



Heidelberg Materials

TYTHERINGTON QUARRY: 6 MILLION TONNES ADDITIONAL RESERVES

Environmental Statement: Chapter 10 Biodiversity





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10 BIODIVERSITY

10.1 INTRODUCTION

- 10.1.1 This chapter of the Environmental Statement (ES) assesses the likely significant effects of the Proposed Scheme, as set out in **Chapter 3: Description of Proposed Scheme**, upon biodiversity. This chapter (and its associated figures and appendices) is intended to be read as part of the wider ES.
- 10.1.2 This chapter describes:
- the legislation, policy and technical guidance that has informed the assessment (**Section 10.2**);
 - the methods used for baseline data gathering (**Section 10.3**);
 - overall baseline (**Section 10.4**);
 - consultation and engagement that has been undertaken and how comments from consultees relating to biodiversity have been addressed (**Section 10.5**);
 - embedded measures relevant to biodiversity (**Section 10.6**);
 - the scope of the assessment for biodiversity (**Section 10.7**);
 - the methods used for the assessment (**Section 10.8**);
 - the assessment of the effects on biodiversity (**Section 10.9**);
 - assessment of cumulative (inter-project) effects (**Section 10.10**);
 - an assessment of in-combination climate impacts (**Section 10.11**);
 - a summary of mitigation and enhancement measures (**Section 10.12**);
 - a summary of the significance conclusions (**Section 10.13**); and
 - a summary of the implementation of environmental measures (**Section 10.14**).
- 10.1.3 This chapter is supported by the following appendices:
- **Appendix 10A:** Tytherington Quarry: 6MTE Extension - Preliminary Ecological Appraisal (PEA)¹;
 - **Appendix 10B:** Landscape and Biodiversity Enhancement Plan; and
 - **Appendix 10C:** Tytherington Quarry: 6 Million Tonnes Additional Reserve. Arboricultural Impact Assessment.

LIMITATIONS AND ASSUMPTIONS

- 10.1.4 The following limitation on the biodiversity assessment has been identified:
- A decaying ash *Fraxinus excelsior* has been precautionarily assumed as being suitable to support roosting bats. The advanced decay of the tree has resulted in multiple potential roosting features on the primary limbs. It is therefore precautionarily assumed to be a bat roost of high conservation value (e.g. a maternity roost) for tree roosting bat species. The Proposed Scheme however includes retention of the ash tree during construction/operation and restoration, and protection of its roots during construction/operation using trackway. The assumption that the ash

¹ The PEA included a survey area which was larger in extent than the areas covered by this ES biodiversity assessment. This reflected the PEA being completed at a time when options were still being explored for the relocation the soil and overburden within the soil store area.

tree could support a maternity roost for bats is therefore not deemed to be a significant limitation to the biodiversity assessment as the tree is being retained.

In addition, it is assumed that the ecological value of the ash tree for roosting bats could change in as little as 6 months² given that ground level tree assessment was completed in June and that the winter often brings damaging storms. It is therefore advised that should the tree need to be removed, due to health and safety requirement, an appropriate level of survey would be needed within the bat active season proceeding any felling.

10.2 POLICY AND LEGISLATIVE CONTEXT

10.2.1 This section details the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to biodiversity. Further information on policies relevant to the Proposed Scheme is provided in **Chapter 5: Planning policy overview** as well as the accompanying Planning Statement.

LEGISLATIVE FRAMEWORK

10.2.2 A summary of the relevant legislation is given in **Table 10-1**.

Table 10-1 – Legislation relevant to the biodiversity assessment

Legislation	Legislative context
The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 ³	The Habitat Regulations transpose the Habitats Directive into English law. The regulations provide for the designation and protection of European sites, the protection of certain species (referred to as European Protected Species or EPS) and the adaptation of planning and other controls for the protection of European Sites.
The Wildlife and Countryside Act 1981 (as amended) ⁴ (WACA)	Consolidates and amends existing national legislation to implement the Bern Convention. This piece of legislation remains the primary UK mechanism for statutory site designations (e.g. Sites of Special Scientific Interest (SSSI)) and the protection of individual species listed under Schedules 5 and 8 of the Act, each subject to varying levels of protection.
The Environment Act ⁵	The Environment Act 2021 introduces significant provisions for enhancing and protecting biodiversity within the UK, including a mandate for biodiversity net gain, which requires new developments to deliver a 10% improvement in biodiversity. It also establishes Local Nature Recovery Strategies to drive efforts in nature recovery and improve ecological networks, and creates the Office for Environmental

² CIEEM (2019). Advice note on the Lifespan of Ecological Reports and Surveys. Chartered Institute of Ecology and Environmental Management, Winchester, Hampshire.

³ UK Government (2019) The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 [Online] Available at: <https://www.legislation.gov.uk/uksi/2019/579/contents/made> Last accessed 22/08/2023.

⁴ UK Government (1981) The Wildlife and Countryside Act (as amended) [Online] Available at: <https://www.legislation.gov.uk/ukpga/1981/69> Last accessed 22/08/2023.

⁵ UK Government (2021) The Environment Act 2021 [Online] Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted> Last accessed 7 March 2024.

Legislation	Legislative context
	Protection to enforce environmental laws. Furthermore, the Act requires the setting of long-term environmental targets through Environmental Improvement Plans, focusing on biodiversity, air, water, and waste, to ensure a strategic approach to achieving substantial environmental enhancement and protection across the country.
The Natural Environment and Rural Communities (NERC) Act (2006) ⁶	Section 40(1) imposes a duty to conserve biodiversity. The duty applies to all local authorities and extends beyond just conserving what is already there, to carrying out supporting, and requiring actions that may also restore or enhance biodiversity. Section 41 requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England. The list (including 56 habitats and 943 species) has been drawn up in consultation with Natural England. These habitats and species are often referred to as S.41 or Priority habitats and species.
Countryside & Rights of Way Act 2000 (CRoW) ⁷	Details further measures for the management and protection of SSSIs and strengthens wildlife enforcement legislation.
The Hedgerows Regulations 1997 ⁸	Protects important countryside hedges from damage or destruction.
Protection of Badgers Act 1992 ⁹	Provides protection to badgers <i>Meles meles</i> and their places of shelter (setts).

PLANNING POLICY

- 10.2.3 A summary of the relevant national and local planning policy is given in **Table 10-2**. The Planning Statement will cover the detail of actual policies.

Table 10-2 - Planning policy relevant to the biodiversity assessment

Policy Reference	Implications
National Planning Policy:	
NPPF Section 15. Conserving and enhancing the natural	NPPF Paragraph 186 sets out the principles that local authorities should apply when determining applications. It states that applications should be refused if significant harm to biodiversity cannot be avoided, adequately

⁶ UK Government (2006) The Natural Environment and Rural Communities (NERC) Act 2006 [Online] Available at: <https://www.legislation.gov.uk/ukpga/2006/16/contents> Last accessed 7 March 2024.

⁷ UK Government (2000) Countryside and Rights of Way Act 2000 [Online] Available at: <https://www.legislation.gov.uk/ukpga/2000/37/contents> Last accessed 7 March 2024.

⁸ UK Government (1997) The Hedgerows Regulations [Online] Available at: <https://www.legislation.gov.uk/uksi/1997/1160/contents/made> Last accessed 22/08/2023.

⁹ UK Government (1992) The Protection of Badgers Act. [Online] Available at: <https://www.legislation.gov.uk/ukpga/1992/51/contents> Last accessed 22/08/2023.

Policy Reference	Implications
environment NPPF Paragraph 186	mitigated or compensated for (as a last resort); land within or outside SSSIs should not normally be permitted.
NPPF Section 17. Facilitating the sustainable use of minerals NPPF Paragraph 216(f)	NPPF Paragraph 216(f) states that planning policies should (inter alia) set out criteria to “ <i>ensure that permitted and proposed operations do not have unacceptable adverse impacts on the natural ... environment ... taking into account the cumulative effects of multiple impacts from individual sites and/or a number of sites in a locality</i> ”.
NPPF Section 17. Facilitating the sustainable use of minerals NPPF Paragraph 217(b)	NPPF Paragraph 217(b) states that mineral planning authorities should (inter alia) “ <i>ensure that there are no unacceptable adverse impacts on the natural ... environment... and take into account the cumulative effect of multiple impacts from individual sites and/or from a number of sites in a locality</i> ”.
Local Planning Policy:	
South Gloucestershire Council Local Plan: Core Strategy (2013) Policy CS1 - High Quality Design	As part of Policy CS1, development proposals should ensure soft landscape proposals form an integral part of the design for the site and seek to make a net contribution to tree cover in the locality (particularly in urban areas) and prioritise biodiversity objectives and local food cultivation where possible.
South Gloucestershire Council Local Plan: Core Strategy (2013) Policy CS9 - Managing the Environment and Heritage	As part of Policy CS9, development proposals should conserve and enhance natural environment, avoiding and minimising impacts on biodiversity and geodiversity.
South Gloucestershire Council Local Plan: Core Strategy (2013) Policy CS34 - Rural Areas	As part of Policy CS34 development proposals should protect, conserve and enhance rural areas’ distinctive character, beauty, wildlife, landscape biodiversity and heritage.
South Gloucestershire Local Plan: Policies, Sites and Places Plan (2017) Policy PSP18 - Statutory Wildlife Sites: European Sites and Sites of Specific Scientific Interest (SSSIs)	Policy PSP18 seeks the protection of European Sites including the Severn Estuary Special Protection Area (SPA), Special Area of Conservation (SAC), and SSSIs from significant and or adverse effect. Development will not be acceptable where any adverse effects on the European features of interest arise, unless the effects: 1. are avoided; 2. where an adverse impact cannot be avoided, the impact will be adequately mitigated; or 3. have imperative reasons of overriding public interest
South Gloucestershire Local Plan: Policies, Sites and Places Plan (2017) Policy PSP19 - Wider Biodiversity	Development Proposals resulting in the loss or deterioration of irreplaceable habitats, including unimproved grassland (lowland hay meadows), ancient woodland, and ancient trees will be refused unless the need for, and benefits of, the development in that location clearly outweigh the loss. Where appropriate, biodiversity gain will be sought from development proposals. The gain will be proportionate to the size of the scheme and be secured through an appropriate planning condition or legal undertaking.

TECHNICAL GUIDANCE

10.2.4 A summary of the technical guidance for biodiversity is given in **Table 10-3**.

Table 10-3 — Technical guidance relevant to the biodiversity assessment

Technical guidance document	Context
Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine ¹⁰	Sets out the industry standard approach to Ecological Impact Assessment (EclA) for assessing the potential effects of a project on ecological receptors.
Advice note on the lifespan of ecological reports & surveys ¹¹	Provides advice on the lifespan of ecological data relative to the perceived changeability of an ecological feature, site or process. According to CIEEM advice, survey data are typically valid for a period of 12 to 18 months from the date of the survey. The guidance highlights any circumstances where data may be valid for less than this typical period. Furthermore, it defines that between 18 months and 3 years a professional ecologist will need to undertake a site visit and may also need to update desk study information to review the validity of any previous findings and recommendations.
Bat Surveys for Professional Ecologists: Good Practice Guidelines ¹²	Provide good practice guidelines in relation to designing and undertaking bat surveys in UK. The guidelines relate to professional bat surveys carried out to assess how proposed activities may impact bats.
Guidelines for Preliminary Ecological Appraisal ¹³	Sets out the industry standard approach to Preliminary Ecological Appraisal for assessing the suitability of a development site for features of ecological importance.
BS 42020:2013 - Biodiversity: Code of practice for planning and development ¹⁴	Gives recommendations and provides guidance primarily for ensuring that actions and decisions taken at each stage of the planning process are informed by sufficient and appropriate ecological information.

¹⁰ CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, Version 1.1. [online]. Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1Update.pdf> [Accessed 16 February 2024].

¹¹ CIEEM (2019). Advice note on the Lifespan of Ecological Reports and Surveys. Chartered Institute of Ecology and Environmental Management, Winchester, Hampshire.

¹² Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

¹³ CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester, Hampshire.

¹⁴ BSI (2013) Biodiversity: Code of practice for planning and development. Chiswick, London ISBN 978 0 580 69917 7

Technical guidance document	Context
Joint Nature Conservation Committee (JNCC) Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit ¹⁵	A standardised methodology for collecting data on the type and distribution of habitats present within a survey area. This method has been used to collect habitat data for the Site.

10.3 DATA GATHERING METHODOLOGY

STUDY AREA

- 10.3.1 The study area for ecological surveys has been defined as the habitats present within the P93/2645 planning consent (**Figure 10.2**) (hereafter referred to as ‘the Site’) and desk study search areas around the Site based on best practice guidance¹³. The Site has been defined as this area because this is the location in which impacts to biodiversity associated with this planning application will occur. The works associated with locations within the extant NA/IDO/002/A planning consent will either have impacts on areas with no biodiversity value as they are an active quarry, or they form part of the extant planning consents restoration strategy.

DESK STUDY

- 10.3.2 The desk study search areas were defined on a precautionary basis to ensure that the Zone of Influence (Zoi) relevant to each potential ecological feature within the study area was covered during baseline collection activities. The desk study search areas are based on best practice guidance⁸ and are listed below alongside the data which they are relevant to:
- Statutory designated biodiversity sites of international importance (Ramsar, Special Protection Areas (SPA) and Special Areas of Conservation (SAC)) within 10km of the Site;
 - Statutory designated biodiversity sites of national or local importance within 5km of the Site;
 - Non-statutory designated biodiversity sites within 2km of the Site;
 - Section 41 habitats and ancient woodland within 2km of the Site;
 - Records of legally protected/ important species within 2km of the Site; and
 - European Protected Species Mitigation Licences (EPSMLs) within 2km of the Site.

SURVEY WORK

- 10.3.3 A field survey of the Site was completed, comprising an Extended Phase 1 habitat survey, undertaken on 28th June 2023. During the survey, distinct habitats were identified, and any features of interest subjected to a more detailed description were target noted (TN). As the standard Phase 1 habitat survey methodology is mainly concerned with vegetation communities, the survey was extended to allow for the provision of information on other ecological features, including identification of the presence or potential presence of legally protected and otherwise notable species.

¹⁵ JNCC, (2010), Handbook for Phase 1 habitat survey – a technique for environmental audit, JNCC, Peterborough, ISBN 0 86139 636 7

10.4 OVERALL BASELINE

CURRENT BASELINE

- 10.4.1 The following sections detail the biodiversity baseline for the Site based on the PEA (WSP, 2023) and the ES Scoping Report (WSP, 2023) produced for the Proposed Scheme.

Statutory and non-statutory designated sites

- 10.4.2 The Severn Estuary Special Protection Area / Special Area of Conservation / Ramsar is located within 10km of the Site boundary (6.9km), and two Sites of Nature Conservation Interest are located within 2 km of the Site boundary. The distance between these and the Site, the nature of the habitats on Site, and the lack of hydrological connectivity, means that there is a lack of a clear pathways for effect with regard to the habitats and / or species for which these sites have been designated. Due to a lack of pathways for effect, it is not considered there will be any effects on the features of ecological interest at these designated sites (alone or cumulatively) as a result of the Proposed Scheme.
- 10.4.3 There are also three statutory designated sites of national importance within 5km of the Site, however these are all designated for geological, not ecological, reasons and hence are not relevant to this biodiversity assessment.
- 10.4.4 As such, statutory and non-statutory designated sites will not be mentioned further in this assessment.

Habitats

- 10.4.5 Habitats recorded on Site comprised plantation broadleaved deciduous woodland, hedgerow with trees, and semi-improved grassland with scattered scrub and a dry pond (see PEA Figure 3.5 in **Appendix 10A**).
- 10.4.6 The plantation woodland has ash, wild cherry *Prunus avium* and pedunculate oak *Quercus robur* which are of a similar age and height without a complex canopy, and with evidence of planting lines and tree guards.
- 10.4.7 The northeast and northwest boundaries of the soil store area had hedgerows with hawthorn *Crataegus monogyna*, hazel *Corylus avellana* and blackthorn *Prunus spinosa* with mature pedunculate oak and ash trees. The trees within the hedgerow were predominantly one age class and they were in a healthy condition. The exception to this was one decaying ash tree in the northeast of the soil store area which has the potential to be used by roosting bats and/or common nesting birds. This ash tree is considered under the roosting bats receptor rather than within an assessment for hedgerows with trees.
- 10.4.8 The soil store area is dominated by a 5m high overburden and topsoil mound surrounded on three sides by a 3m agricultural topsoil mound. This soil store area was constructed between 2006-2008 and the overburden mound was seeded with a commercial wildflower mix, whilst the agricultural topsoil mound was allowed to revegetate from the seedbank. The overburden grassland is short in sward height and included common centaury *Centaureum erythraea*, annual meadow grass *Poa annua*, perennial rye grass *Lolium perenne* and birds foot trefoil *Lotus corniculatus*, pyramidal orchid *Anacamptis pyramidalis*, lady's bedstraw *Galium verum* and oxeye daisy *Leucanthemum vulgare*. The agricultural topsoil sward type was formed from taller grass such as false oat-grass *Arrhenatherum elatius*, Yorkshire fog *Holcus lanatus*, oxeye daisy, meadow buttercup *Ranunculus*

acris and self heal *Prunella vulgaris* with some ruderal species such as common nettle *Urtica dioica*, rosebay willowherb *Chamaenerion angustifolium* and field bindweed *Convolvulus arvensis* being present. For both sward types, the grassland has naturally developed into semi-improved grassland on raised topography which requires minimal management.

Protected and Notable Species

- 10.4.9 The suitability of the Site to support other protected and notable species was assessed during the survey work.

Bats

- 10.4.10 A single decaying ash tree which has multiple potential roosting features and partially hollow primary limbs was identified in a hedgerow in the northeast of the soil store area. This tree is precautionarily assessed as having the potential to support a roost of high conservation value such as a maternity roost for tree roosting bats. The remainder of trees within the survey area did not have any potential roosting features observed at the time of survey.
- 10.4.11 The habitats within 5m of the hedgerows with trees and the scattered scrub within the grassland have the potential to support commuting and foraging bats. These habitats are connected to the wider landscape to the south via a hedgerow which meets with a gap in the woodland boundary along Itchington Road, and to the north via the quarry track which extends towards the railway line and Tytherington Road.

Badger

- 10.4.12 Although there are badger records within 500m of the Site, no sign of badger presence or sett creation was recorded during the survey and the Site is therefore considered unlikely to be of significant value to badgers. There is the small risk that badgers could commute along the tracks on Site or forage in the grasslands at the soil store area.

Hazel dormouse *Muscardinus avellanarius*

- 10.4.13 No records of dormouse were identified during the desk study nor were any signs recorded during the survey work. The habitats on the Site such as plantation woodland lack a good understorey and range of species such as hazel, bilberry *Vaccinium myrtillus* and honeysuckle *Lonicera periclymenum* which all provide important food resources for dormice. The hedges around the Site also lack a complexity of native flora species and are somewhat isolated between the quarry, quarry tracks made of bare ground and the M5 motorway. Therefore, it is concluded dormice are likely absent from Site and as such they will not be mentioned further in this assessment.

Nesting birds

- 10.4.14 The Site has potential to support a breeding bird community comprising common and widespread species that are typical of the habitats in the area (primarily grassland, woodland and hedgerows). The habitats on the Site are unsuitable for species for which Severn Estuary SPA and Ramsar is designated. Therefore, due to the small amount of habitat present on Site, and the likely low conservation value of the species present, the Site is considered unlikely to be of significant value to nesting birds and those of conservation concern.

Great crested newt *Triturus cristatus*

- 10.4.15 The waterbody on the Site was unsuitable for GCN as it was dry at the time of survey. There are two further ponds mapped south-west of the Site, roughly 450m away. These ponds were also dry at the time of survey. The Site is therefore not considered suitable to provide GCN aquatic or terrestrial habitat and as such they will not be mentioned further in this assessment.

Reptiles

- 10.4.16 The habitats within Site have potential for reptiles such as the grassland and scrub providing suitable hibernation and foraging potential. Despite this, the retention of suitable surrounding habitat along the edges of the access tracks and the limited extent of the habitat loss makes it unlikely that the Proposed Scheme would have a meaningful impact on the local population status.

Otter *Lutra lutra* and water vole *Arvicola amphibius*

- 10.4.17 No records of otter or water vole were identified during the desk study nor were any signs of otter or water vole identified during the field surveys as the habitats on the Site are unsuitable for these species. Therefore, it is concluded that otter and water vole are likely absent from the Site and as such they will not be mentioned further in this assessment.

Other Priority Species

- 10.4.18 Whilst the habitats on Site could be suitable for priority species identified within the desk study such as hare and hedgehog *Erinaceus europaeus*, the limited extent of the Site makes it likely that these species are absent and that the works will not impact the conservation status of the local population. Furthermore, the retention of suitable surrounding habitat and the limited extent of the habitat loss makes it unlikely that these species will be impacted.

Summary

- 10.4.19 It is concluded that the habitats on Site could support bats for roosting, commuting and foraging, badgers for commuting and foraging, and potentially small numbers of reptiles and priority species such as hedgehog and hare. The habitats on Site are considered unlikely to support any other protected and notable species beyond those listed here.

PREDICTED FUTURE BASLINE

- 10.4.20 Over the next 5-10 years it is expected that the extent of semi-improved grassland within the Site will reduce as areas of scattered scrub continue to expand and the hedgerows with trees become progressively wider without management. The widening of the hedgerows would result in areas of habitat which would be considered scrub with trees rather than hedgerows. The quality and distribution of woodland habitats on the Site are unlikely to change in the next 10 years.
- 10.4.21 The ash tree with the potential to support roosting bats will continue to develop weather damage and decay further. It is likely that its remaining limbs will become broken from wind damage, however, the trunk is likely to remain in place.
- 10.4.22 It is unlikely that the suitability of the habitats within the Site to support protected and notable species (with the exception of roosting bats) will change markedly over the next 10 years under the current management regime.

10.5 CONSULTATION

- 10.5.1 The assessment has been informed by consultation responses and ongoing stakeholder engagement. An overview of the approach to consultation is provided in **Section 2.4 of Chapter 2: Approach to Environment Impact Assessment**.

SCOPING

- 10.5.2 A Scoping Opinion was issued by South Gloucestershire Council in January 2024. A summary of the relevant response received in the Scoping Opinion in relation to biodiversity and confirmation of how these have been addressed within the assessment to date is presented in **Table 10-4**.

Table 10-4 – Summary of issues raised during consultation regarding biodiversity

Issue raised	Consultee	Response and how considered in this chapter	Section Ref
Biodiversity enhancement plan required for the Site	South Gloucestershire Council	A Landscape and Biodiversity Enhancement Plan (LBEP) (Appendix 10B) has been developed for the Site. This document characterises the pre-development landscape and biodiversity value of the habitats on Site. It then describes the habitats which are proposed under the restoration strategy and gives an assessment of how the Proposed Scheme enhances biodiversity for the Site.	Not applicable
SSSI's within 5km of the Site have not been considered	South Gloucestershire Council	The SSSI's within 5km of the Proposed Scheme are designated for their geological rather than ecological importance. It is beyond the scope of the biodiversity chapter to address impacts to geology. As such, they will not be considered within this assessment.	Section 10.4
Ponds within 500m have not been considered.	South Gloucestershire Council	Figure 1.1 and 1.2 within the Tytherington Quarry: 6 million tonne additional reserves – Environmental Impact Assessment (EIA) Scoping Report show the extant planning boundaries for P93/2645 and NA/IDO/002/A. The Site in this biodiversity assessment has been defined as the habitats present within the P93/2645 planning consent because this is the location in which impacts to biodiversity associated with this planning application will occur. The works associated with locations within the extant NA/IDO/002/A planning consent will either have impacts on areas with no biodiversity value as they are an active quarry, or they form part of the extant planning consents restoration strategy. There are therefore three ponds which are within 500m of the Site which have the potential to be relevant to this biodiversity assessment. These three ponds had dried out at the time of survey and were not considered suitable to support legally protected amphibians.	Section 10.4
NPPF requires net gains for nature.	Environment Agency	Section 4 of the Government's response to the consultation paper on BNG Regulations and Implementation (Jan 2022) indicates new mandatory provision of BNG would not be applicable to Section 73 applications where the original planning permission pre-dates BNG requirements. This has been confirmed via the	Not applicable

Issue raised	Consultee	Response and how considered in this chapter	Section Ref
		Governments Guidance on Biodiversity Net Gain released in February 2024¹⁶. It specifically states that biodiversity net gain does not apply to '<i>section 73 permissions where the original permission which the section 73 relates to was either granted before 12 February 2024 or the application for the original permission was made before 12 February 2024</i>'. Notwithstanding this, the Proposed Scheme has identified potential biodiversity enhancements for the Site that would be proportionate to the Proposed Scheme, and which would deliver ecological benefits. These benefits for nature have been detailed within the LBEP.	

¹⁶ Department for Levelling Up, Housing and Communities (2024). Guidance: Biodiversity net gain. Available online at: <https://www.gov.uk/guidance/biodiversity-net-gain>. Accessed 05/03/24.

10.6 ENVIRONMENTAL MEASURES INCOPORATED INTO THE PROPOSED SCHEME

- 10.6.1 A range of environmental measures have been embedded into the development proposals as outlined in **Chapter 3 (Section 3.3)**. **Table 10-5** outlines how these embedded measures will influence the biodiversity assessment.

Table 10-5 – Summary of the embedded environmental measures and how they influence the biodiversity assessment

Receptor	Change and effects	Embedded measure and influence on assessment
Ash tree with the potential to be a bat roost.	Avoidance of effects through retention of tree.	Retention of ash tree and protection of its roots through the installation of track matting when using heavy machinery within its root protection area RPA (see Appendix 10C: Arboriculture Impact Assessment for full details). This will remove any effects on this potential bat roost from construction and operations.
Habitats on Site.	Enhancement of Site biodiversity.	Implementation of a LBEP. This will include creation and management of hedgerows with trees, woodland, semi-improved grassland, and wet grassland. This will compensate for any losses in biodiversity associated with vegetation clearance by looking to provide habitats which are of a like-for-like or better quality for ecology. This will result in the enhancement of the Site for biodiversity.
Legally protected and notable species including badgers, nesting birds, reptiles and priority species (e.g. hare and hedgehog).	Further reduce likelihood of having an impact on protected and notable species.	Ecology Method Statement covering pre-vegetation clearance checks for new badger setts, reptiles, nesting birds and priority species (e.g. hare and hedgehog). This will further reduce the risk of causing a legal offence for protected and notable species except roosting bats. This embedded measure means that protected and notable species except roosting bats will not need to be considered further in this assessment.

10.7 SCOPE OF THE ASSESSMENT

10.7.1 This section presents information relating to the current scope of the assessment and includes details on elements of the Proposed Scheme which could impact biodiversity as well as the spatial and temporal scope of the assessment.

THE PROPOSED SCHEME

10.7.2 The elements of the Proposed Scheme listed in **Table 10-6** need to be considered in this assessment. Any other elements of the Proposed Scheme are not relevant to the ecological receptors within the survey area and are therefore not listed in **Table 10-6** below.

Table 10-6 - Impacts from Proposed Scheme

Activity	Effect	Receptor
Construction:		
Permanent or temporary land-take/ changes to habitats	Loss of woodland, hedgerow with trees, grassland, and scattered scrub habitat. Reduction in the availability of foraging and commuting habitat and resting or breeding sites. Killing or injury of fauna through the removal of occupied resting or breeding sites. Loss of ecological connectivity through severance of habitats resulting in fragmentation. Introduction or spread of invasive species.	Terrestrial flora (i.e. hedgerow with trees) and fauna (i.e. bats) within the Site.
Production of aural and visual stimuli and vibration from construction activities such as motorised hand tool vegetation clearance and site personnel.	Disturbance and displacement of species susceptible to noise / visual disturbance resulting in a reduction of energy intake and / or an increase in energy expenditure potentially leading to a reduction in survival and productivity rates.	Terrestrial fauna (i.e. bats) within the Site.
Operations:		
Production of aural and visual stimuli and vibration from operational activities such as drilling and blasting.	Disturbance and displacement of species susceptible to noise / visual disturbance resulting in a reduction of energy intake and / or an increase in energy expenditure potentially leading to a reduction in survival and productivity rates.	Terrestrial fauna (i.e. bats) within the Site.

Activity	Effect	Receptor
Creation of airborne particles (e.g. dust) during construction activities and vehicle movements	Loss or damage of sensitive flora through smothering resulting in effects on habitat composition and the fauna that it supports.	Terrestrial flora and fauna within the Site (e.g. retained woodland areas).
Increase in vehicle movements and changes in movement patterns and timings during operational activities	Potential killing or injury of fauna through road traffic collisions.	Terrestrial fauna within the Site.

SPATIAL SCOPE

- 10.7.3 The spatial scope of the assessment of biodiversity covers the area of the Proposed Scheme contained within the red line boundary, together with the Zones of Influence (Zols) that have formed the basis of the study area described in **Section 10.3**.

TEMPORAL SCOPE

- 10.7.4 The temporal scope of the assessment of biodiversity is consistent with the period over which the Project would be carried out and therefore covers the entire period of the Proposed Scheme.

POTENTIAL RECEPTORS

- 10.7.5 Following CIEEM guidance¹⁷, the importance of ecological features has been determined using a geographic scale and described in relation to UK legislation and policy, and with regard to the extent of habitat or size of population that may be affected by the Proposed Scheme.
- 10.7.6 The importance of ecological features can therefore differ from that which would be conferred solely by legislative protection or identification as a conservation notable species. For example, a small length of hedgerow (which may be a Priority Habitat), even if deemed to be ‘important’ with regards to *The Hedgerows Regulations 1997*, is unlikely to be considered to have greater than ‘local’ importance due to the extent of this habitat type across a given county.
- 10.7.7 Wherever possible, information regarding the extent and population size, population trends and distribution of the ecological features has been used to inform the categorisation described in **Table 10-7** and determine importance at the scheme level. Where detailed criteria or contextual data are not available, professional judgement has been used to determine importance.

¹⁷ CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, Version 1.1. [online]. Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1Update.pdf> [Accessed 16 February 2024].

Table 10-7 - Importance of the Proposed Scheme for Ecological Features

Geographic Context of Importance	Description
International or European	European sites including Special Protection Areas (SPA) Special Areas of Conservation (SAC), candidate SACs, Sites of Community Importance (SCI), Potential SPAs (pSPA), and Ramsar sites (designated under international convention). Areas of habitat or populations of species which meet the published selection criteria based on discussions with Natural England and field data collected to inform EclA for designation as a European site, but which are not themselves currently designated at this level.
National (UK context)	Nationally designated sites including Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs). Areas (and the populations of species which inhabit them) which meet the published selection criteria guidelines for selection of biological SSSIs but which are not themselves designated based on field data collected to inform Ecological Impact Assessment (EclA), and in agreement with Natural England. Section 41 habitats and species (also known as Priority Habitats and Priority Species) listed under the NERC act, red listed¹⁸ and legally protected species that are not addressed directly in Part 2 of the “Guidelines for Selection of Biological SSSIs” but can be determined to be of national importance using the principles described in Part 1 of the guidance. Areas of Ancient Woodland e.g. woodland listed within the Ancient Woodland Inventory and ancient veteran trees
County	Local Nature Reserves (LNRs) and Non-Statutory Designated sites including Sites of Nature Conservation Interest (SNCI)s. Area which based on field data collected to inform the EclA meet the published selection criteria for those sites listed above (for habitats or species, including those listed in relevant Local Biodiversity Action Plans (LBAP)) but which are not themselves designated.
Local	Section 41 habitats and species listed under the NERC Act, red listed¹² and legally protected species that based on their extent, population size, quality etc. Are determined to be at a lesser level of importance than the geographic contexts above. Common and widespread semi-natural habitats occurring within the Study Area in proportions greater than may be expected in the local context. Common and widespread native species occurring within the Study Area in numbers greater than may be expected in the local context.

¹⁸ IUCN. 2023. The IUCN Red List of Threatened Species. Version 2023-1. <https://www.iucnredlist.org>. [Accessed on 05/03/2024]

Geographic Context of Importance	Description
Negligible	Common and widespread semi-natural habitats and species that do not occur in levels elevated above those of the surrounding area. Area of heavily modified or managed land uses (e.g. hardstanding used for car parking, as roads etc.).

- 10.7.8 Where protected species are present and there is the potential for a breach of the legislation, those species will be considered as ‘important’ features. With the exception of such species receiving specific legal protection, or those subject to legal control (e.g. invasive species), all ecological features determined to be important at negligible level will be scoped out of the assessment. Furthermore, ecological features of local importance, where there is a specific technical justification, will also be scoped out. This is because effects on these ecological features would not influence the decision-making about whether or not consent should be granted for the development (in other words a significant effect in EIA terms could not occur). This approach is consistent with that described in CIEEM. Potential sensitive receptors which have a county level geographic context of importance or greater have been taken through into the next stage of the assessment.
- 10.7.9 The following potential sensitive receptors have been assessed and are summarised in **Table 10-8**.

Table 10-8– Potential sensitive receptors

Biodiversity receptor	Geographic context of Importance	Summary	Approximate location
Hedgerows with trees	Local	There are three hedgerows with trees located within the Site. These hedgerows are dominated by hazel, hawthorn and blackthorn and have mature standards of pedunculate oak and ash.	Single hedgerow along the west to northwest boundary. Double hedgerow along the northern boundary.
Plantation woodland	Negligible	Majority of the woodland towards the south of the soil store are planted semi-mature ash, hazel, blackthorn and hawthorn. Some mature oak, ash and cherry trees are present within the woodland.	To the east of the Site separating the soil store from the M5 and their adjacent habitats.
Semi-improved grassland	Negligible	The soil store area is dominated by a 5m high area of overburden and topsoil mound surrounded on three sides by a 3m agricultural topsoil mound. This soil store area that was constructed between 2006 - 2008 and the overburden mound was seeded with a commercial wildflower mix, whilst the agricultural topsoil mound was allowed to revegetate from the seedbank. For both sward types, the grasslands have naturally developed into semi-improved grassland on raised topography which requires minimal management. Additionally, scattered scrub featuring buddleia <i>Buddleja</i>	In the centre of the Site and spread across the variable topology of the soil and overburden store.

Biodiversity receptor	Geographic context of Importance	Summary	Approximate location
		<i>davidii</i> and hawthorn is present within these grasslands.	
Roosting bats	County	A single decaying ash tree which has multiple potential roosting features and partially hollow primary limbs. This tree is precautionarily assessed as having the potential to support a roost of high conservation value such as a maternity roost for tree roosting bats.	Located to the north of the Site at the eastern end of the double hedgerow.
Commuting and foraging habitat for bats	Negligible	The hedgerows with trees and the scattered scrub within the grassland have the potential to support commuting and foraging bats. These habitats are connected to the wider landscape to the south via a hedgerow which meets with a gap in the woodland boundary along Itchington Road, and to the north via the quarry track which extends towards the railway line and Tytherington Road. Hedgerows with trees and grassland habitats with scrub encroachment are common and widespread semi-natural foraging habitats which can be identified on the boundary of the Site and extend into the wider landscape. The flightlines across the Site will be retained in the long-term as a woodland edge will remain along the east boundary, and a hedgerow will be re-instated along the west boundary.	Single hedgerow along the west to northwest boundary, and double hedgerow along the northern boundary. Grasslands in the centre of the Site and spread across the variable topology of the soil and overburden store.

POTENTIALLY SIGNIFICANT EFFECTS

Effects scoped-in to the assessment

10.7.10 The biodiversity receptors that have been taken forward for further assessment are summarised as follows:

- The ash tree which has the potential to support roosting bats.

Effects scoped-out of the assessment

10.7.11 The receptors detailed in **Table 10-9** have been scoped out from being subject to further assessment because the potential effects are not considered likely to be significant for biodiversity.

Table 10-9– Receptors scoped out

Receptor	Justification
Hedgerows with trees	The hedgerows with trees are of a Local value and will therefore be scoped out of our assessment as per the method in section 10.7.8. Nonetheless, hedgerow with trees have been detailed for translocation to a field boundary within 100m of the Site where possible, and additional mitigation replanting under the restoration strategy and LBEP.
Plantation broadleaved deciduous woodland	The plantation woodland on the Site has negligible ecological value when compared to the extents of semi-natural woodland within the surrounding landscape. This receptor will therefore be scoped out of our assessment as per the method in section 10.7.8 . Nonetheless, woodland replanting and enhancements have been detailed within the restoration strategy and LBEP. It is expected that the reinstated and enhanced habitats will be managed so that the woodland can develop into a more naturalised habitat with an enhanced value for biodiversity when compared to the current unmanaged plantation.
Semi-improved grassland	The semi-improved grassland on the Site has resulted from overseeding in 2006-2008 and has negligible ecological value when compared to the extents of semi-improved grassland within the surrounding landscape. This receptor will therefore be scoped out of our assessment as per the method in section 10.7.8 . Nonetheless, grassland reinstatement and management has been detailed under the restoration strategy and LBEP. It is expected that the final reinstated habitats will be managed so that the grasslands will have a similar botanical diversity but there will be additional benefits to wildlife from the inclusion of scrapes and pools.
Commuting and foraging habitat for bats	The hedgerow with trees and grassland habitats with scattered scrub are assessed as having negligible value for commuting and foraging bats because the habitats are common in the wider landscape. The retention of woodland along the east of the Site during construction and operation should retain connectivity for bats. Furthermore, there are no anticipated changes in the lighting and noise disturbance levels as a result of the Proposed Scheme. This receptor will therefore be scoped out of the assessment as per the method in section 10.7.8 .

10.8 ASSESSMENT METHODOLOGY

- 10.8.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 4**, and specifically in **Sections 4.5** to **4.7**. However, whilst this has informed the approach that has been used in this biodiversity assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this biodiversity assessment.

METHODOLOGY FOR PREDICTION OF EFFECTS

- 10.8.2 The starting point for defining which ecological features¹⁹ will be taken forward to the detailed assessment stage will be using the baseline data collected through the desk study and field surveys to determine which of the identified ecological features are 'important' at the level of the Proposed Scheme. Following CIEEM guidance¹⁰.
- 10.8.3 The assessment will be based upon not only the results of the desk study and field surveys that have been undertaken, but also relevant published information (for example on the status, distribution, sensitivity to environmental changes and ecology of the features scoped-in to the assessment, where this information is available), and professional knowledge of ecological processes and functions.
- 10.8.4 For the scoped-in ecological feature (roosting bats in this case), effects are assessed against the predicted future baseline conditions for that feature during the Proposed Scheme (which is no future change).

SIGNIFICANCE EVALUATION METHDOLOGY

- 10.8.5 The significance level attributed to each effect has been assessed based on the sensitivity/value of the affected receptor(s) and the magnitude of change arising from the Proposed Scheme, as well as a number of other factors that are outlined in more detail in **Chapter 4: Approach to EIA**. The sensitivity of the affected receptor is assessed using the geographic context of importance criteria within **Table 10-7**, and the magnitude of change is assessed on a scale of large, medium, small, very small, and negligible, as defined specifically in respect of biodiversity in **Table 10-10** below.

Table 10-10 - Guidelines for the assessment of the scale of magnitude

Scale of change	Criteria and resultant effect
Large	The change permanently (or over the long-term) affects the conservation status of a habitat/species, reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a large area of habitat or large proportion of the wider species population is affected. For designated sites, integrity is compromised. There may be a change in the level of importance of the receptor in the context of the Proposed Scheme.
Medium	The change permanently (or over the long-term) affects the conservation status of a habitat/species reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a small-medium area of habitat or small-medium proportion of the wider species population is affected. There may be a change in the level of importance of this receptor in the context of the Proposed Scheme.

¹⁹ CIEEM refer to biodiversity receptors within technical guidance as ecological features. This term is therefore used in this chapter in place of 'receptors' but for the purposes of the assessment they are the same.

Scale of change	Criteria and resultant effect
Small	The quality or extent of designated sites or habitats or the sizes of species' populations, experience some small-scale reduction or increase. These changes are likely to be within the range of natural variability and they are not expected to result in any permanent change in the conservation status of the species/habitat or integrity of the designated site. The change is unlikely to modify the evaluation of the receptor in terms of its importance.
Very small	Although there may be some effects on individuals or parts of a habitat area or designated site, the quality or extent of sites and habitats, or the size of species populations, means that they would experience little or no change. Any changes are also likely to be within the range of natural variability and there would be no short-term or long-term change to conservation status of habitats/species receptors or the integrity of designated sites.
Negligible	A change, the level of which is so low, that it is not discernible on designated sites or habitats or the size of species' populations, or changes that balance each other out over the lifespan of a project and result in a neutral position.

Effect Significance

- 10.8.6 The matrix in **Table 10-11** has been used to define the significance of the effects identified based on the geographic context and the magnitude of change due to the specific method applied for biodiversity receptors.

Table 10-11 - Matrix for determining Significance of Effect

		Geographic context of importance				
		International	National	County	Local	Negligible
Magnitude of Change	Large	Major	Major	Moderate	Minor	Negligible
	Medium	Major	Moderate	Moderate	Minor	Negligible
	Small	Moderate	Minor	Minor	Negligible	Negligible
	Very small	Minor	Minor	Minor	Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

- 10.8.7 The following terms describe the differences in the significance level of effects, their relevance to the EIA process and how they can apply to both beneficial and adverse effects.

- **Major effect:** where the Proposed Scheme could be expected to have a substantial improvement or deterioration on receptors. This level of effect will always be determined as being significant in EIA terms.
- **Moderate effect:** where the Proposed Scheme could be expected to have a noticeable improvement or deterioration on receptors. This level of effect will likely be significant, although there may be circumstances where such effects are considered not significant on the basis of professional judgement.

- **Minor effect:** where the Proposed Scheme could be expected to result in a perceptible improvement or deterioration on receptors. This level of effect will always be determined as not significant.
- **Negligible:** where no discernible improvement or deterioration is expected as a result of the Proposed Scheme on receptors, including instances where no change is confirmed. This level of effect will always be determined as not significant.

10.9 ASSESSMENT OF EFFECTS

- 10.9.1 The following section details the assessment of effects on sensitive biodiversity receptors which are scoped into the biodiversity assessment. The only sensitive biodiversity receptor is roosting bats.

ROOSTING BATS

- 10.9.2 There is a single decaying ash tree which has precautionarily been assessed as having the potential to support a roost of high conservation value (e.g. a maternity roost) for tree roosting bats. This ash tree is therefore considered to be of county importance as tree roosts would support legally protected bat species and are expected to be locally rare due to the prevailing management of habitats in the landscape.
- 10.9.3 This tree is being retained throughout construction and will be protected from damage by installing track matting for the duration of adjacent soil movement operations which will avoid any damage to the tree's roots. It is therefore concluded that there will be a negligible effect significance on this receptor from construction.
- 10.9.4 During operation impacts from noise, light, dust and site traffic will be consistent with the existing levels of disturbance. It is understood that trackway will be installed at the base of the tree when access is required to the soil store. It is therefore concluded that there will be a negligible effect significance on this receptor from operation because they current level of disturbance will be maintained.
- 10.9.5 The remainder of the trees within the survey area (including those in the plantation woodland and hedgerows) lacked suitable roosting features for bats at the time of survey.
- 10.9.6 It is therefore concluded that there will be a negligible effect on this sensitive receptor and therefore no likely significant effect.

10.10 ASSESSMENT OF CUMULATIVE EFFECTS

- 10.10.1 There are no projects which are expected to produce cumulative likely significant effects when considered alongside the Proposed Scheme.

10.11 ASSESSMENT OF IN-COMBINATION CLIMATE IMPACTS

- 10.11.1 The In-combination Climate Change Impacts (ICCI) assessment considers the extent to which climate change exacerbates or ameliorates the potential effects identified for biodiversity.
- 10.11.2 The ICCI assessment presented has been informed by the future baseline presented within **Chapter 13: Climate Resilience**. The ICCI uses the topic specific assessment methodologies and professional judgement to assess likelihood and magnitude of the impacts, with the combined consideration of future climate trends and impacts.
- 10.11.3 It is expected that there will be an increase in the frequency and intensity of winter storms in the UK in response to climate change. The ash tree with the potential to support roosting bats has the

potential to become damaged at a faster rate when considering this change in climate. The increase in the rate of damage for primary tree branches is expected to accelerate as gales, high winds and storms become more frequent and intense. This could lead to the loss of potential roosting features from the retained tree. The embedded mitigation includes the retention of the tree through construction and operation. It is recommended that the structural integrity of the primary branches is reviewed every year in late autumn to avoid an ICCI. This check would be used to determine if the removal of secondary branches through tree surgery would arrest the loss of potential roosting features arising from wind damage.

10.12 MITIGATION AND ENHANCEMENT MEASURES

10.12.1 Opportunities to mitigate potential adverse effects have already been incorporated within the development (see **Table 10-5**) or are imposed through a number of existing regulatory controls. The Proposed Scheme with these measures and controls in place has been subject to assessment. No other measures are proposed as mitigation in relation to the effects that are identified in this chapter.

10.13 CONCLUSIONS OF SIGNIFICANCE EVALUATION

10.13.1 There are no likely significant effects to report for this biodiversity assessment. As such the environmental measures detailed in **Section 10.6** are considered additional as they are not described in relation to a specific receptor with a significant impact.

10.14 IMPLEMENTATION OF ENVIRONMENTAL MEASURES

10.14.1 **Table 10-12** describes the environmental measures embedded within the Proposed Scheme and the means by which they will be implemented, i.e. they will have been secured through the planning conditions.

Table 10-12 - Implementation of environmental measures

Environmental measure / mitigation	Responsibility for implementation	Compliance mechanism	ES section reference
Retention of ash tree with the potential to support roosting bats.	Heidelberg Materials	Not applicable.	Section 10.7.1 Table 10-5
Implementation of a LBEP. This will include creation and management of hedgerows with trees, woodland, and semi-improved grassland.	Heidelberg Materials	Not applicable.	Section 10.7.1 Table 10-5
EMS covering pre-vegetation clearance checks for protected and notable species (including but not limited to badger setts, nesting birds, reptiles and other priority species).	Heidelberg Materials	Not applicable.	Section 10.8.7 Table 10-8

10.15 REFERENCES

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