

**PROPOSED WESTERLY EXTENSION
TO HERMITAGE QUARRY**

ENVIRONMENTAL STATEMENT

GALLAGHER AGGREGATES LIMITED

Tom La Dell Landscape Architects

June 2010

PROPOSED WESTERLY EXTENSION TO HERMITAGE QUARRY

ENVIRONMENTAL STATEMENT

CONTENTS

1. Introduction
2. Site Description and Current Operations
3. Description of the Proposed Development
4. The Scoping Process
5. Prediction and Evaluation of Impacts
6. Need and Alternatives
7. Landscape and Visual Impact
8. Ecology
9. Ancient Woodland
10. Noise and Vibration
11. Air Quality
12. Highways
13. Geology
14. Hydrogeology and Hydrology
15. Cultural Heritage
16. Conclusions
17. Non Technical Summary

TABLES IN SECTION 8

Table 1	AWIs in compartments within the quarry and circular track
Table 2	Badgers - Evidence and legal base
Table 3	Bats - Evidence and legal base
Table 4	Licensable bat work at Oaken Wood: Methodology
Table 5	Dormice - Evidence and legal base
Table 6	Dormouse work at Oaken Wood: Methodology
Table 7	Strategies for breeding birds, Oaken Wood: Methodology
Table 8	Reptiles - Evidence and legal base
Table 9	Proposed reptile translocation at Oaken Wood: Methodology
Table 10	Enhancement of species diversity and populations of the proposed quarrying, restoration and habitat creation schemes

TABLE IN SECTION 17

Table 11	Summary of Environmental Impact Assessment
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MAPS

Map 1	Location and Setting
Map 2	Borough and Parish Boundaries
Map 3	Traffic
Map 4	Previous planning applications and permissions

DRAWINGS

0257/09/1C	Final restoration and habitat management
0257/10/1K	Woodland management
0257/10/2E	Quarry working plan
0257/10/3K	Hermitage Quarry phasing and working plan
0257/10/4D	Final restoration of quarry, Habitat Creation Field and woodland management around quarry
0257/10/5E	Habitat Creation Field
0257/10/6B	Access between existing quarry and Oaken Wood
0257/10/9B	Oaken Wood application area, existing quarry site and access
0257/10/10E	Hermitage Quarry and Oaken Wood - final restoration plan
0257/10/11	Existing woodland and woodland features
0257/10/12A	Management of overburden and ancient woodland topsoil
0257/10/14	Conversion of chestnut coppice around quarry to scrub with standards
0257/10/15	Final restoration and pre-settlement levels
0257/10/20	PROWs and public access
0257/10/21	Noise screen bunds
0257/10/22	Assessment of ancient woodland
0257/10/101 to 0257/10/130	Hermitage Quarry phasing and working plans
0257/10/202 to 0257/10/230	Hermitage Quarry restoration plans

APPENDICES

- Appendix 1** Kent County Council - Scoping Opinion
- Appendix 2** Landscape and Visual Impact Assessment
- Appendix 3** Ecology: Desktop study
- Appendix 4** Ecology: Vascular Plant Survey
- Appendix 5** Ecology: Lower Plant Survey
- Appendix 6** Ecology: Terrestrial Invertebrate Survey
- Appendix 7** Ecology: Badger Survey
- Appendix 8** Ecology: Bats Survey
- Appendix 9** Ecology: Hazel Dormouse Survey
- Appendix 10** Ecology: Breeding Bird Survey
- Appendix 11** Ecology: Tree Pipit and Nightjar Survey
- Appendix 12** Ecology: Reptile Survey
- Appendix 13** Ecology: Amphibian Survey
- Appendix 14** Noise
- Appendix 15** Vibration
- Appendix 16** Air Quality
- Appendix 17** Traffic Impact Statement
- Appendix 18** Geology
- Appendix 19** Overburden
- Appendix 20** Hydrogeology
- Appendix 21** Archaeology and Cultural Heritage
- Appendix 22** Local Wildlife site designation
- Appendix 23** Assessment of the Blaise Resource
- Appendix 24** Alternative Sites Study

ABBREVIATIONS USED

AMR	Annual Monitoring Report
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
AWI	Ancient Woodland Indicator
dB	Decibel
DPD	Development Plan Document
EA	Environment Agency
EIA	Environmental Impact Assessment
ES	Environmental Statement
GAL	Gallagher Aggregates Limited
Ha	Hectare
HGV	Heavy Goods Vehicle
KLIS	Kent Landscape Information System
Km	Kilometre
KWT	Kent Wildlife Trust
KCC	Kent County Council
LiDAR	Light Detecting and Ranging
LDF	Local Development Framework
LWS	Local Wildlife Site
Magic	Multi-Agency Geographic Information for the Countryside
MBC	Maidstone Borough Council
MDF	Mineral Development Framework
MLP	Mineral Local Plan
MPA	Mineral Planning Authority
MPG	Minerals Policy Guidance Note
MPS	Minerals Planning Statement
mtpa	million tonnes per annum
MWDF	Mineral and Waste Development Framework
MWDS	Mineral and Waste Development Scheme
NE	Natural England
O.S	Ordnance Survey
PPC	Pollution Prevention & Control Permit
PPG	Planning Policy Guidance Note
PPS	Planning Policy Statement
PROW	Public Rights of Way
RSS	Regional Spatial Strategy
SEP	The South East Plan
SSSI	Site of Special Scientific Interest
TMBC	Tonbridge & Malling Borough Council
2004 Act	The Planning and Compulsory Purchase Act 2004

1 INTRODUCTION

- 1.1** This Environmental Statement of the Environmental Impact Assessment informs the planning application for the extension of the existing Hermitage Quarry to the west in to Oaken Wood and the restoration of the site to original ground levels. The existing and proposed quarries are for the supply of Kentish Ragstone based products.
- 1.2** This Statement has 6 principal sections:
- Description of the current operations and the proposed development
 - Need and prediction of impacts
 - Landscape and Visual Impact Assessment
 - Ecology and Nature Conservation
 - Other environmental impacts
 - Non-technical summary and conclusion
- 1.3** The ES has been commissioned by Gallagher Aggregates Limited (GAL) who are the operators of the existing Hermitage Quarry.
- 1.4** For projects that are subject to approval through the planning system the requirements of the European EIA Directive (amended 1997) have been transposed in to domestic legislation by the Town And Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (S I 1999 No.293). These regulations have been applied at all stages in the preparation of this ES.

Technical Context

- 1.5** This ES has been carried out using Ordnance Survey Maps, site level surveys, geological mapping, historical mapping data, LiDAR and other survey methods as stated in each section. Specialist reports have been commissioned for all relevant subjects and interests and are in the Appendices. The most recent research and evidence bases have been consulted and used in all specialist matters.

Project team

- 1.6** Quarry Owner and Operator
Gallagher Aggregates Limited
- Planning
Civitas Planning Limited
- Landscape, Ecology and the Environmental Statement
Tom La Dell Landscape Architects
- Ecology
Kent Wildlife Trust
Wildlife Matters
Martin Newcombe
- Archaeology
Oxford Archaeology
- Noise, Dust and Vibration
Vibroek
- Geology
Dr John Barratt
- Hydrogeology
Environmental Scientifics Group
- Traffic
Civitas Planning Limited

Tom La Dell, Landscape Architects have prepared this ES to accompany the Planning application for the proposed extension of Hermitage Quarry into Oaken Wood. The company prepared the planning application for the original quarry in 1988, together with the southern extension and eastern extension (Map 4), and have been familiar with the site for over twenty years. The issues of the site and its surroundings are well known and are addressed in detail in this ES.

- 1.7** Separate professional reports on environmental matters are;

Archaeology – Hugh Beamish, Oxford Archaeology (Appendix 21)

Ecology – Kent Wildlife Trust (Appendices 3 to 13)

Noise, Dust and Vibration – Vibroek (Appendices 14, 16 and 15)

Traffic (Appendix 17)

Geology – Dr John Barrett, Consultant Geologist (Appendix 18)

- 1.8** This ES takes account of the fact that the proposal is an extension of the current working quarry. The existing quarry access, plant, processing and storage areas will be used for the minerals won from the area of the proposed quarry covered by this Statement.

The Existing Quarry and the Application Site

- 1.9** The existing Quarry is located 3.2 miles (5.3 km) west of the centre of Maidstone, and 5.1 miles (8.3 km) east of the centre of West Malling. (Map 1) At its closest point, it is some 500 metres north of the Barming Heath suburb of Maidstone and 1.5km south of the nearest housing in Ditton. It lies in the Parishes of Ditton and Aylesford and is within the Borough of Tonbridge and Malling (Map 2). The M20 from Swanley to Folkestone is some 2.5km to the north. The A20 runs south of and parallel to the M20 and then turns south east to the centre of Maidstone. The A26 is 1.2km south of the site. The quarry access is on to the B2246, Hermitage Lane, which connects with the A20 and A228 (Map 3). Hermitage Quarry is accessed from Junction 5 of the M20, which is 1.9 miles (3 km) to the north east of the site, via the A20 and Hermitage Lane. The London to Maidstone railway line runs west to east some half a mile (800 m) to the north of the site and is in a shallow cutting. The proposed quarry extension is immediately to the west of the existing quarry and within the north eastern corner of Oaken Wood. It is in the parish of Ditton.

The Applicant

- 1.10** GAL have been quarrying at Hermitage since 1990. GAL are a part of the Gallagher Group Limited which also includes:
Gallagher Limited
Gallagher Contractors
Gallagher Properties
Gallagher Farms
Gallagher Equine
- 1.11** GAL employs 50 people in Hermitage Quarry alone, and have provided job security for the last 20 years. A further 60 people are employed in work indirectly related to the quarry. GAL have also pioneered modern technology in Ragstone quarrying and now produce a wide range of aggregates and building materials together with concrete products based on the quarry sands and aggregates. Recycled aggregates have been produced at the quarry since it commenced operations in 1990.
- 1.12** Hermitage Quarry was granted permission by Kent County Council in 1989 and started operations in 1990 and quickly became the most advanced ragstone quarry yet operated. Average annual production is some 700,000 tonnes leading to increased demand on the reserves. The three extensions to the quarry, to the south, west and east, have ensured an adequate supply of ragstone. Further reserves are now required so that the quarry can continue to supply materials and serve the local community.

Consultation and Scoping

- 1.13** There have been pre-application consultations with the Minerals Planning Authority. A formal scoping opinion has been provided by Kent County Council and this is in Appendix 1. Discussions have also been held with Natural England, the Environment Agency and the Kent Wildlife Trust. The criteria for noise, air quality, vibration and hydrogeology are well known through the current quarry operations. A meeting of the quarry liaison group has been held with members of Parish Councils, Tonbridge and Malling Borough Council and Kent Minerals Planning Officers present. The exhibition at the quarry is open to the public and viewings of the quarry can be booked. The proposal has been posted on the World Wide Web and public comment has been invited. Meetings are planned with other Local Councillors.

Planning policies

- 1.14** Planning policy is detailed in the Planning Statement. Those particularly relevant to the ES are in Minerals Planning Statement 1 and Planning Policy Statement 9.

Minerals Planning Statement 1 is the principal national guidance on minerals and there are a number of environmental policies that are significant in relation to this Environmental Statement. The National objectives include:

To protect and seek to enhance the overall quality of the environment once extraction has ceased through high standards of restoration, and to safeguard the long-term potential of land for a wide range of afteruses

Minerals development should not normally be undertaken in European protected sites (Special Protection Areas, Special Areas for Conservation or Ramsar wetland sites), National Parks, Area of Outstanding Beauty, World Heritage Sites, Areas of Outstanding Beauty or the Green Belt. Oaken Wood has none of these designations. For wildlife designations:

Ensure that the statutory protection given to many wildlife species under a range of legislative provision, and the special protection afforded to European Protected Species, is fully taken in to account when considering minerals proposals that might affect them

For more local designations:

Carefully consider mineral proposals within or likely to affect regional and local sites of biodiversity, geodiversity, landscape, historical and cultural heritage.

With regards to Ancient Woodland:

Do not permit mineral proposals that would result in the loss or deterioration of ancient woodland, not otherwise statutorily protected, unless the need for, and benefits of the development in that location outweigh the loss of the woodland habitat.

And further:

Take account of the value that existing woodland offers in terms of amenity and habitat when considering mineral proposals

For the countryside and landscape:

To take account of the wider countryside and landscape including opportunities for recreation, including quiet recreation, and as far as practicable maintain access to land. Minimise the impact of minerals operations on its quality and character and consider the cumulative effects of local developments.

Have regard to the positive or negative effects that minerals operations may have on rural communities and the extent to which adverse impacts of such operations could be moderated but recognise that such developments can also offer opportunities for these communities especially at the restoration stage.

The section on environmental protection state that:

The opportunities for enhancing the overall quality of the environment and the wider benefits that sites may offer, including nature and geological conservation and increased public accessibility, which may be achieved by sensitive design and timely restoration to protect and enhance the character of surrounding rural and urban areas by careful design of any proposals for minerals development

Effects on noise, dust, vibration and groundwater must be assessed in accordance with current national guidance.

Restoration

Consider the opportunities that sites may offer for the development of new woodland areas and for providing networks of habitats

Ensure proposals for restoration and aftercare of sites include details of appropriate phasing of progressive restoration final landform and landscape and monitoring procedures

- 1.15** The national planning guidance for wildlife and biodiversity is contained within Planning Policy Statement 9 (2005). It is a primary objective of sustainable development to ensure ‘that biological diversity is conserved and enhanced as an integral part of social, environmental and economic development’. A further objective is to:

Conserve, enhance and restore the diversity of England’s wildlife and geology by sustaining, and where possible improving, the quality and extent of natural habitat and geological and geomorphological sites; the natural physical processes on which they depend; and the populations of naturally occurring species which they support.

- 1.16** One of the 'Key Principles' of PPS9 is to 'prevent harm to biodiversity' and that before planning permission is granted 'adequate mitigation measures are put in place'. These objectives are followed in the proposals in this statement and it is submitted that there will not be significant harm to nature conservation interests and biodiversity, rather that there will be an immediate and long term enhancement as a result of the proposals.
- 1.17** The site is a LWS, as designated by the KWT0. The designation description is in Appendix 22. These wildlife sites should be designated following criteria-based decisions.
- 1.18** PPS9 identifies the need to protect wildlife species that receive statutory protection under 'a range of legislative provisions'. These include National and European law. With reference to other species:

Other species have been identified as requiring conservation action as species of principal importance for the conservation of biodiversity in England. Local authorities should take measures to protect the habitats of these species from further decline through policies in local development documents. Planning authorities should ensure that these species are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result unless the need for, and benefits of, the development clearly outweigh that harm.

- 1.19** The findings of the surveys for protected species (Appendices 3 to 13), species in Biodiversity Plans and for other species typical of native woodland in the locality are taken into account in the wildlife reports, their assessment and in proposals for the work in this application.
- 1.20** Most of Oaken Wood is designated by NE as Ancient Woodland in the category of Ancient Semi-natural Woodland. The other category of Ancient Woodland is Ancient Replanted Woodland. PPS9 states that Local Planning Authorities

Should not grant planning permission for any development that would result in its loss or deterioration [of Ancient Woodland] unless the need for, and benefits of, the development in that location outweigh the loss of the woodland habitat.

- 1.21** Ancient Woodland is defined by NE as woodland that has been continuously on a site since at least 1600 and has only been cleared for underwood or timber production. The areas of Ancient Woodland were identified by NE in A Provisional Inventory of Kent's Ancient Woodlands, Revised 1994 and have been shown in more detail on the 'Magic' and 'KLIS' websites. The initial evidence in this Provisional Inventory for woodland cover since 1600 came from the study of old maps and the results were published based on material then available. NE, with local partners, is reassessing areas of Ancient Woodland designation in more detail using more map coverage and at a greater scale. This has not been undertaken for this area of Kent.

2 SITE DESCRIPTION AND CURRENT OPERATIONS

Location and setting

- 2.1** The proposed extension site lies to the south west of Hermitage Quarry in part of Oaken Wood. The ordnance survey grid reference for the centre of the site is TQ 715555.
- 2.2** The proposed quarry lies on the Hythe Beds. This is part of the Lower Greensand that occurs between the Gault Clay and chalk to the north and the Weald clay to the south. The Hythe Beds consist of varying depths of Kentish Ragstone and Hassock (see the Geology section 13 and Appendix 18).
- 2.3** The land is gently sloping from the southern boundary at 90 metres AOD to the northern boundary at 70m, with an average gradient of 1:20 (0257/10/2E and Appendix 2, Plan 1).

Land uses

- 2.4** The application site is in the north eastern corner of Oaken Wood, which is mainly chestnut coppice with small areas of mixed native woodland and an arable field. The site is part of the Hermitage Farm Estate which totals some 230 hectares and also contains the existing Hermitage Quarry. The farm is a combination of grazing for cattle, arable land for cattle feed, woodland and a well equipped network of farm buildings. There is also a fully equipped stabling and training centre for horses. Some of the farm land is previously restored quarry land, finished to a very high standard with pasture and arable land, new hedgerows and fencing. There is a public bridleway through the woodland. There is also a network of paths open to the public and the local horse riding community.
- 2.5** The entire area of Oaken Wood is some 240 ha (Appendix 24) and of this some 73 ha are in the Gallagher Discretionary Trust ownership. The area of the proposed quarry and access from the existing quarry is 33 ha. The site is surrounded by chestnut coppice that will remain. Extensive woodland and hedge planting has been carried out in recent years to the north, around the existing quarry and on Hermitage Farm.

Application site

- 2.6** The size of the application site is 33 hectares. The current use is chestnut coppice woodland. The proposal is to quarry 16 mt of ragstone over some 23 years. Restoration is to original ground levels and will follow immediately behind the quarrying. It will take a further three years to infill and restore the processing area. The access will use the existing quarry access to Hermitage Lane.

Current operations

- 2.7** Hermitage Quarry is operated by GAL. It started in 1990, and employs some 50 people directly in the quarry, and some 60 people indirectly related to the quarry. The original Hermitage Quarry permission on 28 September 1989 has been granted 3 subsequent extensions, a southern extension on 20 January 1996, a western extension in 14 June 1999 and the most recent eastern extension on 08 December 2005. Hermitage Quarry has reserves for about 4 more years supply of Kentish Ragstone. It is worked to a maximum depth of 30m below existing ground levels. The Ragstone in the Hythe Beds occurs in bands, generally 15cm to 80cm thick, between bands of similar widths of an uncemented material called Hassock. The bands of Ragstone vary in quality in the Hythe Beds both at depth and west to east across the Hythe Formation. The geology is fully detailed in Appendix 18. Since quarrying at Hermitage Quarry, Gallaghers have used these minerals to create up to 80 different, high quality products. The percentage of unused material has been reduced in this period from 40% to some 10%.
- 2.8** As a result of significant and continuing investment since 1994 in processing and handling plant Hermitage Quarry has produced a much broader range of products with up to 80 different high quality materials. These are used in the construction and repair of roads, in cappings for building slabs and specialist engineering uses. These have only been produced at Hermitage quarry due to the quality of the stone and the processing plant.
- 2.9** The stone and hassock is loosened at the quarry face by blasting and loaded and transported to the processing plant. The location is shown on drawing no. 0257/10/3K. The ragstone is separated from the hassock by screening. The clean stone is then crushed and screened into gradings based on size and quality. The resulting aggregates are stockpiled to be ready for collection and delivery to their destination. The hassock is washed as required to remove the silt fraction and make it suitable for sand and aggregate production.
- 2.10** In 1999 GAL opened a ready mix concrete plant which produces a full range of BSI accredited concrete products. The sand and aggregates for the concrete come from the ragstone processed in the quarry. The favourable ragstone geology of Hermitage Quarry and the continuing investment in processing and handling plant have enabled it to evolve into the thriving enterprise it is today.

- 2.11** The production of ragstone blocks for building and engineering purposes has always been a small but significant part of the quarry production. These are individually broken to size. They can be cut and dressed as required to match traditional stone masonry. The largest sizes from the crusher runs can be used for facing stone. Kentish ragstone is always required for repairs to historic buildings. Historically it was the principal building stone of south east England. Canterbury Cathedral, Westminster Abbey and the Tower of London are principally built of ragstone as, earlier, was Roman London and the villas in Kent. Parish churches, public buildings and houses were built of ragstone, as were the medieval bridges over the Medway west of Maidstone. Ragstone is now used for new buildings, bridges and facing engineering walls. Large blocks are used as rock armour to protect sea defences from wave action.
- 2.12** The quarry has a production capacity of up to one million tonnes per annum. As a local supplier of these materials the distances from the quarry to the construction sites is kept to a minimum and there is local competition from the imported aggregates. The products are loaded on to HGV lorries for transport to sites. These are from GAL's own fleet and others who collect products for their own use. Most products go to sites up to a 25 mile (40 km) radius from the quarry but specialist products may be delivered to sites up to 100 miles (160 km) distant.

Recovery and recycling

- 2.13** Hermitage Quarry was among the first quarries in Kent to incorporate the processing of secondary minerals and the recycling of construction and demolition waste to produce recycled aggregates. This is now an integral part of the Gallagher Group business, with the waste products for recycling coming to the quarry from Gallagher Construction and other contractors.
- 2.14** By managing primary aggregates, together with the recycling and inert waste streams this reduces the need for stand alone facilities elsewhere.

3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The Proposals

- 3.1** The proposed quarry is an extension of the existing Hermitage Quarry. The existing permitted areas will be worked before the proposed extension. The existing processing and working area and the access to Hermitage Lane will continue to be used for the extension. Their restoration will be undertaken immediately following the restoration of the proposed quarry extension.

There will be six stages to the opening up of the proposed extension and the management of the surrounding land;

- Commencing the management of the woodland in Gallagher's ownership both on the area of the quarry and the surrounding woodland
 - Planting of the Habitat Creation Field
 - Construction of the access from the existing quarry to the proposed extension
 - Commencing the first phase of the quarry
 - Transporting the materials to the existing quarry for processing
 - Commencement of further phases of the quarry with infilling and habitat restoration following immediately behind
 - Completion of the woodland habitat restoration of the final phase of the quarry
 - Continuing management of the restored area and the surrounding woodland
- 3.3** The woodland in Gallagher ownership that surrounds the proposed quarry will be managed as detailed in drawing no. 0257/10/1G. This will commence within one year of the grant of planning permission so that there are immediate benefits for wildlife in Oaken Wood.
- 3.4** The Habitat Creation Field is a 22 acre field that is currently arable and work on it will commence within one year of the grant of planning permission. This will include the creation of native woodland, scrub and meadow habitats with a new pond. The proposals are shown on drawing no. 0257/10/5C. There will be an immediate and significant nature conservation enhancement compared to the existing arable use and habitats will be provided for the translocated reptiles from the quarry area.
- 3.5** The access from the existing to the proposed quarry will be constructed before any minerals are taken from the proposed quarry to the existing quarry. It is shown on drawing no. 0257/10/6B. The byway, circular track through the wood and the gallop will remain at original ground level on a deck. This will also support a 15m wide wildlife corridor of native scrub. The deck will be removed and the land reinstated at the end of the life of the quarry.
- 3.6** The first phase of the quarry will be commenced as on drawing no. 0257/10/201/108. This area will be lowered to create the connection to the access to the existing quarry for all future phases of the proposed quarry.
- 3.7** The minerals will be transported to the existing quarry for processing. Further details of the quarry working practices are in the Planning Statement.

Description of the proposed development 3

- 3.8** The remaining phases of the quarry will be worked in accordance with drawings 0257/10/101 to 130. The phases will be restored following this scheme and the final habitat creation will as detailed on drawings no. 0257/10/202 to 230.
- 3.9** After completion of the restoration (0257/09/1C) the management of the habits for wildlife will be continued according to the management plan, with some public access.
- 3.10** At current rates of extraction the proposed quarry will ensure the life of the quarry for a further twenty three years beyond the permitted reserves. The extent of the existing and proposed quarries is shown on drawing no. 0257/10/2D Quarry working plan.
- 3.11** The proposed quarry will be worked in small phases so that the impact on the woodland will be kept to a minimum at any one time. All of the ragstone from the quarry will be taken to the existing processing plant that is within the existing quarry thus keeping the open area to a minimum. The two areas will be separated by a belt of some 60m wide which contains woodland, a byway, the circular footpath around the wood and the gallop for the horses from the stables on the farm. The connection between the two quarry areas will be via a cut and cover tunnel so that the traffic between the two does not interfere with the other users (0257/10/6B). The hedgerows and woodland will be replanted over the tunnel for the life of the quarry.
- 3.12** The Ragstone from the proposed extension to the quarry will provide at least the same quality of stone that is available from the existing quarry and enable the continued production of high quality aggregates, ready-mix concrete and engineering and building stone. The infill to restore the quarried areas to original ground levels will be with inert materials of the type used to infill the existing quarry. Full licensing and pollution controls will be in place. This is assessed in Section 14.

- 3.13** The quarry will be systematically worked to a progressive phasing and working programme which provides for:
- Mitigation for the nature conservation interests identified in the wildlife reports will be commenced well before quarrying is commenced in each area.
 - The coppice stools will be removed and topsoil will be stockpiled for future use
 - The overburden from the first phase will be stripped and transported to the existing quarry where it will be used to restore the most recently infilled areas
 - The first area of Ragstone and hassock will be excavated to create a face so that blasting can then be undertaken to loosen the rock before it is removed for processing
 - The Ragstone and Hassock will be transported to the existing quarry to be processed using the existing plant
 - The processed products will be stockpiled in the existing quarry for loading and delivery to construction and other projects. Selected grades of materials will be used in the ready-mix concrete plant in the existing quarry
 - When the quarrying of any one area is completed it will be in filled to a original levels using imported inert materials, mainly from construction sites
 - The quarrying, infilling and restoration will be undertaken in strict accordance with the phasing plans which are provided in full detail with this statement in 0257/10/101 to 0257/10/130
 - The overburden from new areas opened up in the phases of the quarrying will be used to restore the adjacent infilled areas
 - The restoration of the soils will be completed by spreading topsoil from previously quarried areas
 - Each area will be planted in the season following restoration with native trees and shrubs and wide rides in accordance with the woodland creation programme for the whole quarry as shown in 0257/10/202 to 0257/10/230
 - Management for nature conservation will be integrated with the management of the surrounding woodland and will continue after the final restoration of the quarry
- 3.14** The proposed management of the wildlife and nature conservation value of the Gallagher part of Oaken Wood is based on the existing value of the wood, the impacts during quarrying and restoration and the habitats created after restoration. It is mainly stands of densely planted chestnut with a few areas of more mixed woodland. There are narrow rides which historically been used for the extraction of the coppice timber. In terms of nature conservation densely planted chestnut has the lowest nature conservation value of any woodlands in south east England. This is principally because the density of the chestnut stools allows little light to reach the woodland floor and because sweet chestnut is an introduced species from southern Europe. It thus harbours few insects and supports a lower level of other wildlife. The low nature conservation value of this dense chestnut coppice woodland has been established in desktop studies and by the extensive KWT survey programme (Appendices 3 to 13) undertaken in 2009 specifically undertaken for these proposals.
- 3.15** The objective of the habitat and management proposals is to substantially enhance the nature conservation value of the woodland in Gallagher ownership in the lead up to quarrying, during quarrying and continuing once the quarry has been completed and restored. The quarrying will be carefully managed so that only a small percentage of the total quarry area will be open at any one time. Infilling will follow closely behind the quarrying and the restored areas will be immediately planted with new native woodland.

4 THE SCOPING PROCESS

4.1 A formal scoping opinion was requested from Kent County Council under the EIA Regulations. The KCC response and their consultee replies are included as Appendix 1. The topics to be covered by the ES, identified by KCC, come under the headings of:

- a) Need
- b) Alternatives
- c) Ecology and Biodiversity
- d) Noise
- e) Air Quality
- f) Vibration
- g) Hydrogeology
- h) Archaeology and Cultural Heritage
- i) Landscape and Visual Impact
- j) Traffic
- k) Combination Effects with Existing or Proposed Projects

These are considered in turn below

a) Need

4.2 This is fully considered and assessed in the Planning Statement with references to Appendices 23 and 24.

b) Alternatives

4.3 A full study of alternative sites has been undertaken and is in Appendix 24.

c) Ecology and Biodiversity

4.4 This is an important issue as much of the site is identified as Ancient Woodland (Section 9). It is also part of the much larger LWS of Oaken Wood (Appendix 22). This is a non-statutory designation. The decision was taken early in the scoping process to appoint KWT as consultants to undertake the required wildlife surveys so that there would be an agreed evidence base to any proposals. Mitigation proposals are required to assess the impact of the temporary loss of woodland and how biodiversity can be enhanced. There is a Tree Preservation Order on the woodland. This is to control work to the trees. The TPO need not be considered further as planning decisions take precedence over TPOs.

4.5 The Ancient Woodland designation is made in the 1994 Provisional Inventory of Kent's Ancient Woodlands and has not yet been updated by NE. Revised Inventories are well advanced in neighbouring counties and significant changes are being made to the extent of AW boundaries. The AW designation does not identify wildlife value. An Archaeology report has been prepared and is in Appendix 21. This includes woodland archaeology and the Ancient Woodland in this area is assessed for its management history.

- 4.6 The assessment of wildlife on the site requires detailed surveys of the flora and fauna appropriate to the habitats. These have been undertaken by KWT for the application area and surrounding woodland and are in Appendices 3 to 13.

d) Noise

- 4.7 Noise levels have been assessed for each stage of the quarry and a further report has been prepared for this EIA and is in Appendix 14.

e) Air Quality

- 4.8 Air quality and dust has not been an issue for the existing quarry to date due to active dust suppression measures. A further report has been prepared for this proposal and is in Appendix 16.

f) Vibration

- 4.9 Blasting commenced in the quarry in around 1995 as an effective way to loosen the rock at the quarry face before transport to processing. Monitoring results are given to the Mineral Planning Authority after each blast and the conditioned levels have not been exceeded. A report has been prepared for the proposed quarry extension in to Oaken Wood to assess the impact of vibration caused by blasting on the nearest properties and is in Appendix 15.

g) Hydrogeology

- 4.10 After quarrying is completed in each stage of the existing quarry the void is filled with inert waste to restore it to original ground levels. This is a fully licensed operation. This is proposed for the quarry extension and a new assessment of the hydrogeological conditions has been prepared and is in Appendix 20.

h) Archaeology and Cultural Heritage

- 4.11 A report has been prepared on the archaeology and woodland archaeology to determine the likelihood of archaeology on the site and its cultural heritage. This is in Appendix 21.

i) Landscape and Visual Impact

- 4.12 A quarry potentially has a visual impact in the landscape and a full Landscape and Visual Assessment is in Appendix 2.

j) Traffic Impact

- 4.13 The proposal is to extend the life of the quarry without significantly increasing traffic movements. The existing quarry access on to Hermitage Lane will continue to be used. This has been in use since 1990 and was constructed for the quarry. A Traffic Impact Statement has been prepared to assess the continued use of the access for the new quarry and is in Appendix 17.

k) Combination Effects with Existing or Proposed Projects

- 4.14** The proposed quarry will follow on from the existing quarry after it has been worked. No new projects are known in the area. There will be no combination effects.

Soils

- 4.15** The soils on the site are not identified in the KCC scoping opinion. The site is predominantly woodland and it is proposed to restore the entire quarry site to woodland. An agricultural soils classification and assessment is not required as there will be no agricultural afteruse. The soils will be conserved and the issue of Ancient Woodland topsoils is considered with the ecology mitigation proposals.

The affected environment

- 4.16** The site of the proposed quarry is chestnut coppice woodland within which is an open field and many narrow rides. All woodland within the footprint of the application area (33 hectares) will be removed in phases during the quarrying process phase. It will be reinstated in phases, after the quarrying and infilling processes, with mixed native woodland with rides and glades which will enhance the areas natural habitat and the quality and appearance of the woodland. The surrounding woodland will be managed to increase its wildlife value. (Drawing no. 0257/09/1C - Final restoration and habitat management, 0257/10/1G – Woodland management)
- 4.17** The proposed site for quarrying is a little further from any residential areas than the existing site. The existing working quarry is 220 metres from the nearest dwelling. The proposed quarry is a minimum of 280 metres from the nearest dwelling.

Possible future of area without development

- 4.18** The proposed quarry area is chestnut coppice woodland and only small areas are coppiced each year due to the low demand for chestnut poles. It would remain as an area of woodland with a low wildlife and biodiversity value and dependent on the demand for chestnut coppice timber.

Conclusion

- 4.19** It was concluded by KCC that an EIA is required for the Oaken Wood extension to Hermitage Quarry, so that all the environmental issues can be considered together and their impacts integrated into the overall quarry proposals. The reports in the appendices provide the required information. They have all been prepared by appropriately qualified and experienced consultants. No technical barriers were identified in the preparation of the reports. Where mitigation is required for any environmental matters this is detailed below in the relevant section of this ES.

PREDICTION AND EVALUATION OF IMPACTS

Overview

- 5.1** The EIA process is designed to predict impacts and provide a transparent method for their evaluation and any mitigation that may be required. Surveys have been undertaken by companies appropriately recognised as experts in their field (Appendices 2 to 21). Where this provides complex data with specific standards of evaluation and assessment of impacts, this is included in their reports. Where the survey results can be interpreted in many ways, and need to be linked to details of the quarry working and restoration, the evaluation and mitigation is provided in the ES. This is principally the case for the ecology and biodiversity.

Mitigation

- 5.2** The specialist reports indicate whether mitigation will be required to contain any identified environmental impacts within accepted levels. The entire quarry working plan and restoration proposals have been designed to reduce environmental impacts to the lowest possible levels. Every phase of working and restoration is detailed on plans in the ES. All environmental impacts and mitigation can be assessed for each stage of the quarrying, infilling and restoration. This ensures that there is no uncertainty as to how the objectives for environmental protection and the mitigation of impacts will be achieved.

Direct Impacts

- 5.3** The direct impacts will be caused by the quarrying of minerals by excavation which leaves an open area until it is infilled and restored. This will remove during quarrying:
- The nature conservation interest of the woodland and the arable field (Section 8)
 - The cultural heritage of the immediate area (Section 15)

The direct impacts of the working of this extension to the existing Hermitage Quarry will be on:

- The visual appearance in the landscape (Section 7)
- Noise (Section 10)
- Dust (Section 11)
- Vibration (Section 10)

The direct impacts are assessed in each section of this ES in Sections 7 to 15. The technical reports relevant to all the impacts are included in appendices 2 to 21. These will be mitigated by the phasing and working of the quarry, shown in drawing no.0257/10/3H and in detail in the other drawings.

- 5.4** The details of the mitigation for each environmental issue are given in Sections 7 to 15. National guidance is followed for the minimum standards that have to be achieved for noise, dust and vibration and the proposals will ensure that the impacts are well below these standards. Where there is a disturbance to the existing landscape this will be restored to original ground levels immediately following the completion of quarrying in any one area. There will be an overall increase in nature conservation value in the Gallagher ownership area of Oaken Wood before quarrying commences and during quarrying. The restoration proposals will result in a substantial enhancement with a substantial increase in biodiversity and populations of key species in the long term.

Indirect Impacts

- 5.5** There will be indirect impacts on:
- Traffic (Section 12)
 - Hydrology (Section 14)
 - The traffic impacts will not alter for the life of the quarry but the extension of the quarry area will result in the quarry traffic being extended for the life of the proposed quarry. The hydrogeology could be affected by the infilling and this is assessed.

Assessment

- 5.6** Each Section assesses each topic through the process of impact assessment, mitigation and the conclusions.

6 NEED AND ALTERNATIVES

- 6.1** A sustainable and reliable supply of high quality aggregates is essential for the construction industry. This is detailed in Regional and Local planning policies. The predicted annual tonnages for the South East Region are 2.2 mtpa of which 1.2 mtpa are to be from sources in Kent. Hermitage Quarry can produce up to 1 million tonnes per annum and is well placed to meet this need. The need for the extension to Hermitage Quarry is assessed in the Planning Statement.
- 6.2** Alternative sources of ragstone can only come from the Hythe Beds in which it occurs. The alternative sites for ragstone quarries are assessed in the Planning Statement and Appendix 24. None have better reserves or are better placed to provide future supplies of ragstone than the proposed extension of Hermitage Quarry. There are other, alternative sources for hard rock but they are not ragstone and they come from outside the South East Region. The nearest quarries are in Somerset and Leicestershire and the products have to be brought to Kent by road or rail. The requirements for crushed rock from Ragstone at 1.2 mtpa are after the provision of recycled aggregates. There is no better alternative for the supply of ragstone than the proposed extension to Hermitage Quarry.

7 LANDSCAPE AND VISUAL IMPACT

Landscape and Visual Impact

- 7.1** The proposed quarry has a potential landscape and visual impact. It is west of Maidstone on the Lower Greensand between the Chalk Downs and the Weald Clay of the Low Weald. It is on the dip slope that falls gently northwards towards the North Downs. There is a local ridge on the dip slope and the existing and proposed quarries are on the north face of this localised slope. The topography is highlighted on Plan 1 in Appendix 2. The geology of Kent runs in a generally west to east pattern creating ridges along the top of the scarp slopes of the Chalk and Lower Greensand. The dip of the Chalk falls northwards towards the Thames Estuary. The River Medway cuts through this geology on a generally northwards flow to the Thames. It loops eastwards, northwards and then westwards around Maidstone in a valley at the depth of the Weald Clay. It cuts through the Chalk north of Maidstone on its route to the River Thames via the Medway Towns.
- 7.2** There are possible views to the proposed quarry from the top of the Chalk scarp slope and the top of the Lower Greensand scarp slope. A full Landscape and Visual Impact Assessment has thus been prepared in accordance with the latest guidance and is in Appendix 2. The report describes the topography in detail and relates this to possible viewpoints and woodland cover that could affect views. A full coverage of views is recorded in photographs taken in summer and winter and analysed in detail.
- 7.3** It is concluded that the short views towards the proposed quarry from all directions are screened by Oaken Wood. A minimum 50 metre belt of the wood will be retained around the site. It is mainly chestnut coppice and will be managed for wildlife on a coppicing cycle detailed on drawing no. 0257/10/1K and partially replanted in phases as shown on drawing no. 0257/10/14. This is planned so that there will always be a combination of younger and older coppice re-growth or maturing scrub with standards so that a dense visual screen is maintained in both summer and winter.
- 7.4** The topography and woodlands ensure that there are no medium distance views into the site. The proposed quarry is on the north facing slope of the local ridge and there are no views from the south. The ridge is essentially contiguous with the north facing dip slope and there are no significant views from the north, west or east into the site or the existing quarry. Views from areas with public access on the top of the scarp slope of the North Downs are largely obscured by the woodland and scrub that is extensive along the it's top. Most of the roads and footpaths are bounded by woodland, scrub or hedgerows and there are no significant views. There are however views from Bluebell Hill picnic site, Trosley Country Park and the public footpath south of Holly Hill, which extend across the Lower Greensand dip slope. The Low Weald is visible beyond the top of the Lower Greensand scarp slope. It is possible to detect the existing quarry with binoculars but it is at least 7km (4.4miles) distant from these viewpoints and there is no significant visual impact. The built up areas of Leybourne, Larkfield and Ditton and the industrial areas of Aylesford are more prominent in all these views. The urban area of Maidstone is visible to the east.

- 7.5** There will be no significant direct or indirect visual landscape impact of the proposals. It is integrated into the landscape with soil bunds and plantings of native trees and shrubs. The by-way and the informal circular path around the Gallagher owned part of Oaken Wood will be on a deck over the quarry access, which will be at low level. The deck will be wide enough to support hedgerows and a belt of dense scrub so that there will be no views into the existing or proposed quarry.
- 7.6** The landscape and visual impacts have been assessed from the most prominent viewpoints around the proposed quarry extension. The proposed quarry area will give rise to no significant landscape or visual impact in short, medium and long distance views.

8.0 ECOLOGY

Introduction

- 8.1** This section covers all aspects of the direct impacts of the proposals on the ecology, habitats, nature conservation, biodiversity, wildlife, protected species, impacts on wildlife, mitigation, habitat enhancement, habitat creation, habitat management and the planning, legal and good practice issues. The woodland is described in detail in the Kent Wildlife Trust reports in Appendices 3 to 13.
- 8.2** Clarity is required in the definitions and meanings of the terms above and they are defined below (largely taken from the Oxford Dictionary of Ecology). The ecology of the site is the overall environment for wildlife and the ecosystems that it supports. The species present are dependent on their physical environment and their interaction with the other species present. All species can only live within their environmental tolerances and the conditions that suit one species will not be the same as those which suit any other species. The species surveys by KWT in Appendices 3 to 13 show the presence or absence and populations of each plant or animal. In the context of this ES they must be related to the environmental conditions.
- 8.3** Habitats are the living place of plants, animals and other life forms or a community of them. Habitats are characterised by their physical properties or their living components or a combination of the two. The habitats of Oaken Wood in the KWT study area are fully described in the ES.
- 8.4** Nature conservation, or biological conservation, is the active management to ensure the maximum diversity of species and the maintenance of genetic variety within species. Its objective is long-term balanced, sustained resource use or sustained yield from the biosphere. This may conflict with the conservation of individual species. When this alone is the objective there may actually be a loss of ecosystem diversity. The principles of nature conservation are followed in all the proposals in the ES.
- 8.5** Biodiversity is biological diversity. It is used to cover all aspects of it, especially including species richness, ecosystem complexity and genetic variation. It is the underlying principle of sustainability of biological resources that diverse ecosystems are able to adapt and survive climate and environmental change. An increase in biodiversity in the short, medium and long term is an objective of the proposals and the results are collated in Table 10.
- 8.6** Wildlife is a general term for all plants, animals and other life forms that are wild as opposed to domesticated.
- 8.7** Protected species are those that are afforded protection under National, European or International law, the latter two having been brought in to National law. They are protected because their habitats are under threat or because they are protected from human cruelty. Full surveys have been undertaken by Kent Wildlife Trust for all species present or likely to be present in the proposed quarry extension in Oaken Wood and the surrounding woodland.

- 8.8** The impacts on wildlife are all the influences on species and their habitats from the natural development of the ecosystem to human impacts of land management and habitat and species destruction. Wildlife impacts are fully considered in the ES and the proposals are designed to minimise these impacts.
- 8.9** Mitigation is the actions to reduce the impact on habitats or species in compensation for them being affected by an activity. Mitigation may result in an enhancement of the current situation and not just be an equal replacement. Mitigation if required in PPS9 and the proposals will provide a substantial long-term enhancement.
- 8.10** Habitat enhancement is the increase in biodiversity in a habitat through the changes brought about by specific, initial activities (if required) and long-term management. Habitat enhancement will be ensured by the proposals through the evidence based approach adopted here and the fully detailed plans that integrate the phasing and working of the quarry with the short, medium and long term enhancement of the habitats.
- 8.11** Habitat creation is the formation and management of new habitats so that they can support a defined new ecosystem. Habitat creation is proposed in this ES for the restored quarry area and the Habitat Creation Field that is currently in arable cultivation.
- 8.12** Habitat management is the actions taken to achieve defined objectives for the chosen habitat type, biodiversity and in some cases for selected species. The most sustainable habitat management has the least human management inputs. All the 'natural' habitats in Britain have been formed and modified by human intervention over many millennia. They are an increasingly conscious, cultural construct. The management proposals for the existing woodland and the new habitats on the restored quarry will ensure their long term biodiversity and sustainability, based on clear evidence. The evidence from continued monitoring will be used as required to reassess long term management objectives and amend the management plan.
- 8.13** The approach to nature conservation and biodiversity in the proposals for the quarry extension is primarily to ensure the conservation and enhancement of habitats for species characteristic of the area for their own sake. The direct public benefits of increased biodiversity will be real but are not an overriding factor in determining the proposals for wildlife benefit.

Legal Requirements

- 8.14** Wildlife is protected under many national and European laws and directives. The principal ones are the Wildlife and Countryside Act 1981 (as amended) and the Conservation (Natural Habitats etc) Regulations 1994 (as amended). Individual species have varying levels of protection under these laws. They are also protected under guidance from Natural England and, increasingly, by guidance from specialist, non-statutory wildlife groups. All relevant laws and guidance have been considered in the preparation of these proposals. They are detailed under the headings for each species or group of species in the following sections.

Scoping

- 8.15** The scope of the ecology work for the ES has been assessed through desk based studies of the nature of the habitats and species on the site (principally Appendix 3 and The ecological impact of sweet chestnut coppice silviculture on former ancient, broadleaved woodland sites in south-east England: English Nature, 2004). The authors of the ES have been familiar with the site since 1993 and this previous experience and earlier reports have been used to extend the scoping.

Field Surveys

- 8.16** Field surveys for each relevant species and groups of species and their habitats were commissioned from KWT and are in Appendices 4 to 13. There have been continuing surveys over many years into nightjar and tree pipit and the most recent report is in Appendix 11.

Vascular (Higher) Plants

- 8.17** Vascular plants are flowering plants, conifers and ferns (the latter are included in the Lower Plant report), and the site of the proposed quarry and the surrounding woodland have been surveyed by KWT and is included as Appendix 4 and titled Vascular Plant Survey. The field survey was carried out between April and November 2009. The report lists the plants found and the compartments of the survey area (Figure 2) in which they occur. It identifies plants that are Ancient Woodland Indicator (AWI) plants and the compartments in which they occur. None of the species recorded are 'notable' and none are 'unusual or important'. The results of the survey are typical for this type of chestnut coppice. The small areas in the northwest and southeast of the survey area and outside the application area are not dense chestnut coppice and have a wider range of plant species. There is a small area to the north east of the application area that is more diverse due to the presence of an old hedgerow.
- 8.18** The KWT report separately lists AWIs and uses them to assess the status of the woodland areas and compartments. There is an implication in the report that AWIs define ancient woodland but this is not the case. The NE criterion is of continuous woodland cover since at least 1600. The NE Standing Advice on AWIs states that:

AWIs are more common in ancient woods than in recent sites. The presence of suites of such species may therefore be used as evidence for the wood being ancient. However no plant species are perfect ancient woodland indicators and the degree of association of a species with ancient woodland may vary across the country.

- 8.19** The KWT document for LWS selection, Local Wildlife Sites in Kent: Criteria for Selection and Delineation, Version 1.3, February 2006 is referred to. It is a document that sets the criteria for LWS selection and does not to define ancient woodland. The criteria for the selection of woodland LWSs are described in WO1 to WO8. WO1 states that: Ancient woodland in Kent should be identified by reference to the provisional inventory produced by English Nature. Where a wood is not indicated as ancient in the provisional inventory, it may nonetheless be considered as ancient if
- *It holds at least ten ancient woodland indicator species drawn from the list in Appendix 1;*
OR
 - *It holds at least five ancient woodland indicator species and includes other features associated with ancient woodland, such as a sinuous outline or marginal woodbank;*
OR
 - *There is other clear, specified evidence that the woodland should be considered as ancient.*
- 8.20** The English Nature (now Natural England) Provisional Inventory of Kent's Ancient Woodlands, Revised 1994 is the document referred to. The three bullet point criteria above are for KWT to 'consider' the woodland as ancient for the purposes of LWS selection. It is NOT for KWT to designate ancient woodland or add to the Inventory. This is only done by NE. More detailed assessments of ancient woodland are currently being undertaken by NE and that for Sussex is nearing completion. The one for Kent has not started.
- 8.21** Criterion WO2 states that:
- All blocks of ancient woodland of 5 ha or more in continuous extent should be designated as Wildlife Sites, unless*
- *The tree and/or shrub element has been substantially modified by replanting;*
OR
 - *There are other clear and obvious reasons to believe that the wildlife interest of the site has been lost or substantially damaged.*
- 8.22** This is considered here and in sequence with the WO criteria as it refers to replanting. It is clear under bullet point 1 that most of the survey area and all the proposed quarry area has been substantially modified by tree planting of close spaced chestnut coppice. Under bullet point 2, it is clear that the wildlife interest has been lost and substantially damaged. It should thus not be designated as an LWS.

8.23 The standards in Criterion WO3 follow on from this and it states that:

Blocks of ancient woodland which have been substantially modified by replanting should only be designated as Wildlife Sites where

They provide a link between blocks of otherwise isolated ancient woodland with a total area of more than 5ha;

OR

Where they are either over 5 ha in continuous extent OR are part of a larger ancient woodland which qualifies as a Wildlife Site AND

- They retain a typical woodland ground flora with at least ten ancient woodland indicator species drawn from the list in Appendix 1'*

OR

- They support an important species or assemblages of species, such as woodland orchids,*

OR

- They form the matrix for an important network of woodland rides and/or glades.*

It is stated that at least ten AWIs must be present. The KWT survey shows that there are no important species or assemblages of species in the study area and they do not form a matrix for an important network of woodland rides or glades.

8.24 KWT have documented and analysed the occurrence of AWIs in their report in Appendix 4). The list of AWIs is taken from Peterken 1996 and Rose 1999. There is a list of AWI species in Kent in Appendix 1 of the KGT, 2006, LWS Criteria for Selection document. This should be used in the evaluation of the nature conservation quality of the woodland. Of the 33 AWI species identified in the report (it states 32) 5 are not on the Kent AWI list:

Hyacinthoides non-scripta, hypericum pulchrum, Moehringia trinervia, Tarnus communis and Vicia sepium

The number in the whole area should thus be 28. Of the Kent AWI list many have the note:

Only include if occur well within a wood and do not appear to be planted.

8.25 There are eleven species in this category in the list. The criteria for 'well within the wood' are not given and this is not defined in the report. Some other entries can be questioned. Black currant *Ribes nigrum* was found only in compartments 1, 31, 32, 33 and 34 which are near dwellings and is questioned as to whether it is native in the Notes column. It is probably a garden escape. Cherry *Prunus avium* is found near dwellings in compartments 27, 29, 33 and 34. The field in compartment 5, identified on Figure 5, was a cherry orchard. Crab apple *Malus sylvestris* should not be on the list at all as they are hybrids with the eating apple *Malus sieversii* from Kazakhstan.

8.26 The data in the KWT report should thus be used as an indication of the quality of the woodland assessed by its biodiversity. For the following analysis, compartment 13 is also included as within the quarry area as part of it will be affected by the access between the existing and the proposed quarry. The analysis of the occurrence of AWIs on the area of the proposed quarry and within the circular track are shown in Table 1.

TABLE 1 AWIs IN COMPARTMENTS WITHIN THE QUARRY AREA AND CIRCULAR TRACK

<i>Compartment</i>	<i>Kent AWIs</i>	<i>Kent AWIs excluding 'well within the wood' species</i>
4	2	1
5	4	1
6	4	4
7	7	6
8	2	1
9	6	5
10	5	4
11	1	1
12	4	4
13	3	3
15	2	2
16	2	2
18	5	5
19	6	5
20	6	6
21	4	3
22	5	4

8.27 This shows that none of these compartments has 10 Kent AWIs. They are well below the total, ranging from 1 to 6. The results of the KWT Vascular Plants report show that:

- AWIs in this area fall well below the criteria for an indication that this could meet the NE definition of Ancient Woodland
- The results indicate that the quarry extension part of the wood does not meet the criteria for selection as a Local Wildlife Site

The low level of AWIs in these compartments and the wider area within the circular track match the results of the archaeology report in Appendix 21 where it is shown that there are no significant features of AW archaeology such as woodbanks or internal woodland boundaries.

8.28 In the overall assessment the KWT vascular plants report shows no notable, unusual or important species in the whole study area. The occurrence of AWIs is low within the proposed quarry and circular track area. This supports the archaeological evidence that there was significant ground disturbance between the felling of the old, native woodland and the planting of chestnut for coppice in the mid-1800s. The interruption of woodland cover would mean that this area is not Ancient Woodland as defined by NE.

- 8.29** The proposed woodland management shown on drawing no. 0257/10/1K will restore a regular cycle of coppicing on the proposed quarry area and the surrounding woodland in Gallagher ownership. The proposed quarry restoration on completion of quarrying is shown on drawing no. 0257/09/1C. The quarry phasing is shown on drawings no. 0257/10/101 to 130, with the detailed planting to implement the habitat creation proposals are on 0257/10/202 to 230. The reintroduction of the regular coppicing within a year of the grant of planning permission will immediately increase the populations of the plants in the wood by many times. The populations will increase in the first few years until a balance is achieved. The plants will also spread as the light levels increase with the pattern of coppicing. The new planting of woodland and scrub will be of only native species, local to the area, will increase the diversity of woody plants. The wide rides will provide ideal conditions for many woodland herbaceous plants. The increase in their populations in the coppiced areas will ensure that the local plants can spread rapidly in to the new woodland habitats.
- 8.30** The mitigation proposals show that there will be a many fold increase in the vascular plants in the woodland around the proposed quarry extension. The woodland on the restored quarry area will be progressively implemented as the finished levels are created by infilling, soon after quarrying. This new, native, broadleaved woodland will be the starting point for the development of woodland that will be many times the value for wildlife compared to the existing chestnut coppice. The impact of the proposed quarry will be beneficial for vascular plants.

Lower Plants

- 8.31** The site of the proposed quarry and the surrounding woodland has been surveyed by KWT for lower plants. These are mosses and liverworts, (bryophytes), lichens and fungi. Strictly speaking fungi are not plants but are included as the survey for all these groups was undertaken by the same surveyor. This was between March and November 2009. The results show that the main areas for bryophytes are on the ride edges and paths. As noted, persistent leaf litter, especially when accompanied by bramble and/or bracken, prevents significant bryophyte colonisation. These conditions occur over much of the study area, especially where the coppice stands are mature. Lichens are poorly represented due to the shading of the dense stands of trees.. One rare fungus was recorded on the quarry area.
- 8.32** The KWT report suggests that the quarry area is richer than the surrounding areas as it has more acid soils. The KWT Vascular Plant Survey records the soil as 'slightly alkaline to neutral throughout'. The Sandgate Beds that occur there are however locally wider spread so this does not fully concur with this. The local acidity of more mature chestnut coppice stools is noted. The habitat can also occur in decaying timber, which is scarce in Oaken Wood. The single Nationally Scarce moss (4.4) was found in these conditions.
- 8.33** It is proposed by the surveyor that this could make the area of County importance for bryophytes. However, it is recognised (5.4.12) that this has not been ratified by the Kent Biodiversity Partnership. Lower plants are, however, generally under recorded due to the relatively few surveys undertaken compared to other wildlife surveys and the lack of suitably experienced surveyors. The KWT surveyor in this case is very experienced.

- 8.34** In general the proposed woodland management and habitat creation will greatly favour lower plants. The coppice management will create more light in these areas with less leaf litter and this will favour many lower plants. Log piles will be placed throughout the woodland (drawing no 0257/10/1K) and this will create contrasting environments for lower plants, especially acid loving mosses and fungi. The native trees and shrubs in the areas of new planting will have a leaf litter that decays more rapidly than sweet chestnut and this will create better conditions for fungi. The wide rides and the increase in length of woodland and scrub edges with higher light levels will favour mosses. The regular coppicing will encourage lichen growth on the standard trees.
- 8.35** The Nationally Scarce moss *Dicranum flagellare* can be considered to be worthy of translocation. A mitigation scheme will be prepared and agreed with KWT. Gallagher Group and Tom La Dell have many decades of experience of transplanting chestnut coppice stools to nearby sites. The orientation of the stool will be maintained so that the environmental conditions that favour the moss are sustained. Decaying timber can be also be moved if required and placed adjacent to translocated stools, so that they can be monitored together.
- 8.36** The habitats for lower plants will be greatly improved in the overall proposals and the very localised special interests can be mitigated for by translocation if required. Favourable conditions can be created on a site nearby but outside the quarry area for any selected species.

Terrestrial Invertebrates

- 8.37** The KWT survey of terrestrial invertebrates (insects and related animals) was reported in November 2009 (Appendix 6). The field survey work was undertaken between May and September 2009. Invertebrates are considered to be a key indicator of Ancient Woodlands by their diversity in the woodland and size of populations. The surveyor is very experienced and undertakes hundreds of invertebrate surveys each year. The survey methodology was extensive and includes all the techniques listed in paragraphs 3.2.1 to 3.2.5. All of the woodland on Figure 1 was covered.
- 8.38** There have been noteworthy species recorded in Oaken Wood in the past, of which very few records noted their location in this extensive wood. None of these species were encountered in the survey of this part of the wood. There are no species protected under UK or European legislation and none were UK Biodiversity Action Plan Priority Species. No Red Data Book species or Nationally Rare species were recorded.
- 8.39** It is clear that where species were recorded. 'Almost the entire invertebrate interest was found within the edge habitats.....'. The KWT survey also found little difference between the woodland compartments. The wider and sunnier edge habitats on the woodland perimeter support greater invertebrate diversity than the narrow, internal rides. The numbers of species dependent of decaying timber are also very low. This is typical of chestnut coppice, where all the brash (side branches and tops of the coppice poles) is burnt when the wood is coppiced and there is almost no fallen timber.

- 8.40** KWT concludes in the report that the invertebrate fauna in the area studied is below that warranted for a site of County Significance. It could be considered of Moderate District or High Local significance.

The invertebrate Ancient Woodland indicators are:

'...extremely poorly represented at Oaken Wood: any classic Ancient Woodland invertebrate fauna that may once have been present appears to have been lost'.

This thorough and detailed survey indicates that this part of Oaken Wood, including the application site, may not be Ancient Woodland. This indicates that it had been completely cleared at some time in the past and was in another land use between the old, native species woodland and the planting of the chestnut coppice.

- 8.41** No mitigation is required for invertebrates. However, all the proposed woodland management and habitat creation proposals will greatly increase the diversity of insect species and increase the sizes of their populations. Invertebrates are the food of many other species of mammals and reptiles. The improved habitats for the invertebrates will ensure a significant increase in the populations of these predators. There will be a significant overall increase in biodiversity. This will assist all the other wildlife mitigation proposals in this ES.

Badgers

- 8.42** KWT surveyed the site of the proposed quarry and the surrounding woodland for badgers from May to November 2009 and the report and results are in Appendix 7. The survey shows badger foraging throughout the wood, particularly in the northern half. This is most notable in compartment 14 (Figure 2) which is an isolated triangle of woodland, immediately adjacent to the existing quarry. A main badger sett was found in compartment 2 which is at the northern edge of the wooded area, well outside the proposed quarry area. A small sett was found in the adjacent compartment 1, also outside the proposed quarry area.
- 8.43** Badgers have underground setts that may be established over many years. The animals have a wide foraging area for their mainly invertebrate prey and they move to the most productive habitats for them depending on the time of year. Fields and meadows can be good foraging grounds, especially in wetter periods. In woodland they prefer more recently coppiced areas where the invertebrate fauna is better developed. The recently coppiced areas in the north of this area of Oaken Wood were noted as being intensively used when the survey was undertaken.
- 8.44** Badgers are protected species and this is detailed in Table 2, together with the evidence base for the proposed mitigation. Any potential disturbance must be at least 30 metres from a badger sett and the closest the quarry comes to the sett in compartment 1 is at least 60 metres and the ones in compartment 2 are more distant. The restoration of coppicing in the woodland is shown on drawing no. 0257/10/1K. This will greatly increase the foraging areas well before the quarrying is commenced in Oaken Wood. The Habitat Creation Field may be within foraging distance for these badgers. The meadow habitats to be created there, together with the pond, will greatly increase the invertebrate fauna on which they mainly feed. There is clearly no significant disturbance caused by the existing quarry and the favoured woodland foraging ground is in an outlying piece of woodland immediately adjacent to this quarry. There will thus be no disturbance to the badger setts and the overall quality of their foraging areas will be greatly increased.

TABLE 2

BADGERS - EVIDENCE AND LEGAL BASE**PROTECTION**

Works at Oaken Wood will at all times be mindful of the badgers that are present in the woods. They are material considerations whose behaviour will not be compromised as they are UK protected species.

Badgers are protected by the Badgers Act 1973, Badger Act 1991 and Protection of Badger Act 1992.

The Badgers Act 1991 gives the badger sett protection, and adds to the 1973 Act the following; if any person shall interfere with a badger sett by doing any of the following things, they shall be guilty of an offence, that is to say:

- a) damaging a badger sett or any part thereof
- b) destroying a badger sett ;
- c) obstructing access to or any entrance of a badger sett
- d) causing a dog to enter a badger sett: or
- e) disturbing a badger when it is occupying a badger sett:

According to the Badgers Act 1973 with its amendments of 1981 and 1985, licences can be issued to interfere with badgers and their setts for the following purposes:

- i) the purpose of any development as defined in section 55(1) of the Town and Country Planning Act 1990,
- ii) for any agricultural or forestry operation,
- iii) for the purposes of any operation (whether by virtue of the Land Drainage Act 1976 or otherwise),
- iv) for preservation or archaeological investigation under section 1 of the Ancient Monuments and Archaeological Areas Act 1979, or
- v) for the purposes of controlling foxes.

Badgers are also protected under UK law under Schedule 7 of the Wildlife & Countryside Act 1981 and the Wildlife & Countryside (Amendment) Act 1985.

Badgers as a 'material consideration' The Department of the Environment's Planning Policy Statement: Nature Conservation (PPS9).

Natural England, the government body which oversees UK and European Community law where applicable, has issued Guidelines for developers (English Nature, 1996, 1997), and are responsible for issuing licences under section 10 (1) (d) of the Protection of Badgers Act 1992 to permit interference with a badger sett, in the course of development (which includes building and construction work).

'very heavy machinery within 30 metres of any entrance to an active sett, and lighter machinery (particularly used for any digging operation) within 20 metres, or light work such as hand digging operation) within 20 metres, or light work such as hand digging or scrub clearance within 10 metres, all require a licence' (English Nature 1996).

Further guidelines are drawn up by Paula Cox (1992)

Clearer guidance was issued in November 2009 by Natural England (Wilson, C.J. 2009)

MANAGEMENT

Woodland management and coppicing

Where trees in the immediate vicinity of badger holes are to be felled they should not be felled so as to damage or block the mouth of a hole (Forestry Commission, Forestry Operations and Badger Setts). Similarly trees should be felled away from holes, main badger runs and obvious latrines.

Timing of normal woodland operations will be carried out to avoid the badgers' breeding season (Forestry Commission, Forestry Operations and Badger Setts).

Fires must never be lit over a badger hole.

INTERGRATION INTO OAKEN WOOD

Badgers will continue to use Oaken Wood as they have always done so, though repetitive land use (coppicing) and changes in woodland and meadow management through hundreds of years. Although their main sett and outliers are not too far from the main area of the proposed development, it is not anticipated that there will be any disturbance to their nocturnal foraging, or any interference with their resting places. Badgers will continue to walk along the man-made rides in the existing woodland, and will soon use the new rides to be created in the new woodland. They will also make forays into woodland, as and where they feel that the topography is useful for them to make setts, and to forage and to establish latrine areas. The fact that a wide variety of native species will be planted along the rides and in the woodland will mean that there will be a lot of food sources, such as worms, beetles and snails for them to eat. Badgers have been living alongside man in working woodlands and will continue to do so after the new woodland is completed.

REFERENCES

Badgers Act 1973

Badger Act 1991

Cox, P. (1992) 'Badgers on site, A guide for developers and planners', sponsored by English Nature.

English Nature, 1996, 1997. Guidelines for developers. Peterborough, English Nature.

Cox, P. (1992) 'Badgers on site, A guide for developers and planners', sponsored by English Nature.

Protection of Badger Act 1992

Wilson, C.J. 2009. New Badger Guidance from Natural England. In Practice. NE have also given further details under <http://www.naturalengland.org.uk/ourwork/regulation/wildlife/species/badgers.aspx>

Bats

- 8.45** KWT surveyed on the site of the proposed quarry and the surrounding woodland for bats between April and November 2009 and the report is included as Appendix 8. The results show that at least six species of bats were recorded in this part of Oaken Wood. Only the common pipistrelle was recorded in roosts in six locations, with at least two Natterer's bats using one of these sites. The roosting trees are shown on the plan on Figure 12 and in the photographs Figures 13 to 19. Only one is within the proposed quarry area. The surveyor is very experienced and used specialist detecting equipment.
- 8.46** Bats are protected by UK and European legislation and any disturbance to their roosts may require a licence from NE. The legal background and evidence base is provided in Table 3. The mitigation work is given in Table 4 by Martin Newcombe who undertook the KWT survey.

TABLE 3**BATS - EVIDENCE AND LEGAL BASE****PROTECTION**

1. BATS (all 17 UK species + a new species found in May 2010 = 18)

Bats are protected by six main UK and EU laws.

On its legal status in the EU and as an EPS species (European Protected Species)

- Bern Convention, Appendix 3,
- EC Habitats Directive 1992 , Annex IVa, which is implemented in the UK by the following :
- Conservation (Natural Habitats, etc.) Regulations, 1994 (Regulation 38)

On its legal status the UK

- Wildlife and Countryside Act 1981, Schedule 5
- The Countryside and Rights of Way Act 2000 (CRoW) secured improvement in WCA 1981.
- On considering whether works at Oaken are within UK and EU law

EUROBATS

Great Britain is a Party to the Convention on Conservation of Migratory Species of Wild Animals (Bonn, 1980), including is Agreement on the Conservation of Bats in Europe (EUROBATS). Under the Agreement Parties are obliged to identify areas which are important to the conservation of bats, including for shelter, protection of feeding, and protect such sites from damage or disturbance.

On whether a Defra Licence will be necessary at Oaken Wood

Due consideration will be exercised with regard to Regulation 44 and Regulation 3(4) of the 1994 Regulations as to whether these criteria will be satisfied and whether a Licence will be necessary.

On following best practice:

Bat Conservation Trust, 2007; Bat Workers' Manual. 2004; Cowan, A., 2003. Guidance Notes No. 1 Trees and Bats. Arboricultural Association.

BIODIVERSITY

The planned measures to maintain and enhance the existing habitats, and to create new ones (for instance the new pond in 22-acre field) will boost invertebrate biodiversity for the overall and long term benefit of bats.

INTEGRATION INTO THE WIDER AREA OF OAKEN WOOD

The habitats at Oaken Wood that are currently being used by bats include i) woodland, ii) woodland edges, iii) coppice clearings, iv) individual large trees and iv) rides. They exploit woodlands in many ways, foraging over the canopy, darting between the limbs of oaks and chestnuts, moving through gaps in the woodland canopy and into the wood itself, and especially feeding through the clearings where the wildflowers produce plenty of insects (mosquitoes, moths, beetles, bugs etc). Bats will have favourite routes for commuting and foraging and will combine different habitats on their nocturnal routes, for instance flying along the Oaken Wood margins into clearings, over the canopy, around individual oaks and then back into the countryside. There are existing and planned connectivity routes through the woodland via rides, and out into the adjacent countryside via hedgerows so that overall the habitats available for bats at Oaken will be retained, enhanced and increased. There will be connectivity along the rides to be created and continuity of the canopy over some of the rides (meeting branches at 'pinch-points') so that the vegetation which indirectly provides the food sources for bats is present to enhance their habitat, as well as providing roost sites on some of the larger trees. In terms of sustainability the young trees to be planted will become the older, gnarled trees of the future that will compliment the existing older trees in Oaken Wood so that there will not be any net loss. A differing age structure of the trees will provide a range of different under-storey plants that will boost insect biodiversity for the benefit of bats.

REFERENCES

- Bat Conservation Trust, 2007. Bat Surveys - Good Practice Guidelines. London, Bat Conservation Trust.
- Bat Workers' Manual. 2004. 3rd edition. Joint Nature Conservation Committee.
- Cowan, A., 2003. Guidance Notes No. 1 Trees and Bats. Arboricultural Association.

TABLE 4

**LICENSABLE BAT WORK AT OAKEN WOOD,
BARMING: METHODOLOGY**

1. Bat (Mammalia: Chiroptera) roosts have been found to be present on the proposed Oaken Wood Quarry Scheme. As a result of this and their legal protection¹ there is a requirement for any roost destruction to be subject to an application for a European Protected Species Licence (EPSL) application. This document describes the proposed process of acquisition and implementation of such a licence.
2. Prior to the commencement of any works that might involve bat roost destruction there will be a requirement for survey work. This survey work will show whether or not bats are impacted by the proposed Scheme, and will assess the extent of that impact on the bats. The survey work will include continuous updating of Kent Wildlife Trust (2009) to ensure that potential bat roosts are considered throughout the life of the Scheme. The survey work will use guidance contained in Bat Conservation Trust (2007) wherever possible.
3. If there is no impact then there will be no need for further action and licensing will not be required. There may, however, be a requirement for best practice e.g. scheduling works for an appropriate time of year in case undetected roosts are found. Thus tree felling and related works should adhere to Bat Conservation Trust guidelines (Bat Conservation Trust, 2000) viz. it is preferable to fell trees that might contain an unknown roost of bats between March to May inclusive and September to November inclusive.
14. If there is impact then an assessment has to be made as to whether that impact is significant enough to be licensable. If it is licensable then the survey will have to show impact and propose mitigation. Depending on species and circumstances the mitigation may have to be provided prior to a licence application and / or after a successful licence application has been made. The nature of the mitigation may have to be determined nearer the time but may involve the erection of 'Schwegler' bat boxes and /or other facilities as described in Mitchell – Jones (2004), Forestry Commission (2005), Entwistle (2001) and others.
5. Any licence application will have to provide a detailed method statement for the destruction of any bat roosts that have been identified. The most likely roosts in Oaken Wood will be in standard trees of suitable height, condition, position and exposure², and thus the method statement will have to describe the way in which the tree will be taken apart and removed, with appropriate safeguards against bats being injured or killed, including ecological supervision throughout.
6. Any trees that might be suitable for use by bats but have not been found to be in use by bats might nevertheless harbour single bats or small groups of bats from time to time. These trees will be carefully dismantled using appropriately – skilled and experienced tree surgeons and removed under the supervision of a bat worker. If bats are found, the bat worker will liaise with Natural England regarding any bats that are found. To this end, 'Schwegler' bat boxes will have been erected in advance in the parts of the proposed Scheme area where no habitat destruction works will be taking place, so as to act as possible receptor sites for any bats that are found during the course of this process.

7. Where an EPSL is required, works have to take place within the agreed timescale and according to the agreed methodology.
8. At the end of licensable works there will be a requirement for a licence return to be made to Natural England, describing all the activities that have taken place under the licence.
9. Long – term monitoring of the mitigation for a roost which is lost under an EPSL will be required.
10. It is recommended that an annual programme of erection of Schwegler bat boxes is undertaken in the retained woodland so as to have sites available when required for bats at any stage. This programme should ideally start before works commence on the proposed Scheme.

BIBLIOGRAPHY

- Conservation Trust. 2000.
Bats and trees: a guide to the management of trees.
London, Bat Conservation Trust.
- Bat Conservation Trust. 2007.
Bat surveys: good practice guidelines.
London, Bat Conservation Trust.
- Entwistle A., Harris S., Hutson A., Racey P., Walsh A., Gibson S., Hepburn I. and Jackson J. 2001.
Habitat management for bats.
Peterborough, Joint Nature Conservation Committee.
- Forestry Commission. 2005.
Woodland management for bats. Forestry Commission.
- Kent Wildlife Trust. 2009.
Oaken Wood, Barming, Kent.
Bat survey.
- Mitchell - Jones A. J. 2004.
Bat mitigation guidelines.
Peterborough, English Nature.

¹ The Wildlife and Countryside Act 1981, Statutory Instrument 1994 No. 2716 (The Conservation (Natural Habitats, &c.) Regulations 1994) and related legislation. .

² Which will itself be determined by the timetable of any coppicing cycle which is proposed for the Scheme site.

- 8.47** Bats need suitable roosting sites such as those in trees and foraging ground where there are plentiful flying insects. The latter are encouraged in more open areas, where they feed on meadow species, and in the branches of standard trees, where these are not surrounded by dense coppice.
- 8.48** There will be a large increase in insect populations immediately after the coppicing shown on drawing no. 0257/10/1K commences and this will be well before the start of the proposed quarry extension. The distribution of the main standard trees in the part of the KWT study area of Oaken Wood is shown on drawing no. 0257/10/11. It can be seen that there are few standards in the quarry area. Only one of these has a bat roost. It is proposed that all standard trees that are felled are cut off at ground level, the main branches shortened by two thirds of their length and positioned in the areas around the quarry shown on drawing no. 0257/10/14 to be converted to 'scrub with standards'. These can be placed upright and the bases buried at least 2m deep. The trunk and branches will decay and provide bat roosts in the future. Bat boxes will be erected if required as described in Table 4. It is considered more sustainable if natural roosting sites are provided.
- 8.49** The implementation of the mitigation work required will be planned ahead so that legal requirements and seasonal factors can be met in all the work. The overall management plans will greatly enhance the invertebrate food supply for bats. The habitat creation proposals for the Habitat Creation Field on drawing no. 0257/10/5D will provide a species rich mix over the meadows and especially over the pond. The rides proposed in the woodland over the restored quarry area, shown on 0257/20/1 will also provide especially good foraging areas for bats. There will be overall habitat enhancement for bats from the start of woodland management work and even during the quarry working.

Dormouse

- 8.50** KWT surveyed the site of the proposed quarry and the surrounding woodland for dormice from April to November 2009 and assessed in their report dated December 2009 (Appendix 9). The results of the survey show that (hazel) dormouse *Muscardinus avellanarius* was found to be localised throughout the study area of Oaken Wood with the presence confirmed only in one nest box and three tubes. These are put in place and monitored by the surveyor. Nests were also found in three locations.

Animals can only survive in suitable habitats and the KWT report states that

Suitable hazel dormouse habitat is considered to comprise the physical structure of sprawling bushes of several different food-bearing species and lateral branches for movement purposes, together with adequate (arboreal) linkages between areas; this type of habitat was generally not present at Oaken Wood.

More suitable habitats are mentioned as occurring on the boundaries of Oaken Wood, outside the application area.

8.51 The overall conclusion is that there is a low population of dormouse, as low as one to four hectares of the KWT survey area of Oaken Wood. The surveyor, Martin Newcombe has been familiar with the wood and its possible habitats for dormice since an earlier survey in 2005. He assesses the overall situation to be that the population is low due to unsuitable habitats. Only recently coppiced chestnut will support this species as it is the only period when a suitable shrub layer, with fruiting bramble, is developed. The dormice are probably dispersing and travelling through the wood from other, better habitats and probably do not breed in this part of the wood.

8.52 There are two aspects to the mitigation for dormouse in the proposals and the enhanced habitat for them to be created on the restored quarry:
The management of the existing woodland on the quarry area before each phase is quarried and in the surrounding woodland areas.
The creation of mixed native woodland and scrub on the restored quarry areas.

As stated in the report '[The survey area of] The wood is therefore possibly a locally important area for dormice but one which would be more so were it not dominated by sweet chestnut'.

8.53 The woodland in Gallagher Discretionary Trust ownership, both on and outside the proposed quarry area, will be managed from the first year after planning permission. A coppicing cycle will commence as detailed on drawing no. 0257/10/1K. This will create extensive areas of improved habitat in the chestnut coppice and the dormice will easily move between the more favoured habitats. The first area of new mixed, native woodland and scrub will be on the Habitat Creation Field, drawing no. 0257/10/5E. This work will commence within the first year after the grant of planning permission. The shrub planting in this area and on the restored quarry includes a considerable proportion of hazel. Hazel nuts are a preferred food of dormice, especially before their winter hibernation. Within a relatively short time this will become a foraging area for dormice and then a nesting and hibernating area. The planting of the restored quarry areas will have the same woodland and scrub creation to create a new woodland area with wide rides. This will follow on from the planting on the Habitat Creation Field and create greatly enhanced habitat for dormice. The structure of the woodland, scrub and rides will lead to increased populations of dormice and a new centre for breeding individuals within the KWT survey area of Oaken Wood.

8.54 The legal and evidence base is given in Table 5 and this will be followed in all any translocation and mitigation required. The methodology to be followed is given in Table 6. This has been prepared by the surveyor and author of the KWT report (Appendix 9). The phasing of the work after the grant of planning permission ensures that there will be long preparation time before any work commences. An assessment of any licensing requirements will be made with Natural England at the appropriate time. With a clear enhancement of the habitats by coppicing this will be easily managed. The removal of coppice stools prior to quarrying will require more detailed investigation with a search undertaken by an experienced ecologist with an NE licence. There will be no significant impacts on dormice and there will be a long term enhancement of their habitats.

TABLE 5

DORMICE - EVIDENCE AND LEGAL BASE**PROTECTION****On its legal status the EU as EPS species (European Protected Species)**

- Bern Convention, Appendix 3,
- EC Habitats Directive, Annex IVa.
- Conservation (Natural Habitats, etc.) Regulations, 1994 (Regulation 38)

On its legal status the UK

- Wildlife and Countryside Act 1981, Schedule 5.

On Guidances

particularly on retaining and managing natural features linking wildlife sites...as in PPG9 and then PPS9.

PPG9 Planning Policy Statement 9. Department of the Environment. London, Her Majesty's Stationery Office. Thereafter became PPS9.

On the Species Action Plan (SAP) for dormice

.Species Action Plan, <http://ukbap.org.uk?UKPlans.aspx?ID=462>

Kent Biodiversity Action Plan

On following Natural England advices.

- on woodland work to be carried out November to February (when dormouse is in hibernation)
- providing nest boxes

ENHANCEMENTS

The habitat in the existing and the proposed restorations areas will be sympathetic to dormice. This will be effected by the correct food plants, and nesting materials plants, to make the desired structure of the habitat that is most suited to dormice. There are already existing corridors along rides, and in the new areas there will be overhead cross-overs for dormice traversing the canopies.

MANAGEMENT**On following this list of woodland management practices**

- creating linked coppice blocks
- creating a variable age structure
- retention of some veteran trees and keeping standing dead wood
- maintenance of rides and glades
- maintaining arboreal connectivity
- retention of climbing plants and bramble
- retention of some fruiting hazel

c.f. People's Trust for Endangered Species, 2009. Managing Small Woodlands for Dormice, a guide for owners and managers. London, People's Trust for Endangered Species.

On finer woodland management techniques for dormice

- making small coups for dormice (0.5ha to 1ha)
- avoiding having coups next to each other.
- cut one tenth of wood to be felled if on a 10yr cycle
- leave two uncut hazel stools around each coup
- maintain aerial pathways
- keep stool density high, ca. 1,200 per ha
- leave 10-20% of wood unmanaged
- incorporate scalloped rides

English Nature, 1994. pp.1-3.

INTEGRATION INTO OAKEN WOOD

Dormice exist in Oaken Wood because of the structure of the woodland and suite of flora that provides food and shelter. Nothing will change with these new proposals. Hazel that is used as a food source is present in the wood (dormice eat hazel nuts) and is part of the planting regime proposed, and honeysuckle, that is used by dormice for stripping the fibres off to make winter and summer nests, is also part of the planting regime. The way that thickets grow in Oaken Wood will be replicated within the new area so that the right amount of light and shade, thick and thin areas will be managed so that dormice will find continuity between different blocks, and different-aged sections of the woodland. Mixed plantings of shrubs and trees will be benefit to dormice in providing habitat and a variety of food sources. As parts of the woodland mature there will always be areas of different density, within easy connectivity so that the habitat and food sources of the dormice are not negatively impacted. Dormice will be able to move around in the canopy, amongst woodland trees, dense shrubs and in tall hedges finding insects and flowers on which to feed.

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Natural England, 2007. Dormouse: European protected species. Natural England Species Information Note SIN005. First edition 19 October 2007. Peterborough, Natural England.

People's Trust for Endangered Species, 2009. Managing Small Woodlands for Dormice, a guide for owners and managers. London, People's Trust for Endangered Species.

TABLE 6**DORMOUSE WORK AT OAKEN WOOD, BARMING: METHODOLOGY**

11. Dormouse (*Muscardinus avellanarius*) nests and other signs have been found to be present on the proposed Oaken Wood quarry enlargement Scheme site. As a result of this and their legal protection³ there is likely to be a requirement for any habitat destruction to be subject to an application for a European Protected Species Licence (EPSL) application.
12. Prior to the commencement of any works that might involve habitat destruction there will be a requirement for ongoing survey work. This survey work will show whether or not dormice are impacted by the proposed Scheme, and will assess the extent of that impact on the bats. The survey work will include continuous updating of Kent Wildlife Trust (2009) to ensure that potential dormouse habitat is considered throughout the life of the Scheme. The survey work will use guidance contained in Bright and Morris (2006) wherever possible. Details of which part of the wood will be affected can only be determined when the details of the proposed coppice cycle within the proposed Scheme areas are known.
13. If there is no impact then there will be no need for further action and licensing will not be required. There may, however, be a requirement for best practice e.g. scheduling works for an appropriate time of year in case previously undetected dormouse nest sites are found.
14. If there is impact then an assessment has to be made as to whether that impact is significant enough to be licensable. If it is licensable then the survey will have to show impact and propose mitigation. Depending on the precise circumstances the mitigation may have to be provided prior to a licence application and / or after a successful licence application has been made. The detailed nature of the mitigation may have to be determined nearer the time.
15. Any EPSL licence application will have to provide a detailed method statement for the destruction of any dormouse habitat that may have been identified. The most likely sites in Oaken Wood will be in young 2-3 years' old coppice cants of suitable density, condition, position, exposure⁴ and floral composition, and this will vary from compartment to compartment, and thus the method statement will have to describe the way in which the coppice will be removed, with appropriate safeguards against dormice being injured or killed, including ecological supervision throughout. This will almost certainly lead to the destruction of any coppice by hand as far as herbaceous vegetation is concerned, although in some cases it may be necessary to remove coppice in the winter down to ground level; whilst leaving the stumps intact but razing all non – tree vegetation down to the ground. In this way, any dormice that emerge from hibernation in such sites will be forced to relocate elsewhere. Such areas may have, therefore, to be small in extent so as not to expose any such dormice to undue predation.

16. Works under an EPSL have to take place within the agreed timescale and according to the agreed methodology.
17. At the end of licensable works there will be a requirement for a licence return to be made to Natural England, describing all the activities that have taken place under the licence.
18. Long – term monitoring of the mitigation for a roost which is lost under an EPSL will also be required.
19. It is recommended that an annual programme of erection of dormouse boxes is undertaken in the retained woodland so as to have sites available when required for dormice at any stage. This programme should ideally start before works commence on the proposed Scheme.

BIBLIOGRAPHY

- Bright P. Morris P. and Mitchell - Jones T. 2006. Dormouse conservation handbook. English Nature.
- Kent Wildlife Trust. 2009. Oaken Wood, Barming, Kent. Hazel dormouse survey.

³ The Wildlife and Countryside Act 1981, Statutory Instrument 1994 No. 2716 (The Conservation (Natural Habitats, &c.) Regulations 1994) and related legislation. .

⁴ Which will itself be determined by the timetable of any coppicing cycle which is proposed for the Scheme site.

Breeding Birds

- 8.55** KWT surveyed for breeding birds in the area of the proposed quarry and the surrounding woodland from April to June 2009 and this is included as Appendix 10. GAL has commissioned an annual survey of Tree Pipit and Nightjar since 1992 and the 2009 report is included as Appendix 11. The results show that there has been a decline in the diversity of birds and their density (i.e. populations) since 1992, probably due to a reduction in the area of coppicing. The bird fauna was found to be typical of chestnut coppice with 37 species recorded, one of which was not breeding. There were no European Schedule 1 species or any with a restricted national distribution. Turtle dove, song thrush, yellow hammer and marsh tit are in the UK red data list if birds of conservation concern. The latter is new to the area and has one territory outside the proposed quarry area. No nightjar or tree pipit were recorded apart from a single male nightjar territory.
- 8.56** The survey area has a breeding population that is small in relation to National or County populations and is well below the score required for a woodland SSSI. Of the red data list species, there are no turtle dove territories in the quarry area, song thrush has one inside the area, two on the edge and four outside it, yellow hammer has one in the quarry area and three outside it and marsh tit has one outside the quarry area.
- 8.57** The proposed quarry area, and to a marginally lesser extent the surrounding survey area, have a bird population that is neither diverse nor dense (i.e. there are only low populations of any particular species). This is due to the generally low habitat value of chestnut coppice for birds, especially dense, overstood coppice like Oaken Wood. As a non-native species chestnut supports many fewer insects than most native species. Insects are a primary food source for birds, especially when they are breeding. Dense chestnut has fewer nesting places than more diverse woodland as the shrub layer and ground flora are generally so poor.
- 8.58** The phased implementation of quarrying, infilling and restoration of the proposed quarry will create a varied and diverse range of woodland and scrub habitats of differing ages with only native species. This will greatly benefit the diversity and density of birds in the area within a year of planning permission being granted and the start of the planned coppice cycle. It is not considered necessary or sustainable that these new habitats are supplemented with bird nesting boxes. Nightjar and tree pipit that favour more open areas after coppicing, could return to the Gallagher owned part of Oaken Wood. The improvement in the habitats for birds will be permanent. The combination of the native woodland on the restored quarry, the management of the surrounding woodland in Gallagher ownership and the habitat creation field will provide a major and significant enhancement of the woodland for birds. The impacts of the proposed quarry will be beneficial for breeding birds.
- 8.59** The only mitigation required for nesting birds is the timing of woodland and scrub clearance so that nesting birds are not disturbed. The procedures are detailed in Table 7. The clearance of woodland before quarrying, in accordance with the working and phasing plans, will be undertaken to a programme to comply with the legal requirements and ensure that there are no nesting birds when the work is undertaken.

TABLE 7**STRATEGIES FOR BREEDING BIRDS AT OAKEN WOOD, BARMING
: METHODOLOGY**

1. All birds (with a few minor exceptions) are protected from harm. When nesting, their nests are protected from the moment that they are started until the last fledgling leaves the nest (Carter, 1995). The bird nesting season is generally regarded as being from March to August inclusive (Carter, 1995), although this varies with species and with other factors such as the prevailing weather conditions.
2. General procedure when a habitat is to be developed that contains or may contain breeding birds is to reduce the vegetation down to ground level so that most, if not all bird species have no places in which to place nests. This is normally done prior to the breeding season during autumn or winter so that the potential breeding birds go elsewhere. This is the only really feasible option.
3. An alternative to habitat destruction is to check the site for breeding birds immediately prior to the commencement of clearing works. This activity is carried out by an experienced ornithologist using the techniques described by Mustoe, Hill, Frost and Tucker (2005). However, it is not always as reliable as the other method, particularly in young broadleaved coppice where the emerging shoots quickly tangle in a dense mass with tall herbaceous plants and dense plants such as some species of bramble (*Rubus fruticosus* agg.).

4. It is therefore recommended that each of the areas within the quarry that are to be worked upon, are coppiced in the preceding year, preferably during winter, so that coppicing has been completed by spring of the following year. Thereafter, the regrowth is kept down to ground level for both the woody and herbaceous constituents of the flora, until such time as work on the proposed Scheme commences.
5. Alternatively work on the proposed Scheme can be left until after August when felling and subsequent clearance can take place.

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Reptiles

- 8.60** KWT surveyed the area of the proposed quarry and the surrounding woodland for reptiles from March to October 2009 and assessed in their report dated November 2009 (Appendix 12). The results of the survey show that there are medium density populations of common or viviparous lizard *Zootoca vivipara* and slow worm *Anguis fragilis* and a low population of grass snake *Natrix natrix*.
- 8.61** The records show that they occur in 'areas of more open habitat, young coppiced areas and along the ride edges with more mature coppiced stands' (5.2). This is the expected result for habitat preferences for these reptiles as they are cold blooded animals and require some direct sunlight to warm up, especially in the mornings. They require mainly low level vegetation in which they find their prey and can move around without being vulnerable to predators. Their ideal habitat is a sward dominated by long grass, heathland or the mosaic of habitats in lower density housing. The survey area of Oaken Wood provides little of this habitat as the wood is so dense that most areas are densely shady. The open field near the centre is grazed or arable, with only the margins potentially suitable for reptiles.
- 8.62** The assessment of the current habitats of the area of the proposed quarry and the surrounding woodland for reptiles is that they are generally of low quality and able to support only scattered populations of lizards, slow worms and grass snakes. This is confirmed in the results in the KWT report. In 5.2 the areas where the reptiles occur are described as being in more open habitat and it is concluded in 5.3 that these areas have higher populations. If the populations are assessed in the context of the proposed quarry area and also of the study area as a whole the populations are low, as there are extensive areas in which no reptiles occur.
- 8.63** Figure 3 shows that common lizard occurs only in more open areas, recently coppiced areas and along ride edges that receive some sunshine, mainly south facing woodland edge. Most sites with records are from outside the proposed quarry working area. Figure 4 shows a similar pattern for slow worm. There are almost no records in the woodland in the south east corner of the study area. Most of this area is predominantly mixed, native tree and shrub species with only a scattering of chestnut. This confirms that, for these reptiles it is the openness of the habitat that favours them and not the tree and shrub species present in the woodland. Grass snake occurs only in the northern part of the area on the open margins of the woodland, with most sites with records outside the quarry working area.
- 8.64** It is clear that the overall impact on the reptile populations will be very low during the quarry working, infilling and habitat creation. Only a small area of the proposed extent of the quarry will be open, between site clearance and habitat creation, at any one time. The proposed nature conservation, habitat creation and habitat management will ensure that before the quarry commences the wildlife value and biodiversity of the area of Oaken Wood and the Habitat Creation Field in Gallagher ownership (0257/10/10E) will be greater than the existing wildlife and biodiversity values.

- 8.65** The Habitat Creation Field has a plan of planting of mixed native woodland and scrub areas and sowing of meadows as shown on drawing no 0257/10/5E. This will create ideal habitats for the translocated reptiles, with meadow grass merging into scrub and woodland boundaries. This will all be prepared well before any reptiles are translocated to it. Some areas of grass will be mown so that they are not initially a suitable habitat for reptiles. These will then be available as a new area of meadow for each translocation event.
- 8.66** The quarry proposals require the removal of all vegetation and restoration to existing levels after quarrying and infilling. The reptiles require translocation to an appropriate habitat before quarrying starts in any area. The proposals for translocation, habitat creation and mitigation have been assessed and proposed through an evidence based process at all stages of the development of the proposals. The decisions on the phasing of the quarry and the habitats created in the Habitat Creation Field receptor site have been made on the legal and evidence base prepared by Dr John Feltwell and this is given in Table 8. The mitigation strategy has been prepared by Martin Newcombe and is shown in Table 9.
- 8.67** The evidence based approach ensures that the translocation and mitigation will be undertaken in full accordance with the requirements of the relevant Wildlife Acts and guidance issued by NE and the relevant specialist reptile groups. It further ensures that the proposals will create enhanced habitats for the three reptiles during quarrying and the habitats created on each phase of the quarrying after infilling and restoration. The proposed rides are ideal reptile habitat when associated with woodland. On the restored quarry areas, reptiles can be translocated to the rides if this is shown to be desirable in the post completion wildlife surveys. At this stage it is considered that reptiles from adjacent habitats will quickly colonise the new rides, which will provide ideal habitat for them.
- 8.68** The proposals clearly achieve the aim of greatly enhanced habitats for the three reptiles identified in the wildlife survey (Appendix 12) within a year of the grant of planning permission. The quarry is being phased so that phased translocation and restoration can be achieved in stages, with enhancement of wildlife value at every stage. The long term management and monitoring after completion of the quarrying will ensure a large increase in biodiversity and much greater populations of the reptiles together with other animals and plants.

TABLE 8**REPTILES**

This addresses the Common or Viviparous Lizard, the Slow worm and the Grass Snake.

The following topics support the methodology in Martin Newcombe's Method Statement.

PROTECTION**Legal Status**

These reptiles are Schedule 5 (Animals) protected under Sections 9 (1) against killing and injuring, and Section 9 (5) for sale, under the Wildlife & Countryside Act 1981 (as amended).

This evidence-based compilation lends support to the methodology detailed in Martin Newcombe's Method Statement (submitted separately).

Conservation Status

Common Lizards are NOT on Kent's list of Priority BAP species (Kent Biodiversity Action Plan - Priority Species, 2010) (The only reptile on the Kent Priority List is the Sand Lizard). The common lizard is, as its common name suggest, common, and it is referred to as one of the 'commoner' reptiles found in the UK. (the others are slow worm and grass snake).

Common Lizard IS ON the list of BAP species in Kent (Kent Biodiversity Action Plan - Priority Species, 2010) and will be duly conserved in the appropriate manner.

Slow worms (legless lizards) also occur on site, and these are also listed as BAP species and will be mitigated at the same time as the common lizards as they live in fairly similar habitats.

Grass snakes also occur on site, and these are also listed as BAP species and will be mitigated at the same time as the common lizards as they live in fairly similar habitats.

These 'commoner' species of reptiles are not subject to the more stricter conservation measures afforded to European Protected Species (EPS), e.g. all bat species, dormice) that are governed by EU law.

In Kent the Common Lizard can still be described as being 'locally abundant' (Kent Reptile & Amphibian Group, 2010)

Authority to translocate the common lizards

Common Lizards are NOT subject to Licenced work (Natural England, 2009, Species Licensing). Translocation is however subject to a proper Method Statement and is open to inspection by Natural England.

Guidelines

Mitigation is compliant with Natural England guidelines (English Nature, 2004)

Mitigation is also compliant with guidelines of the Kent Reptile & Amphibian Group (www.kentarg.com).

HABITAT ENHANCEMENTS**Receptor site suitability****On Preparing the Receptor site well in advance**

It is customary to provide a suitable Receptor Site for the lizards to be transferred from the Donor Site; and this is being arranged by preparing a Habitat Creation Field for them well in advance of their movement. This allows the new habitat to mature and become more suitable for the animals to be introduced to it. This is all in accordance with best practice advocated by Gent & Gibson, 1998.

On making sure there are no common lizards present to start with

The Habitat Creation Field will be surveyed for any existing population of lizards to ensure that there are no lizards present before translocation, and in accordance with Gent and Gibson, 1998. This is to avoid putting more lizards into an area which would become overcrowded resulting in avoidable deaths; this 'carrying capacity' is what is planned to avoid, i.e. not being more individuals present than the habitat can support.

On making the new habitat especially suitable for lizards

On the usefulness of hibernacula in providing hibernation quarters for common lizard, and for their 'untidy' nature with lots of crevices etc, instead of special hole, see Showler et al., 2005.

On allowing some of the bare earth to regenerate naturally, as per Gilbert & Anderson, 1998 (p.146).

On developing the best type of habitat for lizards with large stones, logs, boulders, cracks and burrows in ground, on well drained ground (Beebee & Griffiths, 2000, p. 127) and along woodland rides and woodland rides (p.131)

On providing a pond

Although reptiles do not breed in water, their herpetological relations, amphibians do. Providing a pond in the 22-acre field will increase the invertebrates dependent upon water and this will increase the potential food supply for reptiles (that feed on insects).

The pond will be created according to Natural England's guidelines (Gent & Gibson, 1996).

MANAGEMENT

On monitoring and the use of refugia for sampling, see Foster and Gent, 1996 (p. 100) and on the commitment to on-going monitoring as per English Nature 1998.

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Conservation Evidence (2005) 2, 96-98.

TABLE 9

PROPOSED REPTILE TRANSLOCATION AT OAKEN WOOD, BARMING: METHODOLOGY

20. Reptiles (slow – worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*) and grass snake (*Natrix natrix*) have been found to be present on the proposed Oaken Wood quarry. As a result of this and their legal protection there is a requirement for them to be translocated. This document describes the proposed process of capture and translocation.
21. No licences will need to be acquired prior to the commencement of translocation.
22. Prior to the commencement of capture and translocation a suitable receptor site will have been prepared at a Habitat Creation Field which is currently arable land in the south – west of Oaken Wood (OS / TQ712549); this site will be managed appropriately, as per advice and requirements in Gent and Gibson (2003) and HGBI guidelines (Herpetofauna Groups of Britain and Ireland, 1998).
23. Prior to the commencement of capture and translocation the proposed development each site will be surrounded by a reptile – proof fence of the kind described for great crested newt (*Triturus cristatus*) by English Nature (2001). The route of this fence will be around each phase of the quarrying.
24. Once the fence has been completed an appropriate number of minimum 0.5 x 0.5m roofing – felt refugia will be installed on site. The number of refugia will be as calculated by reference to HGBI guidelines (Herpetofauna Groups of Britain and Ireland, 1998). This number may be increased to double for the purposes of assuring as complete removal of the reptiles as possible over and above the guidelines recommendations.
25. All refugia will be numbered in sequence.
26. The refugia will be left in place for a period of one week to ten days (dependent upon prevailing weather conditions) to enable the animals to find them before trapping starts.
27. Following this period the site will be visited at least once and possibly twice a day in the period between April and September inclusive. All visits will take place early or late in the day rather than in the middle of the day when animals may sometimes be less likely to be present. No visits will be made during prolonged periods of heavy rain, and in hot weather the visits may have to be made at dusk or dawn or curtailed if the hot weather is prolonged.
28. On visiting the site, the numbered refugia will be inspected, one at a time. This will be done by gently lifting up the refugium and picking up any animals that will be found. All animals will be picked up by being grasped firmly but gently on the anterior portion of the body. However, lizards may be picked up by being scooped up by a closing hand held at soil level if necessary. In all events the intention must be to handle the animals firmly but gently. Animals must never be grasped or grabbed by their tails. All captures will be recorded on a form by their location under a numbered trap, their species and age (i.e. whether adult or juvenile).
29. The animals will be transferred (according to number) to a plastic bucket with a lid on it. This bucket will be filled with grass, leaves or similar material into which the animals can hide. At no times will the bucket(s) be left in hot sunshine during the capture process. The lid must be removed in order to place new animals inside and then securely replaced.
30. Transport of the bucket to a release (translocation) site, if by vehicle, will be done in such a way as to ensure that the bucket does not tip over, allowing the animals to escape. The bucket will be securely held in place within the travelling vehicle.
31. On arrival at the translocation site the animals will be released by gently tipping the bucket and all of its contents out in one or more places as appropriate to the number of animals which have been captured. The person in charge will not leave the site until such time as all of the animals have disappeared into cover.
32. The period of translocation will be determined by reference to a database of captures which will be filled in as soon as possible after each visit's results are known. The length of time for capture will be determined by reference to this and to the published guidelines (Herpetofauna Groups of Britain and Ireland, 1998).
33. At the end of the capture and translocation a full report will be compiled and made available to appropriate interested parties.

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Suffolk, HGBI.

Amphibians

- 8.69** The KWT survey of the proposed quarry and the surrounding woodland for amphibians, including great crested newt, was carried out between March and June 2009 by experienced surveyors and the report is included in Appendix 13. The results of the survey show no ponds within the survey area but six within 500 m of the boundaries of the survey area. No great crested newts were recorded. Smooth newt, small brown newt and frogs were recorded in one pond. Common toad was recorded in three ponds and one individual was found beneath a reptile surveyor's mat in compartment 9, within the proposed quarry area. There are no Kent and Medway Biological Records Centre records of amphibians in this area. The ponds are recorded on a Habitat Suitability Index as being poor or below average for reptiles.
- 8.70** Amphibians require water at least for their breeding and development of the young before they can survive on land. The poor quality of the ponds reduces the chances of breeding populations surviving. The one, more successful pond shows that their survival in the area is possible if there is a suitable water body.
- 8.71** No mitigation measures are required for amphibians in the proposals for the quarry. It is however part of the habitat creation proposals to create a pond of some 2200 sq. m. in the Habitat Creation Field, drawing no. 0257/10/5E. This is being provided to increase invertebrate populations both for themselves and for insect eating animals. There will also be clear benefits for amphibians. A pond of this size, which surrounded by grassland managed as meadow, is ideal habitat for them. The pond bank will be rolled over on land and in to the water so that there will be shallows leading to deeper water. This will be at least 2 m deep in the centre so that marginal vegetation can not colonise the open water. It will not be stocked with fish as these predate amphibians. Hibernacula of log piles will be provided in the adjacent, newly planted scrub and woodland areas as soon as they are planted.
- 8.72** There is no significant amphibian interest in the proposed quarry area of Oaken Wood but the provision of a new pond in the Habitat Creation Field will greatly increase suitable habitats for them in the area.

The Proposals and the Habitat Creation

- 8.73** The removal of the woodland from the area of the proposed quarrying requires mitigation to achieve, at the least, no net loss of wildlife and preferably a real and continuing increase in wildlife value. An increase in wildlife and habitat values at all stages of the quarrying is the objective of the proposals. The area of Oaken Wood that requires removal for the quarrying is mainly chestnut coppice, with an arable field near the centre of the area.

- 8.74** The approach to the assessment of the existing habitats and wildlife and the mitigation proposals is evidence based. There are conflicting views in nature conservation about which species a habitat is managed for. Special interest groups tend to prefer management for the species they are interested in. This will inevitably be to the detriment of species that prefer differing habitats. In this enthusiasm it is sometimes forgotten that all species depend on habitats and their long term viability to maintain the species and its populations. The underlying principles of these proposals are to provide a wide range of interlinked habitats that will support a wide range of key species for the site and to be sustainable in the long term.
- 8.75** The baseline is the English Nature (now Natural England) report no. 627, 'The ecological impact of sweet chestnut coppice silviculture on former ancient, broadleaved woodland sites in south-east England, Buckley and Howell (formerly of Wye College), 2004. The principles of an evidence based approach to nature conservation are in the English Nature Report 493 'Support for decision-making in conservation' and furthered, among others, by the Centre for Evidence Based Conservation at Bangor University and the online journal conservationevidence.com. The evidence shows that this type of chestnut coppice woodland, with pure chestnut stands of stools at close spacing, is of relatively low wildlife value compared to all other woodland types in Kent. Oaken Wood is a designated Ancient Woodland by Natural England and as a LWS (Appendix 23) by KWT. The restoration proposals will be for replacement woodland after the quarrying is completed. The evidence shows that mixed native woodland has a much higher wildlife value than chestnut coppice and this will be proposed for the restoration.
- 8.76** One of the principal drivers of biodiversity in woodland is the light levels that reach the ground. In coppice woodland this increases immediately after coppicing and then decreases as the coppice stools regrow. This regrowth is dense to the ground and light levels quickly reduce again within a few years. The long term biodiversity of woodlands is best maintained with rides and glades wide enough to have sunlight on part of them for at least some time of the day. Rides also increase the length of the edges between the different habitats of woodland and more open areas with ground flora vegetation. This can be further diversified by the introduction of native shrub planting, to create scrub habitats on the woodland margins. These diverse edges maximise the complexity of the overall habitat and the range of species it can support. The varying light levels increase the range of plant species. Animals are able to move between the habitats for foraging and protection from predators. Sites for breeding, hibernation and overwintering are increased.

8.77 The restoration proposals are shown on drawing no. 0257/10/4D and are based on the surveys of the existing habitats their flora, fauna and fungi (Appendices 4 to 13) and assessment of the evidence base in the EN desk study. The conclusions are that mixed, native species woodland should be planted rather than chestnut coppice. This is planned to develop into 'high forest' with mainly standard trees and a shrub layer. There are extensive areas in Kent of native species woodland with mainly coppice. These are not regularly cut, as there is little demand for the timber, and their wildlife value has declined accordingly, so planting for coppice was ruled out. The proposed woodland has been designed with wide rides, on varied orientations, a central glade and scrub on selected margins. This will complement the rather uniform habitats of the extensive pure chestnut coppice, with closely spaced stools, that makes up most of the rest of Oaken Wood. The new woodland, together with the habitats of the Habitat Creation Field, will provide centres of biodiversity within the lower value habitats of most of the balance of Oaken Wood. An area of woodland in Gallagher ownership in the south east corner has a low frequency of chestnut coppice and many native species. This will be managed to remove the chestnut and complement the new woodland areas on the restored quarry.

Management of Existing Woodland

8.78 The description of the 73 ha of woodland in the Gallagher ownership that is on and outside the proposed quarry extension area is shown on drawing no. 0257/10/1K. The woodland management proposals are designed to maximise the long term wildlife potential with the production of timber being a secondary consideration. The coupe (cant) sizes, the frequency of coppice cutting and the pattern of the ages of coppice re-growth will maximise the wildlife potential of these areas. The character of the areas to the north that are not Ancient Woodland are described. They are a mixture of natural regeneration of mainly birch and what appear to be planted chestnut. The close spacing of the trunks has resulted in a very shaded ground layer and very low biodiversity. The proposed management is shown for each distinct woodland area.

8.79 The assessment of the overall strategy for the quarry area and surrounding woodland indicates that it would be beneficial to create a wildlife corridor immediately around the quarry boundary. This is proposed as scrub with standard trees and some 15 metres wide. The location and method of implementation is shown on drawing no. 0257/10/14. The first phase will be undertaken in the first planting season after the grant of planning permission. This will then become an enhanced and effective wildlife corridor before work commences on the proposed quarry. On the western and eastern boundaries there will then be a relatively narrow strip of chestnut coppice remaining between the scrub with standards and the outer edge of the woodland. It is thus proposed that this should also be converted to scrub with standards, in year 10 so that the original planting is mature before this area is converted.

- 8.80** It is clear that the biodiversity and populations of significant species can be maintained if the smallest area possible is being quarried and infilled at any one time, before habitat restoration to woodland. This can be achieved in four ways:
- 8.81** Quarrying in relatively small areas so that the area out of woodland cover at any one time is as small as possible.
Infilling to original ground levels as soon as quarrying is completed in any one area.
Translocation of protected species from each area to new habitats before any clearance starts on the area.
Management of the woodland topsoil so that it is conserved in newly planted woodland areas.
- 8.82** The topsoil in Ancient Woodland is usually regarded as the resource to be conserved if possible due to its seed bank and structure. Despite the fact that there is considerable doubt over the Ancient Woodland designation for the quarry area, this procedure will be followed and is detailed on drawing 0257/10/12A.

Impacts on Ecology

- 8.83** The site of the proposed quarry extension area is chestnut coppice with a small arable field near the northern boundary. The surrounding woodland in Gallagher ownership is predominantly chestnut coppice with small areas with native trees and shrubs in the north west and south east corners of this part of the wood. Chestnut coppice is very common in Kent and is the poorest quality woodland habitat in the County. Sweet chestnut is not a native species and supports few animal species. In pure stands of chestnut light levels are low and there is poor plant diversity and generally low populations of those present. The KWT wildlife surveys in Appendices 3 to 13 confirm this for the study area.
- 8.84** Biodiversity and species populations are increased when there is a regular coppicing cycle. Light reaches the woodland floor in the early years and populations of plants and animals increase. It is proposed that a cycle of coppicing commences on all the chestnut coppice in Gallagher ownership within a year of the grant of planning permission and three years before the quarry extension is commenced (0257/10/1K). This will increase the populations of most species in the woodland and may see the return of nightjars and tree pipits.
- 8.85** The proposals are to phase the quarry so that only a minimum area is being quarried or infilled to return it to original levels at any one time (0257/10/101 to 130). Protected species will be translocated to the new habitats at each phase. The woodland on the restored quarry will be implemented in sequence (0257/10/202 to 230) and will be mixed, native broadleaved species. This will provide more diverse and richer habitats, that will support a much wider range of plants and animals than chestnut coppice. All the species identified in the surveys will have greatly enhanced habitats and a wide range of species of native broadleaved woodland and scrub will colonise the new habitats. The overall assessment of the impacts on existing species is given in Table 10. The proposals for ecological mitigation, habitat creation and habitat management ensure that there will be a significant increase in the ecology and biodiversity both during quarrying and in perpetuity following restoration.

TABLE 10**ENHANCEMENT OF SPECIES DIVERSITY AND POPULATIONS OF THE PROPOSED QUARRYING, RESTORATION AND HABITAT CREATION SCHEMES**

Status compared to Kent Woodlands where native species predominate

	<i>Existing</i>	<i>After 1 year</i>	<i>After 4 years</i>	<i>After 10 years</i>	<i>On completion of restoration</i>	<i>Long term</i>
Higher Plants	Low	Medium	Medium	High	High	High
Lower Plants	Low to Medium	Medium	Medium	High	High	High
Terrestrial Invertebrates	Low	Low	Medium	Medium	High	High
Badgers	Medium	Medium	Medium	Medium	Medium to High	Medium to High
Bats	Low	Low	Medium	Medium	Medium	High
Dormice	Low	Low	Low	Medium	Medium	Medium
Tree Pipit and Nightjar	Low	Medium	Medium	High	High	High
Breeding Birds	Low	Low	Medium	Medium	Medium	High
Reptiles	Low	Low	Medium	High	High	High
Amphibians	Low	Low	Medium	Medium	Medium	Medium
Woodland Habitats	Low	Low	Medium	Medium	Medium	High

The assessments include the proposed quarry area, the surrounding woodland in Gallagher ownership and the habitat creation field.

There will be significant increases on a compartment by compartment basis from the end of Year 1.

Monitoring and Long-term management

8.86 The quality and biodiversity of habitats depends on their management as there are no habitats in Britain that are not affected by human activity. This management may be through agriculture and forestry, management primarily for wildlife or for public amenity in parks and private enjoyment in gardens. The proposals for the extension of Hermitage Quarry ensure that there will be an increase in the nature conservation value of the part of Oaken Wood in Gallagher ownership from before quarrying commences to the completion of restoration to original ground levels.. As described, there will be management of the existing woodland and the creation of new, native broadleaved woodland on the restores quarry. This will be undertaken in phases as each area is restored. The details are on drawings no. 0257/10/202 to 0257/10/230. The existing woodland will continue to be coppiced after the quarrying and restoration have been completed. The new woodland and the Habit Creation Field will require continuing management to develop in to the planned biodiverse native woodland. The proposals are to restore the type of woodland that would have existed before the non-native chestnut coppice was planted.

8.87 The planting is designed to develop naturally in the principal habitats of;

- Mixed, native woodland appropriate to the area
- A scrub with standard trees wildlife corridor
- Scrub margins to parts of the woodland
- The woodland rides
- The meadow and pond in the Habitat Creation Field

8.88 The rides and meadow require annual cutting of the vegetation, timed to favour the targeted wildlife. The development of the woodland and scrub habitats requires thinning of the young trees and shrubs at appropriate times to favour the balance of species that will create the favoured habitats to support the biodiversity objectives of the proposals. This will require a management plan that goes beyond the completion of the quarrying and restoration. The plan will define the objectives of long term management of the restored quarry area and the surrounding woodland and how these will be achieved. It will be implemented by the Gallagher Discretionary Trust that is being formed to ensure the long term benefits of the nature conservation proposals in this ES.

8.89 The management plan will be included in a unilateral undertaking for long term management of the restored quarry and the surrounding woodland in a Section 106 Agreement. It will have a programme of monitoring to provide an evidence base for the management proposals and how well the objectives are being achieved. The methods used will follow those used in the KWT surveys in Appendices 4 to 13. The objectives of the habitat creation proposals are to provide enhanced habitats for the species identified in the KWT surveys. Other species will return to the new woodland as the habitat conditions become favourable. Translocation of selected species that are native to the area is also possible. The plan will include appropriate access for the public and educational groups.

8.90 It is proposed that the management plan will be prepared within a year of the grant of planning permission for the quarry extension. The plan will be discussed with interested groups before it is submitted for planning approval.

8.91 The proposals for the habitats and wildlife of the area for the proposed quarry and their long-term management will ensure that there will be a significant enhancement of them in the short term and a substantial enhancement in the medium and long term. The quarry and the related proposals provide a significant enhancement for habitats and wildlife.

9 ANCIENT WOODLAND

9.1 Ancient Woodland is defined by Natural England as:

An area that has been wooded continuously since at least 1600.

If it has been cleared at any time it can only be for underwood or timber production. If the woodland has been cleared at any time since 1600 and been in any other land use before re-planting it is not Ancient Woodland. The areas of Ancient Woodland were defined in A Provisional Inventory of Kent's Ancient Woodlands, Revised 1994 and have been placed in more detail on the 'Magic' and 'KLIS' websites. The initial evidence in this Inventory for woodland cover since 1600 came from the study of old maps and the results were published based on material then available. The evidence base created for this Inventory is not currently available from Natural England so the gradings of the quality of information used to designate each site can not be used to assess the reliability of its Ancient Woodland designation. NE, with local partners, is currently reassessing areas of Ancient Woodland designation in more detail, using more map coverage and at a greater scale. Work undertaken so far in Sussex is resulting in significant change to Ancient Woodland boundaries. This has not yet been undertaken by NE for this area of Oaken Wood.

9.2 Ancient Woodland is a simple definition based on the historic map and document records of its survival on that site. It does not take into account the quality of the woodland, its habitats or its wildlife and biodiversity. The further classification of Ancient Woodland as Ancient Semi-natural Woodland or Ancient Replanted Woodland is confused. In the clarification of the definition on page 3 it is stated in the EN (NE) Inventory that the Ancient Semi-natural Woodland designation should retained

'where semi-natural stands have been slightly modified by planting e.g. mixed woods containing a scattering [their underlining] of ornamental conifers or sweet chestnut (Castanea sativa), in a mixed coppice'.

9.3 Under Ancient Replanted Woodland it states that sweet chestnut is a very long established introduction in the south east and that

'some sweet chestnut coppices have therefore been included in the semi-natural category unless it can be shown that it is suppressing other components of the semi-natural woodland'.

This conflicts with the 'slightly modified' and 'scattering' in the first Ancient Woodland definitions. All the proposed quarry extension area is thus Ancient Replanted Woodland. This is the conclusion in many of the KWT reports. Sweet chestnut is not a native species and was introduced from southern Europe. The planting of chestnut in the former native broadleaved woodland of the Gallagher area of Oaken Wood is detailed in the Archaeology report (Appendix 21). Sweet chestnut plantations modify the woodland environment in much the same way as conifers in forestry planting and reduce native flora and fauna diversity and population levels.

- 9.4** In order to better understand and provide an evidence base for the wildlife value of sweet chestnut coppice Gallagher Aggregates and Kent County Council commissioned a report on chestnut coppice from the then Wye College. This was published by English Nature (now NE) as 'The ecological impact of sweet chestnut coppice silviculture on former ancient, broadleaved woodland sites in south-east England', Buckley and Howell., Report 627,2004. It is available online (www.naturalengland.org.uk) or as a paper copy (0845-6003078). The report's overall conclusion with reference to vegetation, fungi, invertebrates, birds and mammals in relation to sweet chestnut is that:

'Few, if any species recorded so far within these major groups are directly dependent on chestnut as a host. While chestnut does support a number of species that also occur on trees and shrubs comprising the equivalent native broadleaved community the number and variety associated with the former appears to be lower, especially in monoculture stands.'

Most of Oaken Wood and all the proposed quarrying area are monoculture stands with closely spaced chestnut stools, often no more than 2-3 metres apart. KWT's wildlife survey reports (Appendices 4-13) found that there is a low wildlife value in the proposed quarry extension area in Oaken Wood and most of the remainder of their study area outside it. These surveys confirm the findings of the English Nature report. The designation of these areas should be Ancient Replanted Woodland. This does not change the overall Ancient Woodland designation but it does reflect that it is not of high quality in terms of habitats and wildlife value.

- 9.5** There is a full assessment of the Ancient Woodland status in the Archaeology report by Oxford Archaeology (Appendix 21). The Historic Landscape Assessment in section 5 reports on their desk study, the LiDAR survey and site walkover survey. The change to chestnut coppice occurred between 1840-41 and the survey undertaken for the first edition Ordnance Survey map in 1865-66. In 5.2.8 the sources are shown that demonstrate that areas in the northern part of the Gallagher ownership were cleared of trees for agricultural purposes, including an orchard. The existing field in the north of the proposed quarry area was a cherry orchard and a few trees remain in the boundary. These areas are not Ancient Woodland and are shown on drawing no. 0257/10/22.
- 9.6** The LiDAR survey, reported in 5.2.9 and shown in Figure 4, and the walkover survey show quarry pits and an access causeway and importantly, no woodbanks or other historic features such as hornbeam pollards. The latter occur in the south eastern part of the wood and are on old boundaries, where they are a typical feature. The KWT's survey reports also found no Ancient Woodland features in the proposed quarry area.

- 9.7** There do not seem to be published accounts of the way which mixed native broadleaved (usually coppice with standards) woodland in Kent was converted to chestnut coppice. The mixed native broadleaved and chestnut coppice woodlands appear to have been created by interplanting with chestnut and then annual coppicing of the native species until they died. This accounts for the variable percentages of chestnut across the woods of the County. There are many woodlands with a variable mixture of chestnut coppice and native woodland species coppice. This appears to be the result of inadequate suppression of the old, native species coppice stools after planting with chestnut so they now survive together in the wood. The stands of pure chestnut at close spacing, as in Oaken Wood, are the creation of efficient establishment and management systems. They are close enough together, at 2-3 metre centres and upwards, that it is difficult to see how the standard trees and old coppice stools of native species were not removed before the chestnut was planted. These old stools would have had a large diameter, as can be seen in ancient native broadleaved coppice woodlands. It would not have been possible to plant chestnut between these at the spacing found in the proposed quarry area of Oaken Wood. Oaken Wood is recorded with many standards that were removed (Appendix 21, 5.2.5) before the chestnut was planted. The absence of woodbanks and the close spacing indicate that the wood was cleared and the land was cultivated before planting the chestnut.
- 9.8** The results of the KWT Vascular Plant Survey (Appendix 4) have been analysed and are shown in Table 10. This shows that the proposed quarry area does not contain enough AWI plants to meet the KWT criteria for a minimum of 10 species (Local Wildlife Sites in Kent: Criteria for Selection and Delineation, Version 1.3, February 2006). It is clear from the pattern of the distribution of the AWI species that these species mainly occur in the areas of woodland which contain mainly native trees and shrubs (Appendix 4, Figures 4 and 6). The Figures show that they spread from these areas in to the woodland on the application area where there is only chestnut coppice. This is along the rides and few AWIs are found within the blocks of chestnut. The Terrestrial Invertebrate survey (Appendix 6) shows that the entire quarry area has an 'invertebrate fauna of negligible ecological interest'. In relation to the Ancient Woodland designation 'The numbers of invertebrate indicators of Ancient Woodland habitats were also extremely poorly represented at Oaken Wood'. The KWT surveys strongly indicate that the woodland was cleared and that there was an agricultural land use before the chestnut was planted. It would then not be Ancient Woodland.
- 9.9** There is evidence in the woodland to the north of the application area that complete clearance of the trees and other land uses before replanting may not be shown in contemporary map evidence. The adjacent Fullingpits Wood has been surveyed and, as its name suggests, shows conclusive evidence of deep Fullers Earth working between woodland clearance and the planting of the chestnut coppice (Appendix 21). Only one small area of the wood on the western boundary was shown on Ordnance Survey maps as not being woodland for a period of time, even though it has less obvious earthworks than the adjacent woodland in Fullingpits Wood. Ordnance Survey map coverage is not conclusive evidence of the continuous existence of Woodland on a site. It only demonstrates that the woodland was there when it was surveyed. As the Archaeology report demonstrates, the quarried areas must have been cleared of woodland for a considerable period before replanting.

- 9.10** The lack of woodbanks and boundary pollards in the area proposed for the extension of the existing quarry, together with the evidence for many quarry pits, indicates strongly that there may have been a period of excavation for Fuller's earth and agricultural cultivation between the woodland clearance and planting with chestnut. The owner during the period was Lord Brassey who lived at Preston Hall and was one of the most successful railway contractors and builders of the Victorian era. These significant changes to Oaken Wood were on a large scale (Appendix 21, 5.2.5) and could have involved the latest site clearance and earthmoving techniques to remove tree stumps before agricultural cultivation. There is no map evidence or conclusive documentary evidence for most of the area of the proposed quarry not having been woodland for a period between the mixed native woodland and the planting of chestnut coppice. There is however no other evidence to support the Ancient Woodland classification.
- 9.11** There is strong circumstantial evidence that indicates that the area of the proposed quarry extension is not Ancient Woodland:
 The lack of the usual features of woodbanks and pollards associated with Ancient Woodland, as demonstrated on the walkover survey and LiDAR survey
 Many quarry pits
 The few Ancient Woodland indicator vascular plant species and below the 10 accepted as significant by the Kent Wildlife Trust
 The extremely poorly represented invertebrate indicators of Ancient Woodland
 The Estate records of extensive felling of trees
 An owner at the time of the woodland clearance and the planting of the chestnut who knew of and could have used the latest techniques of site clearance and earthmoving
- 9.12** Based on the evidence of the English Nature Research report 627, the quality of the habitats in the proposed quarry area of Oaken Wood can be expected to be low to very low. This is verified in the KWT Vascular Plant Survey (Appendix 4). The Terrestrial Invertebrates Survey (Appendix 6) shows that the

'numbers of invertebrate indicators of Ancient Woodland habitat were extremely poorly represented at Oaken Wood; any classic Ancient Woodland invertebrate fauna that may once have been present appears to have been lost'. It is of 'negligible ecological interest' (5.3).

- 9.13** The other surveys show a limited fauna of reptiles, dormouse and badger. The lower plant survey finds that the deep leaf litter and abundance of bramble and bracken are poor habitats for lower plants. The habitats for Ancient Woodland assemblages of plants and animals do not generally exist in the quarry area and this further indicates that the area could have been cultivated between the felling of the woodland and the planting of the sweet chestnut. The unique value of Ancient Woodland, apart from its age and accumulated biodiversity, is its topsoil. This has accumulated a seed reserve and soil structure that develops with time and leads to the wide range of plants and animals characteristic in Ancient Woodland. The generally low value of the habitats and biodiversity indicates that the topsoil was cultivated at one time and lost its biodiversity. It is recognised that Ancient Woodland indicator species can spread into cleared and replanted or naturally regenerated areas from adjacent woodland. The pattern of occurrence of AWIs in this part of Oaken Wood follows this prediction.
- 9.14** Areas in the north of the wood have been shown to not be Ancient Woodland. The ecological evidence shows that the remaining area proposed for quarrying is of low quality and it could have been cultivated and quarried between the felling of the original wood and the planting of the sweet chestnut for coppice. This is generally supported by the archaeological evidence which shows small scale quarrying and an absence of woodbanks and old pollards. The KWT wildlife surveys do not show any significant evidence for the typical assemblages of species in Ancient Woodland. This is all shown on drawing no. 0257/10/22 where it is shown that there are no indicators of Ancient Woodland on the area of the proposed quarry. This indicates that the area for the proposed quarry should not be designated as Ancient Woodland.

10 NOISE AND VIBRATION**Noise**

- 10.1** The noise levels of minerals operations are potentially a significant environmental impact on residential and employment properties and on the amenities of users of adjoining land, including public rights of way. A predictive noise report has been undertaken by Vibrock and this is included as Appendix 14. Vibrock as a company is very familiar with Hermitage Quarry having undertaken studies there for over 15 years. The report follows the guidance in Minerals Policy Statement 2 and predicts the noise levels at various stages of the operations.
- Topsoil and overburden strip
 - Quarrying
 - Infilling
 - Restoration to final levels
- 10.2** The assessment is based on the nature of the proposed operations, the topography of the quarry and around the quarry and existing background noise. There have been no significant problems with noise in the twenty years of the quarry. The trees and woodland are not considered to have a significant effect on noise reduction. The most sensitive potential noise receptor properties around the quarry have been selected for detailed analysis of the results and these are tabulated and reported in full. The noise levels for the quarry are generally kept low by the fact that it is worked in small phases and the processing of all the materials will be undertaken in the existing quarry using the existing plant. This has planning permission and was approved after a rigorous assessment of the noise predictions and proposals for screen bunding. There is regular monitoring of this by Tonbridge and Malling Borough Council Environmental Health and it complies with the requirements.
- 10.3** The noise predictions at all the closest properties comply with the guidance in MPS2 for quarry working and for the temporary preparatory works of soil stripping that occur at or near to ground level. There is predicted to be a very small noise level above that required for temporary works in the phase that is closest to the by-way. This is predicted to be 3dB (decibels) over the figure of 70. 3dB is the figure at which a change in noise level can be detected by a person with good hearing. It will be of very short duration, likely to be less than a week of machine work.

10.4 The conclusions are that there will be no significant noise impacts on surrounding properties or the public rights of way or perimeter track around the wood. A public meeting with Barming Parish indicated concern about the proximity of quarry operations to housing in the south east corner of the proposed quarry. This comes closest to the housing on North Pole Road and is some 280 metres from the closest dwelling. There was also mention of the continued use of the processing plant in the existing quarry. This is some 365m from the closest dwelling and 385 from the closest housing on Rede Wood Road. Proposals for bunding around the processing area are to meet public concern and are shown on drawing no. 0257/10/21. This will be closer to the source of the noise from the plant than the existing bund on the southern quarry boundary, which will remain throughout the life of the quarry. The proposed bund will be installed once the adjacent areas of quarry to the south and west have been infilled to finished levels, shown on drawing no. 0257/10/104. The bunding for Phases 20 to 22 will be provided to screen the noise from the stripping of topsoil and overburden down to a depth of 4 m if this is required after noise monitoring and consultation with local residents. Work in this area will not commence for around twenty years. The noise impact of the proposed quarry will be low and bunding will ensure that the levels will be well below the minimum required for quarrying.

Vibration

10.5 Vibration is an important element in the assessment of the environmental impacts of quarrying. Blasting has been carried out for fifteen years in the existing Hermitage Quarry with no significant issues being reported. It is proposed in the extension of the quarry. The report of the impacts of vibration has been undertaken by Vibrock and is in Appendix 15. There are two types of vibration, in the ground and in the atmosphere. The latter is usually called air overpressure and is as a result of the change in air pressure caused by the energy released by the blasting. It may be audible or inaudible and the latter can still cause objects to shake. One important point in the report is that it is in the operator's interest from a cost point of view to keep vibration resulting from a blast to a minimum so that it is as efficient as possible and the released energy is directed towards loosening the rock at the working face. This coincides with the need to keep to a minimum any impacts on surrounding properties. Blasting occurs at fixed times and local residents are made aware of these times. The impacts of blasting are recorded for every operation and the results are sent to Kent County Council within a day or two of each blast, as required by the planning permissions. All the results show the impacts to be below the maxima defined by KCC in the existing planning permission. The blasting in the proposed quarry will be controlled in the same manor as in the existing quarry.

10.6 Trial blasts have been monitored for the report and they have been fully assessed using the accepted standards and are reported in full. All the results and predictions come well within the criteria defined for this site. For most properties it is noted that the levels of vibration will be imperceptible. It is noted in 9.12 that the levels will be perceptible for the closest properties on North Pole Road but will be well below the accepted levels for the quarry. There will thus be no significant environmental impact resulting from the blasting.

11 AIR QUALITY

- 11.1** Dust is the major factor in quarrying that can affect air quality. Dust is caused by the dispersal of fine particles in the air by wind, vehicles on dusty roads or handling dry materials when the smaller particle sizes can be blown in the wind. Of these, only those with particle sizes below 30 microns (fine silts and clays) can be dispersed more than 100 metres. This can only occur in dry conditions as wet particles are too heavy to become airborne. A report on the Assessment of Environmental Dust by Vibrock is included as Appendix 16. Vibrock has been familiar with Hermitage Quarry for many years and has reported on dust conditions for previous planning applications.
- 11.2** The dust environment has been assessed and it is concluded that the environmental conditions ensure that dust will not be a problem during the operation of the quarry. The predominantly south westerly winds will carry any dust away from built up areas to the south and south east. The properties on North Pole Road could experience some nine days a year, when dry conditions will coincide with winds from the north west, if precautionary measures are not undertaken.
- 11.3** Hermitage Quarry has had an active policy of dust suppression at source from its start twenty years ago. Roads and access routes are damped down in dry weather, processing plant is fitted with dust suppression and vehicle washing facilities are to a very high standard. This reduces to a minimum the possibility of dust becoming airborne. In Oaken Wood the quarry extension will be surrounded by a dense belt of trees. Dust settles on leaves until it is washed off by rain. The sweet chestnut that predominates in this area has large leaves that effectively trap dust, when they are in leaf from May to October.
- 11.4** The processing of materials, stockpiling and loading for transport of materials from the proposed quarry will occur at the existing Hermitage Quarry using the existing fixed plant, stockpile areas and access road to Hermitage Lane. No incidents of breaches of air quality have been reported to Tonbridge and Malling Environmental Health department and the quarry has complied with statutory and planning requirements. The quarry extension requires no air quality protection measures other than a continuation of the measures that have been in operation at the existing quarry. With the continuation of these measures there will be no significant impact on air quality from the proposed quarry extension.

12 HIGHWAYS

- 12.1** The Traffic Impact Statement has been prepared by Civitas Planning and is included as Appendix 17 and Map 3. The proposed quarry extension in Oaken Wood will use the existing access on to Hermitage Lane and the internal access roads that lead to it. This access was approved with the original planning permission in 1989 and Hermitage Lane was improved from the junction to the Barming Station entrance. There is no HGV vehicle access to the south, towards the A26. The continued use of this access has been permitted for the southern, western and eastern extensions.
- 12.2** The proposals will extend the period of time that the existing access on to Hermitage Lane will be used. The existing processing plant will continue to be used so the capacity of the quarry production will not be changed. The proposals will result in the extended use of the existing access and no changes to the existing situation are required for this proposal.
- 12.3** The existing Public Rights of Way are shown on drawing no. 0257/10/20. The length of bridleway MR108 across the proposed quarry will be permanently diverted or temporarily diverted as required by the quarry working an alternative route already exists immediately south of MR108.

13 GEOLOGY

- 13.1** A full assessment of the geology and the available Kentish Ragstone resources at the application site is given in the Geological Assessment in Appendix 18.
- 13.2** Dr John Barrett prepared the original geology report and assessment of the drilling results for the first planning application for Hermitage Quarry. He has prepared the reports for all subsequent applications to extend the quarry including the current Updated Resource Assessment in Appendix 18. the original assessment of the drilling results in Oaken Wood are included in the appendix.
- 13.3** Dr Barrett has assessed the available resource in the application site. Overall the resource can be extracted to a depth of 30m without impacting on the water table. If fully extracted this resource would provide some 19 mt of Ragstone and Hassock. However the basal layer below a 22m depth has a reduced Ragstone content of only 30%. In practice only the better rock in this basal layer would be extracted. This reduces the workable resource to some 16mt. Assuming a production rate of 0.7 mtpa this would give a working life for the proposed extension of some 23 years.
- 13.4** The Geological Assessment also calculates the yields for each phase of the proposed extension. These form the basis for the working plan and the phasing design for the proposed quarry extension. Dr Barrett's predictive modelling of the geology in the Hermitage area in previous applications has proved to be very accurate when each area has been worked. It provides a sound basis for the current proposal.
- 13.5** The Hythe Beds are overlain over most of the proposed quarry extension by the Sandgate Beds. There are also Head deposits of Drift, deposited after the formation of the current land form. For quarrying these are both described as Overburden and are described in Dr Barratt's report in Appendix 19. This material has to be removed before the Ragstone is reached. The depths and volumes are calculated in the report. The volumes and quality of ragstone are all acceptable for the economic working of the proposed quarry extension. .
- 13.6** The quarry will be worked in phases so that the area open at any one time is kept to a minimum. This is shown in drawings 0257/10/101 to 0257/10/130. The processing and stockpiling of finished products will remain in the current location in the existing quarry. The overburden will have to be managed in the early phases of the quarry extension due to the limited space available for stockpiles. Details of this management are shown on 0257/10/12A. The overburden from the first three phases (Phases 8,9 and 10 on 0257/10/3K) will be used for infilling of Phases 9 and 10 once the excavation of the ragstone has been completed. The vehicles carrying ragstone for processing in the existing quarry will return full with overburden for Phases 9 and 10. The remaining overburden in the quarry extension will be used within the area for infilling and final restoration. The depths and volumes of overburden do not adversely impact on the viability of the quarry or cause any impacts outside the quarry.

14 HYDROGEOLOGY AND HYDROLOGY

- 14.1** A Hydrogeological Risk Assessment has been prepared by C L Voelcker for the Environmental Scientifics Group (formerly Bureau Veritas), who have undertaken related work at the quarry for GAL for many years. It is included as Appendix 20. This report addresses the hydrogeology in relation to the quarrying and to ground water and the backfilling of the quarried areas with imported inert infill for restoration to original ground levels. A full assessment is provided in accordance with relevant Environment Agency requirements. The existing quarry operates under an Environment Agency Licence.
- 14.2** The depth of quarry working in relation to ground water levels will follow the practice in the existing quarry. The infill will be using inert materials so that arrangements to collect leachate will not be required as there will be no hazardous discharges in to the ground water. The locations for new monitoring boreholes are proposed. These will be installed at least a year before the final depth of the quarry excavation is decided. This will provide the ground water depths and background levels of significant elements in this water before the first phase is fully quarried and infilling commences.
- 14.3** There will be no significant impacts of the quarry extension on the groundwater or change to the relationship between the existing quarry and the groundwater. The use of only inert infill and regular monitoring will ensure that there are no risks to groundwater quality through the entire quarrying and infilling process.

15 CULTURAL HERITAGE

- 15.1** This includes Archaeology and Historic Landscape Assessments and has been prepared by Oxford Archaeology and is included as Appendix 21. This is a desk based assessment but includes a walkover survey. It is supported by LiDAR (Light Detecting and Ranging) survey data from the Environment Agency. The full range of archaeological periods is covered with reference to published data.
- 15.2** The archaeology of the site is considered to have a low to moderate potential to provide evidence of activity up to the post-Medieval period. It is not considered to have resulted in significant archaeological deposits. There is a high potential to contain evidence of post-Medieval quarrying, cultivation and recent woodland management.
- 15.3** The Historic Landscape Assessment is significant in relation to the Ancient Woodland designation for which there has to have been continuous woodland cover since 1600. This is assessed in detail in relation to this in Section 9. of this report.
- 15.4** There will be no significant impacts on archaeology or cultural heritage.

16 CONCLUSIONS

- 16.1** This Environmental Statement assesses the environmental impacts of the proposed extension of Hermitage Quarry into an adjacent area of Oaken Wood. It has been demonstrated in the Planning Statement that there is a need for the quarry and that there are no better alternative sites. The formal scoping advice of KCC has been followed. All direct and indirect impacts have been assessed and evidence based mitigation is proposed where this is required. The quarrying and infilling will be phased to minimise the environmental impacts at each stage of its operation and this is shown in drawings no. 01257/10/101 to 0257/10/130. The phased restoration and habitat creation after infilling is shown on drawings no. 0257/20/202 to 0257/20/230. Each environmental impact is assessed in Sections 6 to 15 of the ES. The conclusion is that all the likely impacts will be within recognised standards and are therefore acceptable.
- 16.2** Mitigation is proposed where required. The proposals for the ecology of the application area provide immediate and lasting improvements for wildlife. All other impacts are well within statutory requirements. The impacts on the ecology of the area have been assessed following the extensive base provided in the wildlife surveys by Kent Wildlife Trust (Appendices 3 to 13). The ecological issues are integrated into the proposals and have been evaluated objectively at each stage of the quarrying, infilling and restoration. There will be an overall improvement in the habitats and wildlife in the Gallagher Discretionary Trust owned part of Oaken Wood before the start of quarrying. This will continue throughout the quarrying and infilling and there will be a substantial enhancement of habitats and wildlife in the medium and long term. The increase in the habitats and wildlife value in the proposals will greatly exceed the statutory requirements for mitigation.
- 16.3** A summary of the Environmental Impact Assessment is given in Table 11 in 17.51. Where impacts have been identified they can be adequately mitigated. With mitigation there will be no significant environmental impacts resulting from the proposals for the extension of Hermitage Quarry.

17 NON TECHNICAL SUMMARY**Introduction**

- 17.1** The non-technical summary of the Environmental Statement provides an overview of the requirements of the ES, the data used and an assessment of the environmental impacts of each relevant environmental matter for the proposed extension of the existing Hermitage Quarry in to Oaken Wood. It accompanies a planning application by Gallagher Aggregates Limited. The reports on environmental matters have been prepared by specialists in their field.

SITE DESCRIPTION AND CURRENT OPERATIONS

- 17.2** The existing Hermitage Quarry is 5.3 km (3.2 miles) west of the centre of Maidstone and is shown on Map 1. It is some 500 metres north of the Barming Heath suburb of Maidstone and 1.5 km south of the nearest housing in Ditton. The proposed extension to the existing quarry is some 33 hectares. It is immediately to the south west and in the north eastern corner of Oaken Wood. The area of the proposed quarry is mainly dense sweet chestnut coppice woodland with narrow rides. The proposed quarry will be linked to the existing quarry by a low level access track.
- 17.3** The existing Hermitage Quarry has been operating as a ragstone quarry since 1990. The Hythe Beds contain Ragstone and Hassock in alternating bands. These are loosened by blasting and the material is screened, crushed, washed and stockpiled for collection in the existing quarry. The quarry provides some eighty different products, including aggregates and concrete. It also provides Ragstone for buildings and coastal defences. The quarry is excavated up to 30 metres deep and successively restored to original ground levels by infilling with imported inert materials and the overburden from the quarry. There are sufficient reserves for about four years at current production rates.

DESCRIPTION OF THE PROPOSED DEVELOPMENT

- 17.4** The proposed quarry is an extension of the existing quarry and both are shown on drawing no. 0257/10/3K. It will provide ragstone for processing in the existing quarry. The predicted life of the ragstone reserves is some 23 years at current production rates.
- 17.5** The proposed quarry will be connected to the existing quarry by a low level access. The byway, circular track around Oaken Wood, the gallop for the riding stables and an ecological corridor maintaining the woodland habitat connection will be provided on a deck above the access.
- 17.6** The quarry will be phased so that the minimum area of land is taken at any one time for quarrying, infilling and restoration. The details are given in the series of drawings from 0257/10/101 to 0257/10/130 in the Environmental Statement and 0257/10/117 is attached as an example. The phasing is linked to the requirements of the habitats and wildlife that are detailed in the Ecology Section 8. Works linked to this will be undertaken before quarrying commences in the extension area.

- 17.7** The worked areas will be infilled with imported inert materials and overburden from the site. The original ground levels will be restored and returned to woodland. The final restoration proposals are shown on drawing no. 0257/10/4D and illustrated on drawing no. 0257/10/303. This is designed to increase the wildlife value of this area of Oaken Wood and it will be of native trees and shrubs and have wide rides. Full details of this and the phased implementation are shown in the series of drawings from 0257/10/202 to 0257/10/230 in the Environmental Statement and 0257/10/213 is attached as an example.

THE SCOPING PROCESS

- 17.8** A formal scoping request was made to Kent County Council and the reply and consultation responses are in Appendix 1 of the Environmental Statement. The scoping requirements are under the following headings.

- Need
- Alternatives
- Ecology and Biodiversity
- Noise
- Air quality
- Vibration
- Hydrogeology
- Archaeology and Cultural Heritage
- Landscape and Visual Impact
- Traffic

These are fully reported in Appendices 2 to 21 of the Environmental Statement and evaluated in the Environmental Statement.

- 17.9** The methodology of the EIA is described and how impacts are predicted and evaluated.

NEED AND ALTERNATIVES

- 17.10** The need for Ragstone supplies in Kent are detailed. This is evaluated in depth and in the planning context in the Planning Statement. The requirements are for 1.2 million tonnes per annum of aggregates from crushed rock. Hermitage Quarry can produce up to 1mtpa.

- 17.11** The alternative sites for ragstone quarries have been investigated in the Planning Statement. This is in Appendix 24. The nature of the ragstone resource in the Hythe Beds is detailed in Appendix 18, with the varying quality and yields of the Ragstone from east to west across Kent. It is concluded that, given all the criteria studied, there is no better site than the proposed extension of Hermitage Quarry.

LANDSCAPE AND VISUAL IMPACT ASSESSMENT

- 17.12** The site of the proposed quarry is assessed in accordance with the current guidelines for Landscape and Visual Impact Assessment. The positive visibility has been evaluated from a desk study and the most prominent viewpoints identified for long, medium and short views. These are shown in photographs and these are evaluated for their impact.

- 17.13** The long views are from the top of the scarp slope of the North Downs, where there are only three viewpoints from areas with public access. Others are obscured by trees and scrub or the topography. The views of the site are too distant for the proposed quarry to be significant to the naked eye.
- 17.14** Medium distance views are obscured by the gently rolling topography and blocks of woodland. The short views to the site are all obscured by the belt of the existing wood that will be retained around the proposed quarry.

ECOLOGY

The site

- 17.15** The site is in dense chestnut coppice woodland, with an arable field on the northern side. The whole of Oaken Wood is a Local Wildlife Site. There are areas of Oaken Wood with more diverse woodland, including native trees and shrubs. There are small such areas south of the proposed quarry area and to the north west.

Desk study

- 17.16** The need for a desk study and full wildlife surveys was identified in the scoping process. All of these surveys have been undertaken by Kent Wildlife Trust for Gallagher Aggregates and are included as Appendices 3 to 13 of the Environmental Statement. They all cover the proposed quarry area and the surrounding area of Oaken Wood identified on the maps. Ecological mitigation is required to meet the needs of Mineral Planning Statement 1 and Planning Policy Statement 9.
- 17.17** Oaken Wood is identified as Ancient Woodland. This is a description of woodland where there has been continuous woodland cover since at least 1600. It does not define the quality of the woodland. The protection afforded to Ancient Woodland in the planning system is detailed in the Planning Statement.
- 17.18** The KWT wildlife surveys have been undertaken by experienced surveyors using the methods required by Natural England and relevant specialist wildlife groups. All the reports use the same compartments, identified by woodland edges and rides.

Vascular plants

17.19 The Vascular Plants survey was undertaken between April and November 2009. All these plants are identified and the compartments in which they occur. There are no notable, unusual or important species present. A number of vascular plants (or higher plants, including flowering plants, conifers and ferns) have been identified as Ancient Woodland Indicators over the years. These are identified in each compartment. They are shown to be more numerous, as expected, in compartments with some native trees, shrubs or hedgerows. The figure of ten AWIs in one area is usually given as support for Ancient Woodland. When this is applied to the survey compartments on the proposed quarry area it can be seen in Table 1 that none of these have close to ten AWIs. The vascular plant interest in the proposed quarry area is low, with an elevated interest in the areas with some native trees and shrubs in the KWT survey area around the proposed quarry. The occurrence of AWIs in the quarry area is low.

Lower plants

17.20 The Lower Plant KWT survey of mosses and liverworts, lichen and fungi was between March and November 2009. The results show that the main areas for bryophytes are on the edges of rides and paths. Their occurrence is low in the dense, overstood areas of chestnut due to the deep leaf litter and bramble cover. Lichens are rare due to the dense shade of most of the wood. One rare fungus was recorded from the quarry area, on a chestnut coppice stool. This can be transcribed to a site outside the quarry area using appropriate mitigation techniques. There will be a significant improvement for the habitats of lower plants on the restored quarry.

Terrestrial invertebrates

17.21 Terrestrial Invertebrates were surveyed by KWT between May and September 2009. The principal conclusion in the report is that the area of Oaken Wood surveyed is very poor for invertebrates, with no Red Data Book or Nationally Rare Species found. There have been noteworthy species found in other parts of Oaken Wood but none were found in the proposed quarry or surrounding area. Terrestrial Invertebrates are important AWIs. They were however not found in the survey. The report states that AWIs are 'extremely poorly represented in Oaken Wood, any classic Ancient Woodland invertebrate fauna that may once have been present appears to have been lost.'

17.22 There are no significant terrestrial invertebrates and no mitigation measures are required. The woodland management of the surrounding woodland and the habitat creation proposals will greatly increase the diversity of invertebrate species. These are the food for many mammals, birds and reptiles. The increased invertebrate diversity and population levels will ensure a significant increase in the populations of these predators. There will be a large overall enhancement of invertebrate habitats and, following this, their dependent predators.

Badgers

- 17.23** The KWT badger survey was undertaken from May to November 2009. An active badger sett was found to the north west of the proposed quarry area. There is foraging for food through much of the wood, mostly closer to the sett. The adjacent fields and meadows to the north and west are typical foraging grounds and the badgers are not dependent on the woodland. They favour recently coppiced and more open areas of woodland. Badgers are protected species and any potential disturbance must be at least 30 metres from a sett. The proposed quarry area is 60 metres from the sett at its closest point. The foraging ground for the badgers will be greatly enhanced by the proposed woodland management on drawing no 0257/10/1K. The quarry phasing ensures that only a small area of the proposed quarry will be quarried, infilled or being restored at any one time. The habitat creation of native, broadleaved woodland and rides will create permanent improved habitats for badgers for the long term.

Bats

- 17.24** Bats were surveyed by KWT between April and November 2009. At least six species were recorded in the survey area of Oaken Wood. Only the common pipistrelle was recorded as roosting, in six trees. Only one is within the proposed quarry area. Bats are protected species under National and European legislation. Disturbance to their roosts may require a licence from Natural England, depending on the details of the situation at the time for translocation. The ideal habitats for bats are areas with suitable roosting sites, such as in trees, and plentiful flying insects. In woodland these are more abundant in open areas of rides and glades. The open canopies of standard trees are good, where they are not surrounded by dense coppice.
- 17.25** Mitigation work for any roosting site will be planned well ahead by a licenced ecologist to take account of the actual situation at the time and seasonal requirements. A licence will be applied for if required. The woodland management proposals will greatly enhance the conditions for bats to forage in the network of mixed age coppice. The habitat creation proposals will provide good woodland habitats for foraging in the long term. There will be a significant enhancement of habitats for bats before quarrying in the proposed extension commences and continuing through the entire working life.

Dormice

- 17.26** The Dormouse surveys were undertaken by KWT between April and November 2009. The results of the survey show that the hazel dormouse is localised throughout the survey area with its presence found in only one nest box and three tubes. The population is as low as one to four hectares of the wood. The habitats in the survey area are not suitable for a larger population as there are not enough sprawling bushes of food bearing species and branches at different levels for their lateral movement. Only recently coppiced chestnut provides enhanced habitats. The dormice are dispersing through the survey area of the wood and do not appear to be breeding there.

17.27 Dormouse is a protected species and a licence may be required if they are disturbed. The management of the Gallagher owned area of Oaken Wood, both on the proposed quarry area and around it will provide an immediate increase in the quality of the habitat for dormouse. They will move between the more recently coppiced areas. The new woodland habitats created on the restored quarry will provide high quality habitats for dormouse with a good balance of food plants, cover and resting sites. There will be a significant enhancement of dormouse habitats in the proposals.

Breeding birds

17.28 Breeding birds were surveyed by KWT from April to June 2009 and there are results from continuing GAL surveys for tree pipit and nightjar since 1992. The results in the KWT report show that there has been a decline in the diversity of birds since previous surveys in 1992. No nightjar or tree pipit were recorded breeding. There were no European Schedule 1 species or any with restricted national distribution. Of the species recorded, turtle dove, song thrush, yellow hammer and marsh tit are in the UK red data list of birds of conservation concern. The survey area has a breeding population of birds that is small in relation to national or County populations and is well below that required for a woodland SSSI designation. Of the red data list birds, there are no turtle dove territories in the quarry area, song thrush has one within it and two on the edge, yellow hammer has one in the quarry area and marsh tit has none in the quarry area. The low diversity and populations are due to the low habitat value of chestnut coppice, especially overstood chestnut coppice, for birds.

17.29 The woodland management proposals on the area of the proposed quarry and the surrounding woodland will create an immediate improvement in the habitats for breeding birds. The habitats in the woodland on the restored quarry create a mixed species, native broadleaved woodland with wide rides. There will be a great increase in habitat values for breeding birds compare to the existing woodland.

Reptiles

17.30 Reptiles were surveyed by Kent Wildlife Trust from March to October 2009. Common lizard, slow worm and grass snake were found in medium density populations in areas of more open habitat, mainly in recently coppiced areas and ride edges with more mature coppice. The populations of all three reptiles are scattered as the habitats are generally of low quality for them. These three reptile species are protected under National legislation. A licence is not required for their translocation. The guidance from Froglife is used for this. The direct impacts on the reptiles will be limited to the areas that are being quarried and infilled at any one time. Each area is a small percentage of the area of Oaken Wood in Gallagher ownership. The reptiles are moved from each area to new habitats and their return is prevented by the erection of specialist fencing around it. The principal receptor area will be the Habitat Creation Field. These new habitats will not have a reptile population before translocation, as advised by the guidance. The management of the woodland before quarrying on each area and in the surrounding woodland will enhance the reptile habitats. The woodland and rides on the restored quarry will create many habitats for reptiles. There will be a large increase in reptile populations before quarrying commences, throughout the period of quarrying and in the long term in the managed woodland and restored woodland on the quarry area.

Amphibians

- 17.31** The amphibian survey was undertaken by KWT between March and June 2009. Amphibians require ponds, at least for breeding. There are no ponds within the survey area but there are six within 500 metres of the boundaries. Great newts forage on dry land over these kinds of distances when not breeding. No great crested newts were found in the survey. Smooth newt, small brown newt and frogs were found in one of the ponds. Common toad was found in three ponds and one was found under a reptile surveyor's mat in the centre of the survey area. No mitigation measures are required for amphibians. However it is intended to provide habitats for amphibians in the Habitat Creation Field to increase the biodiversity and species populations in the overall quarry proposals. A pond will be provided and the meadow areas for reptiles and the scrub will be excellent habitat for amphibians. The increase in habitats for amphibians will be very large.

Habitat creation

- 17.32** The habitat creation proposals (0257/10/4D) take account of the impact of the proposed quarry on the existing habitats and species recorded in the KWT surveys. The existing woodland will have to be removed from the area of the proposed quarry extension in Oaken Wood. The quarry phasing is planned so that the minimum area possible is open at any time before it is infilled and restored. Sweet chestnut is not a native tree and dense chestnut coppice is shown to have a low wildlife value compared to mixed, native broadleaved woodland. The proposed habitat creation on the restored quarry is to this type of woodland and with wide rides and scrub margins in selected areas.
- 17.33** The objective is to increase the habitat and wildlife value of the woodland within a year of the grant of planning permission by management of the woodland on the site of the existing quarry and the surrounding woodland in Gallagher ownership. This is shown on drawing no 0257/10/1K. The programme will ensure that the habitats are enhanced year on year before the first restored area of the quarry is planted. The restored areas are designed to be good for biodiversity and wildlife at all stages of their development. The objective is to develop 'high forest' with standard trees and a shrub layer. The wide rides in the woodland are excellent for wildlife and there will be further habitat diversification with areas of scrub and a wildlife corridor of scrub with standards.

Impacts on wildlife

- 17.34** There will be insignificant impacts on the wildlife of the area. Direct impacts on protected species will be mitigated so that they will not be significant. The woodland management and habitat creation proposals will provide a very significant overall increase in biodiversity in the woodland area in Gallagher ownership and great increases in their populations. There will be great clear benefits to the ecology of the area in the short medium and long term. These will be continued after the life of the quarry through monitoring and long term management proposals.

ANCIENT WOODLAND

- 17.35** The definition of Ancient Woodland by Natural England is: An area that has been wooded continuously since at least 1600. It can be cleared in that time only for underwood or timber production. If it has been in any other land use before replanting it is no longer Ancient Woodland. Oaken Wood is shown as Ancient Woodland in the Provisional Inventory of Kent's Ancient Woodlands, Revised 1994. There are two categories, Ancient Semi-natural Woodland and Ancient Replanted Woodland. It is considered that ARW maintains mainly AW species provided that the replanting runs in parallel with or immediately follows the removal of the original woodland. On the Inventory Oaken Wood is identified as Ancient Semi-natural Woodland. The definitions used by Natural England and the results of the surveys by Kent Wildlife Trust (Appendices 3 to 13) show that all the proposed quarry area is Ancient Replanted Woodland. This is shown to have a significantly lower wildlife value than A S-n W in this part of Oaken Wood due to the predominantly dense chestnut coppice.
- 17.36** The appearance and character of the woodland on the proposed quarry area indicates that the original wood could have been cleared and there was an agricultural use before the chestnut was planted. The Archaeology report has a Historic Landscape Assessment that addresses the direct evidence. This shows that much of the northern area was cleared for a number of years and is secondary woodland.
- 17.37** A LiDAR survey is included in the Archaeology report as Figure 4. This imaging technique shows landforms accurately and has been analysed in the report. This, together with the walkover survey show an absence of Ancient Woodland features. This is confirmed by the Kent Wildlife Trust surveyors.
- 17.38** Certain vascular plants are recognised as Ancient Woodland Indicator plants because of their association with these woodlands. It is recognised by KWT that ten AWIs are required before they indicate AW. The vascular plants survey shows that the woodland compartments on the proposed quarry area have between 1 and 7 AWIs. The terrestrial invertebrates survey shows that the entire survey area has an invertebrate fauna of 'negligible ecological interest' and that 'any classic Ancient Woodland fauna that may once have been present appears to have been lost.' Historic map evidence does not show that areas of woodland were present between the map surveys. This is demonstrated in the adjacent Fullingpit Wood. The archaeological evidence and the wildlife evidence from higher plants and terrestrial invertebrates indicate that there can not have been continuous woodland cover and that the area was cultivated between the original native woodland and the planting of chestnut coppice. There is no evidence to support the Ancient Woodland classification.

NOISE AND VIBRATION

Noise

- 17.39** The noise levels of minerals operations are potentially a significant impact on residential and employment properties and on the amenities of users of adjoining land. A predictive noise report is included in Appendix 14 of the Environmental Statement. The noise levels for the quarry are generally kept low as the working areas are small and the processing of the materials will be carried out in the existing quarry in their current location. There is a single location on the diverted bridleway where the noise levels recommended in MPS2 will be exceeded during excavation at existing ground level. This will be less than a week of machine work. There will be no significant noise impacts on the surrounding properties or public rights of way. At a public meeting with residents of Barming Parish bunding was requested south of the existing processing area and this is shown on drawing no/ 0257/10/21 in the Environmental Statement. Bunding will be provided in the south east corner of the proposed quarry, if this is requested by local residents when the previous quarry phase is being worked.

Vibration

- 17.40** Vibration is caused by the blasting that is carried out to loosen the Ragstone at the working face before it is taken to the processing plant. It has been used in the existing quarry for fifteen years and is carried out to a strict regime of monitoring and control. It is proposed that this is continued in the proposed quarry extension. There are two types of vibration, in the ground and in the atmosphere. The latter is called air overpressure and is caused by the energy released in the blasting. It may be audible or inaudible and the latter can still cause objects to shake. The blasting is controlled by standards set by Kent County Council. Every blast is recorded and the results are sent to KCC within a day or two of each blast. All the results show that the impacts are below the maxima defined by KCC.
- 17.41** The blasting and vibration have been predicted for the quarry extension and are in Appendix 15 of the Environmental Statement. Trial blasts have been monitored for the report and have been fully assessed using the accepted standards. All the results and predictions come well within the criteria for the site of quarry extension and the surrounding area. For most properties it is noted that the levels of vibration will be imperceptible. For the closest properties on North Pole Road there will be some perceptible impact but it will be well below the levels set for the existing quarry. There will thus be no significant environmental impact resulting from the proposed blasting.

AIR QUALITY

- 17.42** Dust is the major factor that can affect air quality. Dust is caused by the dispersal of fine particles in air by the wind, vehicles on dusty roads or handling dry materials when the smaller particle sizes can be blown in the wind. The air quality report is in Appendix 16 in the Environmental Statement. The assessment concluded that the environmental conditions ensure that dust will not be a problem during the operation of the quarry. The predominantly south westerly winds will carry any dust away from built up areas to the south and south east. The properties on North Pole Road could experience some nine days a year when dry conditions will coincide with winds from the north west if precautionary measures are not undertaken.
- 17.43** Hermitage Quarry has had an active policy of dust suppression at source from its start twenty years ago. Roads and access routes are damped down in dry weather, processing plant is fitted with dust suppression and vehicle washing facilities are to a very high standard. This reduces at source the possibility of dust becoming airborne. In Oaken Wood the quarry extension will be surrounded by a dense belt of trees. When dust settles on the leaves it is washed off later by rain. The large leaves of sweet chestnut are effective in trapping dust. The processing of materials from the Oaken Wood quarry extension will all take place in the existing quarry, using the existing plant. The existing quarry has complied with statutory and planning requirements and no incidents of breaches of air quality have been reported to Tonbridge and Malling Environmental Health department. The proposed quarry extension in Oaken Wood requires no other air quality protection measures than a continuation of those operating in the existing quarry. There will be no significant impact on air quality from the proposed quarry.

HIGHWAYS

- 17.44** The proposed quarry extension in Oaken Wood will continue to use the existing access in Hermitage Lane. This was formed for the existing quarry in 1990 and has been used since then. With the proposed quarry there will be an extension of the time period that this access will be used but traffic levels will not be affected.

GEOLOGY

- 17.45** Ragstone is produced from the Hythe Beds and this is the geology that underlies the area. Dr Barrett has provided the geological assessments for all stages of Hermitage Quarry. The results of this modelling have been shown to be very accurate when each stage of the quarry has been worked. The phasing and working plans for the quarry extension in Oaken Wood in drawings no 0257/10/101 to 0257/10/130 have been undertaken based on the geology of the area. This provides the depth of the ragstone deposit and the yield from each phase.
- 17.46** The overburden is the deposit overlying the Hythe Beds that have to be removed before quarrying can commence in that area. The overburden report in Appendix 19 of the Environmental Statement assesses the volumes in each phase and is the basis for the overburden management plan. The phasing of the quarry is fully detailed to ensure that a minimum area of quarrying and infilling is open at any one time. This is for the protection of the environment and nature conservation in the areas from impacts of the working of the quarry extension in Oaken Wood.

HYDROGEOLOGY AND HYDROLOGY

- 17.47** The hydrogeological risk assessment is in Appendix 20 of the Environmental Statement. The report assesses the hydrogeology and ground water in relation to the proposals for the proposed quarry extension and the infilling and restoration to original ground levels with imported inert materials. A full assessment is provided in accordance with Environment Agency requirements. There will be no significant impacts of the proposed quarrying and infilling in the quarry extension on the groundwater or change in the relationship between the existing quarry and the groundwater.

CULTURAL HERITAGE

- 17.48** This includes Archaeology and Historic Landscape Assessments and has been prepared by Oxford Archaeology and is included in Appendix 21 of the Environmental Statement. This is a desk based assessment but includes a walkover survey. It is supported by LiDAR (Light Detecting and Ranging) survey data from the Environment Agency. The full range of archaeological periods is covered with reference to published data. The archaeology of the site is considered to have a low to moderate potential to provide evidence of activity up to the post-Medieval period. It is not considered to have resulted in significant archaeological deposits. There is a high potential to contain evidence of post-Medieval quarrying, cultivation and recent woodland management. The Historic Landscape Assessment is significant in relation to the Ancient Woodland designation for which there has to have been continuous woodland cover since 1600. This is assessed in detail in relation to this in Section 9 of this report. There will be no significant impacts on archaeology or cultural heritage.

CONCLUSIONS

- 17.49** This Environmental Statement assesses the environmental impacts of the proposed extension of Hermitage Quarry into an adjacent area of Oaken Wood. It has been demonstrated in the Planning Statement that there is a need for the quarry and that there are no better alternative sites. The formal scoping advice of KCC has been followed. All direct and indirect impacts have been assessed and evidence based mitigation is proposed where this is required. The quarrying and infilling will be phased to minimise the environmental impacts at each stage of its operation and this is shown in drawings no. 01257/10/101 to 0257/10/130. The phased restoration and habitat creation after infilling is shown on drawings no. 0257/20/202 to 0257/20/230. The conclusion is that all the likely impacts will be within recognised standards and are therefore acceptable.
- 17.50** Mitigation is proposed where required. The proposals for the ecology of the application area provide immediate and lasting improvements for wildlife. All other impacts are well within statutory requirements. The impacts on the ecology of the area have been assessed following the extensive base provided in the wildlife surveys by Kent Wildlife Trust (Appendices 3 to 13). The ecological issues are integrated into the proposals and have been evaluated objectively at each stage of the quarrying, infilling and restoration. There will be an overall improvement in the habitats and wildlife in the Gallagher Discretionary Trust owned part of Oaken Wood before the start of quarrying. This will continue throughout the quarrying and infilling and there will be a substantial enhancement of habitats and wildlife in the medium and long term. The increase in the habitats and wildlife value in the proposals will greatly exceed the statutory requirements for mitigation.
- 17.51** A summary of the Environmental Impact Assessment is given in Table 11 below. With mitigation there will be no significant environmental impacts resulting from the proposals for the extension of Hermitage Quarry.

Table 11 Summary of Environmental Impact Assessment

Environmental Issue	Existing Baseline	Assessment Methodology	Predicted Environmental Impact	Mitigation and Management
Landscape and Visual Impact Assessment	The proposed quarry lies within Oaken Wood. It is close to the existing quarry which is in open land. It is on the dip slope of the Greensand Ridge. The chalk Downs are on rising ground several kilometres to the north.	The Landscape and Visual Impact Assessment has been undertaken in accordance with the standards in Guidelines for Landscape and Visual Impact Assessment and the Landscape Institute (Appendix 2).	The proposed quarry is screened from short and medium views by the topography and woodland. The impact in views from the North Downs will be too distant to be significant.	The woodland around the quarry will be managed to ensure that it is not visible in short and medium views.
Ecology	<u>Chestnut coppice woodland with standards</u>	Ecology and wildlife desk study and surveys by Kent Wildlife Trust (Appendices 3 to 13).	Short term and phased loss of woodland	Preparatory work to commence coppicing before quarrying starts. Phasing of quarrying to reduce to a minimum the area open at any one time. Infilling and restoration to original levels following completion of quarrying in each phase. Replanting with native trees and shrubs following restoration of each phase, with woodland rides. Habitat creation in nearby field to ensure enhanced wildlife habitats, diversity and populations at all stages of the quarrying and restoration. Mitigation strategy for each species or wildlife group based on surveys and assessment of impacts at each stage of the proposals. Long term management of the woodland and other habitats to ensure continuing enhancement for wildlife.
<u>Vascular Plants</u>		Desk study and surveys (Appendices 3 and 4) by Kent Wildlife Trust	Phased loss of existing habitat	Surrounding woodland managed to increase diversity and population levels. Restoration of quarried and infilled phases will favour vascular plant diversity. New woodland will be only native species. Wide rides will increase diversity and populations of native herbaceous plants. Long term management will ensure continuing increase in diversity and populations of vascular plants.

Environmental Issue	Existing Baseline	Assessment Methodology	Predicted Environmental Impact	Mitigation and Management
	<u>Lower Plants</u>	Desk study and surveys (Appendices 3 and 5) by Kent Wildlife Trust	Phased loss of existing habitat	Surrounding woodland managed to increase diversity and population levels. Restoration of quarried and infilled phases will favour lower plant diversity. Habitats in new woodland, on woodland edges and in rides will favour lower plants. Long term management will increase habitats for lower plants.
	<u>Terrestrial Invertebrates</u>	Desk study and surveys (Appendices 3 and 6) by Kent Wildlife Trust	Phased loss of existing habitat	Surrounding woodland managed to increase diversity and population levels. Restoration of quarried and infilled phases will favour terrestrial invertebrates. Habitats in new woodland, on woodland edges and in rides will favour terrestrial invertebrates. Long term management will increase habitats for terrestrial invertebrates.
	<u>Badgers</u>	Desk study and surveys (Appendices 3 and 7) by Kent Wildlife Trust	Phased loss of foraging habitat	Woodland managed to increase quality of foraging habitats. Restored woodland and ride habitats will provide enhanced foraging areas. Long term management will ensure continued habitat quality.
	<u>Bats</u>	Desk study and survey (Appendices 3 and 8) by Kent Wildlife Trust	Loss of roosting sites	New roosting sites provided as mitigation. Woodland management and creation of rides in woodland on restored areas will provide improved foraging areas. Long term management will ensure continued enhanced habitats for bats.
	<u>Hazel Dormouse</u>	Desk study and survey (Appendices 3 and 9) by Kent Wildlife Trust	Phased loss of existing habitat	Surrounding woodland managed to enhance habitat for hazel dormouse. Restored woodland will provide habitat in which dormice will thrive, leading to significant population increase. Long term management will control the development of the woodland to favour dormice.
	<u>Breeding Birds</u>	Desk study and survey (Appendices 3, 10 and 11) by Kent Wildlife Trust and Tim Hodge	Phased loss of existing habitat	Surrounding woodland managed to enhance habitats for breeding birds. Food supply will also be increased in enhanced habitats for vascular plants and terrestrial invertebrates. Native woodland on restored areas will enhance species diversity and populations. Long term management will ensure continued and improving habitats for breeding birds.

Environmental Issue	Existing Baseline	Assessment Methodology	Predicted Environmental Impact	Mitigation and Management
	Reptiles	Desk study and survey (Appendices 3 and 12) by Kent Wildlife Trust	Phased loss of existing habitat	Translocation of affected individuals to be to highest standards. Habitats to receive these to be prepared in advance on nearby arable field. Woodland management and woodland on restored areas will favour increase in populations. Long term management will ensure increasing quality of habitats for reptiles.
	Amphibians	Desk study and survey (Appendices 3 and 13) by Kent Wildlife Trust	Loss of small area of habitat	Habitat creation in nearby arable field will create new habitats for amphibians. Translocation will occur if required in identified area. Long term management will ensure continued enhancement of new habitats
Noise	Existing receptors of housing and employment area measured for background noise levels. Noise levels if existing quarry assessed.	Report undertaken by specialist company (Appendix 14) to all current standards and recommendations.	Potential for a single phase of topsoil and overburden strip to just exceed recommended levels for a short period. All other predictions well within recommended maximum noise levels.	Processing plant to remain in existing quarry and with enhanced noise screen bunding on side closest to housing. Vehicles to be maintained to highest recommended standards to control noise outputs. Noise levels to be monitored in advance of single, short phase of noise levels just exceeding recommended levels and noise screen bund provided in advance of these works.
Vibration	Closest properties assessed for impacts of vibration. Predictions and actual vibration levels for existing quarry assessed.	Report undertaken by specialist company (Appendix 15) to all current standards and recommendations.	Vibration will be well below permitted levels. Blasting will follow established procedures in existing quarry with reporting every blast to Mineral Planning Authority.	No mitigation required. Continuation of existing management of blasting will ensure no significant impacts.
Air Quality	There is potential for windborne dust from vehicles and the processing plant reaching dwellings and an employment area. The existing quarry has operated for many years in a similar relationship to these receptors.	The existing, background dust levels and potential from the proposed quarry have been assessed in the report proposed to current standards. (Appendix 16).	The potential for windborne dust production has been assessed and there are potential impacts.	Control of windborne dust production will follow the established procedures in the existing quarry. It will be controlled at source by damping down roads and water applied in the crushing process.

Environmental Issue	Existing Baseline	Assessment Methodology	Predicted Environmental Impact	Mitigation and Management
Highways	The vehicular traffic impact will be a continuation of the existing levels for the life of the proposed quarry. There is a bridleway across the proposed quarry.	The traffic is assessed in Appendix 17.	Traffic impact could increase if there are greater traffic flows. The bridleway will require diversion before the relevant phases are worked.	Traffic levels will be within those permitted for the existing quarry. A suitable route for the diverted bridleway exists just to the south.
Geology	The proposed quarry is on the Hythe Beds that yield Kentish Ragstone. The existing quarry has been in operation for over 20 years on the same geology.	A full geological assessment is in Appendix 18.	The geology has to provide the predicted yields. The geology report details the yield for each phase of the quarry phasing plan.	No mitigation is required. The quarry will operate in accordance with the management plan.
Overburden	The overburden is on top of the strata that yield Kentish Ragstone.	A full overburden assessment is in Appendix 19.	The overburden is shown to be of reasonable depth for each phase ensuring economic quarrying of the ragstone.	An overburden management plan shows how it will be managed during the life of the quarry and that all infilled areas will be capped with an appropriate depth of overburden, before topsoiling.
Hydrogeology	The proposed quarry is on the Greensand aquifer.	A full report and assessment is provided in Appendix 20. The operation and infilling of the existing quarry is re-evaluated and extended to the proposed quarry.	Possible contamination of the aquifer.	Further monitoring boreholes will be provided. The quarrying and infilling will continue existing practices to protect the aquifer.
Archaeology and Cultural Heritage	The area of the proposed quarry may have archaeological interest or features of woodland archaeology.	The report in Appendix 21 covers all aspects of archaeology and woodland archaeology.	Loss of archaeological remains. Loss of woodland archaeology.	No recommendations are made for archaeological rescue. No significant woodland archaeology features are recorded on the quarry area and there will be no significant loss.
Economy	Existing quarry employs 50 local people with 60 indirectly related to the quarry.	Employment records.	Loss of employment if quarry is not extended.	Local employment in skilled jobs will continue for the life of the proposed quarry.

<p>Environmental Issue Alternative Sites</p>	<p>Existing Baseline The Hythe Beds that yield Kentish Ragstone occur east to west in a belt through Mid-Kent. It is a very variable resource both in its stone quality and the depth of the reserve (yield per hectare).</p>	<p>Assessment Methodology A full assessment has been undertaken of all significant sites for potential ragstone quarrying (Appendix 24). The resource in the only other ragstone quarry in Kent is assessed in Appendix 23.</p>	<p>Predicted Environmental Impact Minerals can only be quarried where they occur. There need to be economic reserves and access to transport links from the quarry to user sites. It is assessed that the proposed quarry site is the best available for future working.</p>	<p>Mitigation and Management The experience of the existing quarry and quality of the management will ensure that the impacts are kept to a minimum.</p>
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DRAWINGS & PLANS