultimately determine the proposed development design layout. Information in the AIA is not meant to be interpreted rigidly and is instead presented in order to allow an informed judgement on tree constraint and opportunity.

17.3 Under the English Woodland Grant Scheme for Songhurst and Bulhams Wood Contract no 27153, there is an agreed Felling Licence. Other parts of Pallinghurst Woods are also covered by Felling Licences agreed with the Forestry Commission, and these woodlands are also within the Woodland Grant Scheme (WGS).

17.4 There are 4 different areas of woodland in Pallinghurst Woods that have different ancient woodland classifications. These are Pephurst Wood, Hurst Wood, Caddick Copse and Songhurstkiln Copse. There is also an area of ancient woodland that is known as Hope Rough, located within 200m of Pallinghurst Woods. The 4 woodlands with some type of ancient classification in Pallinghurst Woods cover a total area of 25 hectares within the 110+ hectares of the woods.

17.5 Ancient trees attributes can include an ancient tree's great age, size, condition, biodiversity value, as a result of significant wood decay and the habitat created from the ageing process, as well as an ancient tree's cultural and heritage value. Very few trees of any species become ancient. All ancient trees are veteran trees, but not all veteran trees are ancient. A veteran tree may not be very old, but it may have decay features, such as branch death and hollowing. These features contribute to its biodiversity, cultural and heritage value.

17.6 A buffer zone's purpose is to protect ancient woodland and individual ancient or veteran trees including ancient hedge banks and hedgerows. The size and type of the buffer zone should vary depending on the scale, type and impact of the development.

17.7 The area of Pallinghurst Woods surveyed by Owen Allpress consisted of 73 individual trees, 24 Groups of trees, and 1 Woodland block. The proposed development can be split into 2 parts, the 1st is the access track from Loxwood Road to the site of the clay extraction. The 2nd part of the development will be the site including the clay pit extraction activities, and the associated weighbridge, the CMRF, and the staff welfare buildings and associated site activities. The proposed development makes use of the existing access track which is currently used in

forestry and farming operations in and around the area of Pallinghurst Woods. The current use of the access track means that it has the overhead clearance needed for forestry extraction operations for much of the length of the proposed access route for the application site.

17.8 The proposed development site comprises semi-mature shaws and trees, along the site's northern and eastern margins, with some replanted ancient woodland near to the site. These wooded areas with mature trees act as a green backdrop and natural buffer for the site. The species on site are a mixture of broadleaved native trees, some of these have been self-seeded by natural regeneration, and others have been planted, as in the south of the site. The species comprise native tree and shrub species, including Sessile Oak (Quercus petraea) and Hazel (Corylus avellana) and Birch (Betula spp), giving a varied woodland edge. There are some mature Sessile Oak (Quercus petraea) trees. Beyond the site, there are more blocks of mature mixed native broadleaved woodland to the north, with ancient woodland to the west and south of the site. There is native broadleaved woodland to the east of the site, within Pallinghurst Woods.

Assessment of environmental effects – access route

17.9 The two new 20 metre long passing places for lorries; will entail losing some of the verge of the route and the ditch with a loss of its associated wild flora and natural habitats. There is also the potential for some removal of trees within or close to the access route, as well as the removal of scrub vegetation including young and natural regeneration trees. The need for pruning of trees to allow for the access route widening, and the need for the removal or pruning of trees to create and maintain visibility splays will be virtually removed due to the widening of the verges for the Wood White Butterfly. There is also the potential for damage to the root systems of retained trees, this would be by compaction caused by HGVs.

17.10 Resurfacing the access track would afford the opportunity to assess the roadway so that it is capable of safely carrying the agreed configuration of vehicles. The width recommended for timber extraction vehicles is 3.4m, and this width is likely to be sufficient for the vehicles using the access track for soil extraction and for recycling of inert materials etc., and to enhance the capacity of the surface to accommodate the extra passage of vehicles.

17.11 There should be little impact on the access track from air and water pollution. It is also unlikely that the increase in lorry movements will have woodland/tree impacts from dust or pollution. This is partly due to the low frequency and low speed of the lorries.

17.12 It is considered that the direct arboricultural effects of the increased use of the trackway would have very little direct effect on the woodlands that the access route track currently travels through. An integral part of woodland management is the need for extraction of harvested wood. This is recognised within the Woodland Grant Scheme which gives grants for maintenance of access tracks to help with the extraction of wood. The present forestry track will need resurfacing; this has been designed to accommodate the proposed increase in its use by HGVs/ lorries. Cellweb or a similar product would be used. Cellweb is a no dig tree root protection system for roadways, offering a no-dig and no-compaction system when used with sub-base Type 4/20.

17.13 The two passing places have been designed to have a minimal effect on the individual trees and woodland. There is already a verge on both sides. Passing places will be on the south side, helping to create areas which are more favourable

to invertebrates on the northside of the forestry track. The passing places can be achieved by using BS 3857:2012 Root Protection areas, placing the passing places where there are no trees, or placing passing places where trees will be felled due to forestry operations. By maintaining protection of trees' RPAs as recommended in BS 5837:2012, and avoiding work within these areas, then trees should not be physiologically affected.

17.14 Over the entire access route, the additional passing places, would account for a total of 147 square metres loss of the verge along the access route. This includes an area near the entrance to the CMRF. Over the entire access route, on the balance of probability, the number of additional tree losses caused by the additional lorry movements, improvements to the roadway and additional passing places, would be minimal.

Assessment of environmental effects – proposed development site

17.15 There is a small section of replanted Ancient Semi-Natural Woodland (ASNW) near to the proposed clay pit extraction site. A minimum ASNW 15m buffer zone will be maintained throughout the development. This is to protect the ancient woodland and the ancient woodland soils and the ASNW trees' Root Protection Areas (RPAs). The clay pit buffer zone will be at least 75 metres. In year 1, the trees in cells 1 and 2 will be felled. The clay extracted from these two compartments will be stockpiled on cell 28. The stockpile on cell 28, would disappear in years 2-3. The proposals are for the restoration work to commence in year 2.

17.16 Some areas of the proposed CMRF and the clay extraction area have been recently felled in the last 4 or 7 years. Trees in this area are low value trees (Category C) and are young individuals of small stature. The full extent of tree removal is to be phased into 3 phases spread over the first 20 years.

17.17 The total site area is 7 ha. More than 1 ha will be left around the edges of the site, so that these peripheral areas of green can maintain green links to habitats beyond the site. To the north-west of the site there is an area of ancient semi-natural woodland, and to the south there is further ancient woodland; both of these ASNWs will be protected throughout the course of the development. The area for the CMRF is situated on an area of woodland which is young. Most of the trees in this area would be category C trees due to the Diameter at Breast Height (DBH). On the east side of the site, the clay cells 5, 6, 8, 7, 13, 14, 18, 16, 17, and 15, are again also areas which have been felled in recent years. This part of the site has been restocked.

17.18 A number of Category A individual trees, including tree T71, T80, T83 and perhaps T 70, all of which are mature Oak trees, would be lost. 'A' category groups of trees which are to be lost would be Groups G81, G85, G86 and G87. As category A trees these trees will have a high arboricultural value. For example, the condition summary within the tree survey schedule reports T83 to be a "very large and significant sized Oak at compartment boundary, of high individual arboricultural value". Only one B category tree would be lost this is tree T 82. The only B category group of trees which would be lost is G98. There is one woodland category B group of trees which would be mostly lost due to the development. There will be short-term to medium term (2-40 years) loss of trees and woodland and associated woodland flora on the site. As new tress will be progressively planted after the restoration of each cell, after 32-35 years the area should be restocked with trees and native ground flora.

Mitigation

17.19 Removal of parts of tree groups and woodland blocks will be specified by the reference area in the tree survey schedule. All trees within the defined area will be removed; it may be necessary to mark out a "cut line" on site, to avoid trees being felled in the buffer zone. Along the access route, in the wider site, a schedule of proposed tree pruning will be produced with annotated plans. The tree pruning will be specified in absolute terms (i.e., in metres above centre of access track.) Ground protection will be used where access is required, where this will be close to a retained tree, or to a group of trees, or woodland block, and where tree protection fencing cannot be installed because of site operations and other site constraints.

17.20 Before tree operations begin, a specification will be produced. This will be to include operational standards for all types of pruning, and tree felling, and will be according to best practice. This will help to ensure that tree work is undertaken to a consistent, and acceptable standard across the whole development of the site and across the wider site. Minimum requirements will be clearly set out for forestry contractors, referring to qualifications, accreditations, licenses and insurance cover.

17.21 Before any tree works are carried out, the potential impact on any protected species, (including on any nesting birds), will be clearly identified, and a protocol, for avoidance of any impact, will be included on the works schedule. This is likely to include seasonal constraints, timing of works, and restrictions on the use of some equipment.

17.22 Forestry contractors will also be given basic "Toolbox" talks and training on relevant protected species. This will include general site observations, possible restrictions to working methods, identification skills and reporting protocols where protected species are identified. The Toolbox talks will be required in order to safeguard protected species on site / near to site in accordance with Wildlife & Countryside laws. Best practice guidelines will also need to be followed, and the opportunity used to help to educate forestry contractors, before tree work begins. The tree protection fencing will be based on BS 5837:2012. The protected areas will constitute a construction exclusion zone, within which no unplanned access, nor any operations, would be permitted.

17.23 The use of materials which could pollute groundwater or soils will be carefully controlled. Items such as use of cement, and the storage of fuels, will require respective Method Statements and operational standards put in place prior to start of works on site.

17.24 A traffic management system will be used in order to minimise 2 lorries passing on the access track. This will be to mitigate the need to have a wider access track, or the need for more than 2 passing places in the western plot. Having a site wide speed limit of 5 mph will be to increase site safety and to reduce noise and dust that is likely to be produced by lorry movements. It is also likely to reduce/eradicate wildlife fatalities caused by additional lorry movements. Areas which have been re-planted with topsoil will be protected from vehicle access as "No Go" areas.

17.25 Temporary physical protection measures will be required for the construction phase of the CMRF site, and for the associated roadways into site. This will be to prevent contractors from wandering into neighbouring / adjoining protected woodland and buffer areas, as well as to avoid problems associated with soil compaction / loss of soil structure.

17.26 Prior to restoration commencing a pre-start meeting will be set up between the LCP's landscape and tree representatives and the District and County landscape Contract Supervising Officers. There will need to be regular dialogue, and regular site landscape meetings; these will be arranged so as to facilitate the smooth running of the tree and landscape contracts on the site, and in due course the phased restoration of the site, and the planting in the entrance area, in the wider site.

17.27 When a compartment has been replanted with soil, the soil will need to be prepared either in spring or autumn as a seedbed. Seeding will need to be carried out as soon as possible after seedbed preparation, at the correct time of year, in early April or in early September, in suitable weather conditions, and the seed kept moist until it has germinated. The wildflower seed will need to be specified as suited to heavy, wet clay soils and will need to be of local provenance, if that seed is locally available. During the first season of growth, all the wildflower area seeded, will need to be mown, and the arisings collected; this is to encourage tillering of the plants. A compost heap area in a sunny location beyond the working area could be as agreed with the Landscape Supervising Officer.

17.28 The seeding will also ideally need to be carried out at the earliest possible stages in year 2, as the seeding and new wildflower grassland areas will help to stabilise the soils, and this restored surface will be to help to prevent soil erosion from the recently infilled and restored areas. This is to safeguard the clay soils on site, and to safeguard the water quality, by preventing soil erosion from site, and by therefore helping to prevent soil pollution of the water courses in the local area. The wildflowers in wildflower seeding, as specified for the Wood White butterfly, will need to be supplemented by planting of some areas of wildlfower plugs, within the wildflower seeded areas. See **Figure PS7** for details of the species list of wildflower food plants for the Wood White butterfly and for other local butterflies.

17.29 The new woodland areas should be planted using the recommended woodland mixes and planting transplants, and specifications and bills of quantity, based on the sites' tree planting specifications as shown on the landscape restoration plans. All the new trees will need to be kept weed free, throughout establishment and at least for the first 5 years, by maintaining a weed free area of 1 m^2 for each tree. This maintenance is recommended as research shows that keeping trees weed free with a 1 m^2 weed free circle will triple the newly planted trees' growth in the first 15 years. The newly planted trees will need to be highly protected from browsing woodland animals, such as deer, by installation of protective tree tubes (to be Tuley tree tubes or similar approved tree shelters), to be a minimum of 1.2 m high. These will need to be high enough to protect from browsing deer, and of a type to be agreed with the Supervising Landscape Officer. Tree shelters can reduce the losses caused by animals, the cost of herbicide application, and time spent on inspection and maintenance, as well as stresses that are associated with the transfer from nursery to planting site. Tree shelters can in fact lead to cost savings by avoiding the need for expensive deer fencing, enabling herbicide applications to be made more efficiently and improving survival.

17.30 Any plants which die will be replaced within the first tree planting season, during suitable weather conditions. The beating up will need to be in the first bare root planting season, which runs from late November to early March, after trees are dormant, and before trees come into leaf. Maintenance of the restored woodland planting will be for the lifetime of the development (33+ years). Thereafter, the

woodland areas will need to be covered by a new Woodland Management Plan and Woodland Grant Scheme Agreement with the Forestry Commission.

Conclusions

17.31 There will be tree loss on the site, in the short to medium term, due to the development proposals. Once the compartments begin to become re-vegetated with wild flora and they are then replanted with trees, the loss of trees and impacts on the woodland ground flora and other habitats would be mitigated.

17.32 Over the longer term, the development offers restoration of the site to an area of mixed native, deciduous woodland, which, with the help of ecologists, foresters and landscape architect, will become an enhanced woodland area, which will link to surrounding ancient woodland and which will over time mature to become structurally more diverse. There will be some landscape benefits; for example, the aim will be for the woodland areas to retain and to encourage a more diverse selection of native species of trees and ground flora, as well as to encourage a wider selection and mosaics of different habitats. These woodland habitats will be regularly assessed and managed, in accordance with landscape planning conditions.

17.33 Retention of the green buffer to the site will enable the linking to wider woodland habitats and the conservation of the landscape and visual amenity of the periphery of the site within the wider landscape in NCA 121 Low Weald, in the Low Weald Hills.

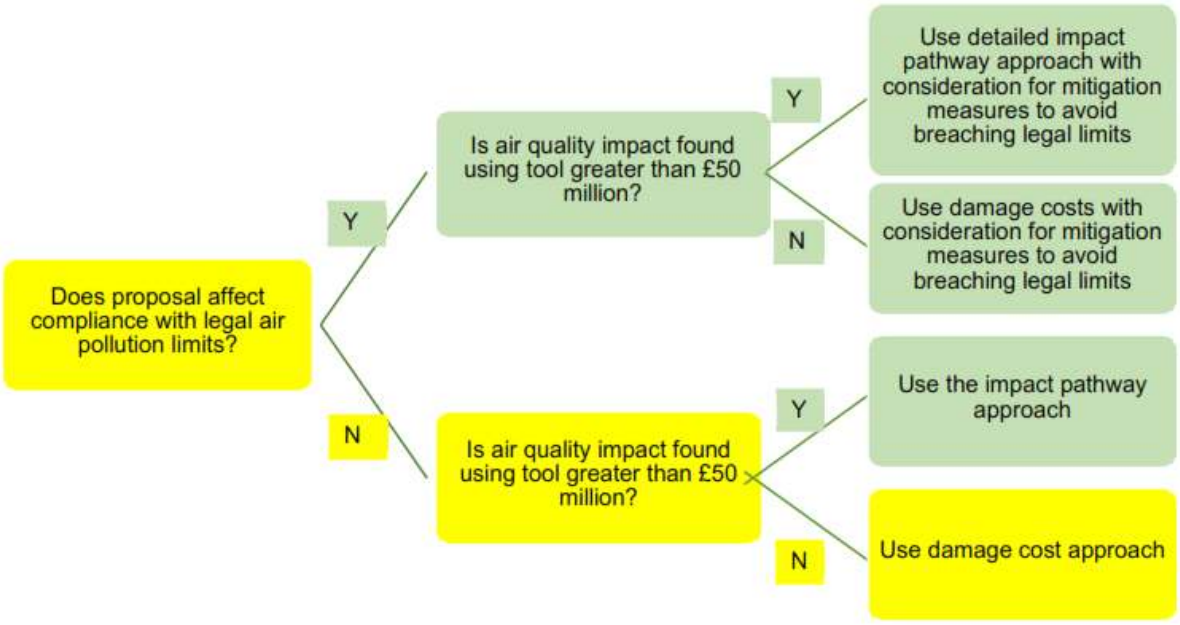
17.34 The site and the wider site will ultimately be returned to mixed, native, deciduous woodland, managed under a short rotation coppice, with more diverse wildflower grassland habitats (from shady to sun lit), with woodland rides and additional habitats including deadwood habitats, and newly extended and managed linked wildflower verges. This will be to benefit local invertebrates, including butterflies such as the Wood White, and to create a more resilient woodland over time.

18. Air quality assessment (including amenity)

18.1 WSCC's Scoping Opinion did not acknowledge that the proposed development is not within an Air Quality Management Area (AQMA). The scoping opinion requested an 'air quality assessment' for the site operations and traffic movements through a greenfield site (para. 4.43). The scoping opinion did not request a specific assessment of traffic air quality beyond the site, which would have to take into account the predicted increase in local / regional traffic from other road users during the 30+ year life of the project. The vehicle movements that will result from the proposed development are small (less than 100 annual average daily traffic – "AADT") when compared to the large number of vehicles that are using the A281 and the local Lorry Route Network.

18.2 The scoping opinion did request that an assessment should take into account the Air Quality and Emissions Mitigation Guidance for Sussex (2019) and a damage cost calculation should be submitted with the application. This guidance was superseded by the Air Quality and Emissions Mitigation Guidance for Sussex (2020) ("AQEM"). However, the DEFRA guidance referred to in the AQEM was superseded on the 26 March 2021 and DEFRA's new guidance quantifies the emissions over a 10-year period compared with the 5 years specified in the AQEM. Furthermore, DEFRA's new 10-year damage cost calculator is more appropriate for comparing damage costs from the implementation of different policies and different types of emissions from different sources than it is for carrying out an assessment as set out on page 8 of the AQEM. The Institute of Air Quality Management's guidance, as referred to on page 16 of the AQEM, was last updated in January 2017.

18.3 In accordance with the screening checklist in the AQEM, the proposed development is a major development that includes mineral extraction and waste. The 2021 Emissions Factor Toolkit and the damage cost calculation based on the emissions of oxides of nitrogen (NO_x) and particulates sized at 2.5 microns in diameter ($PM_{2.5}$), is shown as **Appendix ES Q**. The NO_x emissions are calculated to be 0.369 tonnes per annum and the $PM_{2.5}$ emissions are calculated to be 0.024 tonnes per annum. The damage cost calculator shows the cumulative Central Present Value to be £9,819 over 5 years. This sum should be seen in context with the flowchart shown in the guidance section of DEFRA's air quality toolkit:



18.4 Activities associated with the proposals that have the potential to generate dust outside of the CMRF building are the excavation of clay, the transportation of material at the site and off site, the transportation of CD&E wastes on to site and the restoration of the site. HGVs leaving the site have the potential to result in the deposit of mud on the road. The Dust Management Plan (DMP) is shown as **Appendix ES R**.

18.5 Prior to the provision of mains electricity, an on-site max 450kW ultra low NO_x diesel generator running on low sulphur fuel oil will provide all site electricity. The NO_x emission will be max 5mg per second. Typically, where any combustion plant has a NO_x emission rate that is max 5mg/s it is unlikely to give rise to impacts provided that the emissions are released from a vent or stack at a height that provides adequate dispersion[1].

Dust assessment methodology

18.6 The Institute of Air Quality Management's (IAQM) 2016 Guidance on the Assessment of Mineral Dust Impacts for Planning v1.1 states "*dust impacts will occur mainly within 400m of the operation, even in the dustiest of sites".* All receptors within and beyond 400m of the proposed development have been assessed in accordance with Appendix 4 of the IAQM 2016 Guidance and using Protreat's experience in producing dust management plans for waste management sites. To have an impact on a sensitive receptor, dust must be carried from the source by the direction and speed of the wind towards the receptor.

18.7 Professional judgment is used to estimate the overall effect on the surrounding area considering the number and location of receptors and the magnitude pf the dust at each receptor.

Baseline

Dust

18.8 The annual mean air quality objective for PM_{10} is 40µg/m^3 with a 24 hour mean concentration of 50µg/m^3 that must not be exceeded more than 35 times a year. The estimated annual mean PM_{10} background concentration obtained from DEFRA for 2019[2] at the site is between 12.99 and 13.36µg/m^3 with a mean value of 13.12µg/m^3. The background concentrations of PM_{10} at the site are considerably below the annual mean air quality objective of 40µg/m^3.

18.9 A wind rose from the Meteorological Office records for Gatwick Airport located approximately 25km northeast of the site, for the period from 1993 to 2012 and an additional wind rose for the period from 2008 to 2021 is presented as **Appendix ES S**. The earlier wind rose shows that the prevailing wind was from the south west / south south west, whereas the more recent wind rose shows the prevailing wind from the west south west / south west. Wind speed data for the period from January 2008 to May 2021 is presented as **Appendix ES T**. Wind speeds for approximately half of the year (54%) are between 0.5 metres per second (m/s) and 5m/s which is classed as calm through to a gentle breeze on the Beaufort Scale. Wind speeds greater than 10m/s occur for approximately 5% of the year.

18.10 The proposed development site is screened to the west, south and east by up to 1km of woodland, especially to the south / southwest and much of the 1km of land

[1] Institute of Air Quality Management guidance 2017

[2] UK Ambient Air Quality Interactive Map (defra.gov.uk)

containing the southerly woodland is up to 5 metres lower than the site. This will greatly reduce the prevailing wind conditions at the site.

Mud on the road

18.11 The access to the site will be via the woodland access road to the nearest highway, which is Loxwood Road. The operation and restoration of the site has the potential to lead to mud being tracked onto the public highway hence controls are necessary.

Lighting

18.12 If operations are undertaken during the hours of dusk / dark during the winter (from 0800 to 1000hrs and 1500hrs to 1800hrs) lighting at the working face will be provided on the excavator. Lights will be installed as necessary along the eastern and northern sides of the CMRF, inside the CMRF / amenity building, the parking area in the eastern plot and at the entrance to Loxwood Road. Lights will be directed downwards and only to the area that needs to be lit. The lights will only be used during the hours of operation.

Assessment of environmental effects

Dust

18.13 To result in an impact, dust must be generated and carried in sufficient quantities from the source to a sensitive receptor and this is dependent on the site activities and meteorological conditions including wind speed, wind direction and rainfall. Dust impacts will occur mainly within 400m of the activity, but this distance will depend on the proximity of one receptor to another. As the vast majority of the site is screened by the woodland on three sides, when the wind direction is not the prevailing wind, the woodland is by and large the only receptor.

18.14 It is assumed that significant dust blow will not occur below wind speeds of 5m/s. The Gatwick wind data shows that wind speeds are below 5m/s for c. 197 days of the year. Due to the woodland screening, the actual number of days will be higher than this. Rainfall would normally be an additional factor to consider on those days when rainfall is less than 0.2mm but given the proposed Mist Air mitigation measures for this site, this is less relevant.

18.15 The residual source emissions for each of the site activities has been determined based on the IAQM's 2016 Guidance:

Activity	**Residual Source Emissions**
Materials handling	Large
Site restoration	Large
Clay extraction	Medium
Stockpiles / open cells	Medium
On site transport	Medium
Off site transportation	Low

18.16 Soil stripping, overburden handling and restoration operations will be carried out throughout the life of the development. Likewise, with the CMRF activities. However, as per Appendix 4 of the IAQM 2016 Guidance, there will be a small working area of less than 0.5 hectares at any time, a low volume of movements and a small number of mobile plant. The restoration materials will be stored in lidded containers prior to use. The extracted clay will be stockpiled for weathering and the moisture content will provide a low potential for dust. A speed restriction

of 5mph will be enforced for HGVs along the woodland access road so that the residual source emissions from transportation will be low. Appendix 4 of the guidance titled "determining residual source emissions" confirms that the proposed development is Small. See below:

A: Site Preparation/Restoration

LARGE	SMALL
Large working area	Small working area
High bunds	Low bunds
High volume of material movement	Low volume of material movement
High no. heavy plant	Low no. heavy plant
Minimal seeding/sealing of bund surface	Bunds seeded/sealed immediately
Material of high dust potential	Material of low dust potential

An example of a large potential dust magnitude from site preparation/restoration may include factors such as a working area ›10ha, bunds ›8 m in height, ›100,000 m^3 material movement, ›10 heavy plant simultaneously active, bunds un-seeded, fine grained and friable material. Conversely, a small potential dust magnitude may include a site with a working area ‹2.5ha, bunds ‹4 m in height, ‹20,000 m^3 material movement, ‹5 heavy plant simultaneously active, all bunds seeded, material with a high moisture content.

Comment: the proposed site will have a working area that is less than 0.5ha, bunds will be < 4m in height, c. 6,500m^3 material movement, max 2 heavy plant simultaneously active, all restored areas seeded and material with a high moisture content. Therefore – **small potential dust magnitude.**

B: Mineral Extraction

LARGE	SMALL
Large working area	Small working area
High energy extraction methods	Low energy extraction methods
Material of high dust potential	Material of low dust
Potential high extraction rate	Low extraction rate

An example of a large potential dust magnitude from mineral extraction may include a working area ›100 ha, drilling and blasting frequently used, dusty mineral of small particle size and/or low moisture content, 1,000,000 tpa extraction rate. A small potential magnitude may include working area ‹20 ha, hydraulic excavator, coarse material and/or high moisture content, ‹200,000 tpa extraction rate.

Comment: the proposed site will have a 0.5ha working area (6 hectares over 30 years), hydraulic excavator, coarse material and/or high moisture content and c. 12,500 tpa extraction rate. Therefore – **a small potential magnitude**

C: Materials Handling

LARGE	SMALL
High no. heavy plant	Low no. heavy plant
Unconsolidated/bare surface	Hard standing surface
Activities close to site boundary	Activities within quarry void
Material of high dust potential	Material of low dust potential

An example of a large potential dust magnitude from materials handling may include factors such as >10 loading plant within 50 m of a site boundary, transferring material of a high dust potential and/or low moisture content on dry, poorly surfaced ground. Conversely, a small potential dust magnitude may include <5 plant, more than 100 m of a site boundary, within the quarry void or clean hardstanding, transferring material of low dust potential and/or high moisture content.

Comment: the proposed site will have 2 plant, activities within the quarry void but within 100m of the site boundary transferring material of low dust potential and/or high moisture content. Therefore, **a medium potential dust magnitude.**

D: On-Site Transportation

LARGE	SMALL
Use of unconsolidated haul roads	Use of conveyors
Unpaved haul roads	Paved haul roads
Road surface of high dust potential	Road surface of low dust potential
High no. HDV movements	Low no. HDV movements
High total length of haul roads	Low total length of haul roads
Uncontrolled vehicle speed	Controlled (low) vehicle speed

An example of a large potential dust magnitude from on-site transportation could include >250 movements in any one day on unpaved surfaces of potentially dusty material. A small potential magnitude may include the employment of covered conveyors used for the majority of the on-site transportation of material, <100 movements of vehicles per day, with surface materials of compacted aggregate, <500 m in length and a maximum speed of 15 mph.

Comment: the proposed site will have lidded containers for the movement of restoration materials, 42 movements of vehicles per day, with surface materials of compacted aggregate or asphalt, greater than 500m in length but a maximum speed of 5 mph. Therefore, **a small potential magnitude.**

E: Mineral Processing

LARGE	SMALL
Raw material of high dust potential	Raw material of low dust potential
End product of high dust potential	End product of low dust potential
Complex or combination of processes	Single process
High volume material processed	Low volume material processed

An example of a large potential dust magnitude from mineral processing may include factors such as a mobile crusher and screener with concrete batching plant on-site, processing >1,000,000 tpa of material with a high dust potential and/or low moisture content e.g. hard rock. Conversely, a small potential dust magnitude may include a site with a fixed screening plant with effective design in dust control, processing <200,000 tpa of material with a low dust potential and/or high moisture content e.g. wet sand and gravel.

Comment: the proposed CMRF will have a concrete crusher but this will be inside a building. Any fixed screening plant operated outside for clay would be used in

conjunction with the Mist-Air system for dust control, processing 12,500tpa of low dust potential and/or high moisture content weathered clay. Therefore, **a small potential dust magnitude.**

F: Stockpiles/Exposed Surfaces

LARGE	SMALL
Long term stockpile	Short term stockpile
Frequent material transfers	Infrequent material transfers
Material of high dust potential	Material of low dust potential
Ground surface unconsolidated/un-kept	Ground surface hardstanding/clean
Stockpiles close to site boundary	Stockpiles well within quarry void
Large areas of exposed surfaces	Small areas of exposed surfaces
High wind speeds/low dust threshold	Low wind speeds/high dust threshold

An example of a large potential dust magnitude from stockpiles and exposed surfaces could include a stockpile with a total exposed area ›10 ha in an area exposed to high wind speeds located ‹50 m of the site boundary. Daily transfer of material with a high dust potential and/or low moisture content. Stockpile duration ›12 months and quarry production ›1,000,000 tpa. A small potential magnitude may include stockpile duration of ‹1 month with a total area ‹2.5 ha in an area of low wind speeds, located ›100 m from the site boundary. Weekly transfers of material with a low dust potential and/or high moisture content. Quarry production ‹200,000 tpa.

Comment: the proposed site will have a total stockpile area of < 0.5ha in a sheltered area of low wind speeds, located 15 to 200m from the site boundary with a clay quarry production of 12,500 tpa. Therefore, **a small potential magnitude.**

G: Off-Site Transportation

LARGE	SMALL
High No. HDV Movements	Low No. HDV Movements
Unconsolidated Access Road	Paved Access Road
Limited/No Vehicle Cleaning Facilities	Extensive Vehicle Cleaning Facilities
Small Length of Access Road	Large Length of Access Road

An example of a large potential dust magnitude from off-site transportation could include total HDV ›200 movements in any one day on unsurfaced site access road ‹20 m in length with no HDV cleaning facilities. No road sweeper available. A small potential magnitude may include ‹25 HDV movements per day, paved surfaced site access road ›50 m in length, with effective HDV cleaning facilities and procedures, the employment of an effective road sweeper.

Comment: the proposed site will have 42 HGV movements per day, paved site road > 50m in length, with effective cleaning facilities and procedures and an effective road sweeper when required. Therefore, **a small to medium potential magnitude.**

18.17 As per Appendix 1 of the IAQM 2016 Guidance, "*Large dust particles (greater than 30 µm), which make up the greatest proportion of dust emitted from minerals workings, will largely deposit within 100 m of sources. Intermediate-sized particles (10-30 µm) are likely to travel up to 200-500 m.", together with the qualification cited in the ARUP report that "Under normal meteorological conditions, medium-sized (size range 10-30 µm) will generally travel up to 100-250 m from the source before returning to the surface. Only occasionally, when winds are stronger, will they travel beyond this*."

18.18 The DMP details the 22 receptors which have the potential to be affected by dust. These can be summarised as follows:

Receptor Type	No. of receptors	Emission Source
Ancient woodland	6	Access road
Public footpath users	4	Site
Ancient woodland	3	Site
Deciduous woodland	3	Site
Public footpath users	3	Access road
Residence	2	Entrance
Deciduous woodland	1	Access road

The locations of the receptors is shown in the DMP.

18.19 As specified in Table 4 of the IAQM 2016 Guidance, the "*Good Practice Mitigation – Design Measures*" include that "*dust-generating activities should, where possible, be located where maximum protection can be obtained from topography, woodland or other sheltering features".* Furthermore, *"existing woodland / hedgerows along site boundaries should be retained where possible".*

18.20 Box 3 of the IAQM 2016 Guidance categorises the sensitivities of people to dust soiling effects, as shown below:

Box 3. Sensitivities of People to Dust Soiling Effects

For the sensitivity of people and their property to soiling, the IAQM recommends that the air quality practitioner uses professional judgement to identify where on the spectrum between high and low sensitivity a receptor lies, taking into account the following general principles:

High sensitivity receptor

- users can reasonably expect[a] enjoyment of a high level of amenity; or
- the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected[a] to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.
- indicative examples include dwellings, medium and long term car parks[b] and car showrooms.

Medium sensitivity receptor

- users would expect [a] to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or
- the appearance, aesthetics or value of their property could be diminished by soiling; or
- the people or property wouldn't reasonably be expected [a] to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.
- Indicative examples include parks, and places of work.

Low sensitivity receptor

- the enjoyment of amenity would not reasonably be expected[a]; or
- there is property that would not reasonably be expecteda to be diminished in appearance, aesthetics or value by soiling; or
- there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.
- Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks[b] and roads.

[a] People's expectations will vary depending on the existing dust deposition in the area.

[b] Car parks can have a range of sensitivities depending on the duration and frequency that people would be expected to park their cars there, and the level of amenity they could reasonably expect whilst doing so. Car parks associated with work place or residential parking might have a high level of sensitivity compared to car parks used less frequency and for shorter durations, such as those associated with shopping or errands. Cases should be examined on their own merits.

18.21 With the information and analysis provided in the DMP it is concluded that based on the wind direction, wind speed, the woodland shielding the development site from the prevailing wind, woodland shielding when the woodland is downwind, together with the location and type of receptors; without specific mitigation or dust controls, there is the potential for a negligible to a slight adverse effect of dust impact. Good practice as set out in the IAQM 2016 Guidance and standard dust management controls will be implemented to minimise the potential for dust

impacts. The dust management controls that will be implemented at the site are set out in the DMP.

18.22 It is concluded that the dust emissions can be controlled using well tried and tested methods such that it is unlikely that there will be any significant dust emissions from the site. The IAQM's Guidance states that dust generation from these activities can be controlled effectively and the dust control measures are dependent on good site management. It is also assumed that the dust control measures will be subject to the conditions of an environmental permit that will be issued by the Environment Agency which will minimise the risk of dust emissions at the site boundary. Therefore, it is unlikely that there will be an unacceptable cumulative impact with respect to dust emissions.

Mud on the road

18.23 All HGVs will use the mud control grids and wheel wash facility before leaving the site and entering the public highway. Where necessary, the Loxwood Road layby will be cleaned with a road sweeper. The risk from the proposed development related to mud and debris on the local highway network is negligible.

Lighting

18.24 It is concluded that there will not be an unacceptable impact on amenity as a result of the lighting proposed for the development. The lighting will only be used when the site is operational and will be directed downwards to minimise the visibility of the light. Dusk / dark site operations will be completed by 1800hrs Monday to Friday, hence the hours during which lighting will be necessary during the winter months is limited.

Mitigation

18.25 To offset the 5 year damage cost calculator sum of £9,819, an employee car sharing scheme will be implemented, secure cycle storage will be provided along with an employees' electric bike voucher scheme plus investment in EV charging infrastructure.

18.26 The measures specified in the DMP will be implemented.

18.27 Effective HGV wheel washing facilities will be maintained along with the layby to minimise the potential for mud on the road.

18.28 Fixed lighting will be directed downwards and only used in the specified work areas or to satisfy health & safety requirements and turned off when not in use.

Conclusion

18.29 There are no material reasons why the proposed development for the exportation of clay, the importation of CD&E wastes and exportation of recovered wastes should not be granted planning permission on air quality grounds.

19. Ecology

19.1 Introduction

19.1.1 This section of the Environmental Statement has been prepared by Urban Edge Environmental Consulting, and it provides a summary of their Ecological Impact Assessment (EcIA) (**Appendix ES V)**. 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.

19.1.2 The objectives of this chapter are to:

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

19.2 Key Legislation, Policy and Guidance

Legislation

General

19.2.1 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.

19.2.2 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.

19.2.3 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.

19.2.4 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.

19.2.5 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.

19.2.6 The 2019 Amendment Regulations have created a new national site network in the UK, on land and at sea, 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.

19.2.7 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.

19.2.8 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

19.2.9 Great crested newt *Triturus cristatus* (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.

19.2.10 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

19.2.11 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.

19.2.12 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 to 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

19.2.13 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)

19.2.14 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

19.2.15 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.

Hazel dormouse (Muscardinus avellanarius)

19.2.16 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)

19.2.17 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)

19.2.18 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.

Other Wild mammals

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

19.2.20 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.

Reptiles

19.2.21 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.

19.2.22 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.

Native flora

19.2.23 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

19.2.24 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

19.2.25 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.

Planning Policy

19.2.26 A review of the nature conservation planning policy context is presented in section 2 of **Appendix ES V**.

19.3 Assessment Methodology

Consultation

19.3.1 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.

Assessment Methodology

19.3.2 This 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*.

Scope of the Assessment

Ecological Zone of Influence

19.3.3 The ecological zone of influence (ZoI) was initially defined as the Site.

19.3.4 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. The Site comprises c.8ha 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 ditches[3]. 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. 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

[3] 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.

500m of the extraction site, with a further four lying alongside the proposed access route.

19.3.5 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 elsewhere 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, see Section 12 of the Environmental Statement for more details.

Temporal scope

19.3.6 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.

Baseline

Desk Study

19.3.7 A desk-based study was undertaken in 2019[4] 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);

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

- Statutory sites of national importance within a 2km radius; and
- Non-statutory sites and protected/notable species records within a 1km radius.

19.3.8 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).

Field Surveys

19.3.9 A range of baseline ecological surveys were undertaken to inform and influence the design and layout of the 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 an Appendix to the EcIA. In summary, the following were undertaken:

- Preliminary Ecological Appraisal of the proposed development Site (reported separately)[5];
- Preliminary Ecological Appraisal of the proposed access route (reported separately)[6];
- National Vegetation Classification survey;
- Biodiversity Net Gain assessment survey (reported separately)[7];
- 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.

19.3.10 Baseline ecological surveys undertaken to inform the assessment covered the ZoI defined above i.e. the proposed development Site and its proposed access route, 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

[5] *Ibid*.
[6] Urban Edge Environmental Consulting (2020): *Land east of Loxwood, West Sussex: Preliminary Ecological Appraisal Report.*
[7] Urban Edge Environmental Consulting (2021): *Land north of Loxwood Road, Billingshurst, West Sussex: Biodiversity Net Gain Assessment.*

might foreseeably be affected, directly or indirectly, to provide contextual information and further inform the assessment.

Limitations

19.3.11 The EcIA Appendix contains a full review of applicable limitations to each baseline survey. However, the principal limitations to the baseline ecological surveys 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

19.3.12 Twelve ponds lie within 500m of the proposed development 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 in the EcIA Appendix. 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 this is not considered to be a significant limitation.

Ecological Impact Assessment

Important Ecological Features

19.3.13 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.

19.3.14 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.

19.3.15 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.

19.3.16 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

19.3.17 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.

19.3.18 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 EcIA 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 of the anticipated impacts.

19.3.19 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 ZoI 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 ZoI.

Characterising and quantifying impacts

19.3.20 The term 'impact' relates to changes resulting from proposed development activities, for example the removal of habitat.

19.3.21 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).

19.3.22 For the purposes of the 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, and 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.

19.3.23 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

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

19.3.25 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.

19.3.26 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

19.3.27 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

19.3.28 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.

19.3.29 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).

19.3.30 In addition to identifying mitigation measures, this section also addresses relevant legal requirements, for example in relation to protected or invasive non-native species.

19.4 Baseline and Key Receptors

Introduction

19.4.1 This section summarises the baseline ecological conditions determined through the course of desk-based and field-based investigations described in the previous section. 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.

19.4.2 Full accounts of the results desk-based and field-based investigations are presented in the EcIA Appendix. For the purpose of this chapter summary evaluations are included below.

Statutory and Non-statutory Site Designations

19.4.3 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 19.1. 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 1km of the proposed development Site.

19.4.4 However, the proposed development Site falls within a SSSI Impact Risk Zone for Chiddingfold Forest SSSI and The Mens SSSI which are located approximately 2.7km north-west and 6.5km south, respectively. Planning applications for

minerals extraction within this zone will require the LPA to consult with Natural England prior to determination.

19.4.5 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 SACs are notified for bat populations, as summarised in Table 19.1 and shown in Figure 19.1 at 19.4.7 below.

Table 19.1: 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 *Barbastella barbastellus* and Bechstein's *Myotis bechsteinii* 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 *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*. 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 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 *Barbastella barbastellus*. 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.

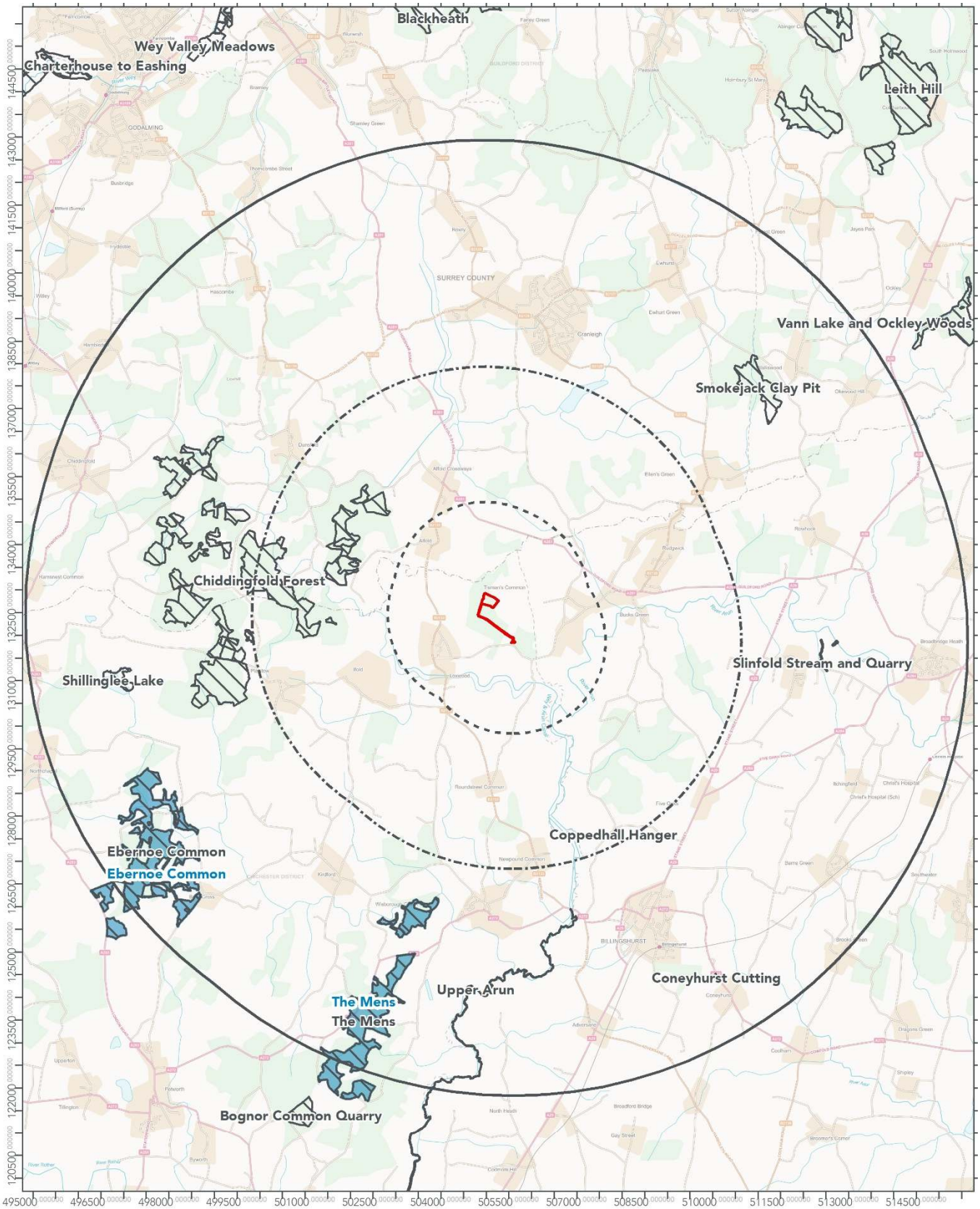
* Approximate distance and bearing from the Site.
** Only the chiropteran interest is listed above, other interest features are also present.

Priority Habitats

19.4.6 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.

Protected, Rare and Notable Species

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



Loxwood Clay Pits, West Sussex

Red line boundary

Sites of Special Scientific Interest

Special Areas of Conservation

Site Buffer 2km

Site Buffer 5km

Site Buffer 10km

0 3,250 6,500

Meters

N

Scale: 1:87,500 **Created by:** AD

Date: May 2021 **Reviewed by:** NP

Drawing number:

UE0363ECO-DesignatedSites210524

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Habitat and Vegetation Communities Evaluation Summary

19.4.8 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 19.2 and Table 19.3

Table 19.2 Summary of habitat evaluation - extraction site

Habitat	Importance	Rationale
Deciduous Woodland DW1, DW2, DW3, R1, R2 and R3	At least Local	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 Local	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	Local	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 19.3 Summary of habitat evaluation - proposed access route

Habitat	Importance	Rationale
Deciduous Woodland DW4, DW5, R3 and R4	At least Local	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	Local	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	Local	Part of a relatively natural woodland watercourse.
Coniferous Plantation C1	Site	Closed canopy mature conifer plantation with scattered shrubs and extensive bare ground.
Species poor hedge H1/H2	Site	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	Site	Small extent and limited richness in plant species and communities; unlikely to qualify as Priority Habitat; support

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

Faunal Evaluation Summary

19.4.9 A summary evaluation of the animal populations present within and adjacent to the extraction site and access route is set out at Table 19.4

Table 19.4 Summary of faunal evaluation - proposed development Site & access route

Species	Importance	Rationale
Great crested newt	Site	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 Local	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	Local	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	County (medium)	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	Site	The Site contains a relatively large area of habitat suitable for foraging and sett creation. However, no active setts were identified.
Roosting bats	Site (provisional)	The Site contains no buildings but 38 mature trees exhibited potential roost features.
Foraging and commuting bats	Local to County	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.

Species	Importance	Rationale
Hazel dormouse	Site	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	Local	The Site contains a relatively large area of good quality habitat for reptiles. Low populations of common lizard and grass snake and an exceptional population of slow worm were recorded. All three are SPI.

Baseline Evolution in the absence of Proposed Development

19.4.10 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.

Important Ecological Features

19.4.11 Of the designated sites, habitats and species listed above, those included in Table 19.5 are evaluated as being of importance and have the potential to be affected by the proposed development.

Table 19.5 Important Ecological Features with potential to be affected by proposed development

IEF	Rationale
Deciduous woodland	Semi-natural deciduous woodland, including areas of Lowland Mixed Deciduous Woodland Priority Habitat (HPI), was evaluated as of at least Local importance and may be directly and indirectly affected by the proposed development.
Deciduous plantation	Plantation deciduous woodland, including irreplaceable Ancient/Replanted Woodland, was evaluated as of at least Local 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 Local 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 Site level but qualifies as Hedgerow Priority Habitat (HPI) and is Hedgerow Regulations Important.
Ponds	The small ponds P13, P14, P14a, P15 adjacent to the access route were evaluated as of importance at the Site level but support populations of two WCA schedule 5 species.

IEF	Rationale
Breeding birds	The breeding bird assemblage was evaluated as of at least Local importance, included six Red/Amber list species and four SPI, and may be directly and indirectly affected by the proposed development.
Wintering birds	The winter bird assemblage was evaluated as of Local importance, included eight Red/Amber list species, four SPI and two WCA schedule 1 birds, and may be directly and indirectly affected by the proposed development.
Invertebrates	The invertebrate assemblage was evaluated as of County (medium) importance, included three SPI and one WCA schedule 5 species, and may be directly and indirectly affected by the proposed development.
Roosting bats	The Site contains 31 mature trees exhibiting potential roost features and was provisionally evaluated as of importance at the Site level.
Foraging and commuting bats	The foraging and commuting bat assemblage was evaluated as of Local to County importance, included at least four SPI and nine Habitats Regulations schedule 2 species, and may be directly and indirectly affected by the proposed development.
Reptiles	The reptile assemblage was evaluated as of Local importance, included three SPI and three WCA schedule 5 species, and may be directly and indirectly affected by the proposed development.

19.4.12 Of the designated sites, habitats and species listed above, those included in Table 19.6 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 19.6: 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 *Myotis spp*. bats were recorded in relatively low numbers during the bat activity surveys (approximately 0.9% and 1.4% of bat passes per hour recorded during remote monitoring at the Site). According to Natural England[8] (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[9] 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,

[8] 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.

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

Feature	Rationale
	Greenaway[10] (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) 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 "*the Site is not within or near any known flightlines for bats from Ebernoe Common SAC or The Mens SAC*."
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 Site 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.

19.5 Proposed Development

19.5.1 Details of the proposed development are provided elsewhere in the Environmental Statement.

Embedded Mitigation

19.5.2 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.

19.5.3 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.

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

- 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.

19.5.4 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 (refer to **Figure ES 6**).

19.5.5 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.

19.5.6 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.

19.5.7 In relation to surface water management and hydrological impacts, the Water Chapter – Section 12 of the Environmental Statement (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.

19.5.8 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.

Additional Mitigation

19.5.9 Additional mitigation and enhancement measures are proposed and are outlined in the EcIA **Appendix ES V**. 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.

19.6 Assessment of Likely Significant Effects

Introduction

19.6.1 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.

Potential Effects

19.6.2 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. 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 19.7.

Table 19.7: Potential significant effects resulting from construction, operation and decommissioning phases of the 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).
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.

Effects during the Construction Phase

19.6.3 In Table 19.8 the likely significant effects resulting from construction are detailed for each of the Important Ecological Features identified previously 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 above), which is also referred to in Table 19.8. All necessary additional mitigation is also described.

Table 19.8 is shown as **Table ES 2** in the Environmental Statement.

Effects during the Operation and Decommissioning Phases

19.6.4 In Table 19.9 likely significant effects resulting from operation and decommissioning are detailed for each of the Important Ecological Features identified previously 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 which is also referred to in Table 19.9. All necessary additional mitigation is also described.

Table 19.9 is shown as **Table ES 3** in the Environmental Statement.

Summary of Residual Effects

19.6.5 Table 19.10 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 19.10: Residual effects

Feature	Significant residual effects		
-	*Construction phase*	*Operation*	*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

Biodiversity Net Gain

19.6.6 Mitigation and enhancement measures further to that which is embedded in the proposed development, referred to as additional mitigation, is listed in Tables 19.8 and 19.9 and outlined in further detail in the EcIA Appendix. In addition to mitigation, and in line with the guidelines (CIEEM, 2018) and national and local policy objectives, draft recommendations for biodiversity net gain are set out in the accompanying *Biodiversity Net Gain Assessment*, see **Appendix ES W**. 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 for an agreed level of Biodiversity Net Gain.

Monitoring

19.6.7 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.

19.7 Conclusions

19.7.1 After carrying out site surveys from March 2020 to February 2021 (see **Appendix ES U**), an Ecological Impact Assessment was prepared for the proposed minerals and waste development at Land north of Loxwood Road, Billingshurst, West Sussex (Grid Reference: 505115, 132770).

19.7.2 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.

19.7.3 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).

19.7.4 Mitigation designed into the Proposed Development is described in Chapter 5 of the EcIA, see **Appendix ES V**. The assessment of impacts carried out takes this mitigation into account. No important statutory or non- statutory designated sites of relevance to the Proposed Development were identified.

19.7.5 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.

19.7.6 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 of the EcIA and the outline mitigation plan is presented at Appendix C, see **Appendix ES V**;

- 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.

19.7.7 Measures to secure biodiversity net gain in line with national and local planning policy and guidance are proposed in an accompanying draft Biodiversity Net Gain Assessment, see **Appendix ES W**.

19.7.8 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.

19.7.9 Any significant residual effects are predicted and summarised in Table 19.10.

20. Socio economic impact

20.1 The socio-economic impact over the 30+ year lifetime of the project has been assessed with and without employment. The initial investigations commenced in late 2016 and, to date, more than £250k has been spent pre planning application. The construction and set up costs during the first 2-3 years of the project will be more than £1 million.

20.2 Due to the changes in the West Sussex clay market i.e., the former loss of a safeguarded site for producing bricks and future predicted further losses, there will be no displacement effect from the proposed development. Likewise, the changes to the waste market post Brexit, which has impacted on waste exports and, therefore, the type of wastes that will now need to be processed by all counties in the south-east of England, plus the future impact from circular economy policies and objectives, and the Rudgwick CD&E waste facility nearing capacity, there will be no displacement in this sector either.

20.3 If permission is granted, this will also lead to further investment in West Sussex, for brick production, which would replace the predicted future loss of existing brickworks and help to provide bricks of a local character for use in house building in the West Sussex area.

20.4 During the first 1 to 3 years the proposed development will create 12 full time jobs based at the site, with a further 4 to 6 full time driving jobs based offsite. The site based jobs will be a mixture of management, admin, excavator operator, maintenance fitter and CMRF machinery operators. The travel to work employer support initiatives should favour those who live within 5 miles of the site. Favourable consideration will be given to employing unskilled workers for some of the roles and to providing training where required. During the lifetime of the project, on a net present value basis, this could provide c. £10 million of income to the local economy.

20.5 At the end of the project, the provision of the additional public right of way, a fishing pond, a habitats pond and the increase in biodiversity from the measures implemented during the life of the project, will increase the local attraction of Pallinghurst Woods, which will generate economic benefits to local hospitality.

20.6 It has been concluded that if planning permission is granted the benefits will be completely additional to the local authority area and, therefore, there will be "low deadweight".

21. Climate change

21.1 Schedule 4 of the EIA regs requires an assessment of the vulnerability of a project to climate change. The hydrology and hydrogeology section of this Environmental Statement and those associated environmental impact assessments have considered the impact of climate change on flood risk etc. and concluded that there are no significant impacts.

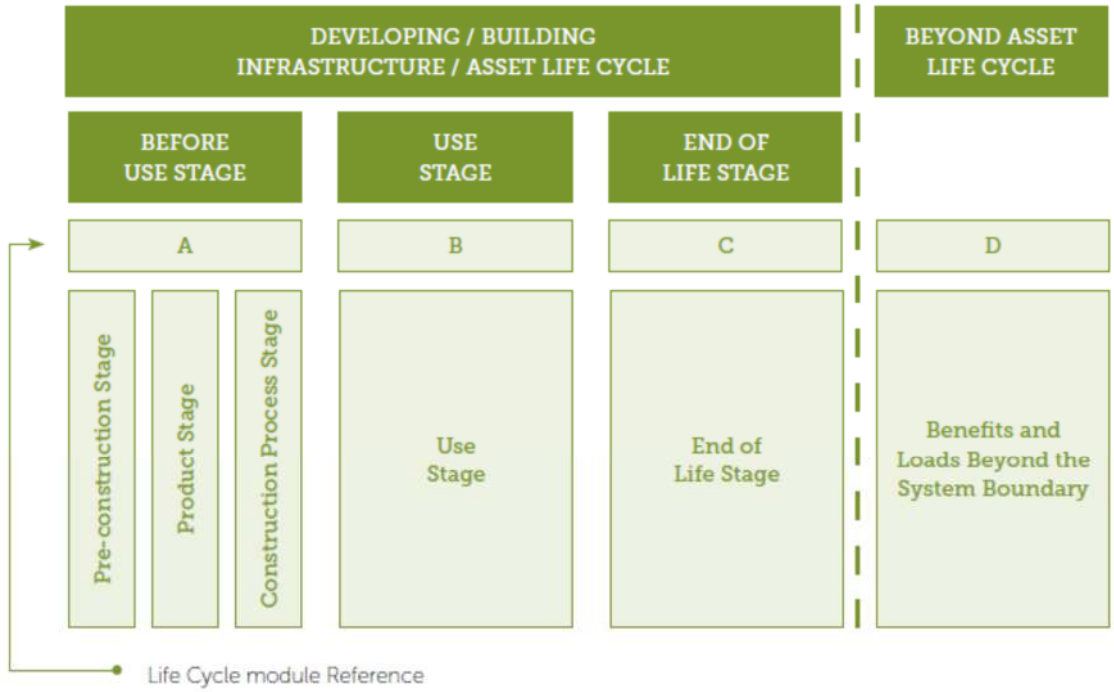
21.2 The EIA Regs also require that the environmental impact assessment process considers the "*direct and indirect significant effects of the proposed development*" on climate (for example greenhouse gas emissions (GHG)) and Schedule 3(1)(f) of the EIA Regs includes an assessment of the characteristics of a development with regard to "*the risk of major accidents and/or disasters relevant to the development concerned, including those caused by climate change, in accordance with scientific knowledge*" if this is chosen as selection criteria for the screening of a Schedule 2 development.

21.3 WSCC's Scoping Opinion scoped in the following climate change aspect:

The impact of the project on climate change should be included (e.g. greenhouse gas emissions, loss of trees and carbon sequestration), as well as the impact of climate change on the project (e.g. increased surface water runoff/flooding, increased dry periods, loss of habitat), particularly given its 31 year duration, and the distance to brick making facilities.

21.4 WSCC's Scoping Opinion concluded that population and human health, risk of major accidents / disaster and heat and radiation, can be excluded from detailed consideration. Protreat have produced the following assessment.

21.5 In assessing the impacts of climate change, it is important to first set out the scope of the study. The diagram below is taken from the Institute of Environmental Management and Assessment (2017) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance. In relation to this development, there is a build phase, an operational phase and a restoration phase. All three should be included within the scope of the study, as all three are planned phases of the project.



Impact from tree removal

21.6 One factor in calculating the GHG emission values for the development will be the removal of trees. Trees are often described as 'the lungs of the earth' and they sequester harmful carbon dioxide from the atmosphere to help mitigate climate change. However, the bulk of the development site contains very few mature trees The development site was chosen purposefully for this reason. The main areas where trees are present are shown as being in the SW corner of the site, and it can be seen there are very few mature trees in the remainder of the site, most particularly in the NW and NE/SE sectors which are largely clear of any significant tree cover.

21.7 Neither is the access road going to lead to the removal of any trees, the old forestry track being chosen as the route into site precisely for that reason. The development will therefore actually clear comparatively few trees – maximum 3 hectares.

21.8 In addition, when assessing the impacts of tree loss due to the development, it is also important to remember that over the scoped life of the project (operation + restoration) the plan is to replant more trees than are lost, both in the development area and possibly the surrounding woodland. This is possible because the developer also owns the surrounding 300 acres of woodland. The plan is also to restore the site sequentially, so the loss of trees will be as temporary as can be made possible.

21.9 The impact of the initial tree loss on the development site over the life of the project will therefore be minimal, due to both the replanting of trees during the restoration phases, and by compensation planting within the surrounding woodland during the lifetime of the project as part of the biodiversity plan. It has been concluded that, over the entire life of the project, tree loss will not be a significant climate change impact issue, and it has therefore been scoped out of the GHG assessment.

Lifecycle GHG Assessment

21.10 The GHG assessment adopts a lifecycle approach to calculate GHG emissions associated with the Proposed Development and to identify GHG 'hotspots' i.e. emission sources likely to generate the largest amount of GHG emissions. This approach enables priority areas for mitigation to be identified and is consistent with the principles set out in IEMA guidance. Where possible, GHG emissions have been quantified using a calculation-based methodology as per the following equation as stated in the Department for Environment, Food and Rural Affairs (DEFRA) 2018 emissions factors guidance:

Activity data x GHG emissions factor = GHG emissions value

21.11 In line with the World Resources Institute's 2015 GHG Protocol, A Corporate Accounting and Reporting Standard, when defining potential impacts, the seven Kyoto Protocol GHGs as far as feasible have been considered, namely:

Carbon dioxide (CO2); Methane (CH4); Nitrous oxide (N2O); Sulphur hexafluoride (SF6); Hydrofluorocarbons (HFCs); Perfluorocarbons (PFCs); and Nitrogen trifluoride (NF3). These GHGs are broadly referred to in this Chapter under an encompassing definition of 'GHG Emissions', with the unit of tCO2e (tonnes of CO2 equivalent).

Assessment methodology

21.12 In the absence of any widely accepted guidance on assessing the significance of the impact effect of GHG emissions, the EIA Guidance published by IEMA in 2017 has been followed - IEMA (2017) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance. This provides a framework for the consideration of greenhouse gas emissions in the EIA process, in line with the amending EIA Directive 2014/52/EU. The guidance sets out how to:

- Identify the GHG emissions baseline in terms of GHG current and future emissions;
- Identify key contributing GHG sources and establish the scope and methodology of the assessment;
- Assess the impact of potential GHG emissions and evaluate their significance; and
- Consider mitigation in accordance with the hierarchy for managing project related GHG emissions (avoid, reduce, substitute, and compensate).

21.13 The key anticipated GHG sources which have been scoped into the assessment are summarised in the table below:

Lifecycle Stage	Activity	Primary Emission Source	Assumptions
Pre-Construction	Enabling Work for CMRF construction	Diesel in Heavy machinery used for Land clearance.	2 weeks, one JCB type digger. No removal of material from site is anticipated, and the existing road will need only minor repairs in parts with recycled aggregate (so scoped out).
Construction	Building the proposed CMRF	Embodied carbon in the building materials	Assumes a steel clad building with concrete floor, exact quantities of which were not available for the assessment. The Build Carbon Neutral tool was therefore used to make a best estimate.
		Diesel in Heavy Plant Utilisation during construction	Assumed construction takes 1 month for a simple portal building. 2 JCB type vehicles used.
Operational	Operation of the CMRF	Diesel in Generator for electrical motors and lighting etc	Generator operated on diesel, 50 hours a week until mains electricity is supplied
	Operation of the Clay pit	Heavy plant digging the pit and 1 JCB type vehicle moving materials. Diesel in moving clay to market	Assumed 50 hours a week operation with 2 JCB type diggers. Clay movements 13 times a week for life of project. Assumed mileage at (say) 30 miles distant @ 6.6 mpg
	Construction materials inputted	Diesel emissions from vehicular use	Assumes 32 movements a day @ 12.3mpg
	Construction materials Outputted	Diesel emissions from vehicles minus the saved embodied carbon in the recycled materials	Assumed 10 movements a day

Restoration	Moving of stripped soils	Diesel use in JCB type equipment	Included in Clay pit operation
Post Operations	Dismantling of CMRF	Diesel used in dismantling equipment	Assume 2 JCB type vehicles for 1 month
Total lifetime GHG emission Estimate			
Recycling Operation	Recycling of construction materials otherwise landfilled	Carbon saving due to reuse of secondary materials	Assume 12500 tonnes per annum recycled as per the approximate breakdown in Source 5
Balance of GHG Effects			

21.14 The estimated GHG emissions for the life of the project is therefore calculated to be <50,000 tCO_2e. This must of course be offset by the CO2 savings generated through the recycling of construction materials which is estimated to be 150,000tCO_2e – meaning that overall, the project will be carbon negative.

Baseline

21.15 According to the 2018 Local Authority Carbon Dioxide Emissions data, the average per capita emission for West Sussex is 4.4 tCO2. When multiplied by the population of West Sussex this equates to a CO2 emissions output for West Sussex of approximately 3.78mtCO2e per annum. So, in the absence of any other reasonable comparator, West Sussex has been used as the receptor for the purposes of the GHG emissions impact assessment and to enable the significance evaluation of the estimated GHG emissions arising from the development.

21.16 Due to the absence of any defined industry guidance for assessing the magnitude of GHG impacts for EIA, standard GHG accounting and reporting principles have been followed to assess impact magnitude. In GHG accounting, it is common practice to consider exclusion of emission sources that are <1% of a given emissions inventory on the basis of a de minimis contribution. Both Department of Energy and Climate Change (DECC) (DECC (2013) Guidance on Annual Verification for emissions from Stationary Installations) and the Publicly Available Specification (PAS) 2050 (2011) specification (British Standards Institution (2011) PAS 2050:2011 Specification for the assessment of the life cycle greenhouse gas emissions of goods and services allow emissions sources of <1% contribution to be excluded from emission inventories, and for these inventories to still be considered complete for verification purposes. This would therefore suggest that a development with emissions of <1% of a relevant carbon budget would be minimal in its contribution to the wider national GHG emissions. This criterion will therefore be used to assess the magnitude of the GHG impact from the project, when taken against West Sussex as a whole.

Assessment of environmental effects

21.17 Excluding the obvious recycling benefits, the project is calculated to produce <50,000t of CO2e emissions over the lifetime of the project. In comparison to the 3.8mtCO2e generated within West Sussex annually, this equates to c. 1% of the annual emissions of West Sussex over the whole period of the operational life of the development. When looking at the figures on an annual basis, the development

emissions equate to approximately 0.04% of the emissions of West Sussex which is considered to be insignificant.

21.18 Using the rationale above, the emissions from the development can therefore be deemed to be insignificant as they are considerably less than 1% of the target inventory. This GHG finding is particularly true when the emissions saved by the recycling plant and the subsequent avoidance of materials for disposal are also taken into consideration, wherein the project becomes massively carbon beneficial.

Mitigation

21.19 In line with IEMA guidance, it is required to investigate mitigation of all GHG emissions where possible, as all GHG emissions are deemed harmful irrespective of significance. As can be seen from the table above, the majority of the emissions from the development are in the form of fossil fuel use over the lifetime of the project, due to transportation of materials in/out of the development and in short term electrical energy generation.

21.20 The development site is not accessible via water or rail, leaving just road transport as the only option for deliveries in and recycled goods out. To date, there are no commercially proven battery operated HGV's on the market, so traditionally fuelled HGV's remain the only viable alternative. In line with the avoid / reduce / substitute / compensate guidance, the main option for GHG reduction would seem to be reducing the mileage and substituting diesel for renewably derived fuel sources as these become available. Road diesel in common use already contains up to 7% biodiesel as a renewable blend.

21.21 Once the project is underway it will be possible to look to bring in waste construction materials as a 'back-haul' following a clay or recyclates delivery, utilising the empty delivery vehicle returning to the site to bring in CD&E wastes for the CMRF. The potential for back-hauling materials is not yet known, and cannot be accurately foreseen, as the markets will be geographically diverse. It will however be a preferred operational practice to back-haul materials, especially excavation wastes, whenever the opportunity presents itself to reduce GHG emissions and fossil fuel use.

21.22 As soon as possible during the first 2-3 years of the development, the on site power generation will be replaced with mains electricity via the overhead electricity cable system that already runs through the middle of Pallinghurst Woods serving the areas of Loxwood and Tismans Common. This will reduce the GHG emissions from the proposed development.

Conclusions

21.23 The GHG emissions are not significant and these will improve over the life of the project. There will be no significant flood risk impacts from climate change.

22. Conclusions

22.1 The proposals for a clay quarry and construction materials recycling facility (CMRF) for CD&E wastes including the use of an existing access from Loxwood Road, the extraction and exportation of clay and restoration using suitable recovered materials from the CMRF to nature conservation interest including woodland, waterbodies and wetland habitats are the subject of a comprehensive Environmental Impact Assessment (EIA) the results of which are set out in this Environmental Statement.

22.2 Comprehensive technical studies have been undertaken to establish the environment of the application site and the surrounding area to assist a robust assessment of the potential impacts associated with the proposed development. The final design of the proposed development along with the proposed mitigation measures and the detailed assessment of the impacts has evolved through a reiterative design and review process. Wherever possible, the negative impacts have been reduced by altering the project. Where it has not been possible to reduce the impacts with the project design, mitigation measures have been proposed.

Alternatives

22.3 As set out in Sections 8 & 9 of the Planning Statement there are no other suitable clay extraction sites, and many of the allocated waste sites have either not been developed or planning permission has been given for another type of development. There are no other sites more suitable for development for the proposed interdependent uses in West Sussex.

22.4 The restoration proposals for the site have been determined by the baseline setting of the site, the ecological mitigation measures and the draft plans to achieve a biodiversity net gain. The NPPF policies for biodiversity net gains and restoration of the woodland support these objectives. Alternatives such as more or less habitats with nature conservation interest or less broadleaved woodland restoration would conflict with the balance that can be delivered.

22.5 The do nothing option does not meet the objectives of the NPPF in terms of encouraging sustainable development that promotes economic benefits, in terms of employment and vibrant communities and in terms of the secure supply of clay for the manufacture of valuable products for use in the building industry without resulting in significant environmental impacts.

22.6 If the development does not proceed, the biodiversity gain opportunities will be lost, along with the socio-economic benefits arising from the supply of clay and clay products to the local economy and along with the lost opportunities from the recycling of CD&E wastes in accordance with the Circular Economy policies and objectives. Furthermore, if the development does not proceed, the landowners' will need to review their woodland management practices employed during the last 30 years.

Cumulative effects

22.7 Schedule 4 of the EIA Regs states that the description of the likely significant effects of a development on the environment resulting from the cumulation of effects with other existing and/or approved projects taking into account any existing environmental problems relating to areas of particular environmental importance likely to be effected or the use of natural resources should be included in the Environmental Statement.

22.8 Information regarding the proposals available on WSCC and Chichester District Council's website / planning portal have been reviewed and the potential for cumulative impacts has been assessed with regard to traffic and transport and the other EIA technical issues addressed in Part 3. It is concluded that the cumulative impacts of the proposals at LCP's proposed site and the approved residential developments off Guildford Road, Loxwood will not be significant.

Transport, traffic and public rights of way

22.9 The importation and exportation will be max 42 HGV movements per day Monday to Friday 0800 to 1800hrs (21 HGVs in and 21 HGVs out), which is equivalent to 4 HGV movements per hour. The HGV traffic associated with this proposal is likely to increase the recorded vehicular volumes by some 3.2% to the west, at the site access and by just 2.3% at the A281 Guildford Road junction (or 3.4% to 4.7% when including cars). This is not considered to be a material increase when spread throughout the day. Note: based on June 2020 background *lockdown* road use.

22.10 All HGVs will approach the site from the east and leave the site towards the east on Loxwood Road to the junction with the A281 at Bucks Green and this will be subject to a lorry routing agreement.

22.11 HGVs will be restricted to the surfaced roads on the main development site and the access road. These roads will be maintained in a condition that prevents the movement of mud onto the road beyond the site entrance on Loxwood Road and minimising the generation of noise and dust. This will be achieved by the installation of mud control grids and a wheel wash.

22.12 The entrance to the layby will be widened as detailed in **Figure PS13** and maintained in accordance with a Section 106 Agreement with signs installed drawing attention to the new road layout.

22.13 There are no material reasons why the proposed development for the exportation of clay, the importation of CD&E wastes and exportation of recovered wastes should not be granted planning permission on highway safety or traffic grounds.

22.14 At the end of the restoration period, internal views of the woodland will be enhanced by a new footpath that will follow the western, southern, and eastern boundaries of the proposed development site, from the junction of footpaths 792_1 / 797 to the junction of footpath 792_1 / bridleway 801. This footpath will provide access to the fishing pond that will be provided in part of the area allocated for the surface water lagoon.

Landscape and visual impact

22.15 The site is well enclosed in views, by woodland to the north, as well as to south. The site forms a part of the largest woodland block in the far west of the Local Landscape Character Area Low Weald Hills, LW4. The visual impacts and landscape effects on the landscape are lowered by the wooded nature of the views, which are restricted to close range views only.

22.16 The mitigation and enhancements proposed for the site will ensure that the proposals will comply with the NPPF, and with the Chichester District Local Plan Policies for landscape. Protection and conservation of the key features of the LCA LW4, for woodland, soils and ancient woodland, including the peripheral site boundary mature trees, and those along footpaths, will be in line with West Sussex Landscape Character Guidelines, Local Distinctiveness and The Low Weald Landscape Character Area. Also, with the West Sussex Landscape Strategy Land

Management Guidelines for the protection of key landscape features in Local landscape Character Area, LW4, the Low Weald Hills.

22.17 The proposed conservation of the green buffer to the site and new planting along the northern site boundary would enable linking from the edges of the site through tree planting, and hedgerow planting, to extend to existing woodland areas, thus reinforcing the locally distinctive landscape patterns. Hence the woodland cover will allow mitigation to reflect the historic pattern and fabric of the woodland and agricultural landscape, and to minimise effects on scenery, nature conservation and recreational land uses.

22.18 The LVIA points out that the local landscape character includes occasional clay pits and quarries with brickworks, and these are in fact a key feature of LW4. The dense woodland and the occasional clay quarries/pits and brickworks are key historic characteristics of the Local Landscape Character Area LW4 Low Weald

22.19 The findings of the LVIA are that these proposals will comply with the NPPF, and the proposed development will, in the long term, bring beneficial landscape effects and visual impacts, through the proposed landscape protection of ancient woodland and shaws on the boundaries of the site, and the creation of new habitats and restoration to woodland following the traditional land use.

Hydrogeology and hydrology – flood risk

22.20 The assessment has been undertaken in compliance with Groundwater Protection: Principles and practice GP3 (April 2013). The Proposed Development is not expected to pose a risk to groundwater or surface water at the Site. No significant adverse effects are predicted which could pose a constraint to development.

22.21 The Site is not located in a hydrologically sensitive area and local watercourses or controlled waters are unlikely to be significantly adversely affected by proposals in relation to quality or flows. It is not considered that there are any hydrological constraints to development. A water feature survey has been undertaken and no evidence of any groundwater emissions was identified. As a consequence, paragraph 4.52 of the Scoping Opinion (abstraction licence) does not apply.

22.22 The Site lies within a Flood Zone 1 risk area and, therefore, classified as a low risk of flooding according to National Planning Policy Guidance. The surface water discharge from the site will be limited to greenfield runoff in reflection of the hydrological environment. The Proposed Development is not vulnerable to, or at risk of flooding and is appropriate for the location and will not increase flood risk elsewhere, during the operational period or upon restoration. The Proposed Development remains low risk against future flooding when taking account of climate change.

Noise and vibration

22.23 Consultation was undertaken by Andersons Acoustics with both WSCC and CDC, through the scoping process and subsequent email and telephone correspondence. WSCC confirmed that the guidance in the Planning Practice Guidance – Minerals (PPG-M) would be appropriate for the assessment of the site's mineral operations, with the CMRF component being subject to a BS 4142 type assessment (Methods for rating and assessing industrial and commercial sound) - minimising site noise as far as is reasonably practicable to a level not exceeding the representative background sound level, and not exceeding 5 dB above the representative background sound level.

22.24 A baseline sound level survey, comprising unattended measurements at the two agreed locations, and short attended measurements at three further locations, were undertaken to establish the existing sound environment in proximity to the nearby noise sensitive receptors. Observations made during site attendance confirmed the soundscape across and around the site was comprised of sound from local road traffic and typical countryside sounds. A detailed acoustic model of the site and surrounding area was created to calculate the level of predicted noise from the development at various receptors.

22.25 In each model, a 'Worst Case Scenario' was used, in order to ensure the assessment findings would be robust. For example, whilst 42 HGV movements per day are expected for the combined operation, rather than spread these throughout the day, as a worst case, six vehicle movements in a single peak hour was assumed for use in the model.

22.26 Based on the assumptions used in the noise modelling assessment, which err on the side of worst case, the predicted levels at the noise sensitive receptors are equal to or below the lowest actionable criteria set in local and national policies. For the CMRF operation the predicted noise rating levels at the sensitive receptors are equal to or below the lowest applicable criteria at all but one property. At Longhurst, the predicted rating level exceeds the target criteria by 1 dB but is still below the limit at which any significant impact might occur.

22.27 Accordingly, the noise emissions from the operation of the site are national and local policy compliant and no specific mitigation measures are recommended. Notwithstanding this, the site will seek to minimise noise emissions across all its activities as far as is reasonably practicable, in line with best practice.

22.28 Assessment of the maximum predicted sound levels from both the clay extraction and CMRF process to each receptor was undertaken against the guidance from West Sussex Council's Waste Local Plan, the Sussex Authorities Planning Noise Advice Document, BS4142:2014+A1:2019, consultation with Chichester District Council, the Government's Planning Practice Guidance for Minerals (PPG-M) and the criteria for schools given in BB 93. Based on assumptions outlined in this assessment, which err on the side of worst case, the predicted levels at the noise sensitive receptors are equal to or below the lowest applicable criteria. Accordingly, the noise emissions from the operation of the site are considered to be national and local policy compliant.

Land contamination

22.29 Based on the former uses within Pallinghurst Woods and the findings from the intrusive investigation it is considered that the proposed development will not result in an unacceptable impact associated with land contamination.

Archaeology and cultural heritage

22.30 The physical archaeological investigations undertaken on the site largely confirmed the results of the desk-based research and LiDAR imaging. Two areas of the site have been identified as being of local archaeological importance – the woodland banks and likely rabbit enclosure on the development site, and the 19th century brickworks in Pephurst Wood.

22.31 There are no visual or contextual connections between the site and designated heritage assets, and the effect of traffic on local assets has been described as being of limited negative impact, hence no mitigation for these cultural and historical

assets is required. LCP is committed to minimising the impact of the development on any potential archaeological deposits, as the impact of the extraction of clay at the site on any buried archaeology will be negative and permanent. The importance of any archaeological assets which may be found is however likely to be of local significance only, so can be classified as 'low' significance, and the consequence of any effect could be categorised as 'medium' due to the likely poor condition of any finds, hence it is concluded that the overall potential impact of the development is not significant.

22.32 It is concluded that taking into consideration the baseline conditions, the absence of all but post-medieval interest, and the limited nature of the proposed development, that the mitigation measures proposed will be effective in mitigating the impacts of the scheme and will contribute to local archaeological archives, and there will be no residual effects on known cultural heritage assets.

Soil resources

22.33 The proposed site at Pallinghurst Woods will be totally restored to a denser deciduous woodland with nature conservation, water bodies and wetland habitats. All of the stripped soils will be used sustainably for translocation in the neighbouring woodland to protect the translocated habitats and the restoration will be to high quality woodland with nature conservation interest. The Planning Statement has demonstrated that there is an overriding need for the clay from the site for the use in construction materials and there is a demand for Circular Economy policies and objectives which support the use of suitably recovered materials from the CD&E wastes for the restoration of the clay pit and the woodland environment. This outweighs the temporary loss of the mixed woodland and scrubland.

Aboricultural

22.34 There will be tree loss on the site, in the short to medium term, due to the development proposals. Once the compartments begin to become re-vegetated with wild flora and they are then replanted with trees, the loss of trees and impacts on the woodland ground flora and other habitats would be mitigated.

22.35 Over the longer term, the development offers restoration of the site to an area of mixed native, deciduous woodland, which, with the help of ecologists, foresters and landscape architect, will become an enhanced woodland area, which will link to surrounding ancient woodland and which will over time mature to become structurally more diverse. There will be some landscape benefits; for example, the aim will be for the woodland areas to retain and to encourage a more diverse selection of native species of trees and ground flora, as well as to encourage a wider selection and mosaics of different habitats. These woodland habitats will be regularly assessed and managed, in accordance with landscape planning conditions.

22.36 Retention of the green buffer to the site will enable the linking to wider woodland habitats and the conservation of the landscape and visual amenity of the periphery of the site within the wider landscape in NCA 121 Low Weald, in the Low Weald Hills.

22.37 The site and the wider site will ultimately be returned to mixed, native, deciduous woodland, managed under a short rotation coppice, with more diverse wildflower grassland habitats (from shady to sun lit), with woodland rides and additional habitats including deadwood habitats, and newly extended and managed linked

wildflower verges. This will be to benefit local invertebrates, including butterflies such as the Wood White, and to create a more resilient woodland over time.

Air quality assessment

22.38 The proposed development is a major development that includes mineral extraction and waste. The 2021 Emissions Factor Toolkit and the damage cost calculation based on the emissions of oxides of nitrogen (NO_x) and particulates sized at 2.5 microns in diameter ($PM_{2.5}$), is shown as **Appendix ES Q**. The NO_x emissions are calculated to be 0.369 tonnes per annum and the $PM_{2.5}$ emissions are calculated to be 0.024 tonnes per annum. The damage cost calculator shows the cumulative Central Present Value to be £9,819, which places the development well within the less than £50 million damage cost category rather than the more than £50 million cost category.

22.39 The annual mean air quality objective for PM_{10} is 40µg/m^3 with a 24 hour mean concentration of 50µg/m^3 that must not be exceeded more than 35 times a year. The estimated annual mean PM_{10} background concentration obtained from DEFRA for 2019 at the site is between 12.99 and 13.36µg/m^3 with a mean value of 13.12µg/m^3. The background concentrations of PM_{10} at the site are considerably below the annual mean air quality objective of 40µg/m^3.

22.40 The proposed development site is screened to the west, south and east by up to 1km of woodland, especially to the south / southwest and much of the 1km of land containing the southerly woodland is several metres lower than the site. This will greatly reduce the prevailing wind conditions at the site.

22.41 With the information and analysis provided in the Dust Management Plan (DMP) it is concluded that based on the wind direction, wind speed, woodland shielding the development site from the prevailing wind, woodland shielding when the woodland is downwind, together with the location and type of receptors; without specific mitigation or dust controls, there is the potential for a negligible to a slight adverse effect of dust impact. Good practice as set out in the IAQM 2016 Guidance and standard dust management controls will be implemented to minimise the potential for dust impacts. The dust management controls that will be implemented at the site are set out in the DMP.

22.42 It is concluded that the dust emissions can be controlled using well tried and tested methods such that it is unlikely that there will be any significant dust emissions from the site. The IAQM's Guidance states that dust generation from these activities can be controlled effectively and the dust control measures are dependent on good site management. It is also assumed that the dust control measures will be subject to the conditions of an environmental permit that will be issued by the Environment Agency to minimise the risk of dust emissions at the site boundary. Therefore, it is unlikely that there will be an unacceptable cumulative impact with respect to dust emissions.

22.43 All HGVs will use the mud control grids and wheel wash facility before leaving the site and entering the public highway. Where necessary, the Loxwood Road layby will be cleaned with a road sweeper. The risk from the proposed development related to mud and debris on the local highway network is negligible.

22.44 To offset the 5 year damage cost calculator sum of £9,819, an employee car sharing scheme will be implemented, secure cycle storage will be provided along with an employees' electric bike voucher scheme plus investment in EV charging infrastructure.

Ecology

22.45 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 of the EcIA and the outline mitigation plan is presented at Appendix C, see **Appendix ES V**;
- 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.

22.46 Measures to secure biodiversity net gain in line with national and local planning policy and guidance are proposed in an accompanying draft Biodiversity Net Gain Assessment, see **Appendix ES W**.

22.47 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 in a Landscape and Ecological Management Plan, the production of which is anticipated to be subject to planning conditions.

22.48 Any significant residual effects are predicted and summarised in Table 19.10 below.

Feature	Significant residual effects		
-	*Construction phase*	*Operation*	*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

22.49 The draft BioDiversity Net Gain Assessment, shown as **Appendix ES W**, is based on Defra Metric 2.0, which will shortly be replaced by version 3.0. Further revisions are anticipated when the Environment Bill becomes law either later this year or next year. There are currently no legislative requirements to provide a BioDiversity Net Gain for a planning application. Furthermore, the DEFRA model is more appropriate to brown field rather than green field mineral developments, as the model is designed to encourage brown field developments. The % change calculation in Biodiversity Units (BU) only allows full consideration of the area within the planning redline, whereas in this case, the enhancements in the wider area of woodland within the planning blue line reduces the % change shown in

the draft assessment, from minus 36.6% to just minus 2.1%. With the inclusion of more enhancements in the blue line area, it is estimated that a positive biodiversity net gain can be achieved[11].

22.50 Furthermore, the 'Do Nothing' option suggests that any BioDiversity Net Gain assessment should not assume that the current BU baseline measurement would be maintained if the development does not proceed.

22.51 The Ecological Impact Assessment concludes that the proposed development will result in short-term negative effects to a range of Important Ecological Features, particularly during the construction and operational phases of development. However, the mitigation hierarchy has been applied in full by: avoiding impacts to significant features at the Site's boundaries including Ancient Woodland and historic boundaries with mature trees and diverse ground flora; mitigating the loss of deciduous woodland Habitat of Principal Importance through translocation of ground flora and replacement woodland planting; mitigating negative effects on protected fauna through translocation and creation of suitable replacement habitats; and compensating for residual negative effects by creating new areas of biodiverse habitat through conversion of conifer woodland outside of the Site to deciduous woodland. Furthermore, an extensive range of management interventions outside of the Site is proposed for the benefit of protected species which will enhance the extent, structure and condition of habitats which support notable species including in particular nightingale, wood white butterfly and foraging and commuting bats. Following decommissioning and site restoration, the EcIA has shown that positive effects are expected overall.

Socio economic impact

22.52 The socio-economic impact over the 30+ year lifetime of the project has been assessed with and without employment. The construction and set up costs during the first 2-3 years of the project will be more than £1 million.

22.53 If permission is granted, this will also lead to further investment in West Sussex for brick production, which would replace the predicted future loss of existing brickworks and help to provide bricks of a local character for use in house building in the West Sussex area.

22.54 During the first 1 to 3 years the proposed development will create 12 full time jobs During the lifetime of the project, on a net present value basis, this could provide c. £10 million of income to the local economy.

22.55 It has been concluded that if planning permission is granted the benefits will be completely additional to the local authority area and, therefore, there will be "low deadweight".

[11] CIEEM (2019): Biodiversity Net Gain: Good practice principles for development – A practical guide. CIEEM, CIRIA, IEMA, 2019.

Climate change

22.56 WSCC's Scoping Opinion concluded that population and human health, risk of major accidents / disaster and heat and radiation, can be excluded from detailed consideration.

22.57 Schedule 4 of the EIA regs requires an assessment of the vulnerability of a project to climate change. The hydrology and hydrogeology section of this Environmental Statement and those associated environmental impact assessments have considered the impact of climate change on flood risk etc. and concluded that there are no significant impacts.

22.58 It is has been concluded that, over the entire life of the project, tree loss will not be a significant climate change impact issue, and it has therefore been scoped out of the GHG assessment.

22.59 Government guidance allows emissions sources of <1% contribution to be excluded from emission inventories. This would therefore suggest that a development with emissions of <1% of a relevant local carbon budget would be minimal in its contribution to the wider national GHG emissions. This criterion has therefore been used to assess the magnitude of the GHG impact from the project.

22.60 When considering the figures on an annual basis, the development emissions equate to approximately <0.05% of the emissions of West Sussex and are therefore considered to be insignificant. The GHG emissions are not significant and these will improve over the life of the project.

Overall Conclusion

22.61 The extraction of clay and the recovery of construction, demolition and excavation wastes at the proposed site in Pallinghurst Woods, near to Loxwood, in the area of Weald Clay and within the Area of Search identified in the Waste Local Plan, will support the minimum 25 year brick clay reserve in West Sussex and help to fulfil the Circular Economy policies and objectives post Brexit and create the associated employment and economic benefits. The impacts from the proposed operations have been assessed and where necessary the design of the development project has been amended or mitigation measures have been proposed.

22.62 There are biodiversity and landscape benefits providing a net gain from the restoration scheme for the site and it is therefore concluded that planning permission should be granted.

23. References

See the references cited in appendices ES A to ES W enclosed with this Environmental Statement.

Statutory Instruments 2017 No.571 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

The Waste (Circular Economy) (Amendment) Regulations 2020

HM Government National Planning Policy Framework

HM Government (2014) Planning Practice Guidance Note for Minerals

Institute of Air Quality Management (2016) Guidance on the Assessment of Mineral Dust Impacts for Planning v1.1.

Defra's 2018 Waste and Resources Strategy

British Standards Institution (BSI; 2013): BS42020:2013 Biodiversity – Code of practice for planning and development. BSI Standards Limited, London.

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Collins, J. (ed.) (2016): Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd Edition, Bat Conservation Trust, London.

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