

Report to: -
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v. 2 – August 2018

**PRELIMINARY ECOLOGICAL
APPRAISAL OF LAND AT
SWANWORTH QUARRY,
WORTH MATRAVERS, SWANAGE,
DORSET BH19 3LE**



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PRELIMINARY ECOLOGICAL APPRAISAL OF LAND AT SWANWORTH QUARRY, WORTH MATRAVERS, SWANAGE, DORSET BH19 3LE

1. SUMMARY

1.1.1 In order to establish habitat types (and their extent) and provide a predictive assessment of their likely dependent fauna, AEcol were commissioned by QUARRYPLAN GB LTD to perform a Preliminary Ecological Appraisal of approximately 14.99 ha of land at Swanworth Quarry, Worth Matravers, Swanage, Dorset BH19 3LE (hereafter referred to as 'The Site').

1.1.2 The Preliminary Ecological Appraisal comprised: -

- A desk-study including a search for historical biological data relating to The Site and stratified radii performed by Dorset Environmental Records Centre (DERC);
- Phase 1 habitat mapping to the method set out in the *Handbook for Phase 1 Habitat Survey: A technique for environmental audit* (JNCC 2010);
- An assessment of the conservation value of the habitats present against the criteria set for Section 41 Habitats of Principal Importance (S41 Habitats);
- Application of the *AEcol Predictive Ecological Assessment System* to provide a hypothesis of the potential dependent legally protected and/or Section 41 Species of Principal Importance (S41 Species); and
- Reasoned recommendations for further 'Phase 2' surveys by application of planning policy trigger thresholds.

1.1.3 The conclusions of the Preliminary Ecological Appraisal are as follows: -

1. Nine Statutory Wildlife Sites lie within a 2 km radius of The Site comprising: Isle of Portland to Studland Cliffs Special Area of Conservation (SAC), St. Albans Head to Durlston Head SAC, Dorset Heaths SAC, Studland to Portland marine candidate Special Area of Conservation (cSAC), Dorset and East Devon World Heritage Site (WHS), Dorset Heathlands Ramsar, Corfe Common Site of Special Scientific Interest (SSSI), South Dorset Coast SSSI, and Dorset Area of Outstanding Natural Beauty (AONB);
2. Twelve non-Statutory Wildlife Sites lie within a 1 km radius of The Site comprising: Westhill Wood Site of Nature Conservation Interest (SNCI), Afflington Wood SNCI, The Plantation SNCI, Scoles Lane Copse SNCI, Coombe Bottom Habitat Restoration Site (HRS), West of The Lookout HRS, South of The Lookout HRS, West of Downshay Wood HRS, West of Afflington Wood HRS, Lower Scoles Farm HRS, Swanworth Quarry HRS, and Kingston Toll Conservation Verge (CV);
3. The Site holds 14 Phase 1 (JNCC 2010) habitat types, two of which qualify as two

S41 Habitats and two Dorset Local Biodiversity Action Plan (LBAP) Priority Habitats, comprising: -

- S41 – *Lowland Calcareous Grassland and Hedgerows*; and
 - LBAP – *Lowland calcareous grassland and Ancient &/or species rich hedgerows*;
4. Of the five hedgerows within The Site, none have the potential to qualify as ‘Important’ under the criteria of the *Hedgerow Regulations 1997*;
 5. Five legally protected, S41 Species or LBAP Priority Species have been confirmed as present within The Site, as identified at Table 1; and
 6. There is a “*reasonable likelihood*” that one LBAP Priority Species of plant and 11 faunal species that are variously: legally protected; S41 Species; or LBAP Priority Species, might also occur within The Site or within the Zone of Influence of The Site, as identified at Table 2.

Table 1. The faunal species for which presence within The Site is accepted and the mechanisms that compel their consideration.

GROUP	SPECIES	Associated legislation	S41	LBAP
Bird	Skylark <i>Alauda arvensis</i>	----	✓	----
Bird	Linnet <i>Linaria cannabina</i>	----	✓	----
Bird	Yellowhammer <i>Emberiza citronella</i>	----	✓	✓
Mammal	Brown hare <i>Lepus europaeus</i>	----	✓	✓
Mammal	Badger <i>Meles meles</i>	✓	----	----

Table 2. The floral and faunal species for which there is sufficient evidence to suggest a “*reasonable likelihood*” of occurrence within The Site or within the Zone of Influence of conservation significance and the mechanisms that compel their consideration.

GROUP	SPECIES	Associated legislation	S41	LBAP
Plant	Dwarf spurge <i>Euphorbia exigua</i>	----	----	✓

GROUP	SPECIES	Associated legislation	S41	LBAP
Invertebrate	Wall <i>Lasiommata megera</i>	----	----	✓
Bird	Bullfinch <i>Pyrrhula pyrrhula</i>	----	✓	----
Bird	General Bird assemblage	✓	----	----
Mammal	Barbastelle <i>Barbastella barbastellus</i>	✓	✓	✓
Mammal	Serotine <i>Eptesicus serotinus</i>	✓	----	----
Mammal	Natterer's bat <i>Myotis nattereri</i>	✓	----	----
Mammal	Noctule <i>Nyctalus noctula</i>	✓	✓	✓
Mammal	Common pipistrelle <i>Pipistrellus pipistrellus</i>	✓	----	----
Mammal	Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	✓	✓	✓
Mammal	Brown long-eared bat <i>Plecotus auritus</i>	✓	✓	✓
Mammal	Grey long-eared bat <i>Plecotus austriacus</i>	✓	----	✓
Mammal	Greater horseshoe-bat <i>Rhinolophus ferrumequinum</i>	✓	✓	✓

1.1.4 The following recommendations are made: -

- **Roman snail *Helix pomatia***: survey to establish the status of the species on-site, and if present, the location and population size;
- **Slow-worm; common lizard; grass snake; and, adder**: survey to establish: a) presence/absence; and, if present - b) location; and, c) a reptile release area for use in an Ecological Management Plan;
- **Nesting birds (general)**: survey dependant on whether adequate compensation can be provided as part of the quarry design. At present, extent of habitat to be lost/reinstated is unknown;
- **Barn owl *Tyto alba***: survey to establish: a) presence/absence; and, if nesting - b) the location of all potential nest sites;
- **Common dormice *Muscardinus avellanarius***: survey to establish: a) whether the species occurs within The Site; b) where the species occurs within The Site; and, c) population size;

-
- **Badger *Meles meles*:** survey to establish true status of setts; and
 - **Barbastelle; serotine; Bechstein's bat; Brandt's bat; whiskered bat; Leisler's bat; noctule; Nathusius' pipistrelle; grey long-eared bat; greater horseshoe-bat; and, lesser horseshoe-bat: -**
 - *Place of shelter or protection:* Daytime roost assessment to inform survey design;
 - *Foraging habitat and linear landscape elements:* a desk-top assessment should be performed to establish whether there is a “reasonable likelihood” the loss of the habitat might represent a disturbance impact such as to occasion a significant negative effect upon the species. If this assessment suggests there is a risk, further survey may be required in order that information presented is not ‘lacking or inadequate’.

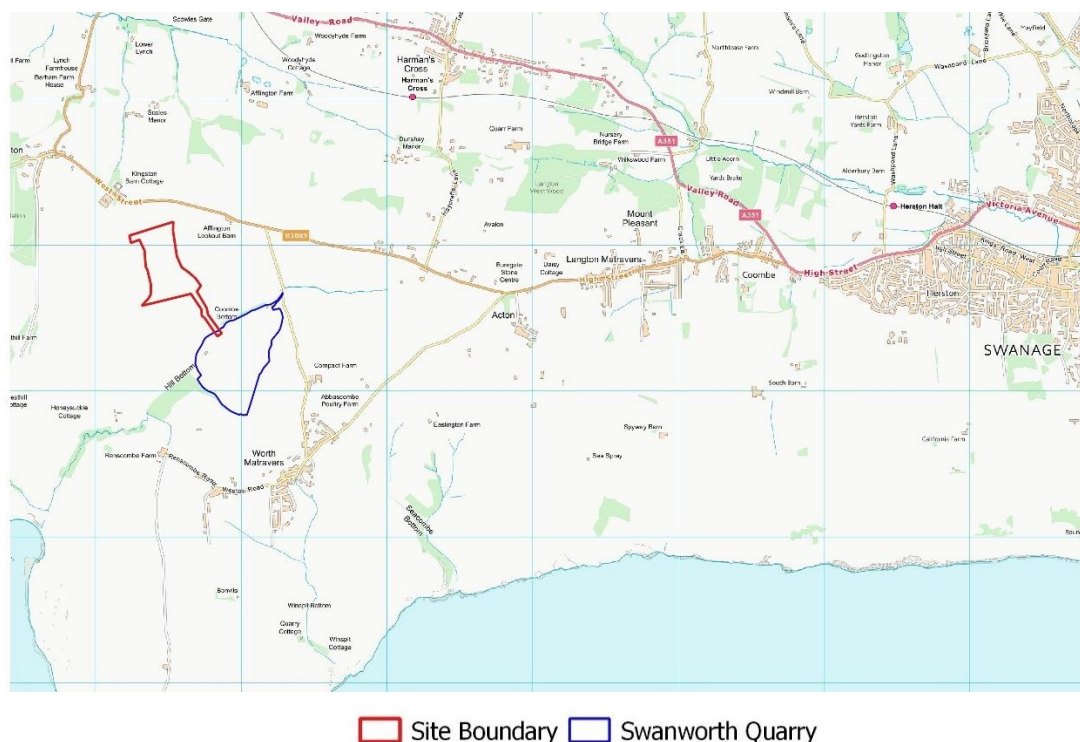
Section 1 – End

2. BACKGROUND

2.1 General

2.1.1 In order to establish habitat types (and their extent) and provide a predictive assessment of their likely dependent fauna, AECOL were commissioned by QUARRYPLAN GB LTD to perform a Preliminary Ecological Appraisal of approximately 14.99 ha of land at Swanworth Quarry, Worth Matravers, Swanage, Dorset BH19 3LE (hereafter referred to as 'The Site').

2.1.2 The Site is situated around O.S. grid reference SY964788, c. 1.5 km to the north-west of Worth Matravers, Dorset in a wider area of arable and pastoral farmland. The existing consented Swanworth Quarry abuts The Site on the south-east corner and overlaps at the point where the access gantry is proposed. Figure 1 shows the location and extent of The Site and Swanworth Quarry.



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Figure 1. The location and extent of The Site.

2.1.3 The Preliminary Ecological Appraisal comprised: -

- A desk-study including a search for historical biological data relating to The Site and stratified radii performed by Dorset Environmental Records Centre (DERC);
- Phase 1 habitat mapping to the method set out in the *Handbook for Phase 1*

Habitat Survey: A technique for environmental audit (JNCC 2010);

- An assessment of the conservation value of the habitats present against the criteria set for Section 41 Habitats of Principal Importance (S41 Habitats);
- Application of the *AEcol Predictive Ecological Assessment System* to provide a hypothesis of the potential dependent legally protected and/or Section 41 Species of Principal Importance (S41 Species); and
- Reasoned recommendations for further ‘Phase 2’ surveys by application of planning policy trigger thresholds.

2.1.4 AEcol is an independent ecological consultancy with competence in Preliminary Ecological Appraisal, species survey and habitat assessment, restoration, monitoring and management in the UK (see www.aecol.co.uk).

Section 2 – End

3. LEGISLATIVE AND POLICY MECHANISMS

3.1 General

3.1.1 A summary of the legal and conservation policy mechanisms that determine the need for specific surveys in support of mineral planning applications is set out in the following text.

Note: AEcol have no legal specialism and are in no way legally qualified. Reference to legislation made in broad terms within relevant sections of this report is included purely to identify conservation mechanisms etc. Legal definitions for certain words and phrases used within legislation and guidance have been subject to interpretation by Freeths LLP on commission by AEcol. However, for detailed interpretation, or where doubt exists as to the legality of actions, further qualified legal counsel should be sought.

3.2 *Conservation of Habitats and Species Regulations 2017*

General

3.2.1 The *Conservation of Habitats and Species Regulations 2017* transposes Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (“the Habitats Directive”) and certain aspects of Directive 2009/147/EC on the conservation of wild birds (“the Birds Directive”). These Regulations extend to England and Wales and provide for: -

- The designation and legal protection of ‘European Sites’;
- The legal protection of ‘European Protected Species’ (EPS); and
- The adaptation of planning and other controls for the protection of European Sites.

European Protected Species of plants

3.2.2 Nine plant species receive legal protection under Schedule 5 of the *Conservation of Habitats and Species Regulations 2017*, these comprise: shore dock *Rumex rupestris*; yellow marsh saxifrage *Saxifraga hirculus*; creeping marshwort *Apium repens*; floating-leaved water plantain *Luronium natans*; slender naiad *Najas flexilis*; early gentian *Gentianella anglica*; fen orchid *Liparis loeselii*; lady’s-slipper *Cypripedium calceolus*; and, Killarney fern *Trichomanes speciosum*.

3.2.3 Part 3, regulation 45, paragraph (1) of the *Conservation of Habitats and Species Regulations 2017* states: “It is an offence deliberately to pick, collect, cut, uproot or destroy a wild plant of a European protected species”. The offence in paragraph 3.2.3 applies regardless of the stage of the biological cycle of the plant in question.

European Protected Species of animals

3.2.4 29 Species of animals receive legal protection under Schedule 2 of the *Conservation of Habitats and Species Regulations 2017*, these comprise: lesser whirlpool ram's-horn snail *Anisus vorticulus*; large blue butterfly *Maculinea arion*; Fisher's estuarine moth *Gortyna borelii*; common sturgeon *Acipenser sturio*; great crested newt *Triturus cristatus*; pool frog *Rana lessonae*; natterjack toad *Bufo calamita*; sand lizard *Lacerta agilis*; smooth snake *Coronella austriaca*; common dormouse *Muscardinus avellanarius*; otter *Lutra lutra*; and, all bat species in England and Wales. Part 3, regulation 41, paragraph (1) of the *Conservation of Habitats and Species Regulations 2017* states: -

“A person who: -

- a) *deliberately captures, injures or kills any wild animal of a European protected species;*
- b) *deliberately disturbs wild animals of any such species;*
- c) *deliberately takes or destroys the eggs of such an animal; or*
- d) *damages or destroys a breeding site or resting place of such an animal, is guilty of an offence.”*

3.2.5 The offence in paragraph 3.2.5 above applies regardless of the stage of the life of the animal in question.

3.2.6 Part 3, regulation 41, paragraph (2) states that disturbance of animals includes in particular any disturbance which is likely: -

- a) *“to impair their ability: -*
 - i. *to survive, to breed or reproduce, or to rear or nurture their young; or*
 - ii. *in the case of animals of a hibernating or migratory species, to hibernate or migrate; or*
- b) *to affect significantly the local distribution or abundance of the species to which they belong”.*

3.3 Wildlife & Countryside Act 1981 (& as amended)

General

3.3.1 The *Wildlife & Countryside Act 1981 (& as amended)* is the principle mechanism for the legislative protection of wildlife sites and species in Great Britain.

Protection of plants

3.3.2 Part 1, Section 13 of the *Wildlife & Countryside Act 1981 (& as amended)* outlines

the protection of wild plants in England and Wales. Subsection 1 states: “*Subject to the provisions of this Part, if any person: -*

- a) intentionally picks, uproots or destroys any wild plant included in Schedule 8; or*
- b) not being an authorised person, intentionally uproots any wild plant not included in that Schedule, he shall be guilty of an offence.”*

Protection of birds

3.3.3 Part 1, Section 1 of the *Wildlife & Countryside Act 1981 (& as amended)* outlines the protection of wild birds, their nests and eggs in England and Wales. Subsection 1 refers to the protection of all wild birds, their nests and eggs, and states: “*Subject to the provisions of this Part, if any person intentionally: -*

- a) kills, injures or takes any wild bird;*
- b) takes, damages or destroys the nest of any wild bird while that nest is in use or being built; or*
- c) takes or destroys an egg of any wild bird,*
he shall be guilty of an offence.”

3.3.4 Bird species listed under Schedule 1 of the *Wildlife & Countryside Act 1981 (& as amended)* receive additional legal protection under subsection 5 of the Act, which states: “*Subject to the provisions of this Part, if any person intentionally [or recklessly]: -*

- a) disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or*
- b) disturbs dependent young of such a bird,*
he shall be guilty of an offence.”

Protection of other animals

3.3.5 Part 1, Section 9 of the *Wildlife & Countryside Act 1981 (& as amended)* outlines the protection of certain wild animals in England and Wales. Subsection 1 states: “*Subject to the provisions of this Part, if any person intentionally kills, injures or takes any wild animal included in Schedule 5, he shall be guilty of an offence.”* In addition, subsection 4 states: “*Subject to the provisions of this Part, a person is guilty of an offence if intentionally or recklessly: -*

- a) he damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;*
- b) he disturbs any such animal while it is occupying a structure or place which it uses for shelter or protection; or*
- c) he obstructs access to any structure or place which any such animal uses for shelter or protection.”*

3.4 **Protection of Badgers Act 1992**

3.4.1 Badgers and their setts are legally protected under the *Protection of Badgers Act 1992*, which states: “A person is guilty of an offence if, except as permitted by or under this Act, he willfully kills, injures or takes, or attempts to kill, injure or take, a badger.”

“A person is guilty of an offence if, except as permitted by or under this Act, he interferes with a badger sett by doing any of the following things: -

- a) damaging a badger sett or any part of it;
- 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, intending to do any of those things or being reckless as to whether his actions would have any of those consequences.”

3.4.2 The Act defines a badger sett as “any structure or place which displays signs indicating current use by a badger.” Natural England (2009) have provided guidance on the definition of ‘current use’, stating that “for a sett to fall within the definition of the Act, a badger need not be in current occupation, and may not have been for some time. As long as there are signs present indicating “current use” the sett is defined as such in the Act and is therefore protected. The maximum lapse of time between last occupation by badgers and the inspection of a sett for it to be considered in “current use” is how long it takes the signs to disappear, or more precisely, to appear so old as to not indicate “current use” ... A sett is therefore protected as long as such signs remain present. In practice, this could potentially be for a period of several weeks after the last actual occupation of the sett by a badger or badgers.”

3.5 **Hedgerows Regulations 1997**

3.5.1 Some hedgerows are protected by the *Hedgerows Regulations 1997*. Hedgerows are graded on a two-tier system; ‘important’ and ‘unimportant’. In order to qualify as ‘important’, hedgerows must meet criteria set out within the *Regulations* encompassing wildlife, historic and landscape aspects. Hedgerows that qualify as ‘important’ under the *Hedgerows Regulations 1997* should only be breached or removed following the application for, and receipt of, a ‘Hedgerow Removal Notice’ from the Local Planning Authority. A Hedgerow Removal Notice will typically be granted for: -

- Making a new opening in substitution for an existing opening which gives access to land, and where the existing opening is in-filled within eight months of the new breach;

-
- Obtaining access to land where another means of access is not available or only available at disproportionate cost; and
 - For carrying out development for which planning permission has been granted.

3.6 Natural Environment and Rural Communities (NERC) Act 2006

3.6.1 Under the *Natural Environment and Rural Communities (NERC) Act 2006*, a Local Planning Authority has a duty to conserve biodiversity. This duty is set out at Section 40, which states:

- “(1) *Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.*
- (2) *In complying with subsection (1), a Minister of the Crown, government department or the National Assembly for Wales must in particular have regard to the United Nations Environmental Programme Convention on Biological Diversity of 1992.*
- (3) *Conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat...*”

3.6.2 Under Section 41 of the *NERC Act 2006*, the Secretary of State has a duty to publish a list of habitats and species of flora and fauna considered to be of principal importance for the purpose of conserving biodiversity. Local Planning Authorities will use this list to identify the species and habitats that require specific consideration in dealing with planning and development control. The list was derived from the habitats and species in England that were identified as requiring action under the UK Biodiversity Action Plan (described later at Sub-section 3.10 of this report). Hen harrier *Circus cyaneus* (a Schedule 1 species of bird) was also included, because it was concluded that without specific conservation action the native population will not persist. The list comprises an overall: -

- 56 Habitats of Principal Importance (hereafter referred to as S41 Habitats); and
- 943 Species of Principal Importance (hereafter referred to as S41 Species).

3.7 National Planning Policy Framework (NPPF)

3.7.1 In the most basic terms, Paragraph 109 of the National Planning Policy Framework (NPPF) states: “*The planning system should contribute to and enhance the natural and local environment by... minimising impacts on biodiversity and providing net gains in biodiversity where possible...*”

3.7.2 In addition, Paragraph 117 identifies the need for planning policies to identify and map components of local ecological networks (both designated sites and stepping stones in between), and promote the preservation, restoration and enhancement of S41 Habitats of Principal Importance and ecological networks, whilst also promoting the protection and recovery of Species of Principal Importance. In particular, the NPPF highlights that any development proposal on land within or outside a Site of Special Scientific Interest (SSSI) or any other ‘irreplaceable’ habitat (such as ancient woodland or veteran trees), that might have a negative effect upon the biodiversity interest, should be refused unless the need for, and benefits of, the development in that location clearly outweigh the consequential loss or damage.

3.8 ODPM Circular 06/2005

3.8.1 ODPM Circular 06/2005 states: *“The presence of a protected species¹ is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat.”*

3.8.2 Therefore: *“It is essential that the presence or otherwise of protected species, and the extent that they may be affected² by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision.”*

3.8.3 However: *“Bearing in mind the delay and cost that may be involved, **developers should not be required to undertake surveys for protected species unless there is reasonable likelihood³ of the species being present and affected by the development.”***

¹ In this context, following consultation by AEcol with Freeths LLP, the phrase “protected species” in paragraphs 98 and 99 of Circular 06/2005 is understood to mean those species which have specific protection under legislation, i.e. all wild birds, badgers and those other plant and animal species specifically listed in Annex A of the Circular. In addition, this would also include species listed on the *Deer Act 1991* and to the *Conservation of Seals Act 1970*, if these were relevant. NOTE: Paragraphs 98 and 99 are not directed at ‘biodiversity’ generally or at s41 *Natural Environment and Rural Communities Act 2006* species. For ‘biodiversity’ generally and s41 *Natural Environment and Rural Communities Act 2006* species, the Circular is silent on survey requirements.

² In this context, the phrase in paragraph 99 of Circular 06/2005 “the extent that they may be affected” is understood to mean the extent to which the “species” or “the habitat of the species” (also referred to in paragraph 99) is likely to be harmed by the development. NOTE: an opinion provided to AEcol by Freeths LLP suggests the harm referred to is unlikely to be dependent solely upon specific criminal offences being triggered against the relevant species.

³ In this context, following consultation by AEcol with Freeths LLP, the phrase “reasonable likelihood” in paragraph 99 of Circular 06/2005 is understood to mean “more likely than not”. The statement therefore requires that a developer should not have to undertake a survey for a specific protected species unless it is more likely than not that the species (i) is present; and (ii) will be affected by the development.

3.9 National Planning Practice Guidance (NPPG)

- 3.9.1 Paragraph 016 of *National Planning Practice Guidance (NPPG): Natural Environment – Biodiversity and ecosystems* states: “An ecological survey will be necessary in advance of a planning application if the type and location of development are such that the impact on biodiversity may be significant and existing information is lacking or inadequate.”
- 3.9.2 Furthermore: “Where an Environmental Impact Assessment is not needed it might still be appropriate to undertake an ecological survey, for example, where protected species may be present.”
- 3.9.3 However: “Local planning authorities should **only require ecological surveys where clearly justified, for example if they consider there is reasonable likelihood³ of a protected species being present and affected by the development**. Assessments should be proportionate to the nature and scale of the development proposed and the likely impact on biodiversity”

3.10 UK & Local Biodiversity Action Plans (BAP)

- 3.10.1 The UK Biodiversity Action Plans (UK BAP) were written in order to provide detailed strategies for the conservation of Section 41 Habitats and Species of Principal Importance. In addition, some counties have Local Biodiversity Action Plans (LBAP) with county-specific objectives. The LBAPs for Dorset are reviewed within the relevant sub-sections of the Preliminary Ecological Appraisal.

3.11 Providing and protecting habitat for wild birds

- 3.11.1 The Department for Environment, Food & Rural Affairs (DEFRA 2016) have published guidance for competent authorities on how to support wild birds by protecting their habitat and avoiding pollution in light of amendments to the *Conservation of Habitats and Species Regulations 2017*. The guidance states that the Mineral Planning Authority must: -
- “...take the steps [the Mineral Planning Authority] consider appropriate to preserve, maintain and re-establish habitat that is large and varied enough for wild birds to support their population in the long-term.”
 - “...use [their] powers so that any pollution or deterioration of wild bird habitat is avoided as far as possible.”
 - “...aim to provide habitat that allows bird populations to maintain their numbers in the area where they naturally live.”
 - “...focus on habitats for wild birds in decline but also maintain habitats

supporting wild birds with healthier populations.”

Section 3 – End

4. ASSESSMENT METHODS

4.1 General

4.1.1 The wildlife value of the existing habitats within The Site was defined using a repeatable framework that takes account of published criteria, as set out in: -

- *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal 2nd Edition*, issued by the Chartered Institute of Ecology and Environmental Management (CIEEM) in 2016 (CIEEM 2016);
- British Standard BS 42020 *Biodiversity – Code of practice for planning and development* (BSI 2013);
- *Guidelines for Preliminary Ecological Appraisal* (CIEEM 2012); and
- *Guidelines for Ecological Impact Assessment in the United Kingdom* (IEEM 2006).

4.1.2 The systematic approach applied was defined by AEcol in an attempt to anticipate conservation legislation in respect of sites and species, as well as S41 Habitats and Species, (within The Site and within pre-defined radii), and thereby provide a robust baseline data-set to accord with the initial stages set out within British Standard BS 42020 *Biodiversity – Code of practice for planning and development*.

4.1.3 The approach to predictive faunal assessment within this report has therefore been tailored by AEcol to suit the context of a mineral planning application⁴, and ensure a consistent standard is maintained in all stages from the outset, regardless of the size or character of a site. Review and interpretation of desk-study data, in combination with Phase 1 habitat mapping, are assessed following a clearly defined process of reasoning based upon documented scientific accounts for each group, and their individual species. This standardisation endeavours to ensure a reasoned, repeatable and balanced approach is taken at all stages of the planning application process, and guards against the potential for ‘culpable ignorance’ due to subjectivity. It should however be noted that any recommendations made within this report assume a comprehensive inventory of the survey footprint is required. This need may be significantly reduced in scope depending upon the nature and extent of any subsequent scheme proposed.

⁴ A pertinent point to raise is that AEcol only work with quarry companies. Mineral Planning Applications do not see the permanent sterilisation of habitats, but instead a phased, small extent exchange of one habitat to another, and then back again (in whole or in part) with opportunities for biodiversity gain at every stage; including the operational phases. The AEcol approach has been defined to search for maximum gains in this context.

4.2 Desk-study

Data-search

4.2.1 A data-search was commissioned from Dorset Environmental Records Centre (DERC); the results of which formed the basis of the desk-study. However, Local Records Centres (LRC) seldom hold a comprehensive record of all the ecological surveys performed or species recorded within a given locality. Furthermore, the records held may be incomplete and ‘un-determined’ by any third-party referee who might ‘weed-out’ erroneous data. Finally, overly-large search radii (particularly when used in relation to sedentary species) often reward the end user with misleading results, themselves leading to misuse of resources such as irrelevant discussion and even unnecessary ‘Phase 2’ surveys. In an effort to counteract these potential negative influences by providing a full list of species that might potentially be present in the locality (based on both the species distribution and known commuting range), historic biological data relating to The Site was requested as follows: -

- Statutory Wildlife Sites within a 2 km radius of The Site boundary;
- Non-Statutory Wildlife Sites within a 1 km radius of The Site boundary;
- A list of all legally protected, S41 Species and/or LBAP Priority Species of fauna known to occur in Dorset;
- A search of historic data-sets for historic records of legally protected, S41 Species and/or LBAP Priority Species of flora and fauna (excluding bats) occurring within a 500 m radius of The Site boundary; and
- A search of historic data-sets for records of bat-roosts and in-flight records occurring within a 6 km radius of The Site boundary (the large search radius requested is based on the species average Core Sustainment Zones defined by Bat Conservation Trust (Collins 2016)).

4.2.2 The data were initially filtered to remove incomplete species records. Thereafter, the individual merits of the remaining species records are then discussed as follows: -

- Whether or not The Site is within the species known geographical range (i.e. whether the species occurs or has historically occurred anywhere in the County);
- Whether there is evidence to suggest the species has historically occurred within The Site;
- Whether there is evidence to suggest the species occurs, or has historically occurred, outside The Site, but The Site nevertheless falls within the known commuting range of the species; and
- Whether or not The Site held suitable habitat for the species during the Phase 1 habitat survey.

4.2.3 The desk-study results are summarised within the relevant contextual, botanical and faunal sub-sections.

Historic surveys

4.2.4 Data-searches only return positive results. In order to give greater depth to the appraisal, historic accounts of past botanical and faunal surveys were also requested from the client and the Local Records Centre. These are useful in that they may identify situations where the habitat might appear superficially suitable and a structured physical search has been performed which has, for whatever reason, rewarded with a negative result. Where they exist, accounts of historic surveys were collated, reviewed and the results presented within the relevant sub-sections.

4.3 Phase 1 habitat mapping

4.3.1 A Phase 1 survey was undertaken of The Site on the 19th and 20th June 2018, applying the method and criteria defined in *Handbook for Phase 1 habitat survey: A technique for environmental audit* (JNCC 2010). Dominant vegetation types and plant species were recorded. Where plant identification was uncertain (and where the plant was sufficiently developed for confident identification), specimens were 'keyed-out' using Stace (1991), Hubbard (1954) or Poland & Clement (2009) and the distribution and status of uncommon plants were assessed against Preston *et al.* (2002). A list of plant species recorded within The Site is provided at Appendix A.

4.4 Predictive assessment

4.4.1 The results of the desk-study and Phase 1 habitat survey were combined and assessed to provide a hypothesis as to the potential dependent fauna that might occur within or outside (within commuting/foraging range) The Site, by comparing historic evidence, habitat information, survey results and known ecological requirements of the target species⁵.

⁵ **Note:** Whilst the predictive assessment criteria may flag up the need for further consideration of the status of a species or group, the predicted status (i.e. marginal, potential, probable) may not necessarily trigger the need for survey but may simply indicate the need for a more detailed 'desk-top' appraisal than is within the remit of a Phase 1 survey. This is because the need for further survey is affected by many other considerations, not least the quality of the habitat which, while it may qualify as a type occupied by a particular organism, may in fact still be unsuitable for the species due to factors such as isolation, impoverished plant-species composition, hydrology, the presence of predators or competitors etc.

4.4.2 Presence of each species was then assigned a status on an increasing scale as: -

1. **Presumed Absent:** The Site is outside the species accepted geographical range;
2. **Improbable:** The Site is within the geographical range of a given species but holds no primary habitat, and there is no historic evidence to support a hypothesis that the species has occurred within or outside (within commuting/foraging range) The Site;
3. **Marginal:** The Site is within the geographical range but holds no primary habitat. However, there is historic evidence to support a hypothesis that the species has occurred within or outside (within commuting/foraging range) The Site. **Note:** The presence of a 'Marginal' species might be of importance when considering intended habitat changes. For example, the presence of the legally protected great crested newt in the immediate locality might be a factor in the design of a particular mineral development that will envisage the creation of lagoon systems that might allow the species to colonise a previously unsuitable area, and thereby have operational impacts upon the quarry during its life and in the restoration phase;
4. **Potential:** -
 - a) **Potential – Low:** The Site is within the geographical range and holds primary habitat for the species, but historic surveys have been performed and did not record the species or any evidence to suggest even transient presence. This supports the null-hypothesis that the species does not occur within or outside (within commuting/foraging range) The Site. Providing The Site is materially unchanged since this survey took place, the potential that the species has colonised The Site in the interim may reasonably be concluded to be low;

Threshold for action

- b) **Potential – Untested:** The Site is within the geographical range and holds primary habitat for the species, but no historic surveys have been performed (to our knowledge). There is therefore no evidence to contradict a hypothesis that the species occurs within or outside (within commuting/foraging range) The Site. It is therefore entirely reasonable to suppose the species might be present;
5. **Probable (i.e. there are grounds to suggest a "reasonable likelihood" of occurrence):** The Site is within the geographical range, holds primary habitat and there is evidence to suggest the species has historically occurred within The Site, or occupying a place of shelter outside but within commuting/foraging range of The Site;

Or

6. **Present:** The species, or conclusive evidence that the species occurs within The Site, was encountered during the Phase 1 habitat survey.

4.4.3 In the context of this commission (i.e. planning policy) those species for which there is: a) insufficient evidence to contradict a hypothesis of presence (i.e. Potential – Untested); b) tangible evidence to suggest a “*reasonable likelihood*” of presence; and, c) proof of presence, are identified in this report. The analysis that demonstrates it is more-likely-than-not the remaining legally protected and S41 Species will not occur, is set out in the Appendix C Excel spreadsheet.

4.5 Personnel

4.5.1 The Preliminary Ecological Appraisal was performed by Dr James McGill and Heather Anning BSc. Personnel responsible for each aspect of the Preliminary Ecological Appraisal are provided at Table 3.

Table 3. AEcol personnel responsible for each stage of the Preliminary Ecological Appraisal.

TASK	PERSONNEL
Desk-study	Dr James McGill & Heather Anning BSc
Phase 1 habitat survey	James McGill & Heather Anning
Reporting	James McGill & Heather Anning
Proof-reading	Henry Andrews MSc CEcol MCIEEM

Statements of competence

4.5.2 Dr James McGill has competence in botanical, entomological and avian surveys. He has conducted terrestrial entomological surveys in support of EcIA and on behalf of public authorities including Natural England, and conservation organisations including the RSPB. James has competency in Phase 1 (JNCC 2010) habitat surveys, site assessment and botanical surveys demonstrated through achieving a Level 4 Field Identification Skills Certificate (FISC). His doctoral research investigated outcomes of habitat creation and management for assemblages of invertebrates associated with Open Mosaic Habitat on Previously Developed Land (McGill 2018). James has specific competence in species surveys for the mistletoe marble *Celypha woodiana* and hairy click beetle *Synaptus filiformis* (S41 Species), and the loosestrife root weevil *Hylobius transversovittatus* (Red Data Book species).

4.5.3 Heather Anning has a Bachelor’s Degree in Ecology and the Environment, in which her dissertation comprised the control and spread of sudden oak death *Phytophthora ramorum* within the UK. Heather also completed a research project as part of her degree which comprised abundance, behaviour and group size of primates in the

Pacaya-Samiria National Reserve, Peru. Heather holds a licence to survey dormouse in England. Heather has completed ten Preliminary Ecological Appraisals and has been using historic and field data within structural appraisals since April 2017.

4.5.4 Henry Andrews has competence in botanical and faunal surveys. In addition to a Master's Degree in Biological Recording and Species Identification, he is a Chartered Ecologist and Full member of the CIEEM. Henry has been conducting Ecological Impact Assessment (EcIA) from Preliminary Ecological Appraisal through to successful application since 2003. Henry has competency in Phase 1 (JNCC 2010) habitat surveys, site assessment and botanical surveys demonstrated through achieving a Level 4 Field Identification Skills Certificate (FISC). He has competency in site assessment and has designed successful European Protected Species Licences (EPSL) in respect of development for a wide range of protected species, which included habitat creation, species translocation and post-development monitoring spanning 5, 10, 15 and 25 years plus. Henry holds licences to survey for great crested newts, sand lizards, smooth snakes, common dormice and all bat species in England. His chartered status was achieved by demonstrating specialist accomplishment in bat survey and analysis design, in which authoritative status was demonstrated in greater than the required number of disciplines. Henry is the author of the *Bat Tree Habitat Key* (Andrews *et al.* 2016); a comprehensive guide to tree-roosting ecology and was on the steering group for BS 8596 *Surveying for bats in trees and woodland – Guide*. As well as appearing as an expert witness in respect of bat survey, he has also given training in bat ecology and survey methods on behalf of the Bat Conservation Trust and to Forestry Commission, Natural Resources Wales, Environment Agency and National Trust staff.

4.6 Constraints

4.6.1 Constraints in relation to historical data are identified and discussed at Paragraph 4.2.1. No further constraints were encountered.

4.7 Review notice

4.7.1 The desk-study, surveys and interpretation of the results were performed, and this report was written, by appropriately qualified personnel who are identified in the text. All aspects of this commission have been performed in accordance with extant Planning Policy and the Professional Code of Conduct (PCC) set out by the Chartered Institute of Ecologists and Environmental Managers (CIEEM) which states: “*As a Member of CIEEM I shall: -*

1. *Uphold the Objects of CIEEM and the reputation of the profession.*

-
2. *Maintain my professional knowledge and skills, including undertaking and recording such continuing professional development as CIEEM shall require and providing evidence thereof when requested to do so.*
 3. *Only undertake work that I have the competence to do to the expected standard and seek appropriate advice, training and assistance if I am involved in topics beyond my competence.*
 4. *Exercise sound professional judgement in my work, identifying clearly the limitations and applying objectivity, relevance, accuracy, proportionality and impartiality to information and professional advice I provide, including having regard to the relevant published technical guidance and standards and complying with all laws.*
 5. *Act at all times with professional integrity, avoiding or managing any conflicts of interest and avoiding actions that are inconsistent with my professional obligations and the Objects of CIEEM.*
 6. *Ensure those working for me are appropriately qualified, trained, competent, supervised and supported.*
 7. *Demonstrate a commitment to avoiding discriminatory practices in my professional activities.*
 8. *Accept responsibility for my actions and decisions (current as of November 2017)."*

4.7.2 The requirement to accord with Planning Policy applies equally to Developers, Ecological Consultants and all consultees, including Local Authority Ecologists, Environment Agency Ecologists and any individual acting for a Wildlife Trust. Equally, even where they are not sufficiently experienced to qualify for membership, it is expected that anyone reviewing this text in a professional capacity will take care to accord with Items 3, 4 and 5 of the CIEEM PCC. Therefore, it is expected that any review by a third party will: -

1. Open by identifying the identity of the reviewer, including all the following: a) their title; b) their full name; c) their qualifications; d) the membership grade they hold in any relevant professional body; e) the position they hold if they are acting professionally (i.e. Mineral Planning Authority, Environment Agency, Wildlife Trust etc.); and, f) their contact details;
2. Restrict comments to the context of extant Planning Policy, specifically identifying the mechanism that has elicited the review item; and
3. Support all comments with tangible scientific evidence which will be appended to any report, letter or email response.

4.7.3 Review comments that require a response should apply the same principles as the definition of a Planning Condition, setting out concisely and in plain English what is required in one paragraph, and providing the reason the action is compelled and an accompanying paragraph.

4.7.4 It should be noted that any review comment that attempts to illicit a financial exposure that is not robustly demonstrated to be: a) compelled by Planning Policy (in the case of a request for a specific survey evidence should be presented in support of a hypothesis that it is ‘more-likely-than-not’ that the species may occur); and, b) demonstrated as materially worthwhile in the context of a quarry development and satisfying all the criteria listed under Item 4 of the PCC (i.e. objectivity, relevance, accuracy, proportionality and impartiality), will be referred to the planning case officer for justification and may also be referred to the CIEEM Disciplinary Board, as without this information AEcol might be exposing themselves to a charge under Item 5 of the PCC.

Section 4 – End

5. SITE CONTEXT

5.1 General

5.1.1 The Site falls within: -

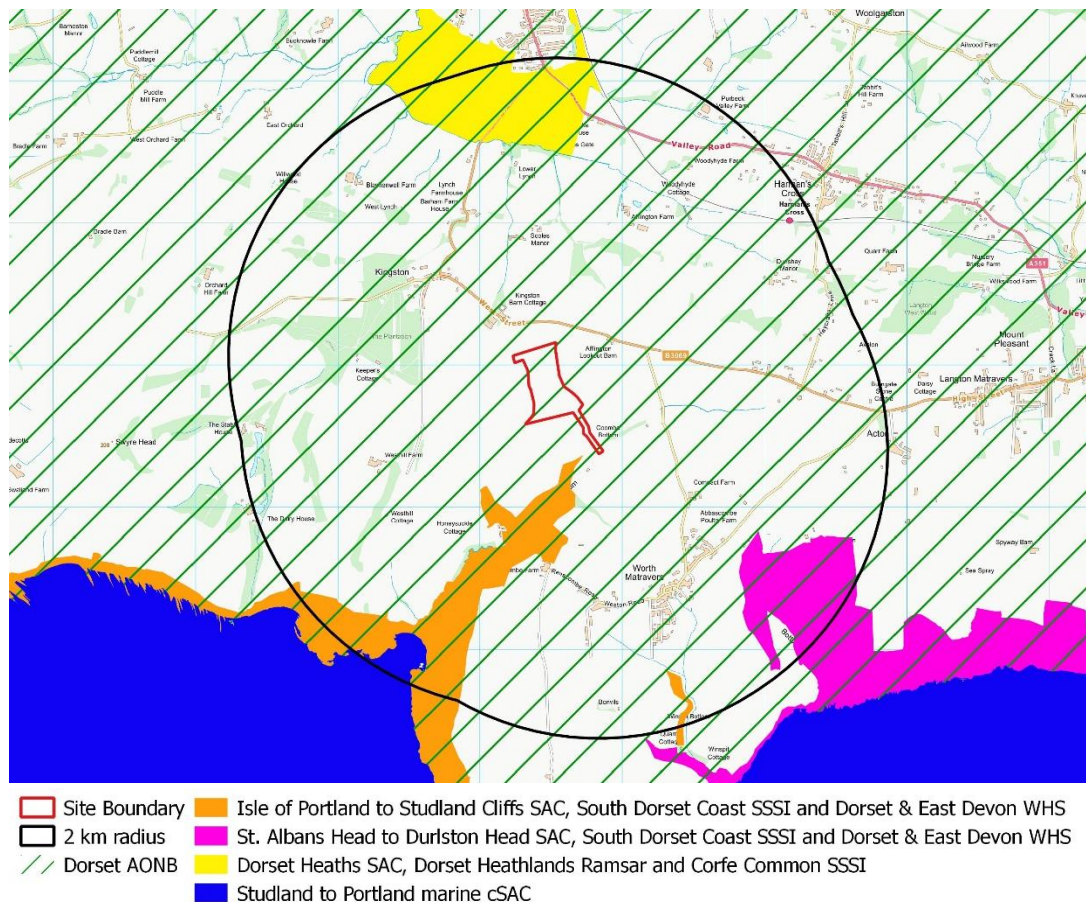
- A 2 km radius of nine statutory wildlife notifications; and
- A 1 km radius of 12 non-statutory wildlife citations.

5.2 Statutory Wildlife Sites

5.2.1 The data-search performed by DERC and reference to www.magic.gov.uk returned details of nine Statutory Wildlife Site designations (in respect of biological notification) within a 2 km radius of The Site, comprising: -

1. Isle of Portland to Studland Cliffs Special Area of Conservation (SAC);
2. St. Albans Head to Durlston Head SAC;
3. Dorset Heaths SAC;
4. Studland to Portland marine candidate Special Area of Conservation (cSAC);
5. Dorset and East Devon World Heritage Site (WHS);
6. Dorset Heathlands Ramsar;
7. Corfe Common Site of Special Scientific Interest (SSSI);
8. South Dorset Coast SSSI; and
9. Dorset Area of Outstanding Natural Beauty (AONB).

5.2.2 The location and extent of the nine Statutory Wildlife citations in relation to The Site is shown at Figure 2 on the following page.



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Figure 2. The location and extent of the nine Statutory Wildlife Sites which will be considered within the PEA.

Special Area of Conservation (SAC)

5.2.3 SAC are designated under the EC Habitats Directive and comprise areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SAC are designated and legally protected under the *Conservation of Habitats and Species Regulations 2017*. Sites which have been submitted to the European Commission by Government, but not yet formally adopted by the Commission, are referred to as candidate Special Areas of Conservation (cSAC).

Isle of Portland to Studland Cliffs SAC

5.2.4 Isle of Portland to Studland Cliffs SAC is located c. 100 m to the south-west of The Site. The SAC is c. 1,446 ha in surface area and encompasses South Dorset Coast

SSSI and Dorset & East Devon World Heritage Site. The Priority Features for which the SAC is designated, are the Annex I habitats and Annex II species: -

- 1210 – Annual vegetation of drift lines;
- 1230 – Vegetated sea cliffs of the Atlantic and Baltic Coasts;
- 6210 – Semi-natural dry grasslands and scrubland faces on calcareous substrates (*Festuco-Brometelia*) (*important orchid sites);
- 1304 – Greater horseshoe-bat *Rhinolophus ferrumequinum*; and
- 1654 – Early gentian *Gentianella anglica*.

St. Albans Head to Durlston Head SAC

5.2.5 St. Albans Head to Durlston Head SAC is located c. 1.2 km to the south-east of The Site. The SAC is c. 285 ha in surface area and also encompasses South Dorset Coast SSSI and Dorset & East Devon World Heritage Site. The Priority Features, for which the SAC is designated, are the Annex I habitats and Annex II species: -

- 1230 – Vegetated sea cliffs of the Atlantic and Baltic Coasts;
- 6210 – Semi-natural dry grasslands and scrubland faces on calcareous substrates (*Festuco-Brometelia*) (*important orchid sites);
- 1304 – Greater horseshoe-bat *Rhinolophus ferrumequinum*; and
- 1654 – Early gentian *Gentianella anglica*.

Dorset Heaths SAC

5.2.6 Dorset Heaths SAC is located c. 1.3 km to the north of The Site. The SAC is c. 5,711 ha in surface area and encompasses Dorset Heathlands Ramsar and Corfe Common SSSI. The Priority Features, for which the SAC is designated, are the Annex I habitats and Annex II species: -

- 4010 – Northern Atlantic wet heaths with *Erica tetralix*;
- 4020 – Temp Atlantic wet heaths with *Erica ciliaris* and *E. tetralix*;
- 4030 – European dry heaths;
- 6410 – *Molinia* meadows on calcareous, peaty or clayey soils (*Molinion caeruleae*);
- 7150 – Depressions on peat substrates of the *Rhynchosporion*;
- 7210 – Calcareous fens with saw sedge *Cladium mariscus* and species of the *Carion davallianaeu* (i.e. small-sedge fen with open low-growing sedge vegetation);
- 7230 – Alkaline fens;
- 9190 – Old acidophilous oak woods with pedunculate oak *Quercus robur* on sandy plains;
- 1044 – Southern damselfly *Coenagrion mercurial*; and
- 1166 – Great crested newts *Triturus cristatus*.

Studland to Portland marine cSAC

- 5.2.7 Studland to Portland marine cSAC is located *c.* 1.8 km to the south-west of The Site and is *c.* 33,191 ha in surface area. The Priority Feature, for which the cSAC has been submitted, is the Annex I habitat: -
- 1170 – Reefs.

World Heritage Sites (WHS)

- 5.2.8 A site is included on the World Heritage List if it is considered to be of outstanding universal value and meets one or more of criteria defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Dorset and East Devon WHS

- 5.2.9 Dorset and East Devon World Heritage Site is located *c.* 100 m to the south-west of The Site and is *c.* 2,550 ha in surface area. It was included as a World Heritage Site as it holds outstanding evidence of the natural history of Earth and its processes.

Ramsar

- 5.2.10 Ramsar sites were designated under the Ramsar Convention on Wetlands of International Importance as holding populations of European Importance of bird species listed on Annex I to the EC Birds Directive.

Dorset Heathlands Ramsar

- 5.2.11 Dorset Heathlands Ramsar is located *c.* 1.3 km to the north of The Site. It is *c.* 6,675 ha in surface area and encompasses Corfe Common SSSI. The Ramsar is designated for its good examples of northern Atlantic wet heath with cross-leaved heath *Erica tetralix* and acid mire with *Rhynchosporion*. It holds the largest example of southern Atlantic wet heaths with Dorset heath *Erica ciliaris* and cross-leaved heath. Dorset Heathlands Ramsar holds one nationally rare and 13 nationally scarce species of wetland plant and at least 28 nationally rare wetland invertebrate species, as well as breeding Dartford warbler and wintering hen harrier.

Sites of Special Scientific Interest (SSSI)

- 5.2.12 SSSI are legally protected under Section 28 of the *Wildlife & Countryside Act 1981 (& as amended)* and may be cited for the uncommon habitats and/or assemblage of rare species they hold.

Corfe Common SSSI

5.2.13 Corfe Common SSSI is located *c.* 1.3 km to the north of The Site and is *c.* 91 ha in surface area. The SSSI is cited for its dry and wet heaths, valley mire and fen, botanically rich flushes and an assemblage of local and rare invertebrate species.

South Dorset Coast SSSI

5.2.14 South Dorset Coast SSSI is located *c.* 100 m to the south-west of The Site and is *c.* 1,592 ha in surface area. The SSSI is cited for its unimproved limestone grassland and chalk heath which support rare plant species including carrot broomrape *Orobanche maritima* and wild cabbage *Brassica oleracea*, as well as the largest national population of early spider orchid *Ophrys sphegodes*; a species legally protected under the *Wildlife & Countryside Act 1981 (& as amended)*. The SSSI also supports the largest population of Lulworth skipper *Thymelicus acteon*; a S41 species of butterfly.

Areas of Outstanding Natural Beauty (AONB)

5.2.15 AONBs are formally designated by Natural England (NE), who are responsible for advising on relevant policies; responsibility of care lies with the local authorities. AONBs are cited for their significant landscape value under the *National Parks and Access to the Countryside Act 1949*, in order to conserve their natural beauty. The *Countryside and Rights of Way Act 2000* brought in advisory committees, Statements of Intent and Management Plans and appointed AONB officer to further protect AONBs.

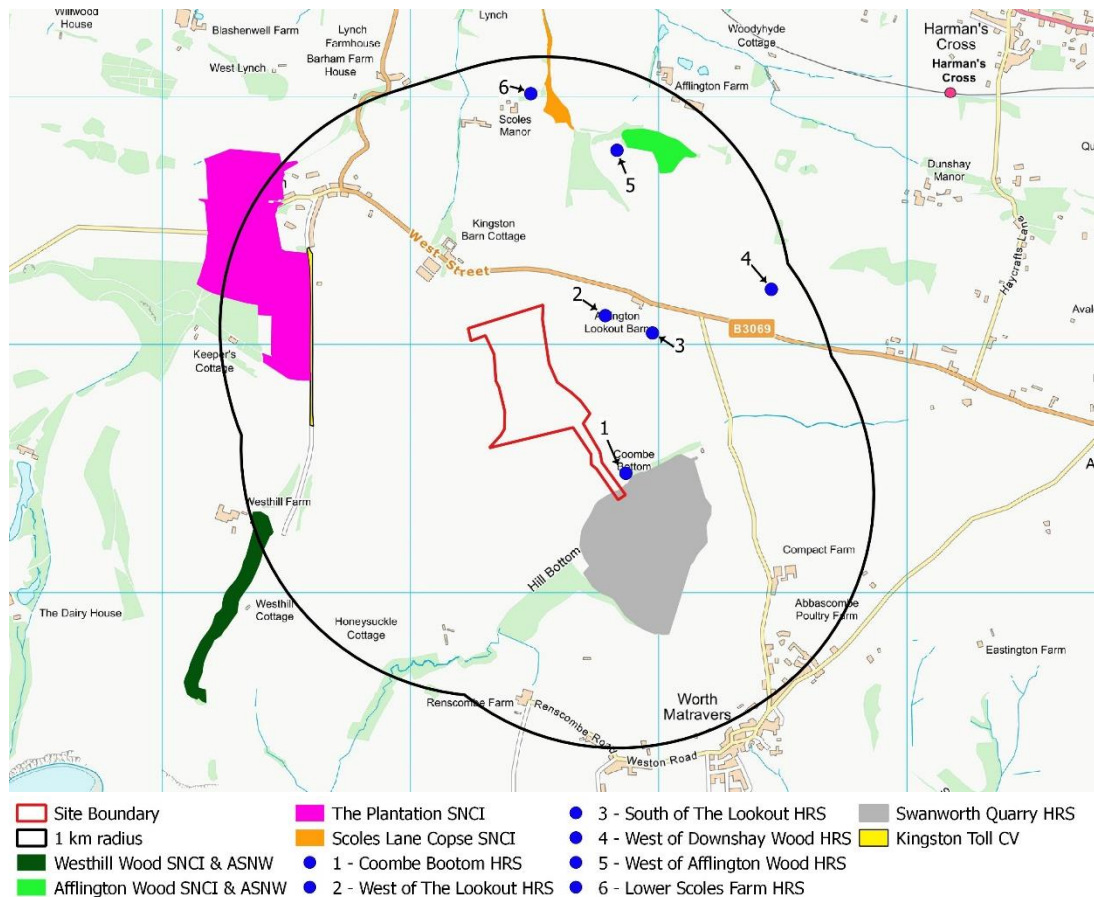
Dorset AONB

5.2.16 The Site falls within the Dorset AONB which is *c.* 112,923 ha in surface area. The AONB is cited for its complex chalk, limestone and sandstone geology and its downland and heathland with a wide range of flora and fauna.

5.3 Non-Statutory Wildlife Sites

5.3.1 Non-Statutory Wildlife Sites are usually identified by the relevant county Wildlife Trust having been selected through application criteria developed by that particular Trust for assessment of biodiversity value in the county context. They have no statutory protection but local authorities may adopt policies to ensure that their value is taken into consideration in the determination of planning applications that could affect them.

-
- 5.3.2 The DERC data-search returned details of 12 non-Statutory Wildlife Sites within a 1 km radius of The Site, comprising: -
1. Westhill Wood Site of Nature Conservation Interest (SNCI);
 2. Afflington Wood SNCI;
 3. The Plantation SNCI;
 4. Scoles Lane Copse SNCI;
 5. Coombe Bottom Habitat Restoration Site (HRS);
 6. West of The Lookout HRS;
 7. South of The Lookout HRS;
 8. West of Downshay Wood HRS;
 9. West of Afflington Wood HRS;
 10. Lower Scoles Farm HRS;
 11. Swanworth Quarry HRS; and
 12. Kingston Toll Conservation Verge (CV).
- 5.3.3 The data-search performed by DERC and reference to www.magic.gov.uk also identified details of two areas of woodland listed on the Ancient Woodland Inventory within a 1 km radius of The Site comprising: -
1. Westhill Wood Ancient Semi-Natural Woodland (ASNW); and
 2. Afflington Wood ASNW.
- 5.3.4 The locations and extents of the 12 non-Statutory Wildlife Sites and two areas of Ancient Semi-Natural Woodland in relation to The Site are shown at Figure 3 on the following page.



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Figure 3. The location and extent of the 12 non-Statutory Wildlife Sites and two areas of Ancient Semi-Natural Woodland within a 1 km radius of The Site.

- 5.3.5 Westhill Wood SNCI & ASNW is located *c.* 940 m to the south-west of The Site and is *c.* 5.1 ha in surface area. It is cited as a semi-natural deciduous woodland and ancient woodland site.
- 5.3.6 Afflington Wood SNCI & ASNW is located *c.* 700 m to the north-east of The Site and is *c.* 2.7 ha in surface area. It is cited as a small ancient deciduous woodland on a gentle North-facing slope.
- 5.3.7 The Plantation SNCI is located *c.* 640 m to the west of The Site and is *c.* 25.7 ha in surface area. It is cited as a deciduous plantation with broadleaved woodland and neutral grassland.
- 5.3.8 Scoles Lane Copse SNCI is located *c.* 715 m to the north of The Site and is *c.* 1.4 ha in surface area. It is cited as a semi-natural broadleaved woodland with calcareous

grassland.

- 5.3.9 Coombe Bottom HRS is located *c.* 45 m to the east of The Site and the habitat interest comprises an individual pond.
- 5.3.10 West of The Lookout HRS is located *c.* 250 m to the east of The Site and the habitat interest comprises an individual pond.
- 5.3.11 South of The Lookout HRS is located *c.* 435 m to the east of The Site and the habitat interest comprises an individual pond.
- 5.3.12 West of Downshay Wood HRS is located *c.* 920 m to the east of The Site and the habitat interest comprises an individual pond.
- 5.3.13 West of Afflington Wood HRS is located *c.* 685 m to the north-east of The Site and the habitat interest comprises an individual pond.
- 5.3.14 Lower Scoles Farm HRS is located *c.* 850 m to the north of The Site and the habitat interest comprises an individual pond.
- 5.3.15 Swanworth Quarry HRS abuts The Site to the south-east of The Site and is partly within The Site. The habitat of the HRS comprises calcareous grassland.
- 5.3.16 Kingston Toll CV is located *c.* 630 m to the west of The Site and is noted for butterfly-orchids *Platanthera sp.*, common spotted-orchid *Dactylorhiza fuchsii*, twayblade *Listera sp.* and white helleborine *Cephalanthera damasonium*.

Section 5 – End

6. PHASE 1 HABITAT SURVEY

6.1 Phase 1 (JNCC 2010) habitats

6.1.1 Habitats within The Site can be broadly divided into 14 Phase 1 (JNCC 2010) habitat types comprising: -

- A2.1 – Woodland and scrub / Scrub / Dense (0.52 ha);
- A3.1 – Woodland and scrub / Parkland and scattered trees / Broad-leaved (7 trees);
- B3.1 – Grassland and marsh / Calcareous grassland / Unimproved (0.05 ha);
- B3.2 – Grassland and marsh / Calcareous grassland / Semi-improved (0.35 ha);
- B4 – Grassland and marsh / Improved grassland (1.32 ha);
- B6 – Grassland and marsh / Poor semi-improved (0.36 ha);
- C1.1 – Tall herb and fern / Bracken / Continuous (0.06 ha);
- C3.1 – Tall herb and fern / Other / Tall ruderal (0.24 ha);
- I2.2 – Rock exposure and waste / Artificial / Spoil (0.02 ha);
- J1.1 – Miscellaneous / Cultivated/disturbed ground / Arable (11.50 ha);
- J2.1.2 – Miscellaneous / Boundaries / Intact hedge / Species-poor (0.34 ha);
- J2.2.2 – Miscellaneous / Boundaries / Defunct hedge / Species-poor (0.09 ha);
- J2.5 – Miscellaneous / Boundaries / Wall (0.05 ha); and
- J4 – Miscellaneous / Bare ground (0.09 ha).

6.1.2 Figure 4 on the following page shows the location and extent of Phase 1 (JNCC 2010) habitats within The Site. A full list of plant species recorded within The Site can be found at Appendix A.

6.1.3 Figure 5 shows the field numbers described during the Phase 1 survey.



Imagery © 2018 Google

Figure 4. The location and extent of Phase 1 (JNCC 2010) habitats.



Imagery © 2018 Google

Figure 5. The field numbers as described during the Phase 1 survey.

6.2 Access

6.2.1 The Site is accessed from a farm track to the south of West Street (B3069); a minor road which runs from the north of Kingston to the east of Langton Matravers.

6.3 A2.1 – Dense scrub (0.52 ha)

6.3.1 Dense scrub occurs in two situations within The Site, comprising: -

- Elder *Sambucus nigra*/bramble *Rubus fruticosus* agg. scrub in Field 4; and
- Blackthorn *Prunus spinosa* and bramble scrub in the valley containing the Purbeck Way.

Elder/bramble scrub

6.3.2 There is a small block of dense scrub in Field 4, comprising elder and bramble over frequent stinging nettle *Urtica dioica* with wood dock *Rumex sanguineus*, field bindweed *Convolvulus arvensis*, and a thin sward of cock's-foot *Dactylis glomerata*, false oat-grass *Arrhenatherum elatius*, Yorkshire-fog *Holcus lanatus* and barren brome *Anisantha sterilis*.

Blackthorn scrub

6.3.3 The dense scrub on the valley slopes above the Purbeck Way comprises blackthorn and bramble with hawthorn *Crataegus monogyna*, elder, common gorse *Ulex europaeus*, traveller's-joy *Clematis vitalba*, ivy *Hedera helix* and honeysuckle *Lonicera periclymenum*. Herb species indicate dunging, shade and hydrology, such as creeping thistle *Cirsium arvense*, stinging nettle, hogweed *Heracleum sphondylium*, cow parsley *Anthriscus sylvestris*, cleavers *Galium aparine*, scarlet pimpernel *Anagallis arvensis*, greater plantain *Plantago major*, rough meadow-grass *Poa trivialis*, Yorkshire-fog and false oat-grass in areas of higher fertility, red campion *Silene dioica*, wood dock, herb-Robert *Geranium robertianum*, wood avens *Geum urbanum*, ground-ivy *Glechoma hederacea*, hedge woundwort *Stachys sylvatica*, wood speedwell *Veronica montana*, lords-and-ladies *Arum maculatum*, stinking iris *Iris foetidissima*, false brome *Brachypodium sylvaticum*, hart's-tongue *Asplenium scolopendrium* and bracken *Pteridium aquilinum* in shaded areas, and bitter-sweet *Solanum dulcamara*, herb-Robert and creeping buttercup *Ranunculus repens* in damper areas. Photo 1 illustrates the continuous scrub in the valley above the Purbeck Way.



Photo 1. Illustrative image of dense scrub in the valley above the Purbeck Way.

6.4 A3.1 – Scattered broad-leaved trees (7)

6.4.1 Scattered trees occur within The Site comprising: -

- Ash *Fraxinus excelsior*;
- Elder; and
- Sycamore *Acer pseudoplatanus*.

Ash

6.4.2 An individual 20 m tall, 43 cm diameter at breast height (DBH), mature ash is located at O.S grid reference SY 96804 78495.

Sycamore

6.4.3 Two mature sycamores are present on the south-facing slope of the valley above the Purbeck Way at O.S grid reference SY 96838 78461. These are *c.* 20 m tall and surrounded by continuous scrub.

Elder

6.4.4 Four elders are present along the dry-stone-wall separating Fields 1 and 2, between O.S grid references SY 96376 79065 and SY 96419 79079. These are 1-3 m tall and 15-20 cm DBH.

6.5 B3.1 – Unimproved calcareous grassland (0.05 ha)

6.5.1 Unimproved calcareous grassland occurs in one situation within The Site; on the steep slope above the Purbeck Way. Upright brome *Bromopsis erecta* is abundant within the sward with a lesser component of red fescue *Festuca rubra*, crested dog's-tail *Cynosurus cristatus* and tor-grass *Brachypodium sylvaticum*. Herbs comprise spear thistle *Cirsium vulgare*, hemp-agrimony *Eupatorium cannabinum*, smooth hawk's-beard *Crepis capillaris*, nipplewort *Lapsana communis*, yarrow *Achillea millefolium*, wild carrot *Daucus carota*, common sorrel *Rumex acetosa*, common bird's-foot trefoil *Lotus corniculatus*, common vetch *Vicia sativa*, meadow vetchling *Lathyrus pratensis*, black medick *Medicago lupulina*, self-heal *Prunella vulgaris*, red bartsia *Odontites vernus*, lady's bedstraw *Galium verum*, hedge bedstraw *Galium album* and bracken. Photo 2 illustrates the unimproved calcareous grassland.



Photo 2. Illustrative image of the unimproved calcareous grassland.

6.6 B3.2 – Semi-improved calcareous grassland (0.35 ha)

6.6.1 Semi-improved calcareous grassland occurs in two situations within The Site comprising: -

- Part of Field 4; and
- At the top of the slope above the Purbeck Way.

Field 4

6.6.2 The semi-improved calcareous grassland in Field 4 is situated at the flat northern end, and in the southern half on an east-facing 30° slope. The sward comprises frequent

crested dog's-tail, rough meadow-grass and creeping bent *Agrostis stolonifera* with a lesser component of cock's-foot, false oat-grass, Yorkshire-fog and soft-brome *Bromus hordaceus*. Dung indicates that the grass is grazed by cattle and sheep, although no livestock were present during the survey and the presence of false brome, common couch *Elytrigia repens* and false oat-grass suggests selective grazing at low-density. Herbs are scattered throughout and comprise spear thistle, creeping thistle, smooth hawk's-beard, curled dock *Rumex crispus*, hogweed, red campion, common bird's-foot trefoil, common vetch, hop trefoil *Trifolium campestre*, white clover *Trifolium repens*, cut-leaved crane's-bill *Geranium dissectum*, field forget-me-not *Myosotis arvensis*, self-heal, common mouse-ear *Cerastium fontanum*, creeping buttercup, ribwort plantain *Plantago lanceolata* and field bindweed. The presence of common couch and field bindweed hints that this field has been under tillage at some point in the past. Photo 3 illustrates the semi-improved calcareous grassland in Field 4.



Photo 3. Illustrative image of calcareous semi-improved grassland in Field 4.

Top of slope above the Purbeck Way

- 6.6.3 The semi-improved calcareous grassland along the footpath/sheep track at the top of the east-facing slope above the Purbeck way comprises frequent false brome and red fescue with a lesser component of perennial rye-grass *Lolium perenne*, Yorkshire-fog, creeping bent, soft-brome and false oat-grass. Herbs comprise woolly thistle *Cirsium*

eriophorum, spear thistle, smooth sow-thistle *Sonchus oleraceus*, wild parsnip *Pastinaca sativa*, upright hedge-parsley *Torilis japonica*, dandelion species *Taraxacum* sp., red campion, common bird's-foot trefoil, common vetch, red clover *Trifolium pratense*, creeping cinquefoil *Potentilla reptans*, cut-leaved crane's-bill, germander speedwell *Veronica chamaedrys*, common speedwell *Veronica persica*, wall speedwell *Veronica arvensis*, self-heal, red bartsia, yellow pimpernel *Lysimachia nemorum*, common mouse-ear, male-fern *Dryopteris filix-mas* and bracken. Hawthorn, dog rose *Rosa canina*, bramble, common and traveller's-joy were also noted within taller areas of the otherwise low sward. Photo 4 illustrates the semi-improved calcareous grassland at the top of the slope above the Purbeck Way.



Photo 4. Illustrative image of calcareous semi-improved grassland at top of the slope above the Purbeck Way.

6.7 B4 – Improved grassland (1.32 ha)

6.7.1 Improved grassland occurs in two situations within The Site, comprising: -

- Field 1; and
- The margins of the Purbeck Way footpath.

6.7.2 In both situations the improved grassland comprises perennial rye-grass with white clover. Field 1 is cut every three weeks for hay. Photo 5 illustrates the character of the improved grassland.



Photo 5. Illustrative image of the improved grassland in Field 1.

6.8 B6 – Poor semi-improved grassland (0.36 ha)

- 6.8.1 The poor semi-improved grassland comprises false oat-grass with rough meadow-grass, soft-brome, barren brome, creeping bent, Yorkshire-fog and common couch. Herbs comprise a suite of common species already described with additional hedge mustard *Sisymbrium officinale*, wild radish *Raphanus raphanistrum* and white dead-nettle *Lamium album*. Photo 6 illustrates the poor semi-improved grassland field margins.



Photo 6. Illustrative image of the poor semi-improved grassland in field margins.

6.9 C1.1 – Continuous bracken (0.06 ha)

6.9.1 Continuous bracken occurs in one situation within The Site, on the slope above the Purbeck Way. Photo 7 illustrates the continuous bracken.



Photo 7. Illustrative image of the continuous bracken.

6.10 C3.1 – Tall ruderal vegetation (0.24 ha)

6.10.1 Tall ruderal vegetation occurs in one situation within The Site, comprising an area at the bottom of the slope in Field 4. The rank sward comprises creeping thistle, spear thistle, stinging nettle, curled dock and hedge bindweed *Calystegia sepium* with rough meadow-grass and soft-brome. Photo 8 illustrates the tall ruderal vegetation.



Photo 8. Illustrative image of tall ruderal vegetation in Field 4.

6.11 12.2 – Spoil (0.02 ha)

6.11.1 Spoil occurs in one situation within The Site; around a vehicle waiting area within Swanworth Quarry. This comprises a 1-2 m strip at the base of a 3 m high bund on the north side of the area, and two 3 m bunds on the south side. The sward comprises seedling sycamore and hawthorn within a ruderal sward of tussocky tall plants on a mosaic of bare and loose earth and rock; butterfly-bush *Buddleja davidii*, bramble, teasel *Dipsacus fullonum*, spear thistle, lesser hawkbit *Leontodon taraxacoides*, smooth sow-thistle, prickly sow-thistle *Sonchus asper*, smooth hawk's-beard, Guernsey fleabane *Conyza sumatrensis*, yarrow, hoary ragwort *Senecio erucifolia*, colt's-foot *Tussilago farfara*, curled dock, hemp-agrimony, red valerian *Centranthus ruber*, great mullein *Verbascum thapsus*, wild parsnip, wild carrot, American willowherb *Epilobium ciliatum*, hoary willowherb *Epilobium parviflorum*, square-stalked willowherb *Epilobium tetragonum*, perforate St John's-wort *Hypericum perforatum*, creeping cinquefoil, wood avens, common bird's-foot trefoil, cut-leaved crane's-bill, herb-Robert, large bindweed *Calystegia silvatica*, hedge woundwort, wood sage *Teucrium scorodonia*, self-heal, greater plantain, buck's-horn plantain *Plantago coronopus*, ribwort plantain, wall speedwell, ivy, cock's-foot, false oat-grass, Yorkshire-fog, creeping bent, barren brome and glaucous sedge *Carex flacca*. Photo 9 illustrates the revegetating spoil in Swanworth Quarry.



Photo 9. Illustrative image of vegetation on spoil in Swanworth Quarry.

6.12 J1.1 – Arable (11.50 ha)

6.12.1 On the day of survey, there were three fields under tillage, and variously holding: oats *Avena sativa*; lucerne *Medicago sativa*; and, barley *Hordeum vulgare*.

Field 2 – Oats

6.12.2 The weed species noted in Field 2 comprised smooth sow-thistle, scentless mayweed *Tripleurospermum inodorum*, cow parsley, corn parsley *Petroselinum segetum*, fat-hen *Chenopodium album*, redshank *Persicaria maculosa*, scarlet pimpernel, white clover, cut-leaved crane's-bill, field bindweed, greater plantain, soft-brome, perennial rye-grass, annual meadow-grass, rough meadow-grass, creeping bent and black grass *Alopecurus myosuroides*. Photo 10 illustrates the arable field with oat crop.



Photo 10. Illustrative image of arable field with oat crop.

Field 3 – Lucerne

6.12.3 The weed species noted in Field 3 comprised smooth sow-thistle, daisy *Bellis perennis*, groundsel *Senecio vulgaris*, hogweed, shepherd's-purse *Capsella bursa-pastoris*, scarlet pimpernel, rough meadow-grass and black grass. A post and wire fence divides Field 3 from Field 4. Photo 11 illustrates the arable field with lucerne crop.



Photo 11. Illustrative image of arable field with lucerne crop.

Field 5 – Spring barley

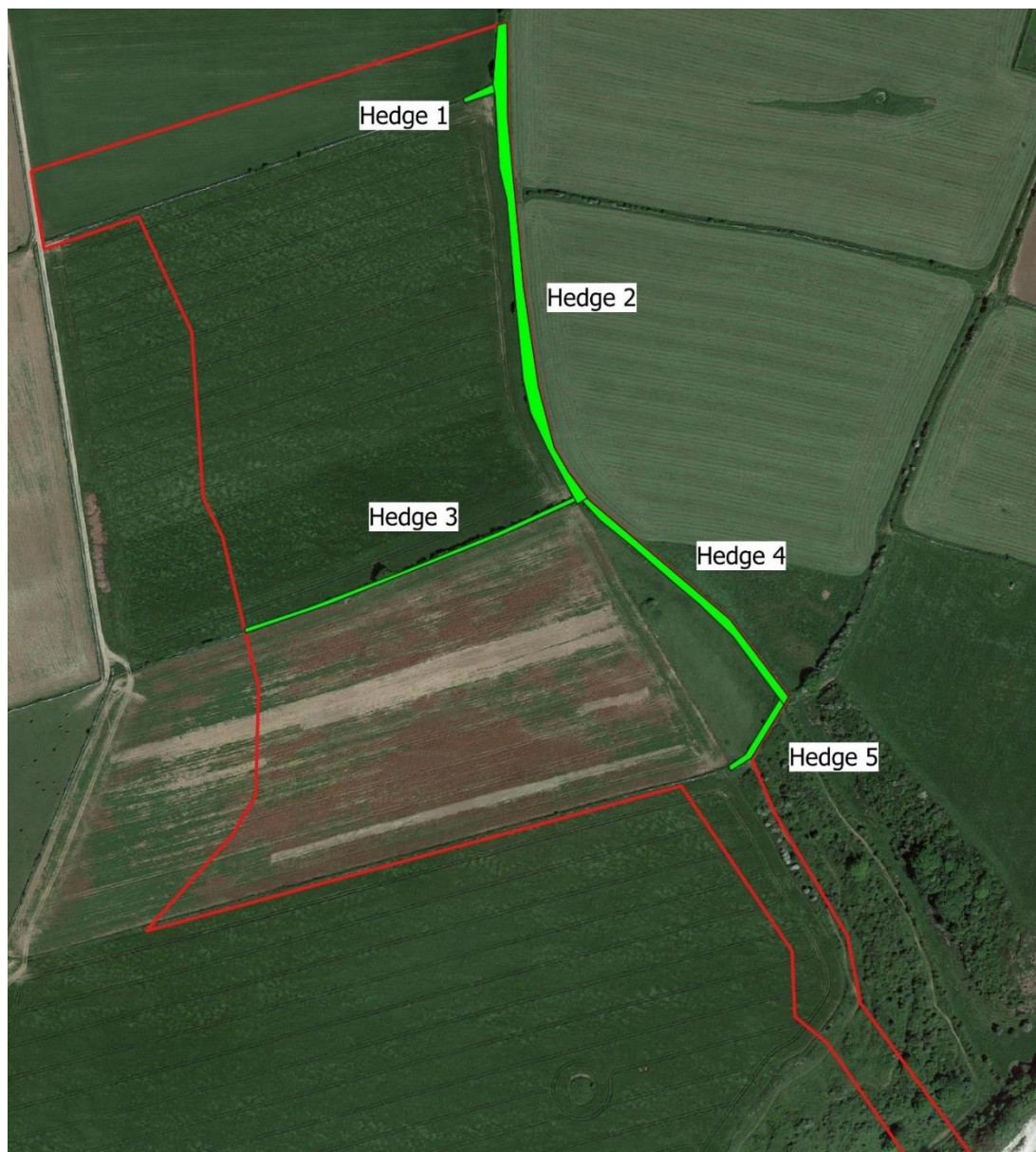
6.12.4 The weed species noted in Field 5 comprise those listed in Field 2 with additional cleavers. Photo 12 illustrates the arable field with spring barley crop.



Photo 12. Illustrative image of arable field with spring barley crop.

6.13 J2 – Hedges (0.43 ha)

6.13.1 Five hedgerows are present within The Site, their location and extent are shown at Figure 6. In summary, woody species comprise blackthorn, hawthorn, elder and field rose. Bramble, traveller's-joy and ivy are frequent throughout. The herb-layer comprises stinging nettle and cleavers with scattered cow parsley, hogweed, greater burdock, creeping thistle, wood dock, cut-leaved crane's-bill, wood avens, herb-Robert, bittersweet, hedge woundwort, lords-and-ladies, stinking iris, rough meadow-grass, false oat-grass and false brome.



Imagery © 2018 Google

Figure 6. The five hedgerow sections that bound and divide The Site.

Hedge 1 – J2.1.2 Intact species-poor hedge

6.13.2 Hedge 1 is intact, c. 21 m in length, 2.5-3 m high and 2-4 m wide and separates Fields 1 and 2. Woody species comprise blackthorn, with a lesser component of hawthorn, elder and field rose. The herb-layer comprises bramble, traveller's-joy and ivy. The hedge has an associated dry-stone-wall but there is no associated bank or ditch. The sides of the hedge are managed by flailing. Hedge 1 does not qualify as 'Important' under the criterion of the *Hedgerow Regulations 1997*. Photo 13 illustrates Hedge 1.



Photo 13. Illustrative image of Hedge 1.

Hedge 2 – J2.1.2 Intact species-poor hedge

6.13.3 Hedge 2 is intact, c. 325 m in length, 3-4 m high and 3-4 m wide, along the northern half of the eastern boundary of The Site including Fields 1 and 2. Woody species comprise blackthorn with a lesser component of hawthorn, elder and sycamore. A sycamore in the hedge at O.S. grid reference SY 96535 79133 is 12 m high with five pollard stems, a DBH of 27 cm and ivy on one stem. A sycamore in the hedge at O.S. grid reference SY 96550 78981, although inaccessible, is c. 15 m high and has ivy on the trunk. An elder in the hedge at O.S. grid reference SY 96559 78927 is 4 m high, with a DBH of 13 cm and has a rot hole in a stem on the north side 60 cm off the ground, with an aperture 3 cm wide and 3 cm high (TN01). The herb-layer comprises bramble and ivy. Hedge 2 has an associated dry-stone-wall but there is no associated bank or ditch. The sides of the hedge are managed by flailing. Hedge 2 does not qualify as 'Important' under the criterion of the *Hedgerow Regulations 1997*. Photo 14 on the following page illustrates Hedge 2.



Photo 14. Illustrative image of Hedge 2.

Hedge 3 – (J2.2.2 Defunct species-poor hedge)

6.13.4 Hedge 3 is defunct, c. 155 m in length, 3-4 m high and 3-4 m wide, along the eastern half of the boundary between Fields 2 and 3. Woody species comprise blackthorn, elder and sycamore. A sycamore in the hedge at O.S. grid reference SY 96448 78811 with two pollard stems is 20 m high, with a DBH of 49 cm and ivy on the trunk. There is a rot hole on the north side of the trunk 1 m off the ground, with an aperture 3 cm wide, 4 cm high, and 15 cm deep (TN13). Hedge 3 has an associated dry-stone-wall but no associated bank or ditch. Hedge 3 does not qualify as ‘Important’ under the criteria of the *Hedgerow Regulations 1997*. The sides of the hedge are managed by flailing. Photo 15 illustrates Hedge 3.



Photo 15. Illustrative image of Hedge 3.

Hedge 4 – (J2.1.2 Intact species-poor hedge)

6.13.5 Hedge 4 is intact, c. 180 m in length, 3-5 m high and 3 m wide and situated on the eastern boundary of Field 4. Woody species comprise blackthorn, hawthorn and elder. Hedge 4 has an associated dry-stone-wall but no associated bank or ditch. The sides of the hedge are managed by flailing. Hedge 4 does not qualify as ‘Important’ under the criteria of the *Hedgerow Regulations 1997*. Photo 16 illustrates Hedge 4.



Photo 16. Illustrative image of Hedge 4.

Hedge 5 – (J2.2.2 – Defunct species-poor hedge)

6.13.6 Hedge 5 is unmanaged and defunct; c. 50 m in length, 1 m high and 1-2 m wide and situated on the southern boundary of Field 4. Woody species comprise blackthorn, and hawthorn. Hedge 5 has no associated bank or ditch and does not qualify as ‘Important’ under the criteria of the *Hedgerow Regulations 1997*. Photo 17 illustrates Hedge 5.



Photo 17. Illustrative image of Hedge 5.

6.14 J2.5 – Wall (0.05 ha)

- 6.14.1 Dry-stone-walls occur under Hedges 1, 2 and 3, and between: Fields 1 and 2; Fields 2 and 3; and, Fields 3 and 5.
- 6.14.2 The dry-stone-walls beneath the hedges are discontinuous. Photo 18 illustrates the character of the dry-stone-walls in open situations, separating fields.



Photo 18. Illustrative image of dry stone walls separating fields.

- 6.14.3 The dry-stone-walls separating the fields are *c.* 1 m high and 70 cm wide at the base, and mostly intact. These are unvegetated apart from occasional bramble and hart's-tongue fern.

6.15 J4 – Bare ground (0.09 ha)

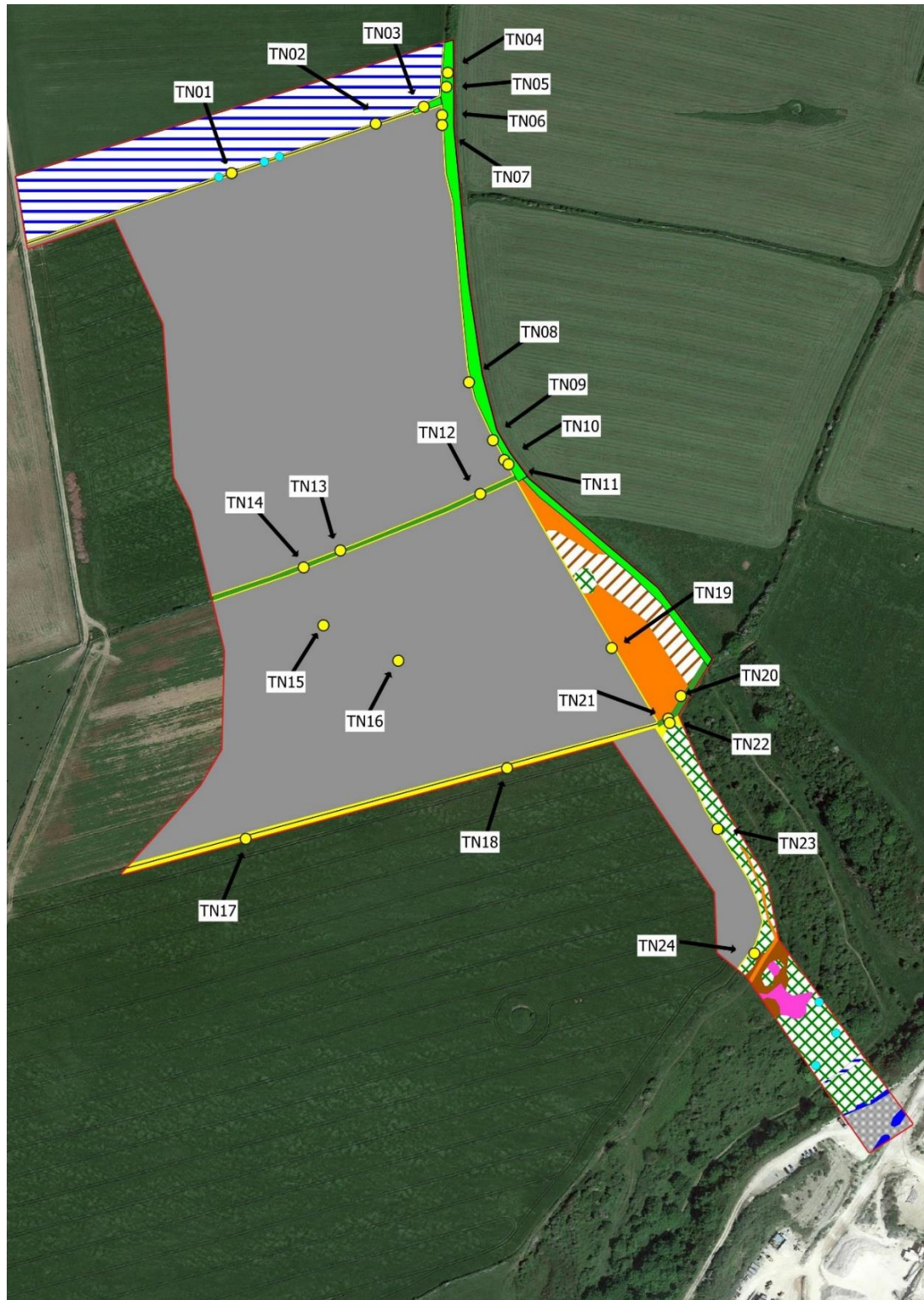
- 6.15.1 The part of The Site that falls within the active part of Swanworth Quarry comprises unvegetated bare ground which is used as a vehicle waiting area.

6.16 Target Notes

- 6.16.1 Twenty-four Target Notes were recorded relating to: three skylark; one linnet; one yellowhammer; five brown hares; one dead badger; three badger latrines; one badger path; nine mammal paths; potential bat-roost features in two trees; and four piles of rubble and/or wood forming potential reptile hibernacula. The detailed notes are provided at Table 4 and their location is shown at Figure 7.

Table 4. Phase 1 Target Notes.

CODE	LOCATION	COMMENTS
TN01	SY 96385 79068	PRF in elder
TN02	SY 96487 79103	Mammal path
TN03	SY 96521 79115	Mammal path
TN04	SY 96538 79139	Dead badger
TN05	SY 96537 79129	Pile of rubble and wood - potential reptile hibernacula
TN06	SY 96534 79109	Mammal path
TN07	SY 96534 79102	Fresh badger latrine
TN08	SY 96553 78920	Fresh badger latrine
TN09	SY 96570 78879	Badger path with hair
TN10	SY 96578 78865	Mammal path
TN11	SY 96581 78862	Mammal path
TN12	SY 96561 78841	Mammal path
TN13	SY 96462 78801	PRF in sycamore
TN14	SY 96436 78789	Pile of rubble - potential reptile hibernacula
TN15	SY 96450 78748	Three skylark; male singing and two others flushed from crop
TN16	SY 96503 78723	Five brown hares in field
TN17	SY 96395 78597	Mammal path
TN18	SY 96580 78647	Mammal path
TN19	SY 96654 78732	Male linnet singing
TN20	SY 96703 78698	Male yellowhammer alarm calling
TN21	SY 96694 78682	Pile of rubble - potential reptile hibernacula
TN22	SY 96695 78679	Fresh badger latrine
TN23	SY 96729 78604	Mammal path
TN24	SY 96755 78516	Pile of rubble - potential reptile hibernacula



Imagery © 2018 Google

Figure 7. The location of Target Notes within The Site.

6.17 S41 Habitats and LBAP Priority Habitats

6.17.1 Two of the Phase 1 habitat types; B3.1 – Unimproved calcareous grassland and J2.1.2 – Intact species-poor hedge, qualify as S41 Habitat and LBAP Priority Habitat, comprising: -

- **S41:** -
 - *Lowland Calcareous Grassland*; and
 - *Hedgerows*.
- **LBAP:** -
 - *Lowland calcareous grassland*; and
 - *Ancient &/or species rich hedgerows*.

6.17.2 Table 5 summarises the Phase 1 habitats that qualify as S41 Habitat and LBAP Priority Habitat.

Table 5. Phase 1 habitat types within The Site that qualify as S41 Habitat and LBAP Priority Habitat.

PHASE 1 HABITAT TYPE	S41 HABITAT	LBAP PRIORITY HABITAT	SURFACE AREA
B3.1 – Unimproved calcareous grassland	<i>Lowland calcareous grassland</i>	N/A	0.05 ha
	N/A	<i>Lowland calcareous grassland</i>	
J2.1.2 – Intact species-poor hedge	<i>Hedgerows</i>	N/A	0.34 ha
	N/A	<i>Ancient &/or species rich hedgerows</i>	

S41 Habitat – Broad habitat is listed as a Habitat of Principal Importance under Section 41 of the *NERC Act 2006*; and
LBAP Priority Habitat – Broad habitat type has a Habitat Action Plan within the Biodiversity Action Plan for Dorset.

Section 6 – End

7. DESK-STUDY RESULTS

7.1 Plants

Data-search

7.1.1 The DERC data-search returned no records of legally protected or S41 Species of plants but returned one record of a LBAP Priority Species of plant; dwarf spurge *Euphorbia exigua*, made outside The Site but within the wider search area. Table 6 summarises the record cited, its conservation status, location, date, and the distance between the recorded location and The Site.

Table 6. Record of dwarf spurge occurring within 500 m of The Site boundary, its legal / conservation significance, location, date and the distance between the recorded location and The Site, provided by DERC.

SPECIES	LEGAL / CONSERVATION SIGNIFICANCE			LOCATION	MOST RECENT DATE	DISTANCE FROM THE SITE
	W&CA	S41	LBAP			
Dwarf spurge <i>Euphorbia exigua</i>	----	----	✓	SY 9681 7922	2013	c. 285 m to the east

Historic surveys

7.1.2 No formal accounts of historic botanical surveys of The Site are held by DERC.

Predictive Ecological Assessment System

7.1.3 Applying the criteria set out earlier in Section 4 of this report to the habitats present within The Site, and considering the accepted national distribution, known local distribution, habitat requirements and ecology of each species, the potential likelihood of legally protected, S41 Species or LBAP Priority Species of plant to occur was assessed.

Result

7.1.4 The presence of one species of plant within The Site is considered probable (i.e. there is a “reasonable likelihood” of occurrence), comprising: dwarf spurge (LBAP Species).

7.1.5 The habitats present within The Site that dwarf spurge is proven to exploit, and its environmental niche therein, are identified at Table 7.

Table 7. The habitats present within The Site that are exploited by dwarf spurge, and the environmental niche occupied by the plant therein.

ECOLOGY		SPECIES
		Dwarf spurge
HABITAT	Habitat niche	Arable fields
	Equivalent Phase 1 habitat(s)	J1.1
	Extent present (Ha)	11.50
ENVIRONMENTAL NICHE AS IDENTIFIED BY HILL <i>ET AL.</i> (1999) IN DEFINED ELLENBERG INDICATOR VALUES ⁶	Shade tolerance	6
	Moisture tolerance	4
	Soil pH	7
	Soil nitrogen	5

7.2 Invertebrates

Data-search

7.2.1 The DERC data-search returned no records of legally protected or S41 Species of invertebrate but returned one record of a LBAP Priority Species of invertebrate; wall *Lasiommata megera*, made outside The Site but within the wider search area. Table 8 on the following page summarises the record cited, its conservation status, location, date and the distance between the recorded location and The Site.

⁶ Ellenberg Indicator Values are a model of bioindication comprising seven environmental values, as follows: 1) shade tolerance; 2) temperature tolerance; 3) climate (latitude band in which the plant typically occurs); 4) moisture (drought and flood tolerance); 5) soil pH; 6) fertility (soil nitrogen load); and, 7) salinity tolerance. These values indicate the environmental niche that the plant species can occupy, but do not take into account other environmental factors such as management, tolerance to competition etc. which must be factored in separately. The Values provided in the table are those that are meaningful in the context of this report.

Table 8. Record of wall occurring within 500 m of The Site boundary, its legal / conservation significance, location, date and the distance between the recorded location and The Site, provided by DERC.

SPECIES	LEGAL / CONSERVATION SIGNIFICANCE			LOCATION	MOST RECENT DATE	DISTANCE FROM THE SITE
	W&CA	S41	LBAP			
Wall <i>Lasiommata megera</i> (butterfly)	----	----	✓	SY970790	2013	c. 390 m to the east

Historic surveys

7.2.2 No formal accounts of historic invertebrate surveys within The Site or wider search area are held by DERC.

Predictive Ecological Assessment System

7.2.3 In order to provide a foundation for predictive assessment, a review of the geographical distribution and habitat requirements of legally protected, S41 Species or LBAP Priority Species of invertebrates was performed and is provided in the accompanying Excel Spreadsheet⁷. The results of the desk-study and the distribution and habitat requirements review provides the evidence-base upon which further predictive assessment is performed.

7.2.4 Applying the criteria set out earlier in Section 4 of this report to the habitats present within The Site, and considering the accepted national distribution, known local distribution, habitat requirements and ecology of each species, the potential likelihood of legally protected, S41 Species or LBAP Priority Species of invertebrate to occur was assessed. A summary of the results of this assessment is provided in the following text. It should be noted that no attempt is made to gauge habitat quality, as a result the process typically overestimates the biodiversity of habitats. However, this does ensure due-diligence at each stage.

Result

7.2.5 The presence of one species of butterfly within The Site is considered probable (i.e. there is a “reasonable likelihood” of occurrence), comprising: wall (S41 Species and

⁷ See: Appendix B – Swanworth Quarry – Results of Predictive Ecological Assessment System – August 2018

LBAP Species).

7.2.6 The habitats present within The Site that wall is proven to exploit, and its environmental niche therein, are identified at Table 9.

Table 9. The habitats present within The Site that are exploited by wall butterfly, and the environmental niche occupied by the invertebrate therein.

ECOLOGY		SPECIES
		Wall (butterfly)
HABITAT	Habitat niche	Short unimproved grassland, coastal cliffs & dunes, hedgerows, wasteland, disused quarries, gardens, railway embankments & footpaths
	Equivalent Phase 1 habitat(s)	B3.1, J1.1, J2.1.2, J2.2.2
	Extent present (Ha)	11.98
ENVIRONMENTAL NICHE	Trophic niche	Herbivore
	Foodplants exploited	Bent sp. <i>Agrostis sp.</i> , cock’s-foot <i>Dactylis glomerata</i> , false brome <i>Brachypodium sylvaticum</i> , tor-grass <i>B. pinnatum</i> , wavy hair-grass <i>Deschampsia flexuosa</i> & Yorkshire-fog <i>Holcus lanatus</i>
	Foodplants present in The Site	Creeping bent <i>Agrostis stolonifera</i> , cock’s-foot, false brome, tor-grass & Yorkshire-fog

7.2.7 While there is insufficient evidence to conclude the presence of any species of conservation significance is probable, the status of 61 invertebrate species of conservation significance is ‘Potential – Untested’. These species, their legal / conservation significance, and the Phase 1 habitats they exploit are identified at Table 10.

Table 10. The 61 invertebrate species of conservation significance for which presence within The Site is considered ‘Potential – Untested’, their legal / conservation status and the Phase 1 habitat types present within The Site in which they might occur (N.B. the table continues over five pages).

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION STATUS		
		W&CA*	S41	LBAP
Roman snail <i>Helix pomatia</i> (mollusc)	A2.1, B3.1, B3.2	✓	----	----
Silky gallows-spider <i>Diploena inornata</i> (spider)	A2.1	----	✓	✓

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION STATUS		
		W&CA*	S41	LBAP
Serrated tongue-spider <i>Centromerus serratus</i> (spider)	B3.1, B3.2	----	✓	----
Thin weblet <i>Meioneta mollis</i> (spider)	B3.1, B3.2	----	✓	✓
Necklace ground beetle <i>Carabus monilis</i> (beetle)	A2.1, B3.1, B3.2, B4, B6, J1.1	----	✓	✓
Black oil-beetle <i>Meloe proscarabaeus</i> (beetle)	B3.1, B3.2	----	✓	✓
Violet oil-beetle <i>Meloe violaceus</i> (beetle)	B3.1, B3.2	----	✓	✓
Black-backed meadow ant <i>Formica pratensis</i> (ant)	A2.1, B3.1, B3.2, B4, B6, J2.1.2, J2.2.2	----	✓	----
Shining guest ant <i>Formicoxenus nitidulus</i> (ant)	A2.1	----	✓	✓
Dingy skipper <i>Erynnis tages</i> (butterfly)	B3.1, B3.2	----	✓	✓
Grizzled skipper <i>Pyrgus malvae</i> (butterfly)	B3.1, B3.2, I2.2	----	✓	✓
Wood white <i>Leptidea sinapis</i> (butterfly)	A2.1, B3.1, B3.2, B4, B6	----	✓	✓
Brown hairstreak <i>Thecla betulae</i> (butterfly)	A2.1, J2.1.2, J2.2.2	----	✓	✓
Wall <i>Lasiomma megera</i> (butterfly)	B3.1, J1.1, J2.1.2, J2.2.2	----	✓	✓
Small heath <i>Coenonympha pamphilus</i> (butterfly)	A2.1, B3.1, B3.2, B4, B6	----	✓	✓
Ghost moth <i>Hepialus humuli</i> (moth)	B3.1, B3.2, B4, B6	----	✓	✓
Pale eggar <i>Trichiura crataegi</i> (moth)	A2.1, J2.1.2, J2.2.2	----	✓	✓
Lackey <i>Malacosoma neustria</i> (moth)	A2.1, J1.1, J2.1.2, J2.2.2	----	✓	✓
Small emerald <i>Hemistola chrysoprasaria</i> (moth)	B3.1, B3.2, J2.1.2, J2.2.2	----	✓	✓
Blood-vein <i>Timandra comae</i> (moth)	J1.1	----	✓	✓
Mullein wave <i>Scopula marginepunctata</i> (moth)	B3.1, B3.2	----	✓	✓
Dark-barred twin-spot carpet <i>Xanthorhoe ferrugata</i> (moth)	B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	----	✓	✓

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION STATUS		
		W&CA*	S41	LBAP
Chalk carpet <i>Scotopteryx bipunctaria</i> (moth)	B3.1, B3.2, J4	----	✓	----
Shaded broad-bar <i>Scotopteryx chenopodiata</i> (moth)	B3.1, B3.2, J1.1	----	✓	✓
Galium carpet <i>Epirrhoe galiata</i> (moth)	B3.1, B3.2	----	✓	✓
Dark spinach <i>Pelurga comitata</i> (moth)	A2.1, B3.1, B3.2, B4, B6, C3.1, J1.1	----	✓	✓
Small phoenix <i>Ecliptopera silaceata</i> (moth)	B3.1, B3.2, B4, B6, C3.1, J1.1, J2.1.2, J2.2.2	----	✓	✓
Pretty chalk carpet <i>Melanthia procellata</i> (moth)	A2.1, J1.1, J2.1.2, J2.2.2	----	✓	✓
Latticed heath <i>Chiasmia clathrata</i> (moth)	B3.1, B3.2, B4, B6, J1.1	----	✓	✓
Dusky thorn <i>Ennomos fuscantaria</i> (moth)	J1.1, J2.1.2, J2.2.2	----	✓	✓
Figure of eight <i>Diloba caeruleocephala</i> (moth)	A2.1, A3.1, J1.1, J2.1.2, J2.2.2	----	✓	✓
Garden tiger <i>Arctia caja</i> (moth)	A2.1, A3.1, B3.1, B3.2, B4, B6, J1.1	----	✓	✓
White ermine <i>Spilosoma lubricipeda</i> (moth)	A2.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	----	✓	✓
Buff ermine <i>Spilosoma luteum</i> (moth)	A2.1, A3.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	----	✓	✓
Cinnabar <i>Tyria jacobaeae</i> (moth)	B3.1, B3.2, B4, B6, J1.1	----	✓	✓
White-line dart <i>Euxoa tritici</i> (moth)	B3.1, B3.2	----	✓	✓
Garden dart <i>Euxoa nigricans</i> (moth)	B3.1, B3.2, B4, B6, J1.1	----	✓	✓
Double dart <i>Graphiphora augur</i> (moth)	A2.1, A3.1, J1.1, J2.1.2, J2.2.2	----	✓	✓
Small square-spot <i>Diarsia rubi</i> (moth)	A2.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	----	✓	✓
Pale shining brown <i>Polia bombycina</i> (moth)	A2.1, B3.1, B3.2	----	✓	✓

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION STATUS		
		W&CA*	S41	LBAP
Dot moth <i>Melanchra persicariae</i> (moth)	B3.1, B3.2, B4, B6, C3.1, J1.1, J2.1.2, J2.2.2	----	✓	✓
Broom moth <i>Melanchra pisi</i> (moth)	A2.1, B3.1, B3.2, B4, B6	----	✓	✓
Shoulder-striped wainscot <i>Mythimna comma</i> (moth)	B3.1, B3.2, B4, B6, J1.1	----	✓	✓
Sprawler <i>Asteroscopus sphinx</i> (moth)	A2.1, A3.1, J1.1	----	✓	✓
Brindled ochre <i>Dasypolia temple</i> (moth)	B3.1, B3.2, B4, B6	----	✓	✓
Deep-brown dart <i>Aporophyla lutulenta</i> (moth)	A2.1, B3.1, B3.2, B4, B6, J1.1	----	✓	✓
Green-brindled crescent <i>Allophyes oxyacanthae</i> (moth)	A2.1, A3.1, J1.1, J2.1.2, J2.2.2	----	✓	✓
Brown-spot pinion <i>Agrochola litura</i> (moth)	A2.1, A3.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	----	✓	✓
Beaded chestnut <i>Agrochola lychnidis</i> (moth)	A2.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	----	✓	✓
Centre-barred sawfly <i>Atethmia centrigo</i> (moth)	J1.1, J2.1.2, J2.2.2	----	✓	✓
Grey dagger <i>Acronicta psi</i> (moth)	A2.1, A3.1, B3.1, B3.2, J1.1, J2.1.2, J2.2.2	----	✓	✓
Knot grass <i>Acronicta rumicis</i> (moth)	A2.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	----	✓	✓
Mouse moth <i>Amphipyra tragopoginis</i> (moth)	J1.1	----	✓	✓
Dusky brocade <i>Apamea remissa</i> (moth)	B3.1, B3.2, J1.1, J2.1.2, J2.2.2	----	✓	✓
Large nutmeg <i>Apamea anceps</i> (moth)	A2.1, B3.1, B3.2, B4, B6, J1.1	----	✓	✓
Rosy minor <i>Mesoligia literosa</i> (moth)	A2.1, B3.1, B3.2, J1.1	----	✓	✓
Ear moth <i>Amphipoea oculea</i> (moth)	A2.1, B3.1, J1.1	----	✓	✓

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION STATUS		
		W&CA*	S41	LBAP
Rosy rustic <i>Hydraecia micacea</i> (moth)	B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	----	✓	✓
Rustic <i>Hoplodrina blanda</i> (moth)	B3.1, B3.2, B4, B6, C3.1, J1.1	----	✓	✓
Mottled rustic <i>Caradrina morpheus</i> (moth)	A2.1, B3.1, B3.2, B4, B6, C3.1, J1.1	----	✓	✓
Fuscous flat-body <i>Agonopterix capreolella</i> (moth)	B3.1, B3.2	----	✓	✓

* Listed on Schedule 5 – Protected against: - killing, inuring and taking

7.3 Fish

Data-search

7.3.1 The DERC data-search returned no records of legally protected, S41 Species or LBAP Priority Species of fish occurring historically within The Site or within the wider search area.

Historic surveys

7.3.2 No formal accounts of historic fish surveys within The Site or wider search area are held by DERC.

Predictive Ecological Assessment System

7.3.3 In order to provide a foundation for predictive assessment, a review of the geographical distribution and habitat requirements of legally protected, S41 Species or LBAP Priority Species of fish was performed and is provided in the accompanying Excel Spreadsheet⁸. The results of the desk-study and the distribution and habitat requirements review provides the evidence-base upon which further predictive assessment is performed.

7.3.4 Applying the criteria set out earlier in Section 4 of this report to the habitats present within The Site, and considering the accepted national distribution, known local distribution, habitat requirements and ecology of each species, the potential likelihood of legally protected, S41 Species or LBAP Priority Species of fish to occur was assessed. A summary of the results of this assessment is provided in the following

⁸ See: Appendix B – Swanworth Quarry – Results of Predictive Ecological Assessment System – August 2018

text. It should be noted that no attempt is made to gauge habitat quality, as a result the process typically overestimates the biodiversity of habitats. However, this does ensure due-diligence at each stage.

Result

- 7.3.5 There are no grounds to suggest that the presence of any legally protected, S41 Species or LBAP Species of fish might potentially occur within The Site.

7.4 Amphibians

Data-search

- 7.4.1 The DERC data-search returned no records of legally protected, S41 Species or LBAP Priority Species of amphibian occurring historically within The Site or within the wider search area.

Historic surveys

- 7.4.2 No formal accounts of historic amphibian surveys within The Site or wider search area are held by DERC.

Predictive Ecological Assessment System

- 7.4.3 In order to provide a foundation for predictive assessment, a review of the geographical distribution and habitat requirements of legally protected, S41 Species or LBAP Priority Species of amphibians was performed and is provided in the accompanying Excel Spreadsheet⁹. The results of the desk-study and the distribution and habitat requirements review provides the evidence-base upon which further predictive assessment is performed.
- 7.4.4 Applying the criteria set out earlier in Section 4 of this report to the habitats present within The Site, and considering the accepted national distribution, known local distribution, habitat requirements and ecology of each species, the potential likelihood of legally protected, S41 Species or LBAP Priority Species of amphibians to occur was assessed. A summary of the results of this assessment is provided in the following text. It should be noted that no attempt is made to gauge habitat quality, as a result the process typically overestimates the biodiversity of habitats. However, this does ensure due-diligence at each stage.

⁹ See: *Appendix B – Swanworth Quarry – Results of Predictive Ecological Assessment System – August 2018*

Result

7.4.5 While there is insufficient evidence to conclude the presence of any species of conservation significance is probable, the presence of one amphibian species of conservation significance is considered ‘Potential – Untested’; common toad *Bufo bufo*. The conservation status of the common toad and the Phase 1 habitats the species exploits are identified at Table 11.

Table 11. The individual amphibian species of conservation significance for which presence within The Site is considered ‘Potential – Untested’, its legal / conservation significance and the Phase 1 habitat types present within The Site in which it might occur.

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION SIGNIFICANCE		
		W&CA	S41	LBAP
Common toad <i>Bufo bufo</i>	A2.1, B3.1, B3.2, B6, J2.1.2, J2.2.2	----	✓	✓

7.5 Reptiles

Data-search

7.5.1 The DERC data-search returned no records of legally protected, S41 Species or LBAP Priority Species of reptile occurring historically within The Site or within the wider search area.

Historic surveys

7.5.2 No formal accounts of historic reptile surveys within The Site or wider search area are held by DERC.

Predictive Ecological Assessment System

7.5.3 In order to provide a foundation for predictive assessment, a review of the geographical distribution and habitat requirements of legally protected, S41 Species or LBAP Priority Species of reptiles was performed and is provided in the accompanying Excel Spreadsheet¹⁰. The results of the desk-study and the distribution and habitat requirements review provides the evidence-base upon which further

¹⁰ See: *Appendix B – Swanworth Quarry – Results of Predictive Ecological Assessment System – August 2018*

predictive assessment is performed.

- 7.5.4 Applying the criteria set out earlier in Section 4 of this report to the habitats present within The Site, and considering the accepted national distribution, known local distribution, habitat requirements and ecology of each species, the potential likelihood of legally protected, S41 Species or LBAP Priority Species of reptile to occur was assessed. A summary of the results of this assessment is provided in the following text. It should be noted that no attempt is made to gauge habitat quality, as a result the process typically overestimates the biodiversity of habitats. However, this does ensure due-diligence at each stage.

Result

- 7.5.5 While there is insufficient evidence to conclude the presence of any species of conservation significance is probable, the presence of four reptile species of conservation significance is considered ‘Potential – Untested’. These species, their legal / conservation status, and the Phase 1 habitats they exploit are identified at Table 12.

Table 12. The four reptile species of conservation significance for which presence within The Site is considered ‘Potential – Untested’, their legal / conservation significance and the Phase 1 habitat types present within The Site in which they might occur.

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION SIGNIFICANCE		
		W&CA*	S41	LBAP
Slow-worm <i>Anguis fragilis</i> (lizard)	A2.1, B3.1, B3.2, B4, B6, J2.1.2, J2.2.2	✓	✓	✓
Common lizard <i>Zootoca vivipara</i> (lizard)	A2.1, B3.1, B3.2, B6, J2.1.2, J2.2.2	✓	✓	✓
Grass snake <i>Natrix natrix</i> (snake)	A2.1, B3.1, B3.2, B6, J2.1.2, J2.2.2	✓	✓	✓
Adder <i>Vipera berus</i> (snake)	A2.1, B3.1, B3.2, B6, J2.1.2, J2.2.2	✓	✓	✓

* Listed on Schedule 5 - Protected against: - killing and injuring only

7.6 Birds

Data-search

- 7.6.1 The DERC data-search returned no records of Schedule 1 species of birds but returned one record of a S41 Species and LBAP Priority Species of bird; bullfinch *Pyrrhula*

pyrrhula, made outside The Site but within the wider search area. Table 13 summarises the record cited, its conservation status, location, date and the distance between the recorded location and The Site.

Table 13. Record of bullfinch occurring within 500 m of The Site boundary, its legal / conservation significance, location, date and the distance between the recorded location and The Site, provided by DERC. N.B. The table that summarises ornithological records is, by necessity, in a different format to those for other taxa. This is due to the sheer volume of data that data-searches typically result in, and a need to focus attention on those records of greatest relevance.

SPECIES	LEGAL / CONSERVATION SIGNIFICANCE			LOCATION OF CLOSEST RECORD	YEAR OF CLOSEST RECORD	DISTANCE OF CLOSEST RECORD FROM THE SITE
	W&CA	S41	LBAP			
Bullfinch <i>Pyrrhula pyrrhula</i> (finch)	----	✓	----	SY968779	2012	475 m to the south

Historic surveys

7.6.2 No formal accounts of historic bird surveys within The Site or wider search area are held by DERC. However, the Phase 1 survey resulted in incidental records of skylark (see Target Note 15), linnet (see Target Note 19) and yellowhammer (see Target Note 20).

Predictive Ecological Assessment System

7.6.3 In order to provide a foundation for predictive assessment, a review of the geographical distribution and habitat requirements of Schedule 1, S41 Species or LBAP Priority Species of birds was performed and is provided in the accompanying Excel Spreadsheet¹¹. The results of the desk-study and the distribution and habitat requirements review provides the evidence-base upon which further predictive assessment is performed.

7.6.4 Applying the criteria set out earlier in Section 4 of this report to the habitats present within The Site, and considering the accepted national distribution, known local

¹¹ See: *Appendix B – Swanworth Quarry – Results of Predictive Ecological Assessment System – August 2018*

distribution, habitat requirements and ecology of each species, the potential likelihood of Schedule 1, S41 Species or LBAP Priority Species of bird to occur was assessed. A summary of the results of this assessment is provided in the following text. It should be noted that no attempt is made to gauge habitat quality, as a result the process typically overestimates the biodiversity of habitats. However, this does ensure due-diligence at each stage.

Result

7.6.5 The presence of three species within The Site is accepted, comprising: skylark (S41 Species), linnet (S41 Species) and yellowhammer (S41 Species and LBAP Species); and a further one species is considered to be probable (i.e. there is a “reasonable likelihood” of occurrence), comprising: bullfinch (S41 Species). The habitats present within The Site that skylark, linnet, yellowhammer and bullfinch might exploit, and their environmental niches therein, are identified at Tables 14 and 15.

Table 14. The habitats present within The Site that might be exploited by skylark and linnet, and their environmental niche therein.

ECOLOGY		SPECIES	
		Skylark	Linnet
HABITAT	Habitat niche	Large arable fields and unmanaged grassland	Breeding: gorse-covered commons, rough ground with scrub, unmanaged farmland, hedges, young plantations, fen woodlands, rural gardens & orchards. Wintering: farmland, wasteland & coastal marshes
	Equivalent Phase 1 habitat(s)	B3.1, B3.2, B4, B6, J1.1	A2.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2
	Extent (Ha)	13.58	14.53
ENVIRONMENTAL NICHE	Trophic	Omnivore	Omnivore
	Food	Grain, seeds, leaves and invertebrates	Seeds, particularly; fat-hen and chickweed. Also oilseed rape, grasses and tree seeds, with insects taken less often

Table 15. The habitats present within The Site that might be exploited by yellowhammer and bullfinch, and their environmental niche therein.

ECOLOGY		SPECIES	
		Yellowhammer	Bullfinch
HABITAT	Habitat niche	Omnivore	Herbivore
	Equivalent Phase 1 habitat(s)	Seeds (mostly grasses) and invertebrates	Buds of oak <i>Quercus</i> spp., willow <i>Salix</i> spp., and hawthorn <i>Crataegus</i> as well as flowers, berries and seeds
	Extent (Ha)	Arable fields with hedges, grassland and railway embankments	Short unimproved grassland, coastal cliffs and dunes, hedgerows, wasteland, disused quarries, gardens, railway embankments
ENVIRONMENTAL NICHE	Trophic	A2.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	A3.1, B3.1, J1.1, J2.1.2, J2.2.2
	Food	14.59	11.98 + 7 scattered trees

7.6.6 In addition, the status of a further 24 bird species of conservation significance is ‘Potential – Untested’. These species, their legal / conservation significance, and the Phase 1 habitats with which they are associated are identified at Table 16.

Table 16. The 24 bird species of conservation significance for which presence within The Site is considered ‘Potential – Untested’, their legal / conservation significance and the Phase 1 habitat types present within The Site in which they might occur (N.B. table continues over three pages).

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION SIGNIFICANCE			
		W&CA*	W&CAx	S41	LBAP
Grey partridge <i>Perdix perdix</i> (partridge)	Breeding, wintering: B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	----	----	✓	✓
Lapwing <i>Vanellus vanellus</i> (plover)	Wintering, non-breeding passage: B3.1, B3.2, B4, B6, J1.1	----	----	✓	✓
Herring gull <i>Larus argentatus</i> (gull)	Wintering, non-breeding passage: A3.1	----	----	✓	----

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION SIGNIFICANCE			
		W&CA*	W&CAx	S41	LBAP
Turtle dove <i>Streptopelia turtur</i> (pigeon)	Breeding, non-breeding passage: A3.1, J1.1, J2.1.2, J2.2.2	----	----	✓	✓
Cuckoo <i>Cuculus canorus</i> (cuckoo)	Breeding, non-breeding passage: A2.1, A3.1, J1.1, J2.1.2, J2.2.2	----	----	✓	✓
Barn owl <i>Tyto alba</i> (owl)	Breeding: A3.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	✓	----	----	----
Nightjar <i>Caprimulgus europaeus</i> (nighthjar)	Non-breeding passage: A3.1	----	----	✓	✓
Wryneck <i>Jynx torquilla</i> (woodpecker)	Non-breeding passage: A3.1	----	✓	----	----
Red-backed shrike <i>Lanius collurio</i> (shrike)	Non-breeding passage: A2.1, J2.1.2, J2.2.2	----	✓	----	----
Woodlark <i>Lullula arborea</i> (lark)	Wintering, non-breeding passage: J1.1	----	✓	✓	✓
Grasshopper warbler <i>Locustella naevia</i> (warbler)	Breeding, non-breeding passage: A2.1, B3.1, B3.2, B4, B6	----	----	✓	✓
Starling <i>Sturnus vulgaris</i> (starling)	Breeding, wintering: A3.1, B3.1, B3.2, B4, B6, J1.1, J4	----	----	✓	----
Ring ouzel <i>Turdus torquatus</i> (thrush)	Non-breeding passage: A2.1, B3.1, B3.2	----	----	✓	✓
Song thrush <i>Turdus philomelos</i> (thrush)	Breeding, wintering: A3.1, J2.1.2, J2.2.2	----	----	✓	----
Spotted flycatcher <i>Muscicapa striata</i> (flycatcher)	Breeding: A3.1	----	----	✓	✓
Dunnock <i>Prunella modularis</i> (accentor)	Breeding, wintering: A2.1, A3.1, B3.1, B3.2, B4, B6, C1.1, J1.1, J2.1.2, J2.2.2	----	----	✓	----
House sparrow <i>Passer domesticus</i> (sparrow)	Breeding, wintering: A2.1, A3.1, J1.1, J4	----	----	✓	✓
Tree sparrow <i>Passer montanus</i> (sparrow)	Breeding: A3.1, J1.1, J2.1.2, J2.2.2 Wintering: J1.1	----	----	✓	✓
Yellow wagtail <i>Motacilla flava</i> (wagtail)	Non-breeding passage: B3.1, B3.2, B4, B6, J1.1	----	----	✓	✓

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION SIGNIFICANCE			
		W&CA*	W&CA×	S41	LBAP
Twite <i>Carduelis flavirostris</i> (finch)	Wintering: J1.1	----	----	✓	----
Lesser redpoll <i>Carduelis cabaret</i> (finch)	Wintering, non-breeding passage: A2.1, A3.1, J2.1.2, J2.2.2	----	----	✓	----
Hawfinch <i>Coccothraustes</i> <i>coccothraustes</i> (finch)	Breeding, wintering: A3.1, J2.1.2, J2.2.2	----	----	✓	----
Reed bunting <i>Emberiza schoeniclus</i> (bunting)	Breeding: A2.1, B3.1, B3.2, B4, B6, J1.1 Wintering: J1.1	----	----	✓	✓
Corn bunting <i>Emberiza calandra</i> (bunting)	Breeding: B3.1, B3.2, B4, B6 Wintering: B3.1, B3.2, B4, B6, J1.1	----	----	✓	----

* Bird species listed on Schedule 1 of the *Wildlife & Countryside Act 1981 (& as amended)* receive additional legal protection under subsection 5 of the Act whilst nesting

× Bird species listed on Schedule 1 of the *Wildlife & Countryside Act 1981 (& as amended)* receive additional legal protection under subsection 5 of the Act whilst nesting; but in the context of this site it is irrelevant as the species is not predicted to occur for breeding

7.7 Mammals (excluding bats)

Data-search

- 7.7.1 The DERC data-search returned no records of legally protected or LBAP Priority Species of terrestrial mammal but returned one record of an individual S41 species of mammal; brown hare *Lepus europaeus*, made outside The Site but within the wider search area. Table 17 on the following page summarises the record cited, its conservation status, location, date and the distance between the recorded location and The Site.

Table 17. Record of brown hare occurring within 500 m of The Site boundary, its legal / conservation significance, location, date and the distance between the recorded location and The Site, provided by DERC.

SPECIES	LEGAL / CONSERVATION SIGNIFICANCE			LOCATION	MOST RECENT DATE	DISTANCE FROM THE SITE
	W&CA	S41	LBAP			
Brown hare <i>Lepus europaeus</i>	----	✓	✓	SY970782	2008	159 m to the south-east

Historic surveys

- 7.7.2 A Phase 1 survey in 2014 included part of The Site (AEcol 2014). During that survey, badger setts, latrines, tracks and crossing points were recorded, a summary of which is provided at Table 18.

Table 18. Records of badger activity in the 2014 Phase 1 survey, the description, location and distance between the recorded location and The Site.

DESCRIPTION	LOCATION	DISTANCE FROM THE SITE
Probable badger track	SY 96591 78857	c. 3 m to the east
Probable badger crossing point	SY 96543 78841	Within The Site
Probable badger crossing point	SY 96217 78568	100 m to the west
Single hole badger sett with bedding and scratch marks and showing signs of current use	SY 96387 78606	Within The Site
Fresh badger latrine	SY 96480 78633	Within The Site
Probable badger pathway	SY 96694 78669	Within The Site
Probable badger pathway	SY 96765 78544	Within The Site
Probable badger pathway	SY 96719 78487	30 m to the west
Tumulus (burial mound) with a single hole badger sett in the side showing signs of current use	SY 96591 78468	150 m to the west
Badger latrine	SY 96633 78356	180 m to the west
Probable badger pathway	SY 96649 78393	145 m to the west
Eight-hole badger sett with play area and scratching post. Four holes showing signs of current use	SY 96641 78364	170 m to the west
Single hole badger sett with fresh spoil	SY 96633 78365	175 m to the west
Single hole badger sett with bedding outside	SY 96619 78347	195 m to the west
Single hole badger sett	SY 96615 78343	200 m to the west
Fresh badger latrine	SY 96484 78264	355 m to the south-west
Probable badger track	SY 96178 78304	310 m to the south-west

7.7.3 In addition, the Phase 1 survey of The Site performed in 2018 recorded five brown hares in Field 3 (see Target Note 16), as well as a dead badger (see Target Note 4), badger latrines (see Target Notes 7, 8 and 22) and a badger pathway (see Target Note 9).

Predictive Ecological Assessment System

7.7.4 In order to provide a foundation for predictive assessment, a review of the geographical distribution and habitat requirements of legally protected, S41 Species or LBAP Priority Species of mammals was performed and is provided in the accompanying Excel Spreadsheet¹². The results of the desk-study and the distribution and habitat requirements review provides the evidence-base upon which further predictive assessment is performed.

7.7.5 Applying the criteria set out earlier in Section 4 of this report to the habitats present within The Site, and considering the accepted national distribution, known local distribution, habitat requirements and ecology of each species, the potential likelihood of legally protected, S41 Species or LBAP Priority Species of mammal to occur was assessed. A summary of the results of this assessment is provided in the following text. It should be noted that no attempt is made to gauge habitat quality, as a result the process typically overestimates the biodiversity of habitats. However, this does ensure due-diligence at each stage.

Result

7.7.6 The presence of two species within The Site is accepted, comprising: brown hare (S41 Species) and badgers (legally protected). The habitats present within The Site that brown hares and badgers might exploit, and their environmental niches therein, are identified at Table 19 on the following page.

¹² See: *Appendix B – Swanworth Quarry – Results of Predictive Ecological Assessment System – August 2018*

Table 19. The habitats present within The Site that might be exploited by brown hares and badgers, and their environmental niche therein.

ECOLOGY		SPECIES	
		Brown hare	Badger
HABITAT	Habitat niche	Herbivore	Omnivore
	Equivalent Phase 1 habitat(s)	A2.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	A2.1, B3.1, B3.2, B4, B6, J2.1.2, J2.2.2
	Extent (Ha)	14.53	3.03
ENVIRONMENTAL NICHE	Trophic	Cereal dominant arable fields, cattle grazed pasture, fallow land and uncultivated strips of land in arable fields. Woods, and hedgerows in winter	Grassland, woodland, scrub & hedgerows
	Food	Cereal crops and other vegetation	Earthworms and ground insects such as grubs etc. Fruit, particularly elder and bramble. May opportunistically take young hedgehogs, eggs of ground-nesting birds and also amphibians

7.7.7 In addition, the status of a four mammal species of conservation significance is 'Potential – Untested'. These species, their legal / conservation significance, and the Phase 1 habitats with which they are associated are identified at Table 20 on the following page.

Table 20. The four mammal species of conservation significance for which presence within The Site is considered ‘Potential – Untested’, their legal / conservation significance and the Phase 1 habitat types present within The Site in which they might occur.

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE	LEGAL / CONSERVATION SIGNIFICANCE			
		EPS*	W&CA**	S41	LBAP
Common dormouse <i>Muscardinus avellanarius</i>	A2.1, J2.1.2	✓	✓	✓	✓
Harvest mouse <i>Micromys minutus</i>	A2.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2	----	----	✓	✓
Hedgehog <i>Erinaceus europaeus</i>	A2.1, B3.1, B3.2, B4, B6, J2.1.2, J2.2.2	----	----	✓	✓
Polecat <i>Mustela putorius</i>	A2.1, B3.1, B3.2, B4, B6, J1.1, J2.1.2	----	----	✓	✓

*Listed on Schedule 2 – Protected against: deliberate killing, injuring, disturbing, damage, destruction to breeding site.

**Listed on Schedule 5 – Protected against: - disturbance whilst occupying or obstruction of access to place of shelter or protection.

7.8 Bats

Data-search

7.8.1 Because bats can fly and several species are territorial, their high level of legal protection means that they should be considered from the perspective of: -

1. The potential loss of on-site roost habitat;
2. The potential for isolation due to the severance of migration/commuting corridors that cross a site, and may be relied upon by bats of a colony roosting outside to one side and needing to cross to reach foraging habitat on another side; and
3. The potential for displacement due to the potential loss of foraging territories that might be relied upon by bats of a colony occupying an off-site roost.

7.8.2 This is because: -

1. Some bat species are reluctant to cross open areas but will, wherever possible, fly in the shelter of a linear landscape element such as a hedge, tree-line, riparian fringe etc. As a result, if such a migration/commuting route is removed, it may isolate a roost from an associated feeding ground; and
2. Specific groups defend their roosts and foraging grounds from bats of the same species. As a result, if the foraging territory of an individual bat is destroyed, it

may not be able to occupy another area if that area is already occupied and defended by a conspecific.

- 7.8.3 The data-search for records of bats is therefore widened to consider the ranges each species typically occupies around their roosts, and thereby anticipate whether or not habitats within a site proposed for development might represent the foraging territories of a specific colony of bats occupying known roosts.
- 7.8.4 The DERC data-search returned 1,376 high resolution records of bats and 25 low resolution records of bats historically occurring within a 6 km radius of The Site boundary. Of these, 1,198 were discarded due to incomplete species or location information (which constrained meaningful interpretation) or being outside the species average CSZ. The remaining 203 records have been divided into ‘roost’ records which indicate a colony of a specific species is at least seasonally present every year within the search area, and ‘in-flight’ records which simply indicate a species has been recorded in the area but (due to the migratory nature of several species) can offer no further insight into the resident status of the species. However, the DERC data did not identify whether a record relates to a ‘roost’ or an ‘in-flight’ contact. The status of the record was therefore deduced by AEcol by inference from other clues (such as the site name, whether repeat records were recorded, and whether the sex of bats was recorded). A summary of the ‘roost’ and ‘in-flight’ records is provided at Tables 21 and 22 respectively below and on pages 73 and 74 respectively.

Table 21. Summary of bat ‘roost’ records occurring within a 6 km radius of The Site, filtered to include only those within an individual species average Core Sustenance Zone (CSZ) defined by Collins (2016), provided by DERC.

SPECIES	LEGAL / CONSERVATION SIGNIFICANCE				LOCATION OF CLOSEST RECORD	YEAR OF CLOSEST RECORD	DISTANCE OF CLOSEST RECORD FROM THE SITE
	EPS*	W&CA**	S41	LBAP			
Serotine <i>Eptesicus serotinus</i>	✓	✓	----	----	SY 97932 80365	2014	1.8 km to the north-east
Natterer’s bat <i>Myotis nattereri</i>	✓	✓	----	----	SY 9466 8124	2013	2.7 km to the north-west
Noctule <i>Nyctalus noctula</i>	✓	✓	✓	✓	SY 9836 8053	2016	2.3 km to the north-east
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	✓	✓	✓	✓	SY 9466 8124	2013	2.7 km to the north-west
Brown long-eared bat <i>Plecotus auritus</i>	✓	✓	✓	✓	SY949813	2011	2.6 km to the north-west
Grey long-eared bat <i>Plecotus austriacus</i>	✓	✓	----	✓	SY 9836 8053	2016	2.3 km to the north-east
Greater horseshoe-bat <i>Rhinolophus ferrumequinum</i>	✓	✓	✓	✓	SY 97890 79240	2005	1.3 km to the east

*Listed on Schedule 2 - Protected against deliberate killing, injuring, disturbing, damage, destruction to breeding site.

**Listed on Schedule 5 – Protected against: - disturbance whilst occupying or obstruction of access to place of shelter or protection.

Table 22. Summary of ‘in-flight’ bat records occurring within a 6 km radius of The Site, filtered to include only those within an individual species average Core Sustenance Zone (CSZ) defined by Collins (2016), provided by DERC.

SPECIES	LEGAL / CONSERVATION SIGNIFICANCE				LOCATION OF CLOSEST RECORD	YEAR OF CLOSEST RECORD	DISTANCE OF CLOSEST RECORD FROM THE SITE
	EPS*	W&CA**	S41	LBAP			
Barbastelle <i>Barbastella barbastellus</i>	✓	✓	✓	✓	SY 9771 7607	2014	2.5 km to the south
Serotine <i>Eptesicus serotinus</i>	✓	✓	----	----	SY959813	2006	2.2 km to the north
Natterer’s bat <i>Myotis nattereri</i>	✓	✓	----	----	SY986788	2010	1.8 km to the east
Noctule <i>Nyctalus noctula</i>	✓	✓	✓	✓	SY975806	2008	1.7 km to the north-east
Common pipistrelle <i>Pipistrellus pipistrellus</i>	✓	✓	----	----	SY966811	2014	1.9 km to the north
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	✓	✓	✓	✓	SY988786	2010	1.9 km to the east
Brown long-eared bat <i>Plecotus auritus</i>	✓	✓	✓	✓	SY987788	2009	1.9 km to the east
Grey long-eared bat <i>Plecotus austriacus</i>	✓	✓	----	✓	SY 9771 7607	2014	2.5 km to the east
Greater horseshoe-bat <i>Rhinolophus ferrumequinum</i>	✓	✓	✓	✓	SY986788	2010	1.8 km to the east

*Listed on Schedule 2 - Protected against deliberate killing, injuring, disturbing, damage, destruction to breeding site.

**Listed on Schedule 5 – Protected against: - disturbance whilst occupying or obstruction of access to place of shelter or protection.

Historic surveys

7.8.5 No formal accounts of historic bat surveys within The Site are held by DERC.

Predictive Ecological Assessment System

- 7.8.6 In order to provide a foundation for predictive assessment, a review of the geographical distribution and habitat requirements of legally protected and/or S41 Species or LBAP Priority Species of bats was performed and is provided in the accompanying Excel Spreadsheet¹³. The results of the desk-study and the distribution and habitat requirements review provides the evidence-base upon which further predictive assessment is performed.
- 7.8.7 Applying the criteria set out earlier in Section 4 of this report to the habitats present within The Site, and considering the accepted national distribution, known local distribution, habitat requirements and ecology of each species, the potential likelihood of legally protected and/or S41 Species of bat to occur was assessed. A summary of the results of this assessment is provided in the following text. It should be noted that no attempt is made to gauge habitat quality, as a result the process typically overestimates the biodiversity of habitats. However, this does ensure due-diligence at each stage.

Result

- 7.8.8 There is sufficient evidence to suggest that: -
- There is a “*reasonable likelihood*” that four species might **roost and forage** within The Site **and also be reliant upon linear landscape elements for seasonal migration and/or nightly commuting**, comprising: -
 - Natterer’s bat;
 - Noctule;
 - Soprano pipistrelle; and
 - Brown long-eared bat.
 - There is a “*reasonable likelihood*” that five species will not roost within The Site, but might enter to **forage and also be reliant upon linear landscape elements for seasonal migration and/or nightly commuting**, comprising: -
 - Barbastelle;
 - Serotine;
 - Common pipistrelle;
 - Grey long-eared bat; and
 - Greater horseshoe-bat.
- 7.8.9 The habitats present within The Site that might be exploited by the overall nine species of bats are identified in Tables 23-27 on the following pages.

¹³ See: Appendix B – Swanworth Quarry – Results of Predictive Ecological Assessment System – August 2018

Table 23. The habitats present within The Site that might be exploited by barbastelles and serotines, and their environmental niche therein.

ECOLOGY		SPECIES	
		Barbastelle	Serotine
ROOST HABITAT	Habitat niche	N/A	N/A
	Equivalent Phase 1 habitat(s)	N/A	N/A
	Extent (Ha)	N/A	N/A
MIGRATION / COMMUTING HABITAT	Equivalent Phase 1 habitat(s)	J2.1.2, J2.2.2	J2.1.2, J2.2.2
	Extent (Ha)	0.43	0.43
FORAGING HABITAT	Equivalent Phase 1 habitat(s)	A2.1, B3.1, B4, C1.1, J2.1.2	B3.1, B3.2, B4, B6, J2.1.2, J2.2.2
	Extent (Ha)	2.29	2.51
ENVIRONMENTAL NICHE	Trophic	Predator	Predator

Table 24. The habitats present within The Site that might be exploited by Natterer's bats and noctules, and their environmental niche therein.

ECOLOGY		SPECIES	
		Natterer's bat	Noctule
ROOST HABITAT	Habitat niche	Summer: Trees, cliffs & buildings Winter: Trees, scree, caves & quarry spoil	Summer: Trees Winter: Trees & cliffs
	Equivalent Phase 1 habitat(s)	A3.1	A3.1
	Extent (Ha)	7 scattered trees	7 scattered trees
MIGRATION / COMMUTING HABITAT	Equivalent Phase 1 habitat(s)	J2.1.2, J2.2.2	J2.1.2, J2.2.2
	Extent (Ha)	0.43	0.43
FORAGING HABITAT	Equivalent Phase 1 habitat(s)	B4	B3.1, B3.2, B4, B6
	Extent (Ha)	1.32	2.08
ENVIRONMENTAL NICHE	Trophic	Predator	Predator

Table 25. The habitats present within The Site that might be exploited by common and soprano pipistrelles, and their environmental niche therein.

ECOLOGY		SPECIES	
		Common pipistrelle	Soprano pipistrelle
ROOST HABITAT	Habitat niche	N/A	Summer: Chapels, churches & houses (including modern) Winter: Trees, cliffs, caves, stone walls & buildings
	Equivalent Phase 1 habitat(s)	N/A	A3.1, J2.5
	Extent (Ha)	N/A	0.05 + 7 scattered trees
MIGRATION / COMMUTING HABITAT	Equivalent Phase 1 habitat(s)	J2.1.2, J2.2.2	J2.1.2, J2.2.2
	Extent (Ha)	0.43	0.43
FORAGING HABITAT	Equivalent Phase 1 habitat(s)	B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2	B3.1, B3.2, B4, B6, J1.1, J2.1.2, J2.2.2
	Extent (Ha)	14.01	14.01
ENVIRONMENTAL NICHE	Trophic	Predator	Predator

Table 26. The habitats present within The Site that might be exploited by brown and grey long-eared bats, and their environmental niche therein.

ECOLOGY		SPECIES	
		Brown long-eared bat	Grey long-eared bat
ROOST HABITAT	Habitat niche	Summer: Trees & buildings Winter: Trees, cliffs, caves, mines & buildings	N/A
	Equivalent Phase 1 habitat(s)	A3.1	N/A
	Extent (Ha)	7 scattered trees	N/A
MIGRATION / COMMUTING HABITAT	Equivalent Phase 1 habitat(s)	J2.1.2, J2.2.2	J2.1.2, J2.2.2
	Extent (Ha)	0.43	0.43
FORAGING HABITAT	Equivalent Phase 1 habitat(s)	J2.1.2, J2.2.2	B4
	Extent (Ha)	0.43	1.32
ENVIRONMENTAL NICHE	Trophic	Predator	Predator

Table 27. The habitats present within The Site that might be exploited by greater horseshoe-bats, and their environmental niche therein.

ECOLOGY		SPECIES
		Greater horseshoe-bat
ROOST HABITAT	Habitat niche	N/A
	Equivalent Phase 1 habitat(s)	N/A
	Extent (Ha)	N/A
MIGRATION / COMMUTING HABITAT	Equivalent Phase 1 habitat(s)	J2.1.2, J2.2.2
	Extent (Ha)	0.43
FORAGING HABITAT	Equivalent Phase 1 habitat(s)	B4, J2.1.2
	Extent (Ha)	1.66
ENVIRONMENTAL NICHE	Trophic	Predator

7.8.10 In addition, the status of a further seven bat species is 'Potential – Untested'. These species, their legal / conservation significance, and the Phase 1 habitats with which they are associated are identified at Table 28 on the following page.

Table 28. The seven bat species of for which presence within The Site is considered ‘Potential – Untested’, their legal / conservation significance and the Phase 1 habitat types present within The Site in which they might occur.

SPECIES	PHASE 1 HABITAT PRESENT IN THE SITE		LEGAL / CONSERVATION SIGNIFICANCE			
			EPS*	W&CA**	S41	LBAP
Bechstein’s bat <i>Myotis bechsteinii</i>	Roost	N/A				
	Migration / commuting	J2.1.2, J2.2.2	✓	✓	✓	✓
	Foraging	N/A				
Brandt’s bat <i>Myotis brandtii</i>	Roost	A3.1				
	Migration / commuting	J2.1.2, J2.2.2	✓	✓	----	----
	Foraging	B3.1, B3.2, B4, B6				
Daubenton’s bat <i>Myotis daubentonii</i>	Roost	A3.1				
	Migration / commuting	J2.1.2, J2.2.2	✓	✓	----	----
	Foraging	N/A				
Whiskered bat <i>Myotis mystacinus</i>	Roost	N/A				
	Migration / commuting	J2.1.2, J2.2.2	✓	✓	----	----
	Foraging	A3.1, B3.1, B3.2, B4, B6				
Leisler’s bat <i>Nyctalus leisleri</i>	Roost	A3.1				
	Migration / commuting	J2.1.2, J2.2.2	✓	✓	----	----
	Foraging	A2.1, A3.1, B3.1, B3.2, B4, B6, J1.1				
Nathusius’ pipistrelle <i>Pipistrellus nathusii</i>	Roost	A3.1				
	Migration / commuting	J2.1.2, J2.2.2	✓	✓	----	----
	Foraging	N/A				
Lesser horseshoe-bat <i>Rhinolophus hipposideros</i>	Roost	A3.1				
	Migration / commuting	J2.1.2, J2.2.2	✓	✓	✓	✓
	Foraging	N/A				

*Listed on Schedule 2 - Protected against deliberate killing, injuring, disturbing, damage, destruction to breeding site.

**Listed on Schedule 5 – Protected against: - disturbance whilst occupying or obstruction of access to place of shelter or protection.

Section 7 – End

8. SUMMARY OF OFF-SITE AND POTENTIAL ON-SITE ECOLOGICAL INTEREST

8.1 Statutory Wildlife Sites

- 8.1.1 Nine Statutory Wildlife Sites lie within a 2 km radius of The Site, comprising: -
1. Isle of Portland to Studland Cliffs Special Area of Conservation (SAC);
 2. St. Albans Head to Durlston Head (SAC);
 3. Dorset Heaths (SAC);
 4. Studland to Portland marine candidate Special Area of Conservation (cSAC);
 5. Dorset and East Devon World Heritage Site (WHS);
 6. Dorset Heathlands (Ramsar);
 7. Corfe Common Site of Special Scientific Interest (SSSI);
 8. South Dorset Coast (SSSI); and
 9. Dorset Area of Outstanding Natural Beauty (AONB).

8.2 Non-Statutory Wildlife Sites

- 8.2.1 Twelve non-Statutory Wildlife Sites lie within a 1 km radius of The Site, comprising: -
1. Westhill Wood Site of Nature Conservation Interest (SNCI);
 2. Afflington Wood (SNCI);
 3. The Plantation (SNCI);
 4. Scoles Lane Copse (SNCI);
 5. Coombe Bottom Habitat Restoration Site (HRS);
 6. West of The Lookout (HRS);
 7. South of The Lookout (HRS);
 8. West of Downshay Wood (HRS);
 9. West of Afflington Wood (HRS);
 10. Lower Scoles Farm (HRS);
 11. Swanworth Quarry (HRS); and
 12. Kingston Toll Conservation Verge (CV).

8.3 Habitats

Section 41 Habitats of Principal Importance

- 8.3.1 The Site holds 14 Phase 1 (JNCC 2010) habitat types, two of which qualify as S41 Habitats, comprising: -
1. *Lowland Calcareous Grassland* (0.05 ha); and

-
2. *Hedgerows* (0.34 ha);

Local Biodiversity Action Plan habitats

- 8.3.2 The Site holds 14 Phase 1 (JNCC 2010) habitat types, two of which qualify as two LBAP Habitats, comprising: -
1. *Lowland calcareous grassland* (0.05 ha); and
 2. *Ancient &/or species rich hedgerows* (LBAP) (0.34 ha).

8.4 Plant species

Legally protected plant species

- 8.4.1 No legally protected species of plants were recorded and there is no evidence to suggest a “*reasonable likelihood*” that any such species might occur within The Site.

Legally restricted plant species

- 8.4.2 No legally restricted species of plants were recorded and there is no evidence to suggest a “*reasonable likelihood*” that any such species will occur within The Site.

Section 41 Species of Principal Importance

- 8.4.3 No S41 Species of plants were recorded and there is no evidence to suggest a “*reasonable likelihood*” that any such species might occur within The Site.

Local Biodiversity Action Plan Priority Species

- 8.4.4 No Local Biodiversity Action Plan Priority Species of plant were recorded, but there is sufficient evidence to suggest a “*reasonable likelihood*” that one species might occur within The Site; dwarf spurge.

8.5 Fauna

- 8.5.1 In rudimentary terms: -
- The total number of legally protected, S41 and/or LBAP species that have already been confirmed to be present within The Site is five;
 - The total number of legally protected, S41 and/or LBAP species for which there is sufficient evidence to suggest a “*reasonable likelihood*” of occurrence within The Site is 13; and

- The total number of legally protected, S41 and/or LBAP species for with the status within The Site and immediate locale remains ‘Potential – Untested’ is 101.

8.5.2 Tables 29 through 31 summarise those species that have been: a) confirmed as present; b) for which there is sufficient evidence to suggest a “*reasonable likelihood*” of presence; and, c) for which no known attempt has been made to test the potential that they might be present.

Table 29. The species that are legally protected and/or of conservation significance and have already been confirmed as present within The Site.

GROUP	SPECIES	Associated legislation	S41	LBAP
Bird	Skylark <i>Alauda arvensis</i>	----	✓	----
Bird	Linnet <i>Linaria cannabina</i>	----	✓	----
Bird	Yellowhammer <i>Emberiza citronella</i>	----	✓	✓
Mammal	Brown hare <i>Lepus europaeus</i>	----	✓	✓
Mammal	Badger <i>Meles meles</i>	✓	----	----

Table 30. The species that are legally protected and/or of conservation significance and for which there is sufficient evidence to suggest a “*reasonable likelihood*” of occurrence within The Site. (N.B General Bird assemblage is also included due to guidance published by DEFRA (2016)).

GROUP	SPECIES	Associated legislation	S41	LBAP
Plant	Dwarf spurge <i>Euphorbia exigua</i>	----	----	✓
Invertebrate	Wall <i>Lasiommata megera</i>	----	----	✓
Bird	Bullfinch <i>Pyrrhula pyrrhula</i>	----	✓	----
Bird	General Bird assemblage	✓	----	----
Mammal	Barbastelle <i>Barbastella barbastellus</i>	✓	✓	✓

GROUP	SPECIES	Associated legislation	S41	LBAP
Mammal	Serotine <i>Eptesicus serotinus</i>	✓	----	----
Mammal	Natterer's bat <i>Myotis nattereri</i>	✓	----	----
Mammal	Noctule <i>Nyctalus noctula</i>	✓	✓	✓
Mammal	Common pipistrelle <i>Pipistrellus pipistrellus</i>	✓	----	----
Mammal	Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	✓	✓	✓
Mammal	Brown long-eared bat <i>Plecotus auritus</i>	✓	✓	✓
Mammal	Grey long-eared bat <i>Plecotus austriacus</i>	✓	----	✓
Mammal	Greater horseshoe-bat <i>Rhinolophus ferrumequinum</i>	✓	✓	✓

Table 31. The species that are legally protected and/or of conservation significance and for which the status within The Site and immediate locale remains 'Potential – Untested'.

GROUP	SPECIES	Associated legislation	S41	LBAP
Invertebrate	Roman snail <i>Helix pomatia</i>	✓	----	----
Invertebrate	Silky gallows-spider <i>Diplocephalus inornata</i>	----	✓	✓
Invertebrate	Serrated tongue-spider <i>Centromerus serratus</i>	----	✓	----
Invertebrate	Thin weblet <i>Meioneta mollis</i>	----	✓	✓
Invertebrate	Necklace ground beetle <i>Carabus monilis</i>	----	✓	✓
Invertebrate	Black oil-beetle <i>Meloe proscarabaeus</i>	----	✓	✓
Invertebrate	Violet oil-beetle <i>Meloe violaceus</i>	----	✓	✓

GROUP	SPECIES	Associated legislation	S41	LBAP
Invertebrate	Black-backed meadow ant <i>Formica pratensis</i>	----	✓	----
Invertebrate	Shining guest ant <i>Formicoxenus nitidulus</i>	----	✓	✓
Invertebrate	Dingy skipper <i>Erynnis tages</i>	----	✓	✓
Invertebrate	Grizzled skipper <i>Pyrgus malvae</i>	----	✓	✓
Invertebrate	Wood white <i>Leptidea sinapis</i>	----	✓	✓
Invertebrate	Brown hairstreak <i>Thecla betulae</i>	----	✓	✓
Invertebrate	Wall <i>Lasiomma megera</i>	----	✓	✓
Invertebrate	Small heath <i>Coenonympha pamphilus</i>	----	✓	✓
Invertebrate	Ghost moth <i>Hepialus humuli</i>	----	✓	✓
Invertebrate	Pale eggar <i>Trichiura crataegi</i>	----	✓	✓
Invertebrate	Lackey <i>Malacosoma neustria</i>	----	✓	✓
Invertebrate	Small emerald <i>Hemistola chrysoprasaria</i>	----	✓	✓
Invertebrate	Blood-vein <i>Timandra comae</i>	----	✓	✓
Invertebrate	Mullein wave <i>Scopula marginepunctata</i>	----	✓	✓
Invertebrate	Dark-barred twin-spot carpet <i>Xanthorhoe ferrugata</i>	----	✓	✓
Invertebrate	Chalk carpet <i>Scotopteryx bipunctaria</i>	----	✓	----
Invertebrate	Shaded broad-bar <i>Scotopteryx chenopodiata</i>	----	✓	✓
Invertebrate	Galium carpet <i>Epirrhoe galiata</i>	----	✓	✓
Invertebrate	Dark spinach <i>Pelurga comitata</i>	----	✓	✓

GROUP	SPECIES	Associated legislation	S41	LBAP
Invertebrate	Small phoenix <i>Ecliptopera silaceata</i>	----	✓	✓
Invertebrate	Pretty chalk carpet <i>Melanthia procellata</i>	----	✓	✓
Invertebrate	Latticed heath <i>Chiasmia clathrata</i>	----	✓	✓
Invertebrate	Dusky thorn <i>Ennomos fuscantaria</i>	----	✓	✓
Invertebrate	Figure of eight <i>Diloba caeruleocephala</i>	----	✓	✓
Invertebrate	Garden tiger <i>Arctia caja</i>	----	✓	✓
Invertebrate	White ermine <i>Spilosoma lubricipeda</i>	----	✓	✓
Invertebrate	Buff ermine <i>Spilosoma luteum</i>	----	✓	✓
Invertebrate	Cinnabar <i>Tyria jacobaeae</i>	----	✓	✓
Invertebrate	White-line dart <i>Euxoa tritici</i>	----	✓	✓
Invertebrate	Garden dart <i>Euxoa nigricans</i>	----	✓	✓
Invertebrate	Double dart <i>Graphiphora augur</i>	----	✓	✓
Invertebrate	Small square-spot <i>Diarsia rubi</i>	----	✓	✓
Invertebrate	Pale shining brown <i>Polia bombycina</i>	----	✓	✓
Invertebrate	Dot moth <i>Melanchra persicariae</i>	----	✓	✓
Invertebrate	Broom moth <i>Melanchra pisi</i>	----	✓	✓
Invertebrate	Shoulder-striped wainscot <i>Mythimna comma</i>	----	✓	✓
Invertebrate	Sprawler <i>Asteroscopus sphinx</i>	----	✓	✓
Invertebrate	Brindled ochre <i>Dasypolia temple</i>	----	✓	✓

GROUP	SPECIES	Associated legislation	S41	LBAP
Invertebrate	Deep-brown dart <i>Aporophyla lutulenta</i>	----	✓	✓
Invertebrate	Green-brindled crescent <i>Allophyes oxyacanthae</i>	----	✓	✓
Invertebrate	Brown-spot pinion <i>Agrochola litura</i>	----	✓	✓
Invertebrate	Beaded chestnut <i>Agrochola lychnidis</i>	----	✓	✓
Invertebrate	Centre-barred sawfly <i>Atethmia centrago</i>	----	✓	✓
Invertebrate	Grey dagger <i>Acrionicta psi</i>	----	✓	✓
Invertebrate	Knot grass <i>Acrionicta rumicis</i>	----	✓	✓
Invertebrate	Mouse moth <i>Amphipyra tragopoginis</i>	----	✓	✓
Invertebrate	Dusky brocade <i>Apamea remissa</i>	----	✓	✓
Invertebrate	Large nutmeg <i>Apamea anceps</i>	----	✓	✓
Invertebrate	Rosy minor <i>Mesoligia literosa</i>	----	✓	✓
Invertebrate	Ear moth <i>Amphipoea oculea</i>	----	✓	✓
Invertebrate	Rosy rustic <i>Hydraecia micacea</i>	----	✓	✓
Invertebrate	Rustic <i>Hoplodrina blanda</i>	----	✓	✓
Invertebrate	Mottled rustic <i>Caradrina morpheus</i>	----	✓	✓
Invertebrate	Fuscous flat-body <i>Agonopterix capreolella</i>	----	✓	✓
Amphibian	Common toad <i>Bufo bufo</i>	----	✓	✓
Reptile	Slow-worm <i>Anguis fragilis</i>	✓	✓	✓
Reptile	Common lizard <i>Zootoca vivipara</i>	✓	✓	✓

GROUP	SPECIES	Associated legislation	S41	LBAP
Reptile	Grass snake <i>Natrix natrix</i>	✓	✓	✓
Reptile	Adder <i>Vipera berus</i>	✓	✓	✓
Bird	Grey partridge <i>Perdix perdix</i>	----	✓	✓
Bird	Lapwing <i>Vanellus vanellus</i>	----	✓	✓
Bird	Herring gull <i>Larus argentatus</i>	----	✓	----
Bird	Turtle dove <i>Streptopelia turtur</i>	----	✓	✓
Bird	Cuckoo <i>Cuculus canorus</i>	----	✓	✓
Bird	Barn owl <i>Tyto alba</i>	✓	----	----
Bird	Nightjar <i>Caprimulgus europaeus</i>	----	✓	✓
Bird	Wryneck <i>Jynx torquilla</i>	✓	----	----
Bird	Red-backed shrike <i>Lanius collurio</i>	✓	----	----
Bird	Woodlark <i>Lullula arborea</i>	✓	✓	✓
Bird	Grasshopper warbler <i>Locustella naevia</i>	----	✓	✓
Bird	Starling <i>Sturnus vulgaris</i>	----	✓	----
Bird	Ring ouzel <i>Turdus torquatus</i>	----	✓	✓
Bird	Song thrush <i>Turdus philomelos</i>	----	✓	----
Bird	Spotted flycatcher <i>Muscicapa striata</i>	----	✓	✓
Bird	Dunnock <i>Prunella modularis</i>	----	✓	----
Bird	House sparrow <i>Passer domesticus</i>	----	✓	✓

GROUP	SPECIES	Associated legislation	S41	LBAP
Bird	Tree sparrow <i>Passer montanus</i>	----	✓	✓
Bird	Yellow wagtail <i>Motacilla flava</i>	----	✓	✓
Bird	Twite <i>Carduelis flavirostris</i>	----	✓	----
Bird	Lesser redpoll <i>Carduelis cabaret</i>	----	✓	----
Bird	Hawfinch <i>Coccothraustes coccothraustes</i>	----	✓	----
Bird	Reed bunting <i>Emberiza schoeniclus</i>	----	✓	✓
Bird	Corn bunting <i>Emberiza calandra</i>	----	✓	----
Mammal	Common dormouse <i>Muscardinus avellanarius</i>	✓	✓	✓
Mammal	Harvest mouse <i>Micromys minutus</i>	----	✓	✓
Mammal	Hedgehog <i>Erinaceus europaeus</i>	----	✓	✓
Mammal	Polecat <i>Mustela putorius</i>	----	✓	✓
Mammal	Bechstein's bat <i>Myotis bechsteinii</i>	✓	✓	✓
Mammal	Brandt's bat <i>Myotis brandtii</i>	✓	----	----
Mammal	Daubenton's bat <i>Myotis daubentonii</i>	✓	----	----
Mammal	Whiskered bat <i>Myotis mystacinus</i>	✓	----	----
Mammal	Leisler's bat <i>Nyctalus leisleri</i>	✓	----	----
Mammal	Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	✓	----	----
Mammal	Lesser horseshoe-bat <i>Rhinolophus hipposideros</i>	✓	✓	✓

Section 8 – End

9. RATIONALE FOR FURTHER 'PHASE 2' SURVEYS

9.1 General

9.1.1 The National Planning Practice Guidance states that if there is evidence to predict a “*reasonable likelihood*” of occurrence, a survey will be necessary if the type and location of the development are such: -

1. That there might be a significant impact resulting in: -
 - a. A specific, identifiable and real risk of conflict with legislation; and/or
 - b. A conflict with planning policy by way of a significant negative effect upon biodiversity; **and**
2. The existing information [in respect of habitats and species of conservation significance] is lacking or inadequate.

9.1.2 These are the criteria defined by government and imposed upon Mineral Planning Authorities when they are deciding whether further surveys are compelled.

NPPG Item 1: The potential for a significant impact

9.1.3 The development proposed is a quarry. In all cases it can be broadly predicted that if a species of conservation significance is present, there may be an impact upon it. The magnitude of that impact is however impossible to predict until a quarry design and the results of the hydrological, air-quality and noise assessments are available for review. In the interim, if it has been concluded that there is sufficient evidence to suggest a “*reasonable likelihood*” that a species of conservation significance may occur within the Zone of Influence, the sensible course of action is to assume that there is a “*reasonable likelihood*” that there might be a significant negative effect and thereon to identify whether or not the information required in order to confidently predict: the **Type** of any effect upon the habitat or species (i.e. loss or gain); the **Extent** of the effect; the **Direction** of the effect (i.e. whether positive or negative); the **Timing** of the effect (i.e. the start date/time of a given action (if relevant)); the **Duration** of the effect (i.e. how long the change will last); the **Frequency** of the effect (i.e. whether the activity or change will be repeated and, if so, how often); the **Magnitude** of the effect; the **Certainty** the effect will occur; and, the **Reversibility** of the effect in respect of the confidence that any negative effect can be mitigated or repaired by compensatory measures.

NPPG Item 2: Whether existing information is lacking or inadequate

9.1.4 In assessing whether information is lacking or inadequate, why the information is required must be defined. This also dictates what information is required. In broad

terms, legislation and policy dictates this at each level, and the thresholds to be considered are as follows: -

- **Habitats** that are: -
 - Legally protected;
 - Section 41 Habitats of Principal Importance; and/or
 - Listed on a Local Biodiversity Action Plan.
- **Plant species** that are: -
 - Legally protected; and
 - Legally restricted.
- **Animal species** that are: -
 - Legally protected;
 - Legally restricted;
 - Section 41 Species of Principal Importance; and/or
 - Listed on a Local Biodiversity Action Plan.

9.2 Deciding whether there is the potential for a significant impact

- 9.2.1 When deciding whether a quarry development has the potential to result in a significant impact, it is vital that the order of assessments is understood and that the fact that ecology does not affect but is affected is considered.
- 9.2.2 Therefore, the risk of a significant impact cannot be fully and empirically assessed until the impacts are defined by environmental studies (i.e. investigations into the hydrological, air-quality and noise impacts that will result from a specific quarry design).
- 9.2.3 In the absence of this information, the decision whether or not to proceed with ‘Phase 2’ surveys, must therefore assume the worst-case-scenario from the outset.
- 9.2.4 However, it should also be kept in mind that this is a quarry development and not housing etc. The development will not therefore result in the sterilisation of the landscape brought about by large scale and permanent loss of biodiversity. Instead there will be a series of changes in the biodiversity, which may be significantly positive.

9.3 The rationale behind the decision whether to survey for legally protected habitats

Hedgerows Regulations 1997

9.3.1 Under the *Hedgerows Regulations 1997* Local Planning Authority permission in the form of a ‘Hedgerow Removal Notice’ is required before removing hedges that are at least 20 metres (66 feet) in length, more than 30 years old and meet defined ecological (or other) criteria qualifying them as ‘Important’. For a hedgerow to qualify it must be at least 30 years old and meet one of the following botanical criteria: -

- Contain plant species protected under Schedule 8 of the *Wildlife & Countryside Act 1981 (& as amended)*. A hedge qualifies within this system if species so classified are present at the time of survey, or if the relevant local record centre holds associated biological records of species presence within the preceding ten years;
- Meet one of four criteria based upon a combination of structural features and presence of species listed upon two schedules; Schedule 1 – Woody trees and shrubs and Schedule 2 – Woodland plants. The four criteria are:
 - At least seven Woody species on average within a 30 m sample length; or
 - At least six Woody species and three Associated Features within a 30 m sample length; or
 - Six Woody species including black poplar *Populus nigra*, or large leaved-lime *Tilia platyphyllos*, or wild service-tree *Sorbus torminalis* within a 30 m sample length; or
 - At least five Woody species and four Associated Features within a 30 m sample length.
 - NB. In the northern counties the number of woody species required to meet this criterion is reduced by one.
- The hedgerow is adjacent to a bridleway or footpath, (within the meaning of the Highways Act 1980(15) therefore not informal private paths), a road used as a public path, (within the meaning of section 54 (duty to reclassify roads used as public paths) of the Wildlife & Countryside Act 1981(16)), or a byway open to all traffic, (within the meaning of Part III of the Wildlife & Countryside Act 1981(17)).

9.3.2 If it is known that an ‘Important’ hedge is present, or there is sufficient evidence to conclude there is a “reasonable likelihood” that an ‘Important’ hedge might be present, and the development plans cannot avoid a significant negative impact upon the hedge, then a ‘Hedgerow Removal Notice’ may be required. The information required to satisfy the Notice application that is needed as a minimum, comprises: -

1. Total hedge length;
2. Number of 30 m samples recorded;
3. The location of the 30 m samples (a 10-figure grid reference for each end of the sample);
4. Number of Schedule 8 legally protected plant species recorded;

5. Average number of Woody species; and
6. A list of the Associated Features.

If legally protected habitat is proven to be present, or there is a “reasonable likelihood” it will occur, is the following information lacking or inadequate?

- 9.3.3 It may be reasonably concluded that pertinent information is lacking or inadequate if any of the following questions cannot be answered in the affirmative: -
1. Has all pre-existing information in respect of hedgerows abutting and within the survey site (i.e. the results of the desk-study) been obtained, collated and reviewed?
 2. Is the hedgerow adjacent to a bridleway, footpath, road used as a public path or byway open to all traffic?
 3. Has the status of Schedule 8 plants occurring under hedgerows within the last 10 years been established in the negative?
 4. Has the status of Schedule 5 animals occurring in the hedgerows within the last 10 years been established in the negative?
 5. Has the status of Schedule 1 birds occurring in the hedgerows within the last 10 years been established in the negative?
 6. Has the overall number of Woody species been established to be five or less?
 7. If an overall number of five Woody species has been established, has it been established that there are less than four Associated Features?
 8. If an overall number of six Woody species has been established: -
 - a. Has the status of black polar *Populus nigra*, large-leaved lime *Tilia platyphyllos* or wild service tree *Sorbus torminalis* been confidently established in the negative? and
 - b. Has it been established that there are less than three Associated Features?
- 9.3.4 Any survey recommendation should focus solely upon the questions that require clarification.

9.4 The rationale behind the decision whether to survey for S41 Habitats

Background

- 9.4.1 Under the *Natural Environment and Rural Communities (NERC) Act 2006*, a Local Planning Authority has a duty to conserve biodiversity. This duty is set out at Section 40, which states: “1) Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.”

-
- 9.4.2 If it is known that a S41 Habitat occurs, or there is evidence to suggest there is a “*reasonable likelihood*” the habitat occurs within an area of land that is proposed for development, then the Mineral Planning Authority should be made aware of the following: -
1. All pre-existing information in respect of the habitats historic status at the survey site (i.e. the results of the desk-study);
 2. The surface area of ground the habitat occupies; and
 3. Whether there is the potential that the development might conflict with the objectives of the Habitat Action Plan.

If S41 Habitat is proven to be present, or there is a “reasonable likelihood” it will occur, is the following information lacking or inadequate?

- 9.4.3 It may be reasonably concluded that pertinent information is lacking or inadequate if any of the following questions cannot be answered in the affirmative: -
1. Has all pre-existing information in respect of the habitats historic status at the survey site (i.e. the results of the desk-study) been obtained, collated and reviewed?
 2. Has adequate information to inform been collected, collated and reviewed to inform the restoration design, in terms of: a) habitat to be created; b) species composition; c) structure d) aspect; and, in some specific cases e) soil chemistry?
 3. Has the surface area occupied been mapped?
- 9.4.4 Any survey recommendation should focus solely upon the questions that require clarification.

9.5 The rationale behind the decision whether to survey for Local Biodiversity Action Plan habitats

- 9.5.1 LBAP habitats may be approached using the same criteria as that for S41 Species.

9.6 The rationale behind the decision whether to survey for legally protected plants

Conservation of Habitats and Species Regulations 2017 – Schedule 5 plants

- 9.6.1 European Protected Species of plants are listed under Schedule 5 of the *Conservation of Habitats and Species Regulations 2017*. Part 3, regulation 45, paragraph (1) states

that: “*It is an offence deliberately to pick, collect, cut, uproot or destroy a wild plant of a European protected species.*” If it is known that a European Protected Species is present, or there is sufficient evidence to conclude there is a “*reasonable likelihood*” that such a species might be present, and the development plans cannot avoid a significant negative impact upon the species, then derogation under a European Protected Species Licence (EPSL) may be required. The information required to satisfy the licence varies depending on the species but broadly, the following is needed as a minimum: -

1. The qualifications of the ecologist writing the application to implement the licence on the ground;
2. The background to the development (to include a brief summary of why the development is necessary) and full details of the work on The Site that are to be covered by the licence;
3. All pre-existing information on the species at the survey site (i.e. the results of the desk-study);
4. The Ellenberg Indicator Values¹⁴ of the plant species;
5. The status of the species at National and County level;
6. The status of the species ‘on-site’, to include:
 - a. Whether the species is actually present, and if so:
 - i. The surface area of ground the species occupies;
 - ii. The habitat in which the species is present;
 - iii. The environment the species occupies, to include as a minimum:
 - Soil pH;
 - Aspect; and
 - Hydrology.
7. The density of the species (e.g. how many flowering spikes per m²);
8. What the impacts of the development might be upon the species;
9. It must be proven that there is no satisfactory alternative that will cause less harm to the species. In particular, if it is impossible/impractical to retain the species unharmed in its present situation, it must be robustly demonstrated exactly why this is the case;
10. If the plant is to be translocated, it must be demonstrated that the activity will not harm the long-term conservation status of the species by the provision of a compensation strategy that is proven to be effective, as demonstrated by

¹⁴ Ellenberg Indicator Values are a model of bioindication. The values comprise a 9-point scale within seven environmental values, encompassing: 1) shade tolerance; 2) temperature tolerance; 3) climate (latitude band in which the plant typically occurs); 4) wetness (drought and flood tolerance); 5) soil pH; 6) fertility (soil nitrogen load); and, 7) salinity tolerance. These values indicate the environmental niche that the plant can occupy, but do not take into account other environmental factors such as management, tolerance to competition etc. which must be factored in separately when using Ellenberg Indicator Values to define restoration mixes.

comprehensive reference to published scientific literature and physical surveys that prove the compensation situation is suitable by offering favourable:

- a. Soil pH;
 - b. Aspect; and
 - c. Hydrology that is identical to that in which the species is already present.
11. A legally binding commitment to maintain the compensatory provision at favourable status within the agreed situation.

Wildlife & Countryside Act 1981 (& as amended) – Schedule 8 plants

9.6.2 Plants listed under Schedule 8 of the *Wildlife & Countryside Act 1981 (& as amended)* receive legal protection under Part 1, Section 13, Subsection 1 which states that: “*Subject to the provisions of this Part, if any person: a) intentionally picks, uproots or destroys any wild plant included in Schedule 8; or, b) not being an authorised person, intentionally uproots any wild plant not included in that Schedule, he shall be guilty of an offence.*” Mitigation Licences to translocate Schedule 8 plants out of a footprint proposed for development cannot be issued by Natural England. As a result, any attempt to move the plants must be approached as a Conservation Licence strategy. These strategies are species-specific but the approach will comprise the same process as an EPSL application; a statement of competence that demonstrates why the ecologist is qualified to hold such a licence, and a detailed method-statement for the due-diligence safeguarding of the species with long-term, legally binding assurances.

If legally protected plants are proven to be present, or there is a “reasonable likelihood” they will occur, and there is a “reasonable likelihood” there will be a significant negative effect upon them, is the following information lacking or inadequate?

- 9.6.3 It may be reasonably concluded that pertinent information is lacking or inadequate if any of the following questions cannot be answered in the affirmative: -
1. Has all pre-existing information in respect of the species historic status at the survey site (i.e. the results of the desk-study) been obtained, collated and reviewed?
 2. Is the true status of the plant known?
 3. If the species is present: -
 - a. Has the surface area occupied by the species been mapped?
 - b. Is the density of the species (e.g. how many flowering spikes per m²) known?
 - c. Is the habitat in which the species is growing known?
 - d. Are the following known for both the existing situation and that proposed for the translocation: -
 - i. The soil pH;
 - ii. Nitrogen range;

- iii. The aspect (i.e. level ground, or direction of slope); and
 - iv. The soil hydrology?
- 9.6.4 Any survey recommendation should focus solely upon the questions that require clarification.

9.7 The rationale behind the decision whether to survey for legally restricted plants

Wildlife & Countryside Act 1981 (& as amended) – Schedule 9 plants

- 9.7.1 Certain species of non-native plants are listed on Schedule 9 of the *Wildlife & Countryside Act 1981 (& as amended)*. Part 1, Section 14, Subsections 2 and 3 state that: “*Subject to the provisions of this Part, if any person plants or otherwise causes to grow in the wild any plant which is included in Part II of Schedule 9, he shall be guilty of an offence.*” However, “*...it shall be a defence to a charge of committing an offence under subsection...(2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.*” If the development plans cannot avoid situations in which a Schedule 9 species occurs, it will be necessary to provide the Mineral Planning Authority with a biosecurity strategy. This strategy should include the following information as a minimum: -
1. The status of the species ‘on-site’, to include: -
 - a. Where the species is;
 - b. The surface area of ground the species occupies; and
 - c. The habitat in which the species is present.
 2. Whether there are any foreseeable mechanisms by which the plant might spread as a result of the development proposed. In particular, this should consider whether alterations to the environment brought about as a result of the quarrying activity might make areas outside the current extent of the species favourable for colonisation. If it is impossible/impractical to eradicate the species from its present situation, it must be robustly demonstrated exactly why this is the case, and how the species is to be contained. All arguments should be supported by reference to published scientific evidence and Environment Agency guidance; and
 3. A legally binding commitment to eradicate the species entirely or contain the species within the existing footprint for the life of the development.

If legally restricted plants are proven to be present, or there is a “reasonable likelihood” they will occur, is the following information lacking or inadequate?

- 9.7.2 It may be reasonably concluded that pertinent information is lacking or inadequate if any of the following questions cannot be answered in the affirmative: -

1. Has all pre-existing information in respect of the species historic status at the survey site (i.e. the results of the desk-study) been obtained, collated and reviewed?
2. Is the species' location known?
3. Has the surface area occupied by the species been mapped?
4. Is the habitat in which the species is growing known?

9.7.3 Any survey recommendation should focus solely upon the questions that require clarification.

9.8 The rationale behind the decision whether to survey for legally protected animals

Conservation of Habitats and Species Regulations 2017 – Schedule 2 animals

9.8.1 European Protected Species of animals are listed under Schedule 2 of the *Conservation of Habitats and Species Regulations 2017*. Part 3, regulation 41, paragraph (1) of the *Conservation of Habitats and Species Regulations 2017* states that: “A person who: a) deliberately captures, injures or kills any wild animal of a European protected species; b) deliberately disturbs wild animals of any such species; c) deliberately takes or destroys the eggs of such an animal; or, d) damages or destroys a breeding site or resting place of such an animal, is guilty of an offence.” Part 3, regulation 41, paragraph (2) states that disturbance of animals includes in particular any disturbance which is likely: “a) to impair their ability — i) to survive, to breed or reproduce, or to rear or nurture their young, or, ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or b) to affect significantly the local distribution or abundance of the species to which they belong.”

9.8.2 If it is known that a European Protected Species is present, or there is sufficient evidence to conclude there is a “reasonable likelihood” that such a species might be present, and the development plans cannot avoid a significant negative impact upon the species, then derogation under licence may be required. The information required to satisfy the licence varies depending on the species but broadly, the following is needed as a minimum: -

1. The qualifications of the ecologist writing the application to implement the licence on the ground;
2. Background to the development (to include a brief summary of why the development is necessary) and full details of the work on The Site that are to be covered by the licence;
3. All pre-existing information on the species at the survey site (i.e. the results of the desk-study);

-
4. The status of the species at National and County level;
 5. The status of the species 'on-site', to include: -
 - a. Whether the species is actually present, and if so: -
 - b. Where the species is;
 - c. The type of habitat exploited by the species;
 - d. The extent of the habitat exploited by the species;
 - e. The environment the habitat offers;
 - f. When the species is present (in terms of timing and duration);
 - g. Why the species is present (e.g. resting, hibernating, migrating, foraging etc.);
 - h. The population size of the species that exploits The Site;
 - i. Whether presence is transitory or permanent; and
 - j. Whether the species is territorial, and if so, whether The Site represents the part of a territory or the entirety of the territory.
 6. What the impacts of the development might be upon the species;
 7. Whether it is possible/practical to retain the species unharmed and undisturbed in its existing situation. In particular, if it is impossible/impractical to retain the species unharmed and undisturbed, it must be robustly demonstrated exactly why this is the case;
 8. If the species is to be translocated, it must be demonstrated that the activity will not harm the long-term conservation status of the species by the provision of a compensation strategy that is proven to be effective, as demonstrated by comprehensive reference to published scientific evidence, and investigations that show the compensation situation is suitable by offering favourable habitat and an enhanced environment; and
 9. A legally binding commitment to maintain the species habitat at favourable status within the compensatory situation.

Wildlife & Countryside Act 1981 (& as amended)

- 9.8.3 For practical purposes, animals that are protected under the *Wildlife & Countryside Act 1981 (& as amended)* can be divided into: -
1. Fully protected species;
 2. Common reptiles; and
 3. Nesting birds.
- 9.8.4 Fully protected species are listed on Schedule 5 and protected under Part 1, Section 9, Section 1 which states: “*Subject to the provisions of this Part, if any person intentionally kills, injures or takes any wild animal included in Schedule 5, he shall be guilty of an offence.*” In addition, Subsection 4 states that: “*Subject to the provisions of this Part, a person is guilty of an offence if intentionally or recklessly: a) he damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection; b) he disturbs any such animal while it is*

occupying a structure or place which it uses for shelter or protection; or, c) he obstructs access to any structure or place which any such animal uses for shelter or protection.”

- 9.8.5 In practice the only species that is dealt with under Schedule 5 alone is the water vole, which has a species-specific licensing process. The approach comprises the same broad process as an EPSL application; a statement of competence that demonstrates why the ecologist is qualified to hold such a licence, and a detailed method statement for the due-diligence safeguarding of the species with long-term, legally binding assurances.

Wildlife & Countryside Act 1981 (& as amended) – Common reptiles

- 9.8.6 Although common reptiles are listed on Schedule 5, they receive only limited protection under Part 1, Section 1 alone, which makes it an offence to intentionally or recklessly kill or injure slow worms, common lizards, grass snakes or adders (N.B. this limited status means the offence of ‘taking’ individuals from the wild is not an offence, but selling them is. As a result, translocations do not require derogation under licence).
- 9.8.7 If it is known that one or more species of common reptile is present, or there is sufficient evidence to conclude there is a “*reasonable likelihood*” that such species might be present, then it will be necessary to provide a strategy demonstrating how the animals will be safeguarded against injury or mortality. The information that will be required to define a due-diligence safeguarding strategy will be as follows: -
1. Which species is / might be present;
 2. Where each species is / might occur;
 3. When each species might be present;
 4. The extent of the habitat occupied by each species during the relevant seasons; and
 5. The identification of equivalent or increased expanses of existing sub-optimal habitat might be enhanced, or unsuitable habitat might be brought into favourable condition to act as receptor areas in compensation for any habitat to be lost.

Wildlife & Countryside Act 1981 (& as amended) – Nesting birds (general)

- 9.8.8 Common bird species are legally protected whilst nesting under Part 1, Section 1, Subsection 1, which states: “*Subject to the provisions of this Part, if any person intentionally: a) kills, injures or takes any wild bird; b) takes, damages or destroys the nest of any wild bird while that nest is in use or being built; or, c) takes or destroys an egg of any wild bird, he shall be guilty of an offence.*”

-
- 9.8.9 There is no licensing process in respect of nesting birds. Instead, as most species are not of conservation significance, their presence is anticipated within generic due-diligence which thereby mitigates the potential for any conflict with the legislation.

Wildlife & Countryside Act 1981 (& as amended) – Schedule 1 nesting birds

- 9.8.10 Certain bird species that are sensitive to disturbance receive additional protection whilst nesting under Subsection 5, which states: “*Subject to the provisions of this Part, if any person intentionally [or recklessly]: a) disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or, b) disturbs dependent young of such a bird, he shall be guilty of an offence.*”
- 9.8.11 There is no licensing process in respect of Schedule 1 birds. Instead, their presence is anticipated within generic due-diligence which thereby mitigates the potential for any conflict with the legislation and, where practicable, assures a continued resource of nesting habitats is provided throughout and post-development.

Protection of Badgers Act 1992

- 9.8.12 Badgers and their setts are legally protected under the *Protection of Badgers Act 1992*, which states: “*A person is guilty of an offence if, except as permitted by or under this Act, he willfully kills, injures or takes, or attempts to kill, injure or take, a badger. A person is guilty of an offence if, except as permitted by or under this Act, he interferes with a badger sett by doing any of the following things: a) damaging a badger sett or any part of it; 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, intending to do any of those things or being reckless as to whether his actions would have any of those consequences.*”
- 9.8.13 Badgers are not and have never been a species of conservation significance (this is why they were specifically not included in the *Wildlife & Countryside Act 1981* or any subsequent amendment) and their species-specific legislation does not compel compensatory provision of foraging habitat. Notwithstanding, if it is known that a badger sett is present, or there is sufficient evidence to conclude there is a “*reasonable likelihood*” that a sett might be present, and the development plans cannot avoid a significant negative impact upon the sett, then derogation under licence may be required. The information required to satisfy the licence varies depending on the sett and situation but broadly, the following is needed as a minimum: -
1. The qualifications of the ecologist writing the application to implement the licence on the ground;

2. Background to the development (to include a brief summary of why the development is necessary) and full details of the work on The Site that are to be covered by the licence;
3. All pre-existing information in respect of badgers at the survey site (i.e. the results of the desk-study);
4. The status of the sett in terms of: -
 - a. How many entrance holes it has;
 - b. What type of sett it is (i.e. main sett, subsidiary, annex or outlier); and
 - c. Whether it is active or not.
5. What the impacts of the development might be upon the sett;
6. Whether it is possible/practical to retain the sett undamaged and undisturbed in its existing situation. In particular, if it is impossible/impractical to retain the sett undamaged and undisturbed, it must be robustly demonstrated exactly why this is the case;
7. If the sett is to be translocated, it must be demonstrated that the strategy is proven to be effective, as demonstrated by comprehensive reference to published scientific evidence, and investigations that show the compensation situation is suitable by offering favourable habitat and an enhanced environment; and
8. A legally binding commitment to maintain the sett and situation in favourable condition.

If legally protected animals are proven to be present, or there is a “reasonable likelihood” they will occur, and there is a “reasonable likelihood” there will be a significant negative effect upon them, is the following information lacking or inadequate?

- 9.8.14 It may be reasonably concluded that pertinent information is lacking or inadequate if any of the following questions cannot be answered in the affirmative: -
1. Has all pre-existing information in respect of the species historic status at the survey site (i.e. the results of the desk-study) been obtained, collated and reviewed?
 2. Has adequate information to inform been collected, collated and reviewed to inform the restoration design, in terms of: a) habitat to be created; b) species composition; c) structure d) aspect; and, in some specific cases e) soil chemistry?
 3. Requirements are then stratified by specific legislation and policy as follows:
 - a. **Conservation Regulations Schedule 2 / Wildlife & Countryside Act Schedule 5 (excluding reptiles): -**
 - i. Is the status of the species at National and County level known?
 - ii. Is the true status of the species ‘on-site’ known, and if so: -
 1. Is the species location known?
 2. Is it known which habitats the species is exploiting within The Site?
 3. Is the extent of habitat being exploited known?

-
4. Has the character of the environment offered by the habitat been described?
 5. Is it known when the species is present in terms of timing and duration?
 6. Is it known why the species is present (e.g. resting, hibernating, migrating, foraging etc.)?
 7. Is the population size of the species known (i.e. how many of them are exploiting The Site)?
 8. Is it known whether the species presence is transitory, resident, territorial or not, and whether The Site represents; the entirety of any territory, or part of the territory?
 9. Is there any further information required to design an effective due-diligence safeguarding strategy that will ensure the development ensures that the species is maintained at favourable status within its natural range?

4. Common reptiles & nesting birds: -

- a. Is the status of the species at National and County level known?
- b. Can a reliable prediction be made of the status of the species 'on-site', and if so: -
 - i. Can the location of the species be confidently predicted?
 - ii. Can it be confidently predicted which habitats the species might exploit within The Site?
 - iii. Is the extent of that habitat known?
 - iv. Has the character of the environment offered by the habitat been described?
 - v. Can it be reliably predicted when the species might be present in terms of timing and duration?
 - vi. Can it be reliably predicted why the species might be present (e.g. resting, hibernating, migrating, foraging etc.)?
 - vii. Can the population size of the species be reliably predicted?
 - viii. Can it be reliably predicted whether the species might be present in a transitory capacity, resident, territorial or not, and whether The Site might represent the entirety of any territory, or part of the territory?
 - ix. Is there any further information required to design an effective due-diligence safeguarding strategy that will: a) guard against injury/mortality etc.; and, b) that will ensure the development preserves, maintains and re-establishes habitat that is large and varied enough for the species to support its population in the long-term?

5. Badgers: -

- a. Is the true status of badger setts within The Site known?
- b. If a sett is present: -
 - i. Is it known whether it is active or not?
 - ii. Is it known how many entrance holes it has?

- iii. Is it known what sort of sett it is?
- iv. Is there any further information required to design an effective due-diligence safeguarding strategy?

9.8.15 Any survey recommendation should focus solely upon the questions that require clarification.

9.9 The rationale behind the decision whether to survey for legally restricted animals

Wildlife & Countryside Act 1981 (& as amended) – Schedule 9 animals

9.9.1 Certain species of non-native animals are listed on Schedule 9 of the *Wildlife & Countryside Act 1981 (& as amended)*. Part 1, Section 14, Subsections 1 and 3 state that: “*Subject to the provisions of this Part, if any person releases or allows to escape into the wild any animal which: a) is of a kind which is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state; or, b) is included in Part I of Schedule 9, he shall be guilty of an offence. However, it shall be a defence to a charge of committing an offence under subsection (1)...to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.*”

9.9.2 If the development plans cannot avoid situations in which a Schedule 9 species occurs, it will be necessary to provide the Mineral Planning Authority with a biosecurity strategy. This strategy should include the following information as a minimum: -

1. The status of the species ‘on-site’, to include: -
 - a. Whether the species really is present;
 - b. Where the species is;
 - c. The surface area of ground the species occupies; and
 - d. The habitat in which the species is present.
2. Whether there are any foreseeable mechanisms by which the animal might spread as a result of the development proposed. In particular, this should consider whether alterations to the environment brought about as a result of the quarrying activity might make areas outside the current extent of the species favourable for colonisation. If it is impossible/impractical to eradicate the species from its present situation, it must be robustly demonstrated exactly why this is the case, and how the species is to be contained. Where it exists, all arguments should be supported by reference to published scientific evidence and Environment Agency guidance; and
3. A legally binding commitment to eradicate the species entirely or contain the species within the existing footprint for the life of the development.

If legally restricted animals are proven to be present, or there is a “reasonable likelihood” they will occur, is the following information lacking or inadequate?

- 9.9.3 It may be reasonably concluded that pertinent information is lacking or inadequate if any of the following questions cannot be answered in the affirmative: -
1. Has all pre-existing information in respect of the species historic status at the survey site (i.e. the results of the desk-study) been obtained, collated and reviewed?
 2. Is the true current status of the animal known?
 3. If the species is present: -
 - a. Is the location of the species known?
 - b. Has the surface area occupied by the species been mapped?
 - c. Is the habitat exploited by the species known?
- 9.9.4 Any survey recommendation should focus solely upon the questions that require clarification.

9.10 The rationale behind the decision whether to survey for S41 Species

Background

- 9.10.1 Under the *Natural Environment and Rural Communities (NERC) Act 2006*, a Local Planning Authority has a duty to conserve biodiversity. This duty is set out at Section 40, which states: “1) Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.”
- 9.10.2 If it is known that a S41 Species occurs, or there is evidence to suggest there is a “reasonable likelihood” the species occurs within an area of land that is proposed for development, then the Mineral Planning Authority should be made aware of the following: -
1. All pre-existing information in respect of the species historic status at the survey site (i.e. the results of the desk-study);
 2. The occurrence or probability the species might occur;
 - a. Where the species is/might be;
 - b. The surface area of ground the species occupies/might occupy; and
 - c. The habitat in which the species is present/might be present.
 3. Whether or not the species has a Species Action Plan; and
 4. Whether there is the potential that the development might conflict with the objectives of the Species Action Plan. Useful information is given in Sections 3

and 6 of the Action Plans, which set out the reason there is concern for the status of the species UK population, and actions identified as conservation objectives. However, in practice, these are often limited to the identification of a decline, and not the cause of that decline, and the need for research to identify the rate and reasons for decline.

If S41 Species are proven to be present, or there is a “reasonable likelihood” they will occur, is the following information lacking or inadequate?

- 9.10.3 It may be reasonably concluded that pertinent information is lacking or inadequate if any of the following questions cannot be answered in the affirmative: -
1. Has all pre-existing information in respect of the species historic status at the survey site (i.e. the results of the desk-study) been obtained, collated and reviewed?
 2. Has adequate information to inform been collected, collated and reviewed to inform the restoration design, in terms of: a) habitat to be created; b) species composition; c) structure d) aspect; and, in some specific cases e) soil chemistry?
 3. Is the location the species is present / might be present known?
 4. Has the surface area occupied / potentially occupied by the species been mapped?
 5. Is the habitat the species exploits / might exploit known?
- 9.10.4 Any survey recommendation should focus solely upon the questions that require clarification.

9.11 The rationale behind the decision whether to survey for Local Biodiversity Action Plan species

- 9.11.1 LBAP species may be approached using the same criteria as that for S41 Species.

Section 9 – End

10. PHASE 2 SURVEY REQUIREMENT & RECOMMENDATIONS

10.1 Potential for conflict

10.1.1 The results of the desk-study and Phase 1 survey were used to assess whether there are grounds to predict a conflict with legislation or Planning Policy and whether information required to inform the planning decision and support an appropriate due-diligence strategy (i.e. EPSL etc.) is lacking or inadequate. The full results of this process are provided in Excel format titled: *Appendix C – Swanworth Quarry – Requirement for ‘Phase 2’ surveys – August 2018.*

10.2 Legally protected habitat - Hedges

Assessment of the amount and adequacy of information

10.2.1 No hedgerows within The Site have the potential to qualify as ‘Important’ under the criteria of the *Hedgerow Regulations 1997.*

‘Phase 2’ Recommendation

10.2.2 No further survey is recommended.

10.3 Section 41 Habitats of Principal Importance

Assessment of the amount and adequacy of information

10.3.1 Evidence thus far collected, collated and reviewed is sufficient and fully adequate to inform any subsequent EcIA in respect of S41 Habitats of Principal Importance.

‘Phase 2’ Recommendation

10.3.2 No further survey is recommended.

10.4 Local Biodiversity Action Plan habitats

Assessment of the amount and adequacy of information

10.4.1 Evidence thus far collected, collated and reviewed is sufficient and fully adequate to inform any subsequent EcIA in respect of Local Biodiversity Action Plan habitats.

'Phase 2' Recommendation

10.4.2 No further survey is recommended.

10.5 Legally protected faunal species

Assessment of the amount and adequacy of information

10.5.1 Evidence thus far collected, collated and reviewed is sufficient and fully adequate to inform any subsequent EcIA, in respect of: -

- **Bats:** Daubenton's bat; Natterer's bat; common pipistrelle; soprano pipistrelle; and, brown long-eared bat.

10.5.2 However, evidence is not sufficient or adequate in respect of: -

- **Invertebrates:** Roman snail;
- **Reptiles:** slow-worm; common lizard; grass snake; and, adder;
- **Nesting birds (general):** all;
- **Nesting birds (Schedule 1):** barn owl;
- **Mammals:** common dormice; and, badger; and
- **Bats:** barbastelle; serotine; Bechstein's bat; Brandt's bat; whiskered bat; Leisler's bat; noctule; Nathusius' pipistrelle; grey long-eared bat; greater horseshoe-bat; and, lesser horseshoe-bat.

'Phase 2' Recommendation

10.5.3 The 'Phase 2' recommendations vary with the species as follows: -

- **Roman snail *Helix pomatia*:** survey to establish the status of the species on-site, and if present, the location and population size;
- **Slow-worm; common lizard; grass snake; and, adder:** survey to establish: a) presence/absence; and, if present - b) location; and, c) a reptile release area for use in an Ecological Management Plan;
- **Nesting birds (general):** survey dependent on whether adequate compensation can be provided as part of the quarry design. At present, extent of habitat to be lost/reinstated is unknown;
- **Barn owl *Tyto alba*:** survey to establish: a) presence/absence; and, if nesting - b) the location of all potential nest sites;
- **Common dormice *Muscardinus avellanarius*:** survey to establish: a) whether the species occurs within The Site; b) where the species occurs within The Site; and, c) population size;
- **Badger *Meles meles*:** survey to establish true status of setts; and

- **Barbastelle; serotine; Bechstein’s bat; Brandt’s bat; whiskered bat; Leisler’s bat; noctule; Nathusius’ pipistrelle; grey long-eared bat; greater horseshoe-bat; and, lesser horseshoe-bat: -**
 - *Place of shelter or protection:* Daytime roost assessment to inform survey design;
 - *Foraging habitat and linear landscape elements:* a desk-top assessment should be performed to establish whether there is a “reasonable likelihood” the loss of the habitat might represent a disturbance impact such as to occasion on a significant negative effect upon the species. If this assessment suggests there is a risk, further survey may be required in order that information presented is not ‘lacking or inadequate’.

10.6 Section 41 Species of Principal Importance

Assessment of the amount and adequacy of information

10.6.1 Notwithstanding those species for which legislative mechanisms have determined further survey or assessment in preceding subsections, the evidence thus far collected, collated and reviewed is sufficient and fully adequate to inform any subsequent EcIA, in respect of S41 Species of Principal Importance.

‘Phase 2’ Recommendation

10.6.2 No further survey is recommended.

10.7 Local Biodiversity Action Plan species

Assessment of the amount and adequacy of information

10.7.1 Notwithstanding those species for which legislative mechanisms have determined further survey or assessment in preceding subsections, the evidence thus far collected, collated and reviewed is sufficient and fully adequate to inform any subsequent EcIA, in respect of Local Biodiversity Action Plan species.

‘Phase 2’ Recommendation

10.7.2 No further survey is recommended.

Section 10 – End

11. CONCLUSIONS

11.1.1 The conclusions of the Preliminary Ecological Appraisal are as follows: -

1. Nine Statutory Wildlife Sites lie within a 2 km radius of The Site comprising: Isle of Portland to Studland Cliffs Special Area of Conservation (SAC), St. Albans Head to Durlston Head SAC, Dorset Heaths SAC, Studland to Portland marine candidate Special Area of Conservation (cSAC), Dorset and East Devon World Heritage Site (WHS), Dorset Heathlands Ramsar, Corfe Common Site of Special Scientific Interest (SSSI), South Dorset Coast SSSI, and Dorset Area of Outstanding Natural Beauty (AONB);
2. Twelve non-Statutory Wildlife Sites lie within a 1 km radius of The Site comprising: Westhill Wood Site of Nature Conservation Interest (SNCI), Afflington Wood SNCI, The Plantation SNCI, Scoles Lane Copse SNCI, Coombe Bottom Habitat Restoration Site (HRS), West of The Lookout HRS, South of The Lookout HRS, West of Downshay Wood HRS, West of Afflington Wood HRS, Lower Scoles Farm HRS, Swanworth Quarry HRS, and Kingston Toll Conservation Verge (CV);
3. The Site holds 14 Phase 1 (JNCC 2010) habitat types, two of which qualify as two S41 Habitats and two Dorset Local Biodiversity Action Plan (LBAP) Priority Habitats, comprising: -
 - S41 – *Lowland Calcareous Grassland* and *Hedgerows*; and
 - LBAP – *Lowland calcareous grassland* and *Ancient &/or species rich hedgerows*;
4. Of the five hedgerows within The Site, none have the potential to qualify as ‘Important’ under the criteria of the *Hedgerow Regulations 1997*;
5. Five legally protected, S41 Species or LBAP Priority Species have been confirmed as present within The Site, as identified at Table 32; and
6. There is a “reasonable likelihood” that one LBAP Priority Species of plant and 11 faunal species that are variously: legally protected; S41 Species; or LBAP Priority Species, might also occur within The Site or within the Zone of Influence of The Site, as identified at Table 33 on the following pages.

Table 32. The faunal species for which presence within The Site is accepted and the mechanisms that compel their consideration.

GROUP	SPECIES	Associated legislation	S41	LBAP
Bird	Skylark <i>Alauda arvensis</i>	----	✓	----
Bird	Linnet <i>Linaria cannabina</i>	----	✓	----
Bird	Yellowhammer <i>Emberiza citronella</i>	----	✓	✓
Mammal	Brown hare <i>Lepus europaeus</i>	----	✓	✓
Mammal	Badger <i>Meles meles</i>	✓	----	----

Table 33. The floral and faunal species for which there is sufficient evidence to suggest a “reasonable likelihood” of occurrence within The Site or within the Zone of Influence of conservation significance and the mechanisms that compel their consideration.

GROUP	SPECIES	Associated legislation	S41	LBAP
Plant	Dwarf spurge <i>Euphorbia exigua</i>	----	----	✓
Invertebrate	Wall <i>Lasiommata megera</i>	----	----	✓
Bird	Bullfinch <i>Pyrrhula pyrrhula</i>	----	✓	----
Bird	General Bird assemblage	✓	----	----
Mammal	Barbastelle <i>Barbastella barbastellus</i>	✓	✓	✓
Mammal	Serotine <i>Eptesicus serotinus</i>	✓	----	----
Mammal	Natterer’s bat <i>Myotis nattereri</i>	✓	----	----
Mammal	Noctule <i>Nyctalus noctula</i>	✓	✓	✓
Mammal	Common pipistrelle <i>Pipistrellus pipistrellus</i>	✓	----	----

GROUP	SPECIES	Associated legislation	S41	LBAP
Mammal	Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	✓	✓	✓
Mammal	Brown long-eared bat <i>Plecotus auritus</i>	✓	✓	✓
Mammal	Grey long-eared bat <i>Plecotus austriacus</i>	✓	----	✓
Mammal	Greater horseshoe-bat <i>Rhinolophus ferrumequinum</i>	✓	✓	✓

Section 11 – End

12. RECOMMENDATIONS

12.1.1 The following recommendations are made: -

- **Roman snail:** survey to establish the status of the species on-site, and if present, the location and population size of the species;
- **Slow-worm; common lizard; grass snake; and, adder:** survey to establish: a) presence/absence; and, if present - b) location; c) a reptile release area for use in an Ecological Management Plan;
- **Nesting birds (general):** survey dependant on whether adequate compensation can be provided as part of the quarry design. At present, extent of habitat to be lost/reinstated is unknown;
- **Barn owl:** survey to establish: a) presence/absence; and, if present - b) location;
- **Common dormice:** survey to establish: a) whether the species occurs within The Site; b) where the species occurs within The Site; and, c) population size;
- **Badger:** survey to establish true status of setts; and
- **Barbastelle; serotine; Bechstein's bat; Brandt's bat; whiskered bat; Leisler's bat; noctule; Nathusius' pipistrelle; grey long-eared bat; greater horseshoe-bat; and, lesser horseshoe-bat: -**
 - *Place of shelter or protection:* Daytime roost assessment to inform survey design;
 - *Foraging habitat and linear landscape elements:* a desk-top assessment should be performed to establish whether there is a “reasonable likelihood” the loss of the habitat might represent a disturbance impact such as to occasion on a significant negative effect upon the species. If this assessment suggests there is a risk, further survey may be required in order that information presented is not ‘lacking or inadequate’.

Section 12 – End

13. REFERENCES

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Section 3 – LEGISLATIVE AND POLICY MECHANISMS

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Section 6 – PHASE 1 HABITAT SURVEY

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Section 7 – DESK-STUDY RESULTS

Sub-section 7.1

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Section 8 – SUMMARY OF OFF-SITE AND POTENTIAL ON-SITE ECOLOGICAL INTEREST

Sub-section 8.3

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Sub-section 8.5

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Section 11 – CONCLUSIONS

JNCC 2010. *Handbook for Phase 1 Habitat Survey: A technique for environmental audit*. Joint Nature Conservation Committee, Peterborough

Section 13 – End

APPENDIX A. PLANT SPECIES RECORDED AT SWANWORTH QUARRY ON 19TH & 20TH JUNE 2018 BY Dr JAMES MCGILL & HEATHER ANNING BSc.

LATIN	VERNACULAR
<i>Acer pseudoplatanus</i>	Sycamore
<i>Achillea millefolium</i>	Yarrow
<i>Agrostis stolonifera</i>	Creeping bent
<i>Alopecurus myosuroides</i>	Black grass
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Anthriscus sylvestris</i>	Cow parsley
<i>Arctium lappa</i>	Greater burdock
<i>Arrhenatherum elatius</i>	False oat-grass
<i>Arum maculatum</i>	Lords-and-ladies
<i>Avena sativa</i>	Oat
<i>Bellis perennis</i>	Daisy
<i>Brachypodium pinnatum</i>	Tor-grass
<i>Brachypodium sylvaticum</i>	False brome
<i>Bromus hordaceus</i>	Soft-brome
<i>Bromus sterilis</i>	Barren brome
<i>Buddleja davidii</i>	Butterfly-bush
<i>Calystegia sepium</i>	Hedge bindweed
<i>Calystegia silvatica</i>	Large bindweed
<i>Capsella bursa-pastoris</i>	Shepherd's-purse
<i>Carex flacca</i>	Glaucous sedge
<i>Centranthus ruber</i>	Red valerian
<i>Cerastium fontanum</i>	Common mouse-ear
<i>Chenopodium album</i>	Fat-hen
<i>Cirsium arvense</i>	Creeping thistle
<i>Cirsium eriophorum</i>	Woolly thistle
<i>Cirsium vulgare</i>	Spear thistle
<i>Clematis vitalba</i>	Traveller's-joy
<i>Convolvulus arvensis</i>	Field bindweed
<i>Crataegus monogyna</i>	Hawthorn
<i>Crepis capillaris</i>	Smooth hawk's-beard
<i>Cynosurus cristatus</i>	Crested dog's-tail
<i>Dactylis glomerata</i>	Cock's-foot
<i>Daucus carota</i>	Wild carrot
<i>Dipsacus fullonum</i>	Teasel
<i>Dryopteris filix-mas</i>	Male-fern
<i>Elytrigia repens</i>	Common couch
<i>Epilobium ciliatum</i>	American willowherb
<i>Epilobium parviflorum</i>	Hoary willowherb
<i>Epilobium tetragonum</i>	Square-stalked willowherb
<i>Eupatorium cannabinum</i>	Hemp-agrimony
<i>Festuca arundinacea</i>	Tall fescue

LATIN	VERNACULAR
<i>Festuca rubra</i>	Red fescue
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Galium mollugo</i>	Hedge bedstraw
<i>Galium verum</i>	Ladies bedstraw
<i>Geranium dissectum</i>	Cut-leaved cranesbill
<i>Geranium robertianum</i>	Herb-Robert
<i>Geum urbanum</i>	Herb-bennet
<i>Glechoma hederacea</i>	Ground-ivy
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Hordeum vulgare</i>	Six-rowed barley
<i>Hypericum perforatum</i>	Perforate St John's-wort
<i>Iris foetidissima</i>	Stinking iris
<i>Lamium album</i>	White dead-nettle
<i>Lapsana communis</i>	Nipplewort
<i>Lathyrus pratensis</i>	Meadow vetchling
<i>Leontodon taraxocoides</i>	Lesser hawkbit
<i>Lolium perenne</i>	Perennial rye-grass
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Lotus corniculatus</i>	Bird's-foot trefoil
<i>Lysimachia nemorum</i>	Yellow pimpernel
<i>Medicago lupulina</i>	Black medick
<i>Medicago sativa</i>	Lucerne
<i>Myosotis arvensis</i>	Field forget-me-not
<i>Odontites vernus</i>	Red bartsia
<i>Pastinaca sativa</i>	Wild parsnip
<i>Persicaria maculosa</i>	Redshank
<i>Petroselinum segetum</i>	Corn parsley
<i>Phyllitis scolopendrium</i>	Hart's-tongue fern
<i>Plantago coronopus</i>	Buck's-horn plantain
<i>Plantago lanceolata</i>	Ribwort plantain
<i>Plantago major</i>	Greater plantain
<i>Poa annua</i>	Annual meadow-grass
<i>Poa trivialis</i>	Rough meadow-grass
<i>Potentilla reptans</i>	Creeping cinquefoil
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus spinosa</i>	Blackthorn
<i>Pteridium aquilinum</i>	Bracken
<i>Ranunculus repens</i>	Creeping buttercup
<i>Raphanus raphanistrum</i>	Wild radish
<i>Rosa arvensis</i>	Field rose
<i>Rosa canina</i>	Dog rose

LATIN	VERNACULAR
<i>Rubus fruticosus</i> agg.	Bramble species
<i>Rumex acetosa</i>	Sorrel
<i>Rumex crispus</i>	Curled dock
<i>Rumex sanguineus</i>	Wood dock
<i>Sambucus nigra</i>	Elder
<i>Senecio erucifolius</i>	Hoary ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Silene dioica</i>	Red campion
<i>Sisymbrium officinale</i>	Hedge-mustard
<i>Solanum dulcamara</i>	Bittersweet
<i>Sonchus asper</i>	Prickly sow-thistle
<i>Sonchus oleraceus</i>	Smooth sow-thistle
<i>Stachys sylvatica</i>	Hedge woundwort
<i>Taraxacum</i> agg.	Dandelion species
<i>Teucrium scorodonia</i>	Wood sage
<i>Torilis japonica</i>	Upright hedge-parsley
<i>Trifolium campestre</i>	Hop-trefoil
<i>Trifolium pratense</i>	Red clover
<i>Trifolium repens</i>	White clover
<i>Tripleurospermum inodorum</i>	Scentless mayweed
<i>Tussilago farfara</i>	Coltsfoot
<i>Ulex europaeus</i>	Common gorse
<i>Urtica dioica</i>	Stinging nettle
<i>Verbascum thapsus</i>	Great mullein
<i>Veronica arvensis</i>	Wall speedwell
<i>Veronica chamaedrys</i>	Germander speedwell
<i>Veronica montana</i>	Wood speedwell
<i>Veronica persica</i>	Common speedwell
<i>Vicia sativa</i>	Common vetch
<i>Vicia sepium</i>	Bush vetch

Appendix A – End