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EXECUTIVE SUMMARY

Lady Cross Plantation

Statutory Sites

- The Lady Cross site is not subject to any statutory nature conservation designation. In the wider local area, the closest European site is Arnecliff and Park Hole Woods Special Area of Conservation (SAC) which is located approximately 3.4km south-west of the site. Arnecliff and Park Hole Woods is also a designated Site of Special Scientific Interest (SSSI).

Non-Statutory Sites

- There are no Local Nature Reserves (LNR’s) on or in close proximity to the proposed site.
- None of the woodland in or adjacent to the proposed site is included on the ancient woodland inventory.
- The eastern section of the site along with adjacent habitat to the north and west are identified on the Local Development Framework (LDF) for the National Park proposals map as ‘moorland’.

Other Habitats

- The site comprises predominantly of arable farmland and pasture. It is surrounded by plantation woodland. Much of the site itself was historically plantation woodland which has subsequently been felled and returned to grassland.
- The southern half of the site is used for arable farming with half of this area used for oat production and half sown with a grass ley mixture in 2014.
- The northern half of the site which is divided into three fields is best described as being semi-improved. None of these fields are, however, species-rich examples of the habitat type.
- Occasional lower lying habitats within the fields support localised areas of typically species-poor marsh and rush-pasture.
- There are very localised patches of heathland habitat at the periphery of the site. These areas are typically wet heath with co-dominant Cross-leaved Heath and Purple Moor-grass. Occasionally Heather is more frequent in a more typical dry heath habitat.
- Within the site, plantation woodland is limited to a small section of open Scots Pine plantation with a species-poor ground flora. More extensive plantation woodland is present around the site boundary, including a section that will be removed to provide access to the site. These peripheral plantations include further extensive areas of Scots Pine as well as sections
which are predominantly broadleaf. Downy Birch is typically the most frequent species in broadleaf sections.

- There are no hedgerow habitats within the site. Field boundaries comprise of post and wire fences
- There are no ditches within the main part of the site and this habitat type is limited to a short section of virtually defunct ditch that will be crossed to provide the site access.
- Whilst ponds are present rarely in adjacent plantation woodland, there are none within the site itself.
- There are limited other habitat types present within the site, particularly those associated with bare and disturbed ground at gate entrances and trackways.
- In terms of individual species, the survey yielded over 150 species of vascular plant, virtually all of which are common or relatively common species which are typical of the habitats encountered. Whilst no nationally rare, nationally scarce or regionally rare species were recorded, records included the regionally uncommon Wood Small-reed.
- No invasive species listed under Schedule 9 of The Wildlife and Countryside Act (1981, as amended), were found within the site boundary.

**Fauna**

- The Lady Cross site was found to be a habitat which was little used by breeding birds. Virtually all breeding records were associated with the adjacent band of woodland which surrounds the site. With regard to the site itself, breeding records from the fields were limited to Skylark. Other breeding records from within the site were associated with the central isolated plantation.
- Records of more notable breeding bird species from within the site were restricted to Skylark and Willow Warbler. Additionally, Common Crossbill, Dunnock, Lesser Redpoll, Song Thrush, Reed Bunting, Willow Warbler and Woodcock were recorded from adjacent woodland.
- No bat roosts were found within the site. Foraging surveys confirmed much of the site to be a poor and little used habitat. Occasional foraging activity was noted, particularly along the edge of the central and peripheral plantation woodlands.
- There is no Otter habitat within or adjacent to the site.
- Precautionary surveys of marshy grassland and adjacent ponds for Water Vole yielded negative results.
- There are no ponds within the site although several are present in the wider local area. Surveys of these ponds found no evidence of Great Crested Newt. Small numbers of Common Frog, Common Toad and Palmate Newt were recorded.
• Reptiles were found to have a restricted distribution locally with Common Lizard recorded only from the habitat along the western boundary of the site.
• The arable fields, semi-improved pastures and plantation woodlands were found to be of very limited value for invertebrates. The peripheral heathland and occasionally herb rich grassland provided some more valuable habitat. Whilst no rare or nationally scarce taxa were recorded, several more local species were recorded, for example, Black Darter *Sympetrum danae*, Four-barred Major *Beris vallata*, Hieroglyphic Ladybird *Coccinela hieroglyphica*, the ant *Formica lemani*, the hopper *Eupelix cuspidata*, the rove-beetle *Anthophagus carabiioides* and the tachinid fly *Tachina grossa*.
• With regard to other species, Brown Hare was recorded rarely. Hedgehog was likewise recorded on one occasion.

Stanghow

Statutory Sites

• The Stanghow site is not subject to any statutory nature conservation designation. The site is, however, in close proximity to the North York Moors SAC, Special Protection Area (SPA) and SSSI, the boundary of which lies to the south of the A171.
• The North York Moors qualifies as a SAC on the basis of providing examples of the Northern Atlantic Wet Heaths with *Erica tetralix*, European Dry Heath and Blanket Bog Annex I habitat types. The latter is an Annex I Priority Habitat when in its active form.
• The SPA designation is related to ornithological interest and specifically to internationally important breeding populations of Golden Plover and Merlin.
• The SSSI designation covers a wider range of habitats and species based within the overall context of a moorland ecosystem.

Non-Statutory Sites

• There are no Local Nature Reserves (LNR’s) on or in close proximity to the proposed site.
• Much of the woodland associated with the wooded valleys of Kateridden Beck (Kateridden Wood) and Dale Beck (Sweet Hill Wood and Dale Bank) is included on the Ancient Woodland Inventory as ‘ancient and semi-natural woodland’. Whilst the proposed site is adjacent to the area of ancient woodland, it does not encroach into it.
• Kateridden Wood, Sweet Hill Wood and Dale Bank form part of the Kilton Beck complex Local Wildlife Site (LWS). This is a large LWS which includes much of the Kilton Beck catchment. The site is designated as a LWS on the basis of providing examples of ancient, ancient replanted and broadleaf woodland. The boundary of the site is identical to the area included on the
Other Habitats

- The site essentially comprises of two distinct areas. These are the main access shaft which will be located within farmland immediately to the north of the A171, with a second spoil deposition area which is in farmland to the south of Stanghow Road. These two areas are divided by the valley of Lockwood Beck, Dale Beck and Kateridden Beck and will be linked by a temporary haul road during the construction phase.
- The main working areas support a limited range of habitat types. Woodland and other associated habitats within the adjacent valley of Lockwood Beck, Dale Beck and Kateridden Beck provide a number of additional habitat types.
- Farmland dominates much of the site and includes several arable fields along with improved pastures used predominantly for cattle grazing.
- Examples of semi-improved grassland are present locally where fields have been less intensively farmed. The most species-rich example is the field immediately to the west of Dale Beck. Surveys of this habitat yielded 65 species including a number which are characteristic of damp and relatively unimproved grasslands. These included Betony, Bitter-vetch, Common Spotted-orchid, Devil's-bit Scabious, Greater Burnet, Ragged-Robin and Sneezewort.
- Whilst there are no true marsh habitats within the proposed site, the damper semi-improved grasslands are transitional habitats which locally could be described as species-rich rush pastures.
- Whilst woodland is extensive in habitats adjacent to the proposed site, the habitat is only found within the site at one location. This relates to a narrow section of stream corridor woodland associated with Lockwood Beck. Although relatively small, the woodland supports a diverse ground flora. A number of characteristic species were recorded from this area including the North Yorkshire ancient woodland indicator species Early-purple Orchid, Great Wood-rush, Hairy Wood-rush, Opposite-leaved Golden Saxifrage, Wood Melick, Wood Sedge and Woodruff.
- Scrub is found rarely within the proposed site and is typically associated with occasional patches of Gorse.
- Six hedgerows are present within the proposed site. These are all relatively species-poor and typically dominated by Hawthorn with few other species which most typically include occasional Blackthorn, Dog-rose, Holly and Elder. None are classified as important under the Hedgerows Regulations whilst one hedgerow classified as being of moderately high value when...
assessed using the Hedgerows Evaluation and Grading System methodology.

- The majority of other field boundaries are represented by dry stone walls and post and wire fences. More rarely, the associated boundary is more substantial and species-rich. Of particular note is the substantial boundary which runs along much of the eastern boundary of the proposed site. Now comprising a line of mature shrubs and trees which are often open and poorly structured it is very diverse with some sixteen canopy species. This is a very high species diversity for North East Yorkshire and is likely to represent a boundary of considerable antiquity.

- In addition to the wooded stream corridor of Lockwood Beck/Dale Beck, the upper reaches of Kateridden Beck are within the proposed site. It is a minor stream which is typically 0.5-1m wide and 0.02-0.1m deep. Maintained ditches are absent from the site. Occasionally, however, the field boundary has an associated semi-defunct ditch/minor stream.

- A limited range of other habitat types are present locally within the study area. These include small sections which are dominated by tall ruderal species as well as habitats associated with bare and disturbed ground at gate entrances and trackways. Other habitats include one area dominated by Bracken.

- Adjacent habitats are particularly associated with the wooded valley of Lockwood beck (Scar Wood), Kateridden Beck (Kateridden Wood) and Dale Beck (Sweet Hill Wood and Dale Bank). Whilst these wooded areas include some sections which appear to have been replanted, much of the woodland appears to be largely intact and likely to be of ancient origin.

- In terms of individual species, the survey yielded almost 260 species of vascular plant, virtually all of which are common or relatively common species which are typical of the habitats encountered. No nationally rare, nationally scarce or regionally rare species were recorded.

- With regard to species which have a restricted distribution in North East Yorkshire, within the site itself these were primarily associated with the species-rich grassland to the west of Dale Beck and the wooded stream corridor associated with Dale Beck.

- Adjacent woodland yielded additional uncommon species. These included Smooth Stalked-sedge, a species apparently not previously recorded in Cleveland.

- No invasive species listed under Schedule 9 of The Wildlife and Countryside Act (1981, as amended), were found within the site boundary.

**Fauna**

- The Stanghow site provides a limited range of breeding bird habitat and as a result, few species were recorded from within the site. The majority of
breeding records were associated with the adjacent woodland habitats. With regard to the site itself, breeding records from the fields were limited to Skylark and Meadow Pipit. Other birds that were recorded from within the site were associated with the field boundary habitats as well as the narrow section of stream corridor woodland. The adjacent woodland was found to be good quality habitat which supported a diverse range of species.

- More notable breeding bird species from within the site were limited to Dunnock, Meadow Pipit and Skylark. In terms of other notable species, farmland further to the east was found to be a better used habitat with records of Grey Partridge, Linnet, Skylark and Tree Sparrow. Adjacent woodland provided records of other notable species, for example, Bullfinch, Lesser Redpoll, Long-eared Owl, Mistle Thrush, Redstart, Song Thrush, Spotted Flycatcher, Willow Tit, Whitethroat, Willow Warbler, Woodcock and Yellowhammer.

- In relation to breeding bird habitats in the wider local area, no evidence of Merlin was found from either Stanghow Moor or Moorsholm Moor. Small numbers of breeding Golden Plover were recorded from Stanghow Moor although these were a significant distance from the proposed site. With regard to other species, a good range of characteristic moorland species were recorded albeit typically at low densities.

- No bat roosts were found within the site. Foraging surveys confirmed parts of the site to be well used, particularly the wooded stream corridor associated with Lockwood Beck and Hagg Beck, woodland edge habitats and Millers Lane. The open arable and pasture fields which dominated large parts of the site were found to be a little used habitat.

- Very limited evidence of Otter was found from the main stream indicating occasional usage only. No evidence of Water Vole was found.

- There are no viable amphibian breeding ponds within or in close proximity to the site. Surveys of a pond in the wider local area which was relevant to an earlier site design supported small numbers of Common Frog, Common Toad and Smooth Newt. No Great Crested Newt were, however, recorded. This pond is no longer within the potential zone of influence of the proposed site.

- Reptiles were found to have a restricted distribution locally. Adder, Common Lizard and Slow-worm were recorded rarely from the species-rich grassland west of Dale Beck with Slow-worm recorded from other woodland edge habitat.

- Whilst the intensively farmed parts of the site represent a poor habitat for a limited range of invertebrates, high quality invertebrate habitat is present locally within the site as well as in immediately adjacent woodland. The species-rich grassland to the west of Dale Beck supported several local species including the hoverflies *Chrysotoxum arcuatum* and *Sericomyia*...
The ancient woodland habitats supported the Nationally Scarce B false darkling beetle *Orchesia minor*. Other regionally rare saproxylic species associated with the woodland included *Biphyllus lunatus* and the rove beetle *Siagonum quadricorne*. The ground flora yielded the local English Chrysalis Snail. Waterfall habitats associated with Kateridden Beck yielded several local species, for example, the camphor beetle *Sterus guynemeri*.

- With regard to other species, Brown Hare was recorded rarely.

**Tockett’s Lythe**

**Statutory Sites**

- The Tockett’s Lythe site is not subject to any statutory nature conservation designation. In the wider local area, the closest such site is the North York Moors SAC, SPA and SSSI which is located approximately 2.3km to the south of the site.

**Non-Statutory Sites**

- The northern boundary of the site lies adjacent to Waterfall Gill which lies within the Skelton Beck Complex Local Wildlife Site (LWS) with the boundary of the LWS extending into the site at two locations. This site is designated on the basis of providing examples of ancient, ancient replanted and broadleaf woodland.
- Much of the woodland associated with Waterfall Gill is included on the Ancient Woodland Inventory as ‘ancient and semi-natural woodland’ with one small section east of Plantation Farm which is classified as ‘ancient replanted woodland’. Those parts of the LWS within the proposed site are not included on the Ancient Woodland Inventory.

**Other Habitats**

- Virtually the entire proposed site is used for arable farming. Fields are often large, intensively farmed and with virtually no associated flora. Field margins support a typical range of commonly occurring arable weeds.
- Permanent pasture is rare within the study area and restricted to a single field in the north of the proposed site. This is a poor semi-improved pasture which is grass dominated.
- Other grasslands are particularly associated with wide grassy field margins which are a feature of the site, particularly along the eastern boundary. These are nutrient enriched and often occur as a mosaic of tall grasses and ruderals.
Thirteen hedgerows are present within or on the boundary of the proposed site, with three additional hedgerows partly impacted as a result of the access provisions to the site. A number of these hedgerows are of mixed composition and are species-rich. Typical canopy species included Ash, Blackthorn, Dog-rose, Elder, Hazel, Holly and Wild Plum. More rarely occurring species included English Elm, Goat Willow, Grey Willow, Pedunculate Oak, Sessile Oak and Wych Elm. Several of the hedgerows incorporate these species as mature standards with several substantial mature Ash and Pedunculate Oak present. Three hedgerows are classified as important under the Hedgerows Regulations. When assessed using the Hedgerows Evaluation and Grading System methodology ten of the hedgerows fall within the moderately high to high value (i.e. 2-, 2 and 2+) category and one hedgerow within the high to very high value (i.e. 1-, 1 and 1+) category.

Whilst virtually all field boundaries are associated with hedgerows, more rarely these include other habitats. These include a narrow band of predominantly mature Crack-willow along with one field boundary ditch.

A limited range of other habitat types are present, for example, tall ruderal habitats which typically occur as mosaics within field margins or on trackside verges. Other habitats include those associated with bare and disturbed ground on farm tracks and at field entrances.

In the wider local area, the dominant habitat is the extensive woodland associated with Waterfall Gill. This woodland extends along the entire eastern boundary of the proposed site. Whilst most of the woodland is included on the Ancient Woodland Inventory as Ancient and Semi-Natural Woodland, much of it appears to have been replanted. Notwithstanding this, it is a mature and predominantly broadleaf woodland which supports a diverse and characteristic woodland ground flora.

In terms of individual species, the survey yielded almost 190 species of vascular plant, virtually all of which are common or relatively common species which are typical of the habitats encountered. No nationally rare, nationally scarce or regionally rare species were recorded from within the site. In the wider local area, of particular note was the presence of the Nationally Scarce Wood Barley from the adjacent woodland associated with Waterfall Gill.

Japanese Rose *Rosa rugosa*, an invasive species which is listed under Schedule 9 of The Wildlife and Countryside Act (1981, as amended) was recorded from two hedgerows.

**Fauna**

- The Tockett’s Lythe site provides a relatively limited range of breeding bird habitats. These essentially fall within the broad habitat types of arable
farmland and hedgerows. The majority of breeding records were associated with the adjacent woodland habitats, as well as adjacent buildings, particularly the habitats around Plantation Farm. With regard to the site itself, breeding records from the fields were limited to a single Skylark.

- More notable breeding bird species from within the site were associated with Bullfinch, Dunnock, Song Thrush, Skylark, Tree Sparrow, Whitethroat, Willow Warbler and Yellowhammer. Additional more notable species recorded from adjacent woodlands included Common Crossbill, Marsh Tit, Mistle Thrush, Spotted Flycatcher and Woodcock. Species associated with Plantation Farm included the specially protected Barn Owl as well as nationally declining species such as House Sparrow, Starling and Swallow.

- No bat roosts were found within the site. Foraging surveys confirmed much of the site to be a poor and little used habitat. There were, however, localised concentrations of foraging activity, particularly in sections of the eastern boundary and in the north of the site. Roosting was confirmed from the adjacent buildings associated with Plantation Farm.

- There is no suitable habitat for Otter or Water Vole within the site. Surveys of the nearby Waterfall Beck found limited evidence of Otter usage but no evidence of Water Vole.

- The habitat is typically hostile for reptiles and no evidence of any reptile species was found.

- There are no ponds within or in close proximity to the site.

- The dominant arable fields are of very limited value for invertebrates. Whilst there are occasionally wide field margins and hedgerow verges, these do not support a high botanical diversity and this limits the invertebrate assemblage. The survey confirmed the site as supporting a typical range of common species. No rare or nationally scarce taxa were recorded.

- With regard to other species, Brown Hare was recorded rarely.
1. INTRODUCTION & OVERVIEW

1.1 Paul Chester & Associates Ltd. (PCA) was commissioned by York Potash Ltd. via Royal Haskoning DHV (RHDHV) to undertake baseline ecological surveys for the proposed Mineral Transport System (MTS) element of the wider York Potash project.

1.2 The MTS relates to a 37.5km tunnel constructed at approximate depths ranging 120-360m from the minehead at Dove’s Nest Farm/Haxby Plantation near Sneatonthorpe, Whitby to the processing and port facilities at Teesside. The MTS will be used to transport evaporite minerals including all polyhalite seams and associated minerals via a linked conveyor belt system from the mine to the processing and port facilities.

1.3 Above ground elements of the MTS are associated with three intermediate access points and spoil deposition sites. These are as follows:

- Lady Cross Plantation
- Stanghow
- Tockett’s Lythe

1.4 At these sites, access tunnels will be sunk. They will be used for the disposal of spoil gained from tunnel construction. Once complete these access points would be disguised as agricultural-style buildings and used for operational maintenance access, emergency egress and providing ventilation.

1.5 The report is specific to the three intermediate access points associated with the MTS. Other elements of the project, for example, those which are associated with the proposed minehead are considered in separate baseline survey reports.

1.6 The report is specific to the results of the baseline ecology surveys. Details of the Ecological Impact Assessment (EcIA) are provided separately by RHDHV.

1.7 Baseline data collected during the course of the ecological surveys is provided as a series of Appendices as follows:

- Appendix A1: Lady Cross Plantation - Botanical Target Notes/Habitat Descriptions
- Appendix A2: Lady Cross Plantation - Target Notes Photographic Record
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Appendix C8: Tockett’s Lythe - Invertebrate Survey Species List
Appendix C9: Tockett’s Lythe - Invertebrate Survey (BWMP and ASPT Scores)
Appendix C10: Tockett’s Lythe - Other Fauna Species List

1.8 In addition, due to the sensitive nature of the location of badger setts, the results of the badger survey are reported as a separate confidential report with a restricted circulation.

1.9 The following Figures are also included:

- Figure A1: Lady Cross Plantation - Statutory and Non-Statutory Nature Conservation Designations
- Figure A2: Lady Cross Plantation - Target Note Areas
- Figure A3: Lady Cross Plantation - Breeding Bird Records
- Figure A4: Lady Cross Plantation - Other Fauna
- Figure B1: Stanghow - Statutory and Non-Statutory Nature Conservation Designations
• Figure B2: Stanghow - Target Note Areas
• Figure B3: Stanghow - Breeding Bird Records
• Figure B4: Stanghow - Breeding Bird Records (Adjacent Moorland)
• Figure B5: Stanghow - Other Fauna
• Figure C1: Tockett’s Lythe - Statutory and Non-Statutory Nature Conservation Designations
• Figure C2: Tockett’s Lythe - Target Note Areas
• Figure C3: Tockett’s Lythe - Breeding Bird Records
• Figure C4: Tockett’s Lythe - Other Fauna
2. ECOLOGICAL SURVEY METHODOLOGY

Introduction

2.1 The final scope of the ecological survey was defined on the basis of known and potential ecological interest in the local area as well as through discussions and comments from key consultees. Particular attention was paid to the potential presence of key rare or legally protected species.

2.2 Surveys were completed during the period February-September 2014.

Ecological Survey Team

2.3 The baseline ecological surveys have been led by Paul Chester, Managing Director of Paul Chester & Associates Ltd (PCA). Mr Chester is an ecologist with twenty-four years professional experience. Prior to establishing PCA in 2007, he was a Technical Director with AMEC Earth and Environmental UK Ltd. From 1998 to 2005 he held a similar role with the Environmental Advice Centre Ltd. He has been involved with in excess of five hundred ecological survey and assessment projects ranging from small-scale specialist surveys to the survey and assessment of large-scale major development projects. Over the previous seventeen years he has assumed the role of Project Manager on virtually all of these projects. He has a wide-ranging experience from the majority of industrial sectors including pipelines, highways, residential, industrial, leisure, retail, energy, ports, etc. Mr Chester has worked with the majority of protected species/species-groups including badger, bats, birds, dormouse, great crested newt, otter, plants, reptiles, water vole and white-clawed crayfish. Mr Chester lives within the North York Moors National Park and has a detailed knowledge of the flora and fauna within the park. He has been a full member of the Chartered Institute of Ecology and Environmental Management since 1995. He has been involved with the ecological surveys associated with the York Potash project since October 2011.

2.4 Specialist support was provided for certain elements of the field survey, particularly the invertebrate and breeding bird surveys. In relation to the invertebrate survey, this was led by Dr Jonty Denton. Dr Denton is one of the UK’s leading field ecologists with some twenty-five years professional experience. He provides a range of expertise including providing baseline surveys (specialising in invertebrates), Phase 1 and 2 habitat surveys through to detailed assessments and specialist management plans for endangered habitats and species, particularly wetlands, heathlands, and old woodlands. He has had over 200 papers and notes published on the biology and distribution of invertebrates in Britain and abroad and is the County
Recorder for beetles, bugs and river-flies in Surrey and North Hampshire, and National Recorder for the Tenebrionoidea (darkling beetles & allied families), Scirtidae (Marsh beetles) and Steninae (Camphor beetles). He recently completed the True Bug - Heteroptera section of the DEFRA Priority Habitats Invertebrate Project for Buglife, and books on the Beetles of Surrey, which is the longest county checklist ever published on a single order in Britain, and a book on the Water Bugs and Beetles of Surrey. In 2003, under the project management of Paul Chester, he carried out one of the largest scale invertebrate surveys ever commissioned in Britain, recording over 3,200 taxa, and generating over 15,000 records from the Kennet Valley in Berkshire. He has carried out contracts for Natural England/RSPB studying the Spangled Water Beetle *Graphoderus zonatus*, the diving beetle *Agabus brunneus* and the ground beetle *Lebia cyanocephala*, three of the most endangered insects in the UK; and carried out the Recovery Scheme pilot work for the Reed Beetle *Donacia bicolora*, Hornet Robberfly *Asilus crabroniformis*, and Gilkicker Weevil *Pachytychius haematocephalus*. He remains the only ecologist who has carried out both vertebrate and invertebrate Species Recovery schemes. He is Britain’s leading pan-species lister having recorded in excess of 11,000 species of flora and fauna in Great Britain and Ireland. He is a Fellow of the Royal Entomological Society and a Fellow of the Linnean Society.

2.5 Support in the ornithological surveys was provided by Chris Bradshaw. Mr Bradshaw is one of the leading UK professional ornithologists with more than 25 years experience of ornithological fieldwork and guiding throughout the UK and overseas. In terms of survey work, he was part of the survey team which completed surveys for the South Pennines Special Protection Area (SPA) in 2005 and 2014 and the North Pennines SPA in 2006/2007. In 2008 he surveyed 12 1km squares as part of a larger survey of the North York Moors SPA with further surveys of the SPA in 2012 and 2013 which were conducted as part of the York Potash project. He has conducted general breeding bird surveys using the CBC methodology and BBS transect methods and undertaken breeding bird surveys for specific species (e.g. Goshawk, Nightjar and Firecrest) or groups of species (e.g. waders). He has experience of using line transects and spot counts in a variety of habitats and countries. He undertook monthly counts of waders and wildfowl for the Wetland Bird Survey (formerly Birds of Estuaries Enquiry) in the Medway, Thames and Swale estuaries for over 20 years, also contributing to low tide counts undertaken in each of these estuaries. Overseas, he has undertaken waterfowl counts and general bird surveys in Hong Kong, Yemen, Kazakhstan and Turkey. He is a principal bird tour leader for Birdwatching Breaks with a particular interest in the Asian avifauna where he has led tours on the Indian subcontinent, Malaysia, Vietnam, Thailand and Mongolia. He
led the first commercial birding tour to Syria and has also run trips in North Africa, the Middle East and South and North America. He was elected to the British Birds Rarities Committee in 2006, served as a member of Council for the Ornithological Society of the Middle East between 1997 and 2004 and served on the Editorial & Records Committee of the Kent Ornithological Society between 1989 and 2002. He has authored or co-authored a number of publications and journal articles on ornithology.

Desk Study

2.6 To provide relevant background information, a detailed desk-based study was undertaken. This involved the consideration of numerous published documents and other information relevant to the proposed MTS and surrounding area. Key sources of information reviewed as part of the desk study included, in particular:

- National Biodiversity Network (NBN) Gateway
- MAGIC web-based interactive map service
- Various national and regional distribution atlases/reports in relation to plants, birds, invertebrates, etc.
- Local Biodiversity Action Plans
- Various other specialist reports on biodiversity locally, for example, NYMNP Moorland Research reports.

2.7 In addition, all relevant ecological data within and around the intermediate access points was obtained from the two relevant environmental records centres, i.e. Environmental Records Centre Information North East (ERIC North East) and the North East Yorkshire Ecological Data Centre (NEYEDC).

2.8 In relation to the Lady Cross Plantation and Stanghow sites these were either within or immediately adjacent to the study areas that were adopted for surveys for the previously considered cross-country pipeline MTS. The detailed results from these surveys were therefore also reviewed as part of the desk study.

Consultation

2.9 Consultation has been undertaken with both national and local statutory and non-statutory consultees. In particular, these have included:

- Natural England
- North York Moors National Park Authority
- Environment Agency
2.10 Further more specific information is provided in relation to the individual species records provided by ERIC North East, NEYEDC and other desk-based sources within the relevant section of the report. In all cases, a precautionary approach has been adopted, i.e. whilst the value of such data searches is acknowledged, it is recognised that coverage is rarely comprehensive and cannot therefore be used as a basis for confirming the absence of individual species/species-groups.

Study Area

2.11 The desk-based elements of the survey extended up to approximately 2km from each of the proposed intermediate access points, with a wider 10km area of search applied to key potential considerations such as internationally protected sites.

2.12 With regard to the survey area adopted for the more detailed surveys, this was defined on the basis of each individual survey requirement and particularly the potential zone of influence relevant to any potential adverse impact. For certain sedentary species, the study area was therefore largely restricted to the proposed development area whilst for others; surveys were extended into the wider local area. A precautionary approach was followed throughout.

Survey Scope and Methodology

Introduction

2.13 The following surveys have been completed:

- Phase 1 Habitat Survey
- Hedgerow Survey
- Boundary Survey
- National Vegetation Classification Survey (selected habitats only)
- Breeding Bird Survey
- Badger Survey
- Bat Survey
- Water Vole Survey
- Great Crested Newt (Amphibian) Survey
- Reptile Survey
- Invertebrate Survey

2.14 The suite of surveys that were completed was varied accordingly to reflect the actual or potential ecological characteristics at each of the intermediate
access locations. Specific detail of this is provided within the relevant baseline section for each site.

2.15 In addition, during the course of the surveys, consideration was given to other potentially important species/species-groups including species such as Brown Hare.

2.16 The methodologies that were followed for the surveys are provided below. Survey constraints are also detailed.

**Habitats/Plants**

2.17 Desk-based elements were particularly associated with the presence and location of statutory and non-statutory nature conservation sites. The location of such sites in relation to the intermediate access points is shown on Figures A1, B1 and C1.

2.18 The habitat survey has been based upon a Phase 1 Habitat Survey undertaken for each intermediate access point. This was based upon the classification of broad vegetation types as defined in the Handbook for Phase 1 Habitat Survey (JNCC, 2010). The survey was extended to include the mapping of boundary features.

2.19 More detailed target note descriptions are provided for individual habitats encountered at each site and are provided in Appendices A1, B1 and C1. Additionally a photographic record of each site is provided in Appendices A2, B2 and C2. The locations of individual habitats referred to in the target note descriptions is provided on Figures A2, B2 and C2.

2.20 Botanical species lists have been compiled for each intermediate access point with particular attention paid to any rare or noteworthy species (see Appendices A3, B3 and C3). In relation to lower plants, whilst no comprehensive survey has been attempted, bryophytes which were recorded during the survey are also listed in Appendices A3, B3 and C3.

2.21 In addition to the Phase 1 survey, more detailed National Vegetation Classification (NVC) surveys have been completed for any key impacted or potentially impacted habitats identified during the Phase 1 Habitat Survey. These surveys were relevant only to the Lady Cross and Stanghow intermediate access points.

2.22 In terms of the approach to the NVC survey, this concentrated upon directly impacted habitats only. In terms of the general approach, this was as follows:
• The first element was for the surveyor(s) to walk the identified potentially sensitive habitat and map the distinctly different vegetation units.

• Random quadrat data was then gathered from within the distinct vegetation units. The standard quadrat for grassland sites was 2m x 2m; extended to 10m x 10m for species-poor or very tall herbaceous vegetation or woodland field layers and dense scrub, and 50m x 50m for sparse scrub and woodland canopy/understorey. Under this approach, for woodland sites such as the stream corridor of Lockwood beck, there was insufficient impacted area for the target quadrat and the habitat was therefore assessed in its entirety.

• In terms of the number of quadrats taken, this was defined on a site-specific basis. However, for woodlands, each identified vegetation unit typically had one canopy, one shrub layer and five ground flora quadrats. For non-woodland habitats, five ground flora quadrats were taken, this number being reduced in smaller vegetation units.

• For each quadrat, the abundance/cover of each species using domin was recorded.

2.23 The final element of the NVC survey was the detailed walkover of the site to record any additional species not present in the sampled quadrats.

2.24 The data has subsequently been considered in terms of the NVC category to which the vegetation best fits. In terms of the approach to this analysis, whilst computer programmes are available, these are often unreliable. The analysis is therefore based upon consideration of the floristic tables and associated community descriptions within the relevant NVC manual (Rodwell 1991a, 1991b and 1992). The floristic tables are provided in Appendices A4 and B4.

2.25 With regard to hedgerows, these habitat features were relevant only to the Stanghow and Tockett’s Lythe sites. Hedgerows within these sites were surveyed in accordance with the Hedgerows Regulations 1997. In terms of establishing the importance of a hedgerow using ecological criteria, this is essentially based upon the woody species, structure, ground flora, fauna and associated features. Woody species are listed on Schedule 3 of the Regulations and are calculated on the basis of paragraph 7(3) of Schedule 1 of the Regulations which essentially involves the sampling of 30m sections within 100m lengths of hedgerow. Typically a hedgerow needs to have seven or more woody species per sampled section to be classified as important in accordance with the Regulations although this number is reduced according to the presence of other associated features. Specifically, a hedgerow is classified as important if it has:
• at least 7 woody species; or
• at least 6 woody species, and has associated with it at least 3 of the features specified in sub-paragraph (4) of the Regulations; or
• at least 6 woody species, including one of the following trees: black-poplar *Populus nigra* ssp. *betulifolia*, large-leaved lime *Tilia platyphyllos*, small-leaved lime *Tilia cordata* or wild service-tree *Sorbus torminalis*; or
• at least 5 woody species, and has associated with it at least 4 of the features specified in sub-paragraph (4) of the Regulations.

2.26 In relation to the above, for North Yorkshire and Redcar and Cleveland, each of the criteria above is reduced by 1 woody species. With regard to sub-paragraph (4) of the Regulations, the associated features are as follows:

• a bank or wall which supports the hedgerow along at least one half of its length;
• gaps which in aggregate do not exceed 10% of the length of the hedgerow;
• where the length of the hedgerow does not exceed 50 metres, at least one standard tree;
• where the length of the hedgerow exceeds 50 metres but does not exceed 100 metres, at least 2 standard trees;
• where the length of the hedgerow exceeds 100 metres, such number of standard trees (within any part of its length) as would when averaged over its total length amount to at least one for each 50 metres;
• at least 3 woodland species within one metre, in any direction, of the outermost edges of the hedgerow;
• a ditch along at least one half of the length of the hedgerow;
• connections scoring 4 points or more in accordance with sub-paragraph (5);
• a parallel hedge within 15 metres of the hedgerow.

2.27 For completeness, hedgerows within the study area were also surveyed utilising the Hedgerow Evaluation and Grading System (HEGS) (Clements and Toft, 1993). The aim of this methodology is to allow the rapid recording and ecological appraisal of any given site in the UK and allow the grading of individual hedgerows present in order to identify those which are likely to be of greatest significance for wildlife. The method of assessment includes recording canopy species, associated ground flora and climbers, number and species of trees, structure of the hedgerow including height, width and gaps and associated features such as banks, ditches and/or grass verges. From this data, a grade is derived as follows:

• Grade 1-, 1, 1+ High to Very High Value
- Grade 2-, 2, 2+ Moderately High to High Value
- Grade 3-, 3, 3+ Moderate Value
- Grade 4-, 4, 4+ Low Value

2.28 Hedgerows graded 2- or above are typically regarded as being of nature conservation priority.

2.29 The results of the hedgerow survey are provided in Appendices B5, B6, C4 and C5.

2.30 With regard to other boundaries, these have also been subject to a general description in terms of type and species composition (where appropriate). These descriptions are included within the relevant target notes.

2.31 Consideration of the presence of invasive species, particularly plants which are listed in Schedule 9 of the Wildlife and Countryside Act (1981, as amended), was included in the survey.

**Breeding Birds**

2.32 The breeding bird survey essentially followed the original methodology of the Common Bird Census (CBC) (Marchant, 1983). The British Trust for Ornithology (BTO) regard CBC mapping as “the most accurate practical way to determine the numbers and distribution of breeding birds within a relatively small study site, and is widely used by BTO staff and other researchers for studies where a high level of detail is required.” Full surveys of each intermediate access point and surrounding area were completed during the periods 10\(^{th}\)-17\(^{th}\) April 2014, 6\(^{th}\)-9\(^{th}\) May 2014 and 2\(^{nd}\)-6\(^{th}\) June 2014.

2.33 Whilst the main survey area was specific to the intermediate access points, the surveys were extended locally at each site as follows:

- Lady Cross Plantation – extended to include all immediate surrounding woodland.
- Stanghow – extended to include Stanghow Moor and Moorsholm Moor both which lie within the North York Moors SSSI/SAC. At these locations, surveys were extended for a distance up to 1km from the proposed intermediate access point. Also extended to include adjacent woodland sections, the majority of which lies within part of the wider Kilton Beck Complex Local Wildlife Site.
- Tockett’s Lythe – extended to include the woodland associated with Waterfall Gill which lies within part of the wider Skelton Beck Complex Local Wildlife Site.
2.34 Within the above dates, surveys of the Lady Cross Plantation site were completed on 11\textsuperscript{th} April. Surveys of the main Stanghow site were completed on 10\textsuperscript{th} April, 6\textsuperscript{th} May and 5\textsuperscript{th} June 2014. The surveys of Stanghow Moor and Moorsholm Moor were completed on 15\textsuperscript{th} April, 17\textsuperscript{th} April (additional dedicated search for Merlin), 7\textsuperscript{th} May and 2\textsuperscript{nd} June 2014. Surveys of the Tockett’s Lythe site were completed on 14\textsuperscript{th} April, 8\textsuperscript{th} May and 6\textsuperscript{th} June 2014.

2.35 In order to ensure that fieldwork was carried out during times of optimum activity, surveys were completed in the mornings, commencing within an hour of sunrise and continuing through to late morning. In addition, night visits to the study area were made to record the presence of nocturnal species. Tape lures were employed in relation to a number of key or typically cryptic species. For certain species, the survey methodology was varied to reflect recommended survey methodologies. For example, raptor surveys were conducted following the methodologies as recommended in Raptors: A Field Guide for Surveys and Monitoring (Hardey et al, 2009).

2.36 The surveys were completed during optimum survey conditions and days with rain or winds in excess of Beaufort force 4 were avoided wherever possible.

2.37 All bird species were noted either by sight or call and were recorded onto maps to enable an assessment of the importance of discrete areas within and adjacent to the proposed sites to be made, not only in terms of the range of species present, but also in terms of the significance of the populations of individual species.

2.38 Birds were deemed to be holding territory if they were observed to be displaying any behaviour indicative of breeding. Specifically, this included the following:

- Birds observed singing, displaying or in courtship
- Birds engaged in territorial behaviour/territorial dispute.
- Birds seen carrying nest material.
- Adult visiting a probable nest site.
- An active nest site.
- An adult bird seen carrying food to nearby nest or young.
- Bird removing faecal sac from nearby nest.

2.39 For those species where breeding behaviour can be difficult to observe, for example, ducks, partridges, etc., the presence of a pair was deemed to represent a territory. For such species, it is, however, clearly possible that breeding may be some distance from the observation. This approach does, however, enable a precautionary approach to be followed in the survey and...
assessment. Birds of note not exhibiting breeding behaviour were also recorded.

2.40 Surveys in adjacent moorland sections, whilst comprehensive in their species coverage paid particular attention to certain key species/species-groups, particularly, Golden Plover *Pluvialis apricaria* and Merlin *Falco columbarius* along with moorland waders generally.

2.41 In terms of the methodology followed in this survey, the survey for Golden Plover and other moorland waders partly followed the Brown and Shepherd (1993) methodology for censusing upland waders. This methodology was developed as a standard and reasonably rapid survey technique for upland waders and involves walking along a predetermined route such that all parts of a study area are approached to within 100m. It is based upon two visits to a survey area, one early in the breeding season and a second at a later date. Specific to this survey, whilst the early and late visits were completed, the approach was extended to include an additional mid-season survey. The Brown and Shepherd methodology likewise advocates a survey start time of 08:30am. This is, however, a late start for breeding bird surveys which ideally should be started within one hour of sunrise. For example, Snipe *Gallinago gallinago* is a species which can typically only be reliably recorded in the period shortly after sunrise. The adopted survey approach is therefore an improved and extended adaptation of the Brown & Shepherd (1993) methodology which provides a higher level of detail/accuracy.

2.42 In relation to Merlin, the methodology followed that as set out by Hardey *et al* (2009) which is the standard accepted approach to the survey for this species. Initial visits relating to territory occupancy were undertaken during first (April) surveys.

2.43 Moorland sections close to the Stanghow site were also surveyed for Nightjar. This survey followed the typical approach to Nightjar survey which is based upon the recording of the position of calling (“churring”) male Nightjars over a series of visits across the main breeding season. The same survey area as was followed for the other moorland bird surveys i.e. to 1km from the proposed intermediate access point was followed. Four survey visits were completed on 10th June, 11th June, 30th June and 7th July 2014.

2.44 Breeding bird records for each site are provided on Figures A3, B3 and C3. Records for the moorland section adjacent to the Stanghow site are provided in Figure B4. Species lists are provided in Appendices A5, B7 and C6.
**Badger**

2.45 The Badger survey has involved an initial main survey period with on-going monitoring throughout.

2.46 The initial period of survey was completed during the period 14\textsuperscript{th}-17\textsuperscript{th} February 2014. This followed a standard approach which has been described previously by various authors, for example, Harris (1989) and Macdonald (1998). The survey involved an initial walkover survey to identify sett locations, together with other field signs present such as paths, hairs, footprints, latrines, etc. Where field signs were encountered, these were investigated further subject to access, particularly with respect to establishing the location of any main setts.

2.47 Setts were considered under the typical accepted categories of main, annex, subsidiary and outlier (Thornton, 1988) as follows:

- **Main:** Typically indicated by a large number of holes with large spoil heaps and with well-used paths to and from the sett and between sett entrances.
- **Annex:** Typically less than 150m from a main sett with several entrances (although not necessarily in use all the time) and connected to the main sett by one or more obvious, well worn paths.
- **Subsidiary:** Typically with a small number of entrances at least 50m from a main sett and without any obvious connecting paths. Such setts are not continuously active.
- **Outlier:** Typically with one or two holes, often with little spoil outside the sett entrance and without any obvious path connecting with another sett. Used only sporadically and occurring anywhere within a territory although often some distance from the main sett.

2.48 Due to the sensitive nature of Badger sett locations, the results of the survey are provided in a separate confidential Appendix.

**Bats**

2.49 The bat survey involved an initial walkover survey to assess the general habitat quality for bats. This included both the identification of key potential foraging habitat, flight corridors as well as potential or actual roost sites.

2.50 Trees were assessed on the basis of the presence of features typically associated with tree roosting bats, for example, woodpecker holes, trunk and branch splits, rot holes (cavities) where branches have been removed, frost cracks, hollow sections of trunk, branches or even roots, cavities beneath old
root buttresses, beneath loose bark, behind dense ivy, in dense epicormic growth and in bat or bird boxes. With regard to trees favoured by roosting bats, a number of general principles were used in the assessment; in particular, tree species usually favoured by roosting bats are Ash, Beech, Elm, Oak, Scots Pine and Willow. Trees of less than 30cm diameter and less than 80 years old are least likely to contain roosts and trees greater than 50cm diameter and more than 120 years old are most likely to contain roosts.

2.51 Buildings were restricted to a single light aircraft hangar immediately adjacent to the Lady Cross site. Whilst no internal building surveys were undertaken, the exterior of the building was inspected for potential entry/exit points and for evidence of bat usage. This was supplemented with external dawn and dusk observations.

2.52 Following on from the daylight surveys, the final element of the bat survey was a series of dusk surveys using ultrasonic bat detectors. This was to seek to confirm roosting evidence and to identify key foraging habitat and flight corridors. Specific to roost sites, trees were typically within the category of low-moderate roost potential. In accordance with relevant guidance, two emergence and/or re-entry surveys between the period May-September were completed. (Bat Conservation Trust, 2012). With only a very small number of trees requiring assessment, these surveys were completed concurrently with the foraging surveys.

2.53 In relation to foraging activity, with each intermediate access point having some habitat assessed as being potentially of moderate value, six full surveys were completed at each site. These were undertaken on a monthly basis between April and September 2014. More specifically, surveys at Lady Cross were completed on 8th April, 29th May, 18th June, 23rd July, 19th August and 2nd September; at Stanghow on 14th April, 26th May, 17th June, 22nd July, 21st August and 5th September; and at Tockett’s Lythe on 10th April, 27th May, 1st July, 29th July, 20th August and 4th September. In accordance with the guidance, the August surveys were extended through to dawn. All surveys were undertaken in good survey conditions with light or no wind, warm temperatures and no rain.

2.54 In terms of the approach to the foraging surveys, two (rarely three) surveyors observed identified potential roosting habitat and/or foraging habitat in the pre-dusk period and remained at this point until bats could not be directly observed. At this point pre-determined transects were slowly walked in order to record bat activity around the site. For sites of this scale, it is possible to walk the entire site boundary along with internal field/woodland boundaries.
within an approximately 3-4 hour time-scale. The routes were varied on each site visit within the overall objective of ensuring full site coverage.

2.55 Records from the bat survey are shown on Figures A4, B5 and C4.

**Otter**

2.56 Whilst only one moderately-sized stream is crossed at the Stanghow intermediate access point, other adjacent watercourses, for example, Waterfall Beck to the east of the Tockett’s Lythe site were assessed for their potential to provide habitat for Otter *Lutra lutra*. In addition, they were surveyed in detail using standard survey techniques. This involved walking the banks or wading in the watercourse to identify field signs such as spraints, holts, footprints and actual or potential resting sites. With regard to resting sites, these were considered on the basis of being sites that are typical of the places known to be used by otters for lying-up and showing evidence of use. Three categories were used to describe resting sites. Actual resting sites were where there were signs that the site was well used by otters including a well trampled entrance, otter spraints and footprints. Possible resting sites were where the site was typical of an otter resting site with obvious evidence that it was being used by a mammal but no signs that otters were using the site. Finally, potential resting sites were areas that are typical of an otter resting site but with no signs of use. The Otter surveys were completed on 12th May, 13th May, 11th July and 6th August 2014.

**Water Vole**

2.57 Whilst the initial scoping identified very limited potential Water Vole *Arvicola amphibius* habitat, a precautionary survey was completed. The survey followed standard methods as set out in the Water Vole Conservation Handbook (Strachan, 2006). This involved the survey of streams, minor streams, ditches, any rush-pasture/marsh habitats and was based upon a detailed search for field signs such as direct observations, sounds of the species entering water, latrines, tunnel entrances, cropped “gardens” around tunnel entrances, feeding stations, paths along the water’s edge, runs in vegetation and footprints in mud. Surveys of stream sections were largely completed concurrently with the Otter surveys and of ponds and ditches/marshes concurrently with the amphibian and botanical surveys.

**Amphibians**

2.58 The first element of the amphibian survey was the identification of ponds within the study area using large-scale (1:10:000) maps and aerial photographs. Following on from this, ponds were visited and assessed using
the Great Crested Newt *Triturus cristatus* Habitat Suitability Index (HSI) (Oldham RS, Keeble J, Swan MJS & Jeffcote M. 2000). The Great Crested Newt HSI is a quantitative measure of habitat quality. The HSI is a number between 0 and 1 which is derived from an assessment of ten habitat variables known to influence the presence of Great Crested Newt. An HSI of 1 is optimal habitat (high probability of occurrence), while an HSI of 0 is very poor habitat (minimal probability of occurrence). The HSI is calculated on a single pond basis, but takes into account surrounding terrestrial habitat and local pond density.

2.59 Following on from the HSI assessment, ponds considered to offer potential amphibian breeding habitat were surveyed using a combination of standard survey techniques. This survey was completed in accordance with the Great Crested Newt Mitigation Guidelines (English Nature, 2001) and included nocturnal torch surveys, bottle trapping, netting and egg-searching. All torch surveys were completed using 1,000,000 Clu-Light amphibian survey torches.

2.60 The more detailed surveys were completed on 1st April (Stanghow), 7th April (Stanghow), 8th April (Lady Cross), 6th May (Stanghow), 8th May (Lady Cross), 13th May (Lady Cross) and 15th May (Lady Cross). All surveys were undertaken in appropriate weather conditions with night-time temperatures exceeding 5°C. There were no ponds relevant to the Tockett’s Lythe site.

2.61 The final approach to the survey of individual ponds was defined on the basis of the most effective survey techniques taking into consideration factors such as water clarity, levels of aquatic vegetation and safety considerations.

2.62 Specific searches during the earlier part of the year were made in relation to Common Frog. Records were also made for Common Frog and Common Toad from other habitats such as ditches.

2.63 In relation to three ponds to the the west of the Lady Cross site, this group of ponds were included in surveys completed in 2012 as part of a potential re-route of the previous pipeline approach to mineral transportation. The results from this survey are therefore relied upon.

2.64 The results of the amphibian survey are provided in Appendix A6.
Reptiles

2.65 The first element of the reptile survey was to walk each of the sites to identify potentially suitable habitat. This was identified on the basis of key considerations such as vegetation, cover and aspect.

2.66 Following the walkover survey, artificial refugia were placed in areas of identified potential habitat. Providing artificial refugia as basking sites is an acknowledged successful method for recording all of the reptile species in Britain. It allows a non-destructive search of the habitat for individuals voluntarily occurring within a standardised sampling area. Refugia were set out with due regard the floristic structure of the habitat and with consideration of other factors, particularly aspect. In terms of survey effort, refugia were visited on up to ten separate occasions. This was considered to represent a sufficient level of survey effort and exceeds the minimum effort recommended in relevant guidance for confirming presence/absence (Gent & Gibson, 1998; Froglife, 1999). Refugia were approached slowly in the event of any reptiles using the upper surface of the refugia as basking platforms; Common Lizard frequently adopting this behaviour. The survey was conducted concurrently with other field surveys with searches made in suitable weather conditions particularly during the period April-May 2014. On completion of the survey, refugia were removed. In addition, suitable habitat was walked during optimum survey conditions to search for direct observations of animals.

2.67 The primary basis of the survey was the confirmation of presence/absence and no further detailed surveys were completed to seek to establish population estimates other than that of considering the general quality of the habitat.

2.68 Reptile records are shown on Figures A4 and B5.

Invertebrates

2.69 Within the proposed intermediate access points, the first element of the survey was to complete a walkover survey of the site to identify key potential invertebrate habitats which were subsequently taken forward for more detailed survey. This initial walkover also considered adjacent habitats where there was the potential for indirect effects to occur, for example, streams, flushes, etc. with potential connectivity to the site.

2.70 The methods employed for the more detailed surveys included standard techniques of sweeping grasses, rushes, sedges, herbs and foliage, beating the foliage and branches of trees and bushes, especially blossom bearing
plants such as Blackthorn, Hawthorn and Rowan over a beating tray (Kirby, 1992). Dead wood was examined by hand and bark removed to reveal bark dwelling (corticolous) species. Accumulated material in hollow trees (old bird’s nests, wasp’s nests, etc.) plus moss and leaf litter were sieved using mesh sizes ranging from 10mm, 5mm to 1mm. Fruiting bodies of fungi were also searched. In some cases fungal fruiting bodies and twigs infested with insect larvae were removed and placed in rearing cages and any adult insects emerging were collected in situ. Surface vegetation, tussocks, and ground litter were sampled and each collection emptied onto a large beating tray, where specimens of interest could be collected. The remainder could then be released unharmed.

2.71 In the wider local area, the streams crossed or adjacent to the Stanghow and Tockett’s Lythe sites were subject to general sampling along with a more specific Biological Monitoring Working Party (BMWP) survey.

2.72 For stream (and other pool/puddle sampling), a 0.5mm GB nets pond net was employed. Bank-splashing was also employed on the muddy/mossy areas around the various water bodies and seepages. This simply involved throwing handfuls of water over the surfaces forcing burrowing beetles to the surface where they were collected in a pooter. Moss and leaf litter was pushed under the water surface to force out the invertebrates within. Once collected, the samples were live sorted on the bank of the stream, with any unidentified taxa preserved in 70% IMS and identified later under a binocular microscope.

2.73 Specific to the BMWP survey, this methodology provides a general assessment of the quality of stream habitats. A 3 minute kick sample was completed at each location. During the kick sample all the micro-habitats were surveyed so as to maximise the diversity of invertebrates caught. Large stones and debris were overturned and searched for caddis larvae, snails, etc. Once collected the samples were live sorted on the bank of the stream, with any unidentified taxa preserved in 70% IMS and identified later under a binocular microscope. From the samples, families present, total number of scoring taxa, BMWP scores and average score per taxon (ASPT) scores were calculated.

2.74 The invertebrates surveys were completed over two survey periods. These were during the periods 12th-15th May 2014 and 17th-21st August 2014.
Other Species

2.75 Other species of mammal, for example, Brown Hare *Lepus europaeus* were simply recorded at the locations that they were noted in the study area, with consideration of habitat usage in the vicinity of these sightings.

Survey Constraints

2.76 There were not considered to be any significant survey constraints and virtually all surveys were able to be completed using accepted standard methodologies completed in good survey conditions at the appropriate time of year. Weather conditions represented a minor constraint to the reptile survey. Reptiles are a group of species which are attracted to bask at artificial refugia which may only be effective for relatively short periods during any particular day. Confirming presence therefore relies upon reptiles being present at refugia during the optimum conditions for basking. Such conditions were often limited to short periods during the 2014 survey season. This limitation was, however, largely addressed through the adoption of multiple visits exceeding the recommended minimum.
3. LADY CROSS PLANTATION INTERMEDIATE ACCESS POINT AND SPOIL DEPOSITION SITE

Desk Study

3.1 The desk study did not identify any key rare or legally protected species records from the proposed site or surrounding area.

Statutory Nature Conservation Sites

3.2 The Lady Cross Plantation site is not subject to any statutory nature conservation designation.

3.3 In the wider local area, the closest European site is Arnecliff and Park Hole Woods Special Area of Conservation (SAC) which is located approximately 3.4km south-west of the site. Arnecliff and Park Hole Woods is designated as a SAC on the basis of providing an example of the ‘Old Sessile Oak woods with Ilex and Blechnum in the British Isles’ Annex I habitat type. The site also qualifies on the basis of supporting internationally important populations of Killarney Fern Trichomanes speciosum.

3.4 Arnecliff and Park Hole Woods is designated as a Site of Special Scientific Interest (SSSI). The SSSI designation is based upon the characteristic native oak woodland and associated ground flora, particularly the population of Killarney Fern.

3.5 Other sites present in the wider local area are associated with the North York Moors SAC. The site qualifies as a SAC on the basis of providing examples of the following habitat types listed in Annex 1 of Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.

- Northern Atlantic wet heaths with Cross-leaved Heath Erica tetralix for which this is considered to be one of the best areas in the United Kingdom.
- European dry heaths for which this is considered to be one of the best areas in the United Kingdom.
- Blanket bogs for which the area is considered to support a significant presence (Blanket Bog is an Annex 1 priority habitat type when in its active form).

3.6 The SAC covers an extensive area extending over 44,000ha of the North York Moors National Park. Those sections closest to the Lady Cross site are a section of Sleights Moor approximately 3.8km to the south-east and a section of Lealholm Rigg approximately 4km to the west.
3.7 With the same boundary as the North York Moors it also qualifies as a Special Protection Area (SPA) on the basis of internationally important bird breeding populations. In particular the site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

- Golden Plover *Pluvialis apricaria*, 526 pairs representing at least 2.3% of the breeding population in Great Britain.
- Merlin *Falco columbarius*, 40 pairs representing at least 3.1% of the breeding population in Great Britain.

3.8 With the same boundary as the North York Moors SAC and SPA, the North York Moors SSSI is a very large protected site covering in excess of 44,000ha and contains the largest continuous tract of heather moorland in England. The site is of national importance for its mire and heather moorland vegetation communities and of international importance for its breeding bird populations. The site consists of the four main moorland blocks with five smaller outlying areas.

3.9 The vegetation across the site displays a transition between blanket bog and dry heathland and supports diverse and extensive upland plant communities. These include a number of different dry heath, wet heath and mire communities. Sections of acid grassland are also present along with locally extensive stands of Bracken *Pteridium aquilinum*. Woodland is restricted to small areas along gills and the moorland edge. In relation to species, the site supports a nationally important assemblage of moorland breeding birds. In addition to the internationally important populations of Golden Plover and Merlin, species which form part of this assemblage include Curlew *Numenius arquata*, Lapwing *Vanellus vanellus*, Redshank *Tringa totanus* and Snipe *Gallinago gallinago*. Other species groups which are well represented include reptiles and invertebrates.

3.10 Although not subject to any specific statutory nature conservation designation, the site lies entirely within the North York Moors National Park.

**Non-Statutory Nature Conservation Sites**

**Local Nature Reserves**

3.11 There are no Local Nature Reserves (LNR’s) on or in close proximity to the Lady Cross Site.
Ancient Woodland

3.12 None of the woodland within or adjacent to this proposed site is included on the ancient woodland inventory. In the wider local area, the closest ancient and semi-natural woodland is associated with Cote Bank Woods which are located approximately 1km to the south-east.

Other Sites (Site Identified North York Moors National Park Core Policy C)

3.13 The Local Development Framework (LDF) for the National Park consists of several different documents to guide future development whilst ensuring that its special qualities are conserved and enhanced. Of particular relevance to biodiversity is Core Policy C – Natural Environment, Biodiversity and Geodiversity of the Core Strategy and Development Policies document. Specific to this policy, areas within the National Park have been identified and are indicated on the LDF proposals map under the broad categories of ‘woodland (including ancient woodland’); ‘mountain, moor, heath, down and cliff’; and ‘coastal landscape.’ These areas are typically habitats which are not subject to any statutory nature conservation designation but which have some intrinsic elevated local ecological or landscape value.

3.14 The eastern section of this site along with adjacent habitat to the north and west are identified on the proposals map as ‘moorland’.

Habitats and Plants

General Habitat Description

Introduction

3.15 This intermediate access point is located in fields to the south of the A171, approximately 1km north of the village of Egton. The site is surrounded by plantation woodland. Much of the site itself was historically plantation woodland which has subsequently been felled and returned to grassland. The site supports a limited range of habitat types.

3.16 More detailed target note descriptions are provided for habitats encountered in both the site and its immediate surrounds in Appendix A1. A photographic record is provided in Appendix A2. These habitats are described in more general terms below.
Arable Farmland

3.17 The southern field (Target Notes 3 and 4) is used for arable farming with the southern sections used for oat production in 2014. The northern half was also presumed to be used for arable production and had been seeded with some form of ley mixture in 2014.

Semi-improved Grasslands

3.18 The northern half of the site which is divided into three compartments (Target Notes 6, 8 and 13) are all grasslands which are best described as being semi-improved.


3.20 Less species-rich is the largest field (Target Note 13) which dominates the northern part of the site. It is damp, neutral to slightly acidic permanent grassland which is cut for hay/silage. It is characterised by abundant Common Bent and Yorkshire-fog, locally frequent Cat's-ear, *Rhytidiadelphus squarrosus* and Sweet Vernal-grass *Anthoxanthum odoratum*, and more occasional Common Mouse-ear, Dandelion, Lesser Trefoil, Rough Meadow-grass, Red Fescue *Festuca rubra sens. lat.* and White Clover. More rarely occurring species included Creeping Buttercup, Ribwort Plantain *Plantago lanceolata*, Common Sorrel, Common Spotted-orchid, Crested Dog's-tail, Lesser Stitchwort *Stellaria graminea*, Marsh Thistle, Meadow Buttercup *Ranunculus acris*, Selfheal *Prunella vulgaris* and Soft-rush.

3.21 The most nutrient enriched of the grassland is the south-eastern field (Target Note 8). This shows moderate degrees of agricultural improvement and is less species-rich with abundant Common Bent, Timothy *Phleum pratense* and Yorkshire-fog, frequent White Clover and more occasional Cat's-ear,

3.22 A further narrow section of neutral grassland associated with the existing verge of the unnamed road adjacent to the site will be crossed by the access to the site. This is a species-poor grassland with abundant Perennial Ryegrass along with more occasional Common Nettle *Urtica dioica*, Creeping Buttercup, Dandelion, False Oat-grass *Arrhenatherum elatius*, Hogweed *Heracleum sphondylium* and Yorkshire-fog.

**Marsh/Rush-pasture**

3.23 Locally, the habitats are damper and with more rush. These include localised sections within wider fields, for example, lower lying sections within the smaller of the northern fields (Target Note 6). In this habitat, Sharp-flowered Rush *Juncus acutiflorus* is locally abundant with frequent Soft-rush and more occasional Compact Rush *Juncus conglomeratus*. Other species include locally frequent Yorkshire-fog along with more rarely occurring Jointed Rush, Heath Rush *Juncus squarrosus*, Lesser Spearwort *Ranunculus flammula*, Marsh Willowherb *Epilobium palustre* and Oval Sedge *Carex leporina*.

3.24 Elsewhere, a series of mounds have been formed along the western boundary of the site (Target Note 10) with quite large sections of habitat dominated by Soft-rush with few associated species. Target Note 2 is a further species-poor habitat which is locally dominated by Soft-rush.

**Heathland**

3.25 There are very localised patches of heathland habitat at the periphery of the site (Target Notes 11 and 12). Target Note 11 is a typical wet heath with co-dominant Cross-leaved Heath *Erica tetralix* and Purple Moor-grass *Molinia caerulea*, locally abundant Polytrichum commune, *Sphagnum cf. papillosum* and more occasional Heather Calluna vulgaris. More rarely occurring species include Common Bent, Heath Rush, *Hypnum jutlandicum*, Sharp-flowered Rush, Soft-rush, Sweet Vernal-grass, Velvet Bent *Agrostis canina* and Yorkshire-fog. Target Note 12 has a similar composition although is more typically a mosaic with examples of both wet heath along with locally frequent Heather in a more typical dry heath habitat.
Plantation Woodland

3.26 Within the site, plantation woodland is limited to a small section of woodland in the central parts of the northern field (Target Note 7). It is a relatively open Scots Pine *Pinus sylvestris* plantation with a species-poor ground flora with dominant Yorkshire-fog, locally frequent Common Nettle *Urtica dioica* and more occasional or rarely occurring Bramble *Rubus fruticosus agg.* Cock's-foot, Common Bent, Common Mouse-ear, Creeping Thistle, Marsh Thistle and Soft-rush. Similar small patches of woodland are also present along the western boundary (Target Notes 9 and 10).

3.27 More extensive plantation woodland is present around the site boundary, including a section that will be removed to provide access to the site (Target Note 1). This woodland comprises predominantly of Downy Birch *Betula pubescens* with birch hybrids and more rarely occurring canopy species such as Goat Willow *Salix caprea*, Grey Willow *Salix cinerea subsp. cinerea* and Silver Birch *Betula pendula*. Scots Pine and Sycamore *Acer pseudoplatanus* are very rare. The shrub layer is very sparse with rarely occurring Holly *Ilex aquifolium*, Rowan *Sorbus aucuparia* and Sessile Oak *Quercus petraea*. The ground flora comprises of abundant Broad Buckler-fern *Dryopteris dilatata* and Wood-sorrel *Oxalis acetosella*, with locally frequent Bramble, *Brachythecium rutabulum*, Creeping Soft-grass *Holcus mollis*, Eurhynchium *praelongum*, Greater Stitchwort *Stellaria holostea*, *Polytrichum formosum*, *Pseudoscleropodium purum* and more rarely occurring Bilberry *Vaccinium myrtillus*, Climbing Corydalis *Ceratocapnos claviculata*, Herb-Robert *Geranium robertianum*, Honeysuckle *Lonicera periclymenum* and Wavy Hair-grass *Deschampsia flexuosa*. Regenerating seedlings of Rowan are present occasionally, with oak seedlings present very rarely.

Scrub

3.28 There are no true scrub habitats within the site. Very rarely, for example, Target Note 14, naturally establishing Downy Birch and Downy Birch x Silver Birch hybrids, with more rarely occurring Goat Willow and very rarely occurring Dog-rose *Rosa canina* and Gorse *Ulex europaeus* form an open scrub habitat. It is, however, very localised in extent.

Field Boundaries

3.29 There are no hedgerow habitats within the site. Field boundaries comprise of post and wire fences
Ditches

3.30 There are no ditches within the main part of the site and this habitat type is limited to a short section of virtually defunct ditch that will be crossed to provide the site access. The ditch contained no water at the time of survey and supported predominantly terrestrial species associated with the adjacent verge. More characteristic species were represented by occasional Greater Bird's-foot-trefoil *Lotus pedunculatus*, Tufted Hair-grass *Deschampsia cespitosa subsp. cespitosa* and more rarely occurring Marsh Thistle.

Ponds

3.31 Whilst ponds are present rarely in adjacent plantation woodland, there are none within the site itself. These adjacent ponds are described in more detail in Appendix A6.

Other Habitats

3.32 There are limited other habitat types present within the site. They include particularly those associated with bare and disturbed ground at gate entrances and trackways. Species found in these areas include Perennial Rye-grass, Annual Meadow-grass *Poa annua*, Common Mouse-ear, Creeping Buttercup, Dandelion, Pineappleweed *Matricaria discoidea* and White Clover.

Adjacent Habitats

3.33 The entire site is surrounded by a band of plantation woodland (Target Notes 17, 19, 21, 23 and 24). The eastern band of woodland (Target Note 17) is essentially an extension of the woodland type crossed to provide the site access (Target Note 1) albeit with some local variations. The southern band includes areas of dense even-aged Downy Birch *Betula pubescens* dominated woodland (Target Note 18) as well as sections which are more mature and with a mixed composition (Target Notes 19 and 20). Along part of this section and extending adjacent to the western site boundary throughout is an even-aged Scots Pine dominated plantation (Target Note 21). Scots Pine continues to be the dominant species in the woodland to the north of the site boundary (Target Note 24). This is with the exception of a narrow band of birch/willow dominated woodland which lies adjacent to the northern site boundary (Target Note 23).

3.34 Other adjacent habitats are associated with a larger section of wet heath/mire to the north-west of the site boundary (Target Note 22). This habitat comprises of frequent and locally dominant Purple Moor-grass with occasional and locally abundant Heather, *Hypnum julandicum* and
occasional Cross-leaved Heath and Deergrass *Trichophorum germanicum*. More rarely occurring species include Bell Heather *Erica cinerea*, Broad Buckler-fern, Common Bent, Crowberry *Empetrum nigrum subsp. nigrum*, Great Wood-rush *Luzula sylvatica*, *Pseudoscleropodium purum*, Soft-rush, Tormentil *Potentilla erecta*, Wavy Hair-grass and Yorkshire-fog. A large pond is present at the northern side of the heath and is described in more detail in Appendix A6.

**National Vegetation Classification (NVC)**

3.35 The habitats within this site do not necessarily classify well in accordance with the NVC. This is probably due to the history of the site with large parts of the site being reclaimed to grassland from previous plantation woodland.

3.36 Semi-improved grasslands are atypical and display characteristics which are associated with both neutral and acidic habitats. In a habitat such as this, the natural habitat type is probably that of a calcifuge grassland, particularly the U4 *Festuca ovina-Agrostis capillaris-Galium saxatile* community which is the most frequently encountered moorland fringe pasture. Agricultural improvement has the effect of changing the botanical composition to a more mesotrophic grassland, particularly, the MG6b * Lolium perenne-Cynosurus cristatus* grassland, *Anthoxanthum odoratum* sub-community. This pattern of partial nutrient enrichment is seen throughout much of the northern half of the site with several of the component constant species at a comparable cover and abundance to the MG6b community albeit with the presence of several species more characteristically associated with the U4 community.

3.37 Damper sections within the grasslands are typically associated with elevated levels of rush. Where rush becomes prominent this equates to the M23 *Juncus effusus-Galium palustre* rush-pasture. A particularly species-poor example of this habitat is present within large parts of the western boundary.

3.38 Very localised sections of heathland in the western parts of the site are damp communities which are considered to be representative of the M16 *Erica tetralix-Sphagnum compactum* wet heath community. Patches of drier heath are present rarely along the north-western boundary and share affinities with the H9 *Calluna vulgaris-Deschampsia flexuosa* and H12 *Calluna vulgaris-Vaccinium myrtillus* communities.

3.39 With regard to the impacted and adjacent woodland sections as an extensive area of predominantly plantation woodland, these generally do not equate well to any particular woodland NVC type. Locally, however, the habitat is more characteristically broadleaf woodland. With Downy Birch typically the dominant canopy species, this woodland most closely resembles the W4
Betula pubescens-Molinia caerulea woodland. Typical ground flora variations are evident, particularly in the woodland adjacent to the eastern boundary, with large sections showing similarities with the ground flora of the W4a Dryopteris dilatata-Rubus fruticosus sub-community.

3.40 Lower-growing poor ruderal dominated habitats, particularly associated with tracks and field entrances include stands with affinities to the OV10 Poa annua-Senecio vulgaris and OV21 Poa annua-Plantago major communities.

Rare and Noteworthy Species

3.41 The survey yielded almost over 150 species of vascular plant, virtually all of which are common or relatively common species which are typical of the habitats encountered. No nationally rare, nationally scarce or regionally rare species were recorded. With regard to species which have a restricted distribution in North Yorkshire, Wood Small-reed Calamagrostis epigejos is an uncommon species. It is present as three small colonies at the edge of the large northern field (Target Note 13), where it borders the plantation woodlands described in Target Notes 16 and 23 as well as a small colony in Target Note Area 9.

Invasive Species

3.42 No species listed under Schedule 9 of The Wildlife and Countryside Act (1981, as amended), were found within the site boundary. Rhododendron Rhododendron ponticum is a very rarely occurring Schedule 9 species which is found in bordering plantation woodland. Montbretia Crocosmia aurea x C. pottsii is also present on the adjacent roadside verge.

Breeding Birds

Survey Results

3.43 The Lady Cross site was found to be a habitat which was little used by breeding birds. Virtually all breeding records were associated with the adjacent band of woodland which surrounds the site.

3.44 With regard to the site itself, breeding records from the fields were limited to Skylark Alauda arvensis (2 territories). Other birds recorded from these fields included occasional feeding Curlew Numenius arquata and Meadow Pipit Anthus pratensis.

3.45 Other breeding records from within the site were associated with the central isolated plantation (Target Note 7) which held a single Chaffinch Fringilla
coelebs territory and from scattered trees along the western boundary (Target Note 10) which held single Blue Tit *Cyanistes caeruleus* and Coal Tit *Periparus ater* territories. Woodland associated with the proposed site access held single Great Tit *Parus major* and Willow Warbler *Phylloscopus trochilus* territories, with Pheasant *Phasianus colchicus* (1 nest site) along the south-eastern boundary of the site.

3.46 In terms of adjacent woodland habitats, the non-impacted central section of woodland (Target Notes 15 and 16) provided a habitat for species such as Chaffinch (2 territories), Coal Tit (1 territory), Goldcrest *Regulus regulus* (2 territories), Lesser Redpoll *Carduelis cabaret* (1 territory), Pheasant (1 territory), Robin *Erithacus rubecula* (2 territories), Song Thrush *Turdus philomelos* (1 territory), Woodpigeon *Columbia palumbus* (1 territory) and Wren *Troglydotes troglodytes* (1 territory).

3.47 Woodland around the perimeter of the site supported Blackbird *Turdus merula* (3 territories), Blackcap *Sylvia atricapilla* (1 territory), Blue Tit (6 territories), Carrion Crow *Corvus corone* (3 territories), Chaffinch (24 territories), Chiffchaff *Phylloscopus collybita* (1 territory), Coal Tit *Periparus ater* (9 territories), Dunnock *Prunella modularis* (1 territory), Goldcrest (3 territories), Great Tit (1 territory), Lesser Redpoll (1 territory), Pheasant (2 territories), Robin (2 territories), Siskin *Carduelis spinus* (1 territory), Song Thrush *Turdus philomelos* (3 territories), Treecreeper *Certhia familiaris* (2 territories), Willow Warbler (2 territories), Woodcock *Scolopax rusticola* (2 territories) and Wren (13 territories). During the initial survey period a small feeding flock (8 birds) of Common Crossbill *Loxia curvirostra* was recorded and may be indicative of breeding locally. Tawny Owl *Strix aluco* was likewise regularly heard calling during nocturnal amphibian and bat surveys and is likely to breed. Hunting Sparrowhawk *Accipiter nisus* was also recorded rarely and whilst there is some suitable breeding habitat, no evidence of breeding was found.

3.48 With regard to wetland species, the large pond to the north-west of the site held breeding Mallard *Anas platyrhynchos* (1 breeding pair) and Moorhen *Gallinula chloropus* (1 breeding pair) was recorded. A pair of Teal *Anas crecca* was likewise present during the first survey visit and may have bred in 2014. Reed Bunting *Emberiza schoeniclus* (1 territory) was also present in habitat adjacent to this pond.

3.49 Pied Wagtail *Motacilla alba* (1 territory) was suspected as breeding at the single building (aircraft hangar) which is adjacent to the north-eastern boundary.
3.50 With regard to non-breeding activity, this was associated with occasional feeding parties of birds, particularly in the peripheral woodland. As detailed, feeding activity within the fields was limited to occasional Curlew and Meadow Pipit.

**Rare or Noteworthy Species**

3.51 A number of species recorded as breeding within or adjacent to the proposed site are rare or noteworthy on the basis of low or rapidly declining breeding numbers. Criteria for considering such species include Schedule 1 of the Wildlife and Countryside Act (1981, as amended) which lists species that are specially protected at all times and Annex I of European Council Directive 2009/147/EC which lists species which are rare or vulnerable in the European Union. In addition, the UK priority species list and list of species of principal importance in England, as well as relevant local BAP’s, lists a number of species which are considered to require urgent conservation action. Finally the British Trust for Ornithology (BTO) maintains a Red List of birds of high conservation concern and an Amber List of birds of moderate conservation concern. Such species are summarised in the table below.

<table>
<thead>
<tr>
<th>Species/Conservation Status</th>
<th>Territories</th>
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<tbody>
<tr>
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<td>Within Site</td>
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<tr>
<td><strong>Wildlife and Countryside Act Schedule 1 Species</strong></td>
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<td>Common Crossbill</td>
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<tr>
<td><strong>BTO Red List Species</strong></td>
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<td><em>Alauda arvensis</em></td>
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<tr>
<td>Song Thrush</td>
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<tr>
<td><strong>BTO Amber List Species</strong></td>
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</tr>
<tr>
<td>Dunnock</td>
<td><em>Prunella modularis</em></td>
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<tr>
<td>Reed Bunting</td>
<td><em>Emberiza schoeniclus</em></td>
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<tr>
<td>Willow Warbler</td>
<td><em>Phylloscopus trochilus</em></td>
</tr>
<tr>
<td>Woodcock</td>
<td><em>Scolopax rusticola</em></td>
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</table>

3.52 Both Mallard and Teal are also BTO Amber List species. They are, however, included on the Amber List on the basis of wintering as opposed to breeding concerns. Notwithstanding this, Teal is a rare breeding species in the North York Moors. Most records of the species are similar to this one with pairs being present at a time when breeding could be expected but without this subsequently being confirmed.
Badger

3.53 Very limited evidence of Badger activity was found in the proposed site or wider surrounding area. The results of this survey are provided as a separate confidential Appendix to this main baseline report.

Bats

Roost Sites

Buildings

3.54 There are no buildings within the proposed site. In the immediate adjacent area, a small light aircraft hangar is present to the north-east. This is of breeze block construction with a flat roof and offers very limited opportunities for bats. On a precautionary basis dusk/dawn observations were made of the building. No evidence of any roosting activity was found.

Trees

3.55 Trees impacted by the proposed site are associated with the small Scots Pine plantation (Target Note Area 7) and also with regard to several trees at the south-east end of Target Note Area 16 and north-east end of Target Note Area 20. A small section of the adjacent south-eastern plantation will likewise be removed to facilitate the main access road to the proposed site (Target Note Area 1). During the initial assessment, none of the trees within these areas were considered to be of sufficient maturity to offer significant roosting potential. Likewise none of the trees displayed any features typically associated with tree roosting bats. Other detracting factors included the relative isolation, particularly of the plantation described in Target Note Area 7. On a precautionary basis dusk/dawn observations were made of these tree groups. No evidence of any roosting activity was found.

Flight Lines and Foraging

3.56 The foraging surveys involved walking transects of the site, supplemented with some fixed point observations. These surveys confirmed the site as a little used bat habitat. No bats were noted from the internal parts of the site and all bat activity was associated with individual bats foraging along the site periphery. On any one survey visit this was estimated to equate to a maximum of 5-7 individual bats. In terms of species, Common Pipistrelle *Pipistrellus pipistrellus* represented the only species recorded during the surveys.
3.57 In terms of foraging patterns, the low numbers of recorded bats made it difficult to establish feeding patterns. Bats were, however, recorded on all visits feeding along the woodland edge associated with the northern (Figure A4, B1) and western boundary (Figure A4, B2) and also from the central section of woodland which crosses the site (Figure A4, B3). Foraging was also noted along the southern and south-western boundary although not on every visit.

3.58 Within any specific survey, the first recorded bat activity was typically well into the dusk period and often 30-40 minutes after the first bats could typically be expected. This strongly suggests that there is no regularly used roost site in the vicinity of the site. A single Common Pipistrelle was noted on one occasion in the early dusk period at the north-western boundary of the site. It is possible that this bat originated from one of the buildings within the adjacent Lady Cross caravan park.

3.59 Given the low numbers of bats, no distinctly or regularly used flights lines were identified.

Water Vole

3.60 There is no potential Water Vole *Arvicola amphibius* habitat within the proposed site. In the immediate wider local area, the large pond to the north of the site and associated adjacent marsh areas provided potentially suitable habitat. On a precautionary basis, a survey of this habitat was completed. This yielded negative results.

Otter

3.61 There is no potential Otter *Lutra lutra* habitat within or in close proximity to the proposed site.

Amphibians

Desk Study

3.62 In terms of the initial desk-study there are no records of Great Crested Newt *Triturus cristatus* within 2km of the study area. In a wider area of search, populations are known to be present, particularly close to the coast at Runswick Bay and Whitby. There are no records of the species from the main moorland sections of the North York Moors.

3.63 With regard to pond locations, whilst the desk study did not identify any ponds within the study area, subsequent field survey confirmed 4 ponds
(Pond 1-4) in the immediate vicinity of the site (Figure A4, P1-P4). In terms of other ponds, aerial photography indicated a large pond (Pond 5) approximately 100m from the north-west corner of the site (Figure A4, P5). A further group of three ponds (Pond 6-8) is present to the west, the closest of which lies approximately 300m from the proposed site at its closest point (Figure A4, P6-P8). This group of ponds were included in surveys completed in 2012 as part of a potential re-route of the previous pipeline approach to mineral transportation. A photographic record and description of each of these ponds is provided in Appendix A6.

**Habitat Suitability Assessment**

3.64 Ponds were assessed utilising the Great Crested Newt Habitat Suitability Index (HSI) (Oldham RS, Keeble J, Swan MJS & Jeffcote M. 2000). The Great Crested Newt HSI is a useful tool in survey and mitigation and has the benefit that it can be undertaken in a single field visit (with supporting desk work), and at any time of the year (though some variables are more easily measured in spring and summer). Although developed in relation to Great Crested Newt, it is also of relevance to the other more common amphibian species. As such, a high HSI is generally a good indication that a pond may be of value to other amphibian species.

3.65 A significant limitation in relation to utilising the HSI in parts of North Yorkshire is that the habitat variable related to geographical location does not differentiate between the lowland sections of habitat locally and moorland/moorland fringe sections associated with the North York Moors. Although with records from North Yorkshire and Cleveland, Great Crested Newt has very rarely been recorded from the typically more acidic ponds associated with moorland fringe habitats. Despite this, the North Yorkshire Moors scores the maximum score of 1 for the ‘location’ habitat variable.

3.66 HSI scores for the ponds are summarised in the table below.

<table>
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<tr>
<th>HSI Criterion</th>
<th>Pond 1</th>
<th>Pond 2</th>
<th>Pond 3</th>
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<th>Pond 5</th>
<th>Pond 6</th>
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<td>0.9</td>
<td>0.5</td>
<td>0.1</td>
<td>0.9</td>
<td>0.9</td>
<td>0.1</td>
</tr>
<tr>
<td>SI4 – Water Quality</td>
<td>0.33</td>
<td>0.33</td>
<td>0.33</td>
<td>0.33</td>
<td>0.33</td>
<td>0.33</td>
<td>0.33</td>
<td>0.33</td>
</tr>
<tr>
<td>SI5 – Shade</td>
<td>0.6</td>
<td>0.2</td>
<td>1</td>
<td>0.6</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>SI6 – Fowl</td>
<td>1</td>
<td>1</td>
<td>0.67</td>
<td>1</td>
<td>1</td>
<td>0.67</td>
<td>0.01</td>
<td>1</td>
</tr>
<tr>
<td>SI7 – Fish</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.67</td>
<td>0.67</td>
<td>1</td>
</tr>
<tr>
<td>SI8 – Ponds</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SI9 – Terrestrial Habitat</td>
<td>0.67</td>
<td>0.67</td>
<td>0.67</td>
<td>0.67</td>
<td>0.67</td>
<td>0.67</td>
<td>0.67</td>
<td>0.67</td>
</tr>
</tbody>
</table>
With regard to assessing the likelihood of Great Crested Newts being present in ponds, a system has been developed using HSI scores to define pond suitability for Great Crested Newts on a categorical scale as follows:

<table>
<thead>
<tr>
<th>HSI Score</th>
<th>Pond Suitability</th>
<th>Proportion of Ponds Occupied by Great Crested Newt</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.5</td>
<td>Poor</td>
<td>0.03</td>
</tr>
<tr>
<td>0.5-0.59</td>
<td>Below Average</td>
<td>0.20</td>
</tr>
<tr>
<td>0.6-0.69</td>
<td>Average</td>
<td>0.55</td>
</tr>
<tr>
<td>0.7-0.79</td>
<td>Good</td>
<td>0.79</td>
</tr>
<tr>
<td>&gt;0.8</td>
<td>Excellent</td>
<td>0.93</td>
</tr>
</tbody>
</table>

Ponds 1, 3 and 6 therefore fall within the ‘average’ category, ponds 2 and 4 within the ‘below average’ category and ponds 5, 7 and 8 within the ‘poor’ category.

In considering the results of the HSI assessment further, the limitation associated with scoring the North York Moors habitat variable as 1 is evident and the results are skewed. In particular, it fails to take into account the fact that Great Crested Newt may simply be absent from this part of North Yorkshire. When considering geographical location further, the main moorland block and moorland fringe habitats associated with the North York Moors are more characteristic of similar habitats in southern Scotland. These areas are classified as Zone C (Unsuitable) in the HSI. A re-calculation of the HSI using this geographical variable is considered to provide a more accurate HSI score of Pond 1 (0.42), Pond 2 (0.34), Pond 3 (0.42) and Pond 4 (0.29), Pond 5 (0.27), Pond 6 (0.41), Pond 7 (0.29) and Pond 8 (0.24).

**Detailed Pond Surveys**

On a precautionary basis, Ponds 1, 2 and 3 were subject to a more detailed survey in accordance with Natural England guidelines. This involved a combination of survey techniques including egg search, netting, torch and bottle trap surveys. Pond 4 could only be surveyed using egg-search and netting techniques, whilst Pond 5 quickly dried out. Ponds 6 and 7 were surveyed previously in 2012 using standard techniques. The results of this previous survey are therefore relied upon for these ponds.

The results of the detailed survey is provided in Appendix A6 and summarised in the Table below.
### Pond Results

<table>
<thead>
<tr>
<th>Pond</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>One large clump of Common Frog spawn. Low numbers (maximum 5) of Palmate Newt netted. Very rare Common Toad.</td>
</tr>
<tr>
<td>2</td>
<td>Nil</td>
</tr>
<tr>
<td>3</td>
<td>Moderate numbers of Palmate Newt (maximum 14), rarely occurring clumps of Common Frog, occasional Common Toad spawn strings.</td>
</tr>
<tr>
<td>4</td>
<td>Low numbers (maximum 3) of Palmate Newt netted. One clump of Common Frog spawn.</td>
</tr>
<tr>
<td>5</td>
<td>Quickly dries, unsuitable breeding habitat for amphibians.</td>
</tr>
<tr>
<td>6</td>
<td>Moderate numbers of Palmate Newt (maximum 14), rarely occurring Common Frog tadpoles, Moderate numbers of Common Toad tadpoles.</td>
</tr>
<tr>
<td>7</td>
<td>Low numbers of Palmate Newt (maximum 7), rarely occurring Common Frog and Common Toad tadpoles.</td>
</tr>
<tr>
<td>8</td>
<td>Unsuitable breeding habitat for amphibians.</td>
</tr>
</tbody>
</table>

### Reptiles

3.72 Reptiles were found to be rare with large parts of the proposed site representing a hostile and unsuitable habitat. This was particularly so in relation to the arable fields, semi-improved pasture and woodland sections.

3.73 Despite the largely unsuitable nature of the habitat, potentially suitable habitat is present rarely, particularly along the peripheral sections of the site. The more detailed refugia surveys subsequently confirmed presence as follows (see Figure A4):

- R1: Common Lizard *Zootoca vivipara* was recorded from the western boundary habitats. Individuals were recorded throughout this part of the site with records from Target Notes Areas 10-12. Historically plantation woodland, following clearance, this area will have been colonised by Common Lizard from the adjacent moorland section (Target Note Area 22). Despite the apparent suitability of this habitat for Adder *Vipera berus* and Slow-worm *Anguis fragilis*, no evidence of either species was found.

3.74 In relation to other potential reptile habitats locally, there are localised sections of potentially suitable habitat elsewhere along the peripheral parts of the site, for example, at the south-east end of Target Note Area 16 and north-east end of Target Note Area 20. Despite the apparent suitability of the habitat, no evidence of reptiles was found. This is most probably due to the historic nature of this area and typically poor connectivity with occupied habitat in the wider local area.
**Invertebrates**

3.75 The initial walkover survey did not identify any potentially high quality invertebrate habitat. In particular, the arable fields and semi-improved pastures which dominate large parts of the site are habitats of very limited value for invertebrates. This was also the case with regard to the majority of the plantation woodland both within and adjacent to the proposed site.

3.76 In relation to other habitats, the botanically more diverse peripheral parts of the site which includes very localised heathland and occasionally herb rich grassland provided some more valuable habitat.

3.77 The survey yielded a typical range of species, the majority of which are common. Whilst no rare or nationally scarce taxa were recorded, several more local species were recorded. These included Black Darter *Sympetrum danae*, Four-barred Major *Beris vallata*, Hieroglyphic Ladybird *Coccinela hieroglyphica*, the ant *Formica lemani*, the hopper *Eupelix cuspidata*, the rove-beetle *Anthophagus carabioides* and the tachinid fly *Tachina grossa*. Of these, the record of *Eupelix cuspidata* appears to be the first record of this species from the North York Moors whilst the record of Hieroglyphic Ladybird appears to be the first modern record.

3.78 A species list from the survey is included in Appendix A7.

**Other Species**

3.79 With regard to other species, Brown Hare *Lepus europaeus* was recorded rarely from the proposed site. The number of animals recorded was, however, typically low and involved individual animals. Hedgehog was likewise recorded on one occasion.

3.80 A species list of other fauna is included in Appendix A8.
4. STANGHOW INTERMEDIATE ACCESS POINT AND SPOIL DEPOSITION SITE

Desk Study

4.1 The most valuable information arising from the desk study was the detailed baseline surveys that were completed for parts of this site as part of the baseline surveys for the previous cross-country pipeline MTS. These surveys confirmed the presence of a number of legally protected species within the local area including Badger, Otter and several species of bat. Breeding bird surveys likewise indicated that adjacent woodland habitats supported a good range of species including a number of rare and declining species. A number of more valuable habitats were also identified in these surveys.

4.2 Other than those records arising from the previous YPL surveys, the desk study did not identify any other key rare or legally protected species records from the proposed site or surrounding area.

Statutory Nature Conservation Sites

4.3 The Stanghow site is not subject to any statutory nature conservation designation. The site is, however in close proximity to the North York Moors Special Area of Conservation, Special Protection Area and Site of Special Scientific Interest which essentially follows the southern boundary of the A171 (excluding Lockwood Beck Reservoir and its surrounds) and which includes sections of both Stanghow Moor and Moorsholm Moor. The boundary of the site in relation to the site is shown on Figure B1. The basis for the designations is as previously described for the Lady Cross Plantation site.

Non-Statutory Nature Conservation Sites

Local Nature Reserves

4.4 There are no Local Nature Reserves (LNR’s) on or in close proximity to the Stanghow Site.

Ancient Woodland

4.5 Much of the woodland associated with the wooded valleys of Kateridden Beck (Kateridden Wood) and Dale Beck (Sweet Hill Wood and Dale Bank) is included on the Ancient Woodland Inventory as ‘ancient and semi-natural woodland’. Woodland to the south associated with Lockwood Beck (Scar
Wood) and Clay Bank Slack (Clay Bank Wood) are not included on the Ancient Woodland Inventory.

4.6 Whilst the proposed site is adjacent to the area of ancient woodland, it does not encroach into it.

**Local Wildlife Sites**

4.7 Kateridden Wood, Sweet Hill Wood and Dale Bank form part of the Kilton Beck complex Local Wildlife Site. This is a large LWS which includes much of the Kilton Beck catchment. The site is designated as a LWS on the basis of providing examples of ancient, ancient replanted and broadleaf woodland.

4.8 The boundary of the site is identical to the area included on the Ancient Woodland Inventory as ‘ancient and semi-natural woodland’ and therefore lies adjacent to, although not within, the proposed site.

**Habitats and Plants**

**General Habitat Description**

**Introduction**

4.9 This intermediate access point is located in fields to the north of the A171, approximately 0.5-1km south of the village of Stanghow. The site essentially comprises of two distinct areas. These are the main access shaft which will be located within farmland immediately to the north of the A171, with a second spoil deposition area which is in farmland to the south of Stanghow Road. These two areas are divided by the valley of Lockwood Beck, Dale Beck and Kateridden Beck and will be linked by a temporary haul road during the construction phase.

4.10 The main working areas support a limited range of habitat types. Woodland and other associated habitats within the adjacent valley of Lockwood Beck, Dale Beck and Kateridden Beck provide a number of additional habitat types.

4.11 More detailed target note descriptions are provided for habitats encountered in both the site and its immediate surrounds in Appendix B1. A photographic record is provided in Appendix B2.

4.12 Appendix B3 provides a botanical species list for the proposed site, with Appendix B4 providing quadrat data for selected impacted habitats. The
detailed results of the hedgerow survey are provided in Appendices B5 and B6.

4.13 Habitats are described in more general terms below.

**Arable Farmland**

4.14 The proposed site includes several arable fields which along with improved pastures represent the dominant habitat types. Arable fields were predominantly used for rape production in 2014 (Target Notes 4, 18, 39 and 42), with two fields to the east of Millers Lane used for cereal production in 2014 (Target Notes 45 and 48).


**Improved Grasslands**

4.16 A number of the fields within the site are typical improved pastures which are used predominantly for cattle grazing (Target Notes 7, 11, 16, 27, 31 and 36). These fields are typical species-poor improved pastures dominated by Perennial Rye-grass *Lolium perenne* with a limited range of associated species. These typically include Yorkshire-fog *Holcus lanatus* along with other species such as Broad-leaved Dock, Common Mouse-ear, Creeping Buttercup, Creeping Thistle *Cirsium arvense*, Crested Dog's-tail *Cynosurus cristatus*, Daisy, Selfheal *Prunella vulgaris* and White Clover *Trifolium repens*. 
Semi-improved Grasslands

4.17 Examples of semi-improved grassland are present locally where fields have been less intensively farmed. These are predominantly associated with areas of more steeply sloping ground. These include fields which are botanically poor, for example the majority of Target Note 12. In such habitats, grasses are dominant with a limited range of associated species.

4.18 More rarely, the fields display a much higher botanical diversity. Of these, the field immediately to the west of Dale Beck (Target Note 14) represents the most species-rich example. Surveys of this habitat yielded 65 species, with quadrats indicating a relatively high species diversity (average of 20.2 species per quadrat). This field supports a number of species which are characteristic of damp and relatively unimproved grasslands. These include Betony *Betonica officinalis*, Bitter-vetch *Lathyrus linifolius*, Common Spotted-orchid *Dactylorhiza fuchsii*, Devil's-bit Scabious *Succisa pratensis*, Greater Burnet *Sanguisorba officinalis*, Ragged-Robin *Silene flos-cuculi* and Sneezewort *Achillea ptarmica*.

4.19 Other examples of similar damp grasslands are found locally within part of the field to the east of Dale Beck (Target Note 12) and also locally within the field to the south of Kateridden Beck (Target Note 32).

Marsh/Rush-pasture

4.20 Whilst there are no true marsh habitats within the proposed site, the damper semi-improved grasslands are transitional habitats which locally could be described as species-rich rush pastures. These are particularly where springs/seepages are present on steeply sloping ground as is locally the case within parts of the fields described in Target Notes 12 and 32. In these damper sections, both Sharp-flowered Rush *Juncus acutiflorus* and Soft-rush *Juncus effusus* are more frequent. More characteristic marsh species associated with these habitats include Hard Rush *Juncus inflexus*, Cuckooflower *Cardamine pratensis* and Greater Bird's-foot-trefoil *Lotus pedunculatus*.

Woodland

4.21 Whilst woodland is extensive in habitats adjacent to the proposed site, the habitat is only found within the site at one location. This relates to a narrow section of stream corridor woodland associated with Dale Beck which will be used to provide a crossing during construction work.

4.23 In terms of other woodland, Target Note 26 is essentially a mature boundary, which does, however, widen at its eastern end where it forms a small wooded area which is essentially an extension of the adjacent wooded stream corridor.

**Scrub**

4.24 Scrub is found rarely within the proposed site and is typically associated with occasional patches of Gorse *Ulex europaeus* dominated scrub. Such habitat occurs locally within neglected sections of fields, for example within parts of Target Notes 12, 14 and 27.

**Hedgerows**

4.25 Six hedgerows are present within the proposed site (Target Notes 5, 20, 33, 38, 46 and 49). These are all relatively species-poor and typically dominated by Hawthorn with few other species which most typically include occasional Blackthorn, Dog-rose, Holly and Elder. The majority are of average structure although they are rarely intact in their entirety. With regard to other features associated with hedgerows, these were typically absent. Very occasionally, hedgerows did, however, incorporate low banks or defunct ditches.
4.26 The associated ground flora is also typically species poor. Hedgerows are bounded by arable farmland or improved pastures and have a nutrient enriched ground flora characterised by species such as Cleavers *Galium aparine*, Common Nettle *Urtica dioica*, Common Couch *Elytrigia repens*, Cow Parsley *Anthriscus sylvestris* and Hogweed *Heracleum sphondylium*. More typical hedgerow species are encountered occasionally, particularly species such as Bracken *Pteridium aquilinum*, Garlic Mustard *Alliaria petiolata*, Greater Stitchwort *Stellaria holostea*, Lesser Celandine *Ficaria verna*, Red Campion *Silene dioica* and Upright Hedge-parsley *Torilis japonica*. Bluebell was recorded from one hedgerow.

4.27 In terms of the survey completed in accordance with the Hedgerows Regulations 1997, none of the hedgerows are classified as important when assessed using the ecological criteria. An arguably more useful method is, however, provided by the Hedgerows Evaluation and Grading System (HEGS) survey. This is on the basis that all hedgerows are classified within a broader range of categories and not simply those of highest quality as is essentially the case under the Hedgerows Regulations. Under the HEGS approach, the hedgerow bordering Millers Lane (Target Note 49) has a HEGS score of 2- and therefore falls within the lowest category of those hedgerows regarded as being a conservation priority. This result is, however, skewed by a number of additional shrub species which are found only at the eastern end of the hedgerow. The western section is much less diverse and Hawthorn dominated. Of the other hedgerows, two have a HEGS score of 3+ (Target Notes 38 and 40), two have a score of 3- (Target Notes 5 and 20) and one has a score of 4- (Target Note 33).

Field Boundaries

4.28 Given the limited hedgerow network, the majority of other field boundaries within the proposed site fall within another boundary category. These include dry stone walls (Target Notes 1, 6, 9, 21, 37, 40, 41, 43 and 44) and post and wire fences (Target Notes 8, 15, 17, 19, 23, 24 and 30). In some cases, these boundaries incorporate scattered or isolated trees and shrubs which are probably indicative of a more intact hedgerow historically.

4.29 Occasionally, the remnant trees and shrubs form a more continuous line, for example, Target Notes 25 and 28. Such boundaries are typically species-poor and characterised by Hawthorn, with more rarely occurring Dog-rose and Holly. Shrub cover typically represents approximately 50% of the boundary.

4.30 More rarely, the associated boundary is more substantial and species-rich. Of particular note is Target Note 10 which runs along much of the eastern...
boundary of proposed site. It is very likely that this boundary was once a managed hedgerow which has subsequently been abandoned and now comprises a line of mature shrubs and trees which are often open and poorly structured. Notwithstanding this, it is very diverse with some sixteen species. These were Blackthorn, Crab Apple *Malus sylvestris*, Dog-rose, Downy Birch *Betula pubescens*, Elder *Sambucus nigra*, Goat Willow *Salix caprea*, Gorse *Ulex europaeus*, Guelder-rose *Viburnum opulus*, Hawthorn, Holly, Hazel, Pedunculate Oak *Quercus robur*, Rowan, Sessile Oak *Quercus petraea*, Sycamore *Acer pseudoplatanus* and Wild Plum *Prunus domestica*. This is a very high species diversity for North East Yorkshire and is likely to represent a boundary of considerable antiquity.

4.31 Elsewhere, Target Note 29 represents another mature and moderately species-rich boundary. It is possible that this boundary historically marked the extent of the woodland locally.

**Ditches/Streams**

4.32 In addition to the wooded stream corridor of Dale Beck, the upper reaches of Kateridden Beck (Target Note 35) is within the proposed site. It is a minor stream which is typically 0.5-1m wide and 0.02-0.1m deep. Streamside vegetation includes occasional Floating Sweet-grass *Glyceria fluitans* and more rarely occurring Brooklime *Veronica beccabunga*. To the east of the proposed site, the stream enters an area of mature woodland with very steeply sloping ground, where the stream continues as a series of waterfalls.

4.33 Maintained ditches are absent from the site. Occasionally, however, for example, Target Notes 23, 25 and 29, the field boundary has an associated semi-defunct ditch/minor stream. These are typically open and grazed which limits the ground flora to a typical range of common species. These include Brooklime, Creeping Bent *Agrostis stolonifera*, Creeping Buttercup, Cuckooflower, Floating Sweet-grass, Marsh Foxtail *Alopecurus geniculatus*, Tufted Hair-grass *Deschampsia cespitosa subsp. cespitosa*, Soft-rush and Yorkshire-fog.

**Other Habitats**

4.34 A limited range of other habitat types are present locally within the study area. These include small sections which are dominated by tall ruderal species, often as single species stands, for example, habitats dominated by Common Nettle or Creeping Thistle. Such habitats likewise occur as a mosaic with typical False Oat-grass *Arrhenatherum elatius* dominated neutral grassland, for example, along Millers Lane (Target Note 44).
4.35 Other habitats include those associated with bare and disturbed ground at gate entrances and trackways. These areas support a similar range of species to those found along the arable field margins. Other habitats include one area dominated by Bracken *Pteridium aquilinum* (Target Note 47).

**Adjacent Habitats**

4.36 Adjacent habitats are particularly associated with the wooded valley of Lockwood beck (Scar Wood), Kateridden Beck (Kateridden Wood) and Dale Beck (Sweet Hill Wood and Dale Bank). Given the proximity to the proposed site, these areas were subject to more detailed survey and are described in Appendix B1 (Target Notes 50-55, 59 and 60). These wooded areas include some sections which appear to have been replanted, for example, Target Notes 50 and 60. Much of the woodland does, however, appear to be largely intact and likely to be of ancient origin.

4.37 Given the topographical variations, there are several woodland types present. On the drier valley side, the canopy is often characterised by Ash and Sessile Oak, with Alder becoming more dominant in damper sections associated with the stream as well as localised seepage/spring lines. Rarely, Grey Willow forms another distinctive woodland type.

4.38 There is also a good variety of different ground flora within the woodland with an excellent range of characteristic woodland species. In addition to those referred to for the section within the site, these included other species such as Common Cow-wheat *Melampyrum pratense*, Goldilocks Buttercup *Ranunculus auricomus*, Hard-fern *Blechnum spicant*, Hard Shield-fern *Polystichum aculeatum*, Hart's-tongue Asplenium *scolopendrium* and Smooth-stalked Sedge *Carex laevigata*. The woodland ground flora is discussed further in relation to rare or noteworthy species.

4.39 Away from the wooded valley a further large plantation woodland is present adjacent to the eastern boundary of the site (Target Note 62). This is a mature mixed plantation woodland adjacent to the eastern boundary of the site which often comprises of even-aged mature Scots Pine *Pinus sylvestris* with more rarely occurring Beech *Fagus sylvatica*, European Larch *Larix decidua*, Norway Spruce *Picea abies*, Pedunculate Oak and Sessile Oak.

4.40 Other adjacent habitat types include an area of locally species-rich grassland adjacent to the stream corridor (Target Note 58). This has some similarities with the adjacent species-rich grassland referred to in Target Note 14. It is, however, not as species-rich and is also adversely affected by locally dominant Gorse scrub as well as some dense patches of ruderals.
National Vegetation Classification (NVC)

4.41 During the course of the survey, more detailed quadrat data were taken from potentially higher quality habitats within the site. This was to enable a more detailed appraisal of the habitat type using the NVC. In other instances, particularly non-impacted habitats or habitats not regarded as being of high value, whilst no detailed quadrant data was obtained, these were also considered in accordance with the NVC based upon the particular characteristics of relatively distinct habitat types.

4.42 In relation to grasslands, the majority of improved pastures within the study area are examples of the MG7 *Lolium perenne* community. These are all typically species-poor grasslands with an abundance and often dominance of Perennial Rye-grass. Locally, fields which show slightly less agricultural improvement are probably representative of the MG6 *Lolium perenne-Cynosurus cristatus* grassland.

4.43 With regard to the damper semi-improved grasslands with greater species diversity, these do not always classify well in accordance with the NVC. The most diverse habitat (Target Note 14) has significant similarities with the MG9 *Holcus lanatus-Deschampsia cespitosa* grassland. Where rush becomes more frequent along seepage or spring lines, the habitat has more affinities with MG10 *Holcus lanatus-Juncus effusus* rush-pasture and where rush is particularly prominent, the M23 *Juncus effusus-Galium palustre* rush-pasture.

4.44 Many of the other grasslands present in the study area are associated with roadside verges or neglected habitats. The majority of these grasslands fall within the MG1 *Arrhenatherum elatius* grassland type.

4.45 The localised scrub communities include, particularly, patches of Gorse which are representative of the W23 *Ulex europaeus-Rubus fruticosus* scrub community. Bracken is likewise very locally dominant and representative of the W25 *Pteridium aquilinum-Rubus fruticosus* underscrub habitat type. Where Bramble becomes locally prominent, this is representative of the W24 *Rubus fruticosus-Holcus lanatus* underscrub habitat type. Very rarely along the adjacent woodland edge, Blackthorn becomes the dominant canopy and is representative of the W22 *Prunus spinosa-Rubus fruticosus* scrub.

4.46 Disturbed tall ruderal dominated habitats are also present locally and are often variable habitats which do not equate well to any particular NVC community type. Occasional stands are more clearly defined and include examples of the OV23 *Lolium perenne-Dactylis glomerata*, OV24 *Urtica dioica-Galium aparine*, OV25 *Urtica dioica-Cirsium arvense*, OV26 *Epilobium*
**York Potash Project**  
Mineral Transport System (MTS): Baseline Ecology Surveys

4.47 **With regard to the adjacent woodland associated with Lockwood Beck, Dale Beck, Kateridden Beck and Hagg Beck, given the topographical variations, there are a number of distinct woodland communities present. Somewhat unusual in drier sections is the abundance of Ash in the canopy. Woodlands with Ash as the dominant canopy species are more typically associated with calcareous bedrocks. Conversely, in less base-rich scenarios, the woodland canopy is typically dominated by oak. This woodland is therefore somewhat transitional, with the canopy displaying affinities with the W8 Fraxinus excelsior-Acer campestre-Mercurialis perennis and W10 Quercus robur-Pteridium aquilinum-Rubus fruticosus woodland type. In damper sections, the woodland is more characteristic and typical of the W7 Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum woodland type. The distinct area of Grey Willow is representative of the W1 Salix cinerea-Galium palustre woodland.**

**Rare and Noteworthy Species**

4.48 The survey yielded almost 260 species of vascular plant, virtually all of which are common or relatively common species which are typical of the habitats encountered. No nationally rare, nationally scarce or regionally rare species were recorded.

4.49 With regard to species which have a restricted distribution in North East Yorkshire, within the site itself, these were primarily associated with the species-rich grassland (Target Note 14) and the wooded stream corridor associated with Dale Beck.

4.50 The grassland supported a number of uncommon species, for example, Betony, Bitter-vetch and Greater Burnet, all of which are associated with relatively unimproved grasslands and which therefore have a restricted distribution.

4.51 With regard to the wooded stream corridor which will be crossed to provide a temporary access, the majority of species were typical of semi-natural woodlands. Notwithstanding this, the overall suite of characteristic species, particularly those which are characteristic of ancient woodland, was often good. In terms of such indicators, Natural England has provided lists of those **hirsutum** and OV27 *Epilobium angustifolium* communities. Lower growing poor ruderal dominated habitats, particularly associated with arable field margins and also around field entrances include stands with affinities to the OV10 *Poa annua-Senecio vulgaris*, OV12 *Poa annua-Myosotis arvensis*, OV13 *Stellaria media-Capsella bursa-pastoris* and OV21 *Poa annua-Plantago* major communities.
species which can be regarded as ‘strong’ ancient woodland indicators for different regions in the UK. Some twenty-five species are listed for the North Yorkshire region, seven of which were recorded within or immediately adjacent to the section described in Target Note 13. These were Early-purple Orchid, Great Wood-rush, Hairy Wood-rush, Opposite-leaved Golden Saxifrage, Wood Melick, Wood Sedge and Woodruff. Four additional species were recorded from the wider woodland. These were Moschatel, Pendulous Sedge, Remote Sedge and Water Avens. Other notable species associated with adjacent woodland included Smooth Stalked-sedge. There are apparently no previous records for this species within Cleveland. In the wider vice-county 62 (North-east Yorkshire), it is an uncommon species of damp ancient woodland. Common Cow-wheat is also a very rare species in Cleveland with very few records. It does, however, have a less restricted distribution in the wider North-east Yorkshire. Common Polypody is another species which is rare in Cleveland although it is again more widespread in the wider vice-county.

4.52 In terms of the actual status of these adjacent woodland habitats, whilst the more detailed surveys largely concur with the ancient woodland inventory, there is some variation. In particular, the surveys indicate that the north-eastern section of Kateridden Wood (Target Note 50) has been replanted. Conversely, the eastern section of Scar Wood including and to the east of Lockwood Beck (Target Note 59) appears to be intact woodland of ancient origin. This is also likely to be the case with regard to large parts of Clay Bank Wood (Target Note 61) neither of which is highlighted on the ancient woodland inventory.

Invasive Species

4.53 No species listed under Schedule 9 of The Wildlife and Countryside Act (1981, as amended), were found within the site boundary.

Breeding Birds

Survey Results

4.54 The Stanghow site provides a limited range of breeding habitat and as a result, few species were recorded from within the site. The majority of breeding records were associated with the adjacent woodland habitats.

4.55 With regard to the site itself, breeding records from the fields were limited to Skylark *Alauda arvensis* (2 territories) and Meadow Pipit *Anthus pratensis* (1 probable territory).
4.56 Other birds that were recorded from within the site were associated with the field boundary habitats as well as the narrow section of stream corridor woodland. Records were, however, limited by the often poor structure of the boundary habitats. Species recorded from such habitats within or on the site boundary were Blackbird *Turdus merula* (7 territories), Blue Tit *Cyanistes caeruleus* (7 territories), Chaffinch *Fringilla coelebs* (1 territory), Dunnock (2 territories), Goldfinch *Carduelis carduelis* (2 territories), Pheasant *Phasianus colchicus* (3 nest sites), Robin *Erithacus rubecula* (1 territory), Song Thrush *Turdus philomelos* (1 territory), Whitethroat *Sylvia communis* (6 territories), Willow Warbler *Phylloscopus trochilus* (1 territory) and Wren *Troglodytes troglodytes* (3 territories).

4.57 With regard to the adjacent woodland, this was found to be good quality habitat which supported a diverse range of species. The most frequently encountered species was Wren (32 territories), with other commonly occurring species such as Blackbird (13 territories), Blackcap (12 territories), Blue Tit (19 territories), Chaffinch (28 territories), Coal Tit *Periparus ater* (10 territories), Robin (19 territories) and Willow Warbler (9 territories).

4.58 More occasional species within adjacent woodland and scrub included Dunnock (5 territories), Goldcrest (5 territories), Song Thrush (6 territories) with more rarely or very rarely occurring Bullfinch *Pyrrhula pyrrhula* (3 territories), Buzzard *Buteo buteo* (1 territory), Great Spotted Woodpecker *Dendrocopos major* (4 territories), Jay *Garrulus glandarius* (3 territories), Lesser Redpoll *Carduelis cabaret* (1 territory), Long-tailed Tit *Aegithalos caudatus* (3 territories), Mistle Thrush *Turdus viscivorus* (2 territories), Nuthatch *Sitta europaea* (3 territories), Redstart *Phoenicurus phoenicurus* (2 territories), Siskin *Carduelis spinus* (2 territories), Spotted Flycatcher *Muscicapa striata* (1 territory), Tawny Owl *Strix aluco* (1 pair), Willow Tit *Poecile Montana* (1 territory) and Woodcock *Scolopax rusticola* (1 territory). Whilst the optimum woodland habitats were associated with the stream corridor woodland and large mixed plantation to the east of the site, Long-eared Owl (1 pair) was confirmed as breeding within the coniferous plantation immediately to the south of the A171/east of Lockwood Beck reservoir.

4.59 Whilst farmland within the site was found to be a little used habitat, in the wider local area, the more extensive arable fields to the east of Millers Lane extending towards Hunger Hill were found to support a better range of species. Although not mapped, a wider survey area incorporating this farmland was adopted during the initial period of site design. This area yielded records of notable farmland species, particularly Grey Partridge *Perdix perdix* (1 territory), Linnet *Carduelis cannabina* (2 territories), Tree
Sparrow *Passer montanus* (1 territory) and Yellowhammer *Emberiza citrinella* (4 territories). Two additional Skylark territories were also in this area.

4.60 The stream habitat provided records of Dipper *Cinclus cinclus* (1 pair).

4.61 With regard to other activity during the breeding season, there is a large feral Greylag Goose *Anser anser* population based at Lockwood Beck Reservoir which regularly feeds in fields in the surrounding area. Fields within the proposed site which are regularly used include particularly the improved pastures TN7 and 11. Feeding activity was also noted extending into the dark at times during nocturnal bat surveys.

**Rare or Noteworthy Species**

4.62 A number of species recorded as breeding within or adjacent to the proposed site are rare or noteworthy on the basis of low or rapidly declining breeding numbers. Such species are summarised in the table below.

<table>
<thead>
<tr>
<th>Species/Conservation Status</th>
<th>Territories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Within Site</td>
</tr>
<tr>
<td><strong>Wildlife and Countryside Act Schedule 1 Species</strong></td>
<td>No such species</td>
</tr>
<tr>
<td><strong>BTO Red List Species</strong></td>
<td></td>
</tr>
<tr>
<td>Grey Partridge</td>
<td><em>Perdix perdix</em></td>
</tr>
<tr>
<td>Lesser Redpoll</td>
<td><em>Carduelis cabaret</em></td>
</tr>
<tr>
<td>Linnet</td>
<td><em>Carduelis cannabina</em></td>
</tr>
<tr>
<td>Skylark</td>
<td><em>Alauda arvensis</em></td>
</tr>
<tr>
<td>Song Thrush</td>
<td><em>Turdus philomelos</em></td>
</tr>
<tr>
<td>Spotted Flycatcher</td>
<td><em>Muscicapa striata</em></td>
</tr>
<tr>
<td>Tree Sparrow</td>
<td><em>Passer montanus</em></td>
</tr>
<tr>
<td>Willow Tit</td>
<td><em>Poecile Montana</em></td>
</tr>
<tr>
<td>Yellowhammer</td>
<td><em>Emberiza citrinella</em></td>
</tr>
<tr>
<td><strong>BTO Amber List Species</strong></td>
<td></td>
</tr>
<tr>
<td>Bullfinch</td>
<td><em>Pyrrhula pyrrhula</em></td>
</tr>
<tr>
<td>Dunnock</td>
<td><em>Prunella modularis</em></td>
</tr>
<tr>
<td>Meadow Pipit</td>
<td><em>Anthus pratensis</em></td>
</tr>
<tr>
<td>Mistle Thrush</td>
<td><em>Turdus viscivorus</em></td>
</tr>
<tr>
<td>Redstart</td>
<td><em>Phoenicurus phoenicurus</em></td>
</tr>
<tr>
<td>Whitethroat</td>
<td><em>Sylvia communis</em></td>
</tr>
<tr>
<td>Willow Warbler</td>
<td><em>Phylloscopus trochilus</em></td>
</tr>
<tr>
<td>Woodcock</td>
<td><em>Scolopax rusticola</em></td>
</tr>
</tbody>
</table>
4.63 Several of the above species are particularly noteworthy in the Cleveland context. In particular, Redstart is a very rare breeding species in the County with only 9 pairs noted in the ‘Breeding Birds of Cleveland’ (Joynt et al, 2008), none of which were from the woodland of East Cleveland. The two singing males in potentially suitable breeding habitat in Kateridden and Clay Bank Woods therefore represent important records. In line with national trends, Grey Partridge, Spotted Flycatcher and Willow Tit are also now rarely recorded breeding species in Cleveland.

4.64 With regard to other species, whilst not identified as a species of conservation concern, the confirmed breeding of Long-eared Owl is an important record in the Cleveland context. It is a very rarely recorded breeding species with only 8 pairs noted in the ‘Breeding Birds of Cleveland’ (Joynt et al, 2008), none of which were from East Cleveland. It is also a very rarely recorded breeding species in the North York Moors.

**Other Adjacent Habitats – North York Moors SPA & SSSI**

**Introduction**

4.65 Given the proximity of the proposed site to the North York Moors, the breeding bird survey was extended into the adjacent designated SPA and SSSI. This included a section of Stanghow Moor to the west of Smeathorns Road and a section of Moorsholm Moor to the east of Smeathorns Road. Whilst this was with particular reference to those species which form the basis for the SPA and SSSI designations, the survey recorded all other species. The breeding records from this survey are provided on Figure B4 and described further below.

**Stanghow Moor**

4.66 Stanghow Moor is an extensive area of moorland to the south and west of Lockwood Beck reservoir which provides a variety of breeding bird habitats. Whilst there are extensive areas of typical dry heathland habitat, the headwater streams which feed the reservoir provide a series of linear sections of marsh which add diversity to the habitats. On flatter ground, these wetter habitats are locally more extensive and locally form quite large areas of wet heath/mire. Other habitats include occasional patches of Gorse scrub as well as Bracken-dominated sections. Patchy willow scrub is also found immediately to the south of the reservoir.

4.67 The survey was extended over an area of approximately 1km south of the A171 and 1km west of Smeathorns Road and confirmed the moorland as supporting a good range of characteristic moorland species.
4.68 No evidence of breeding Merlin *Falco columbarius* was found whilst Golden Plover *Pluvialis apricaria* records were associated with three territories. These were all some distance from the proposed site with the closest being approximately 800m to the south-west.

4.69 In terms of other characteristic moorland species, moorland waders were represented by Curlew *Numenius arquata* (7 territories) along with Lapwing *Vanellus vanellus* (2 territories) and single records of both Oystercatcher *Haematopus ostralegus* and Snipe *Gallinago gallinago*. A Woodcock with a young chick was likewise encountered on one visit although may have bred some distance from where it was observed.

4.70 Other species specifically referred to in the North York Moors SSSI citation were associated with Whinchat *Saxicola rubetra* (2 territories). Two Ring Ouzel *Turdus torquatus* were likewise recorded during the April survey with the main valley to the south-west of the reservoir apparently providing potentially suitable breeding habitat. No evidence of breeding was, however, subsequently found and these birds were presumed to have been on passage.

4.71 Of the other recorded breeding birds, Meadow Pipit (25 territories) was the most frequently encountered species. Skylark (7 territories) was occasional along with more rarely occurring Chaffinch (1 territory), Cuckoo *Cuculus canorus* (1 territory), Linnet (3 territories), Reed Bunting *Emberiza schoeniclus* (3 territories), Robin (1 territory), Song Thrush (1 territory), Stonechat *Saxicola rubicola* (1 territory), Wheatear *Oenanthe oenanthe* (2 territories), Willow Warbler (5 territories) and Wren (6 territories).

4.72 Both Red Grouse *Lagopus lagopus* and Pheasant were also recorded and are relatively frequent. The mapped records are likely to be an underestimate of actual numbers.

4.73 Both Canada Goose *Branta canadensis* (1 pair) and Greylag Goose (4 pairs) were found to be breeding on the moorland and were undoubtedly associated with the large feral goose population locally.

4.74 Although non-breeding, a particularly interesting record was that of an Osprey *Pandion haliaetus* which was recorded on the June visit. This record relates to one of two birds which were present on passage at Lockwood Beck reservoir for several days in 2014.

4.75 With regard to other species, on a precautionary basis, dusk/nocturnal surveys were made for Nightjar *Caprimulgus europaeus*, a species which is
known to occasionally use moorland habitats for breeding locally. This survey yielded negative results.

**Moorsholm Moor**

4.76 Moorsholm Moor is an extensive area of moorland/moorland fringe habitat. On higher ground close to Smeathorns Road, the habitat is often a mosaic with areas of dry heath as well as typical acid grassland. The ground slopes away to the east to an area known as Foul Sykes which forms an extensive area of Purple Moor-grass dominated mire habitat with locally extensive stands of rush. An incised valley east of West Rigg also provides a distinctive landscape and habitat feature. Closer to the A171, there are areas of Gorse scrub as well as isolated single or small groups of pine.

4.77 The survey was extended over an area of approximately 1km south of the A171 and from Smeathorns Road eastwards for approximately 800m to the moorland edge.

4.78 No evidence of breeding Golden Plover or Merlin was found. Calling Golden Plover were heard but these were from moorland some distance to the south of the study area. Small numbers (up to 8 birds) of Golden Plover were also noted feeding to the east of the moor in fields to the west and south of Freeborough Farm. This is a regular feeding area for Golden Plover during the breeding season which can attract much larger flocks of predominantly ‘northern’ race birds on passage during the spring period. No feeding Golden Plover were noted from fields within the proposed site.

4.79 Moorland waders were represented by Curlew (2 territories), Oystercatcher (1 territory) and Snipe (2 territories).

4.80 In relation to other species, Meadow Pipit (21 territories) represented the only species which was recorded at any frequency. Skylark (7 territories) was also present, albeit in low numbers.

4.81 Other species were associated with Chaffinch (2 territories), Cuckoo (1 territory), Goldfinch (1 territory), Linnet (2 territories), Reed Bunting (2 territories), Stonechat (1 territory), Willow Warbler (2 territories) and Wren (4 territories).

4.82 Both Pheasant and Red Grouse were also present, the mapped records of which are again likely to be an underestimate of actual numbers.

4.83 The dusk/nocturnal surveys for Nightjar yielded negative results.
North York Moors SPA Rare or Noteworthy Species

4.84 Stanghow and Moorsholm Moors support a reasonably diverse range of breeding species which includes a number of species of high or moderate conservation concern. Such species are summarised in the table below:

<table>
<thead>
<tr>
<th>Species/Conservation Status</th>
<th>Moorland Section</th>
<th>Territories</th>
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</thead>
<tbody>
<tr>
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<td>Stanghow</td>
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<td>Cuckoo</td>
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<td>Lapwing</td>
<td><em>Vanellus vanellus</em></td>
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<tr>
<td>Skylark</td>
<td><em>Alauda arvensis</em></td>
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</tr>
<tr>
<td>Song Thrush</td>
<td><em>Turdus philomelos</em></td>
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<td><strong>BTO Amber List Species</strong></td>
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<tr>
<td>Curlew</td>
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<tr>
<td>Golden Plover</td>
<td><em>Pluvialis apricaria</em></td>
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<td>Oystercatcher</td>
<td><em>Haematopus ostralegus</em></td>
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<td>Meadow Pipit</td>
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<tr>
<td>Reed Bunting</td>
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<tr>
<td>Snipe</td>
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<tr>
<td>Wheatear</td>
<td><em>Oenanthe oenanthe</em></td>
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</tr>
<tr>
<td>Whinchat</td>
<td><em>Saxicola rubetra</em></td>
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<tr>
<td>Willow Warbler</td>
<td><em>Phylloscopus trochilus</em></td>
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</tr>
<tr>
<td>Woodcock</td>
<td><em>Scolopax rusticola</em></td>
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</table>

Badger

4.85 Limited evidence of Badger activity was found in the proposed site and wider surrounding area. The results of this survey are provided as a separate confidential Appendix to this main baseline report.
Bats

Roost Sites

Buildings

4.86 There are no buildings within the proposed site and potential roost sites are therefore limited to mature trees.

Trees

4.87 A small number of trees were identified which were considered to offer higher roost potential than others. These were typically associated with field boundaries or woodland edge habitats. The locations of those trees which offered higher roosting potential is shown on Figure B5, and can be summarised as follows:

- **T1**: Single mature Ash and single mature hybrid Oak in field boundary TN9. Both trees are in good condition but do have occasional cracks and/or flaking bark. Assessed as being of low potential. No evidence of roosting.
- **T2**: Mature Ash in field TN27. In good condition and isolated but with occasional cracks. Assessed as being of low potential. No evidence of roosting. No bats recorded from this part of the site in the early dusk period.
- **T3**: Mature Pedunculate Oak on north side of TN26. In good condition but with one distinctive hole in the main trunk and more rarely occurring cracks. Assessed as being of moderate potential. No evidence of roosting.
- **T4**: Mature Ash on the eastern boundary of Kateridden Wood in TN50, adjacent to Millers Lane. In poor condition with flaking bark and cracks in several limbs. Assessed as being of moderate potential. No evidence of roosting.

Flight Lines and Foraging

4.88 Dawn/dusk foraging surveys involving walking transects of the site, supplemented with some fixed point observations recorded bat activity at a number of locations. Whilst over the course of six surveys, bats were recorded at various places across the site, several locations consistently yielded more records. These are shown on Figure B5, and can be summarised as follows:
• B1 (Swindale Lane): Occasional Common Pipistrelle commuting along lane. Also commuting and feeding along the adjacent woodland plantation. Two probable Nathusius’ Pipistrelles amongst the records. Unidentified Myotis on two occasions considered to probably be Brown Long-eared.
• B2: Occasional Common Pipistrelle regularly foraging along the mature boundary at eastern boundary (TN10).
• B3: Occasional Common Pipistrelle commuting along the boundary TN8. Recorded in the early dusk period and always moving from south to north, it is possible that these originated from a roost in the nearby Lockwood Beck Farm.
• B4: Rarely recorded Common Pipistrelle crossing the site along field boundary TN6.
• B5: Rarely recorded Common Pipistrelle crossing the site along field boundary TN9.
• B6 (Lockwood Beck): Moderate numbers of Common Pipistrelle utilising the eastern edge of the woodland (commuting and foraging). Several Daubenton’s recorded along the stream, although not on every survey visit.
• B7: Rarely occurring Common Pipistrelle along the stream corridor associated with the upper reaches of Kateridden Beck (TN35). This could be indicative of a small roost within the nearby Kateridden Farm.
• B8: Occasional feeding Common Pipistrelle along the northern edge of Kateridden Wood.
• B9 (Millers Lane): A key flight corridor with 20+ Common Pipistrelle typically commuting north-west to south-east along the lane in the early dusk period. This suggests that a roost site is present in one of the properties along Stanghow Road.
• B10 (Millers Lane): Key foraging habitat associated with the southern section of Millers Lane, adjacent to TN47 and TN50.

The surveys therefore confirmed the majority of bat activity as being associated with woodland edge and stream corridor habitats as well as Millers Lane. Other habitats showed much lower usage. Specifically, the large arable fields adjacent to Millers Lane (TN’s 39, 42, 45 and 48) showed very little bat activity with records limited to field edges and particularly Millers Lane. Other fields to the south of Kateridden Farm (TN’s 16, 18, 27 and 31) displayed a similar pattern. Whilst occasional bats were recorded crossing the southern fields, no bats were recorded from within the fields themselves (TN’s 4, 7, 11 and 12).
Water Vole

4.90 Although sub-optimal, potential Water Vole habitat is associated with the main stream corridor associated with Lockwood and Hagg Beck as well as Kateridden Beck. Very rarely occurring minor ditches, for example, those associated with Target Notes 23, 25 and 29 also provide a sub-optimal potential habitat. Surveys of these habitats yielded negative results.

Otter

4.91 Potential Otter habitat is associated with the main stream corridor of Lockwood Beck and Hagg Beck along with Kateridden Beck. These streams were surveyed over an approximately 1.4km section from downstream of Lockwood Beck Farm downstream to Stanghow Bridge.

4.92 The survey found very limited evidence of Otter. This was limited to two old spraints (see Figure B5, O1 and O2). The key limiting factor is likely to be that of food supply with the stream unlikely to be able to support Otter on anything other than an occasional and temporary basis.

4.93 In terms of other field signs, whilst no holt sites were found, the stream does provide dense bankside vegetation which could be used as a temporary resting site.

4.94 In the wider local area, higher levels of Otter activity were noted from the headwater streams Lockwood Beck and Brindle Bog to the south of Lockwood Beck Reservoir. Fresh spraints were recorded during each of the three breeding bird surveys of this moorland section and are likely to be associated with animals which are using the adjacent commercial trout fishery for feeding purposes. These animals may have orginated from the Yorkshire Esk catchment to the south.

Amphibians

Desk Study

4.95 Great Crested Newt is a rare species in East Cleveland which does, however, have a scattered distribution. Whilst there are no records for the 2km tetrad within which the proposed site is located, there are records from the Margrove Ponds LWS, approximately 2km to the west north-west.

4.96 Specific to the site itself, there are no ponds within the site. In the immediate wider local area there is a pond shown on the relevant OS map 500m to the north at NZ 6754 1567. Two further ponds are shown to the north-east at NZ
6788 1545 (420m from the site) and NZ 6809 1545 (500m from the site). To the west of Lockwood Beck Farm, approximately 250m west of the proposed shaft and 300m south of the spoil deposition area, two ponds are shown at NZ 6699 1424 and are associated with springs at the headwaters of the Hagg Beck catchment.

**Further Assessment**

4.97 Following on from the desk study, pond locations were visited for further assessment. In spring 2014, the proposed site extended further to the north and north-east and so this included those ponds which are now outside of any potential zone of influence. This assessment found the pond to the north of the site at NZ 6754 1567 to be an historic pond now reverting to carr woodland with limited standing water and entirely shaded by establishing trees. Those to the west of Lockwood Beck Farm were found to be essentially damp hollows within improved pastures, likely to hold some water at times but not to represent a viable Great Crested Newt breeding habitat. To the north-east the pond at NZ 6809 1545 was found to have been infilled. The pond at NZ 6788 1545 was found to be extant and on the basis of the initial assessment was considered to offer a potentially viable Great Crested Newt breeding habitat (see Appendix B2, Photograph 90). A relatively shallow and well vegetated pond, this initial assessment was, however, under the assumption that the pond contained water throughout the Great Crested Newt breeding cycle period.

4.98 During the initial site visits, another very small pond was noted within an arable field approximately 340m to the east of the proposed site at NZ 6798 1530. This held several clumps of frog spawn but was found to quickly dry in the late-spring. A very small pond used by domestic ducks and geese was also noted adjacent to Plumb Tree Farm (NZ 6788 1493). This was not, however, a viable amphibian breeding habitat.

4.99 With regard to the pond at NZ 6788 1545, this was subject to an assessment using the Great Crested Newt Habitat Suitability Index (HSI). This yielded an HSI score of 0.70 which just meets the ‘good’ category. On the basis of this assessment, the pond was subject to more detailed standard survey. These surveys confirmed a moderate population of Smooth Newt with a maximum count of 12 on any one visit. At the time of the fourth survey visit the pond had completely dried out. This strongly suggests that the pond does not represent a viable amphibian breeding habitat on an annual basis. No evidence of Great Crested Newt was found. In terms of other species, small numbers of Common Frog and Common Toad were also recorded. As detailed, irrespective of these results, the proposed site has been subject to
design modifications which have subsequently taken this and all other ponds outside of the relevant zone of influence.

**Reptiles**

4.100 Whilst the majority of the site is an intensively farmed landscape which is a typically hostile habitat for reptiles, the initial walkover survey identified potential reptile habitat very locally within and immediately adjacent to the site. This habitat was particularly associated with the small field to the west of Lockwood Beck (Target Note 14) with the potential habitat extending outside of the proposed site to the north (Target Note 58). Other potential habitat was associated with the variable open scrub/grassland associated with Target Note 47 and with the open bank in Kateridden Wood (Target Note 56).

4.101 More detailed refugia surveys confirmed Adder, Common Lizard and Slow-worm from the small field to the west of Lockwood Beck (and the adjacent Target Note 58) (Figure B5, R1 and R2). The number of animals recorded during the surveys was typically low and this is likely to be indicative of a small population of each species. Slow-worm was also recorded from the top of the open bank in Kateridden Wood (Target Note 56) (Figure B5, R2). No reptiles were recorded from the open scrub/grassland associated with Target Note 47.

**Invertebrates**

**Habitat Description**

4.102 Whilst the intensively farmed parts of the site represent a poor habitat for a limited range of invertebrates, the initial walkover survey identified several areas of potentially high quality invertebrate habitat. Specific to the site itself, these were particularly associated with the wooded stream corridor of Lockwood beck as well as the adjacent species-rich grassland described in Target Note 14. Other habitats in the immediate wider local area were particularly associated with the extensive ancient woodland sections and particularly the sections of wet woodland in Kateridden Wood. Streams within the woodland also provided some unusual and potentially valuable habitats. These were particularly associated with two waterfall sections, one on Lockwood Beck and a second on Kateridden Beck.

4.103 The more detailed surveys largely confirmed the initial appraisal. The species-rich grasslands associated with Target Note 14 (Figure B5, I1) along with the adjacent similar habitat within Target Note 58 (Figure B5, I2)
supported several local species including the hoverflies Chrysotoxum arcuatum and Sericomyia (=Arctophila) superabien. Other uncommon species included the northern picture winged fly Tephritis conura and the plant bug Macrotylus solitarius, both of which appear to be new records for Cleveland).

4.104 The ancient woodland habitats (Figure B5, I3) supported the Nationally Scarce B Orchesia minor, a small brown false darkling beetle associated with fungoid hard woods. Other regionally rare saproxylic species associated with this habitat included Biphyllus lunatus and the rove beetle Siagonum quadricorne. The ground flora yielded the local English Chrysalis Snail Leiostyla anglica.

4.105 Waterfall habitats associated with Kateridden Beck (Figure B5, I4) yielded several local species, for example, the camphor beetle Stenus guynemeri, a species apparently with no previous records for Cleveland.

**Other Habitats – Lockwood Beck, Kateridden Beck and Hagg Beck**

4.106 In order to enable consideration of the potential indirect effects of the proposed site, streams within and adjacent to the study area were subject to a Biological Monitoring Working Party (BMWP) survey. Three sample sites were selected, the locations of which are shown on Figure B5, IS1-IS3. These were as follows:

- Lockwood Beck immediately downstream of the proposed haul road crossing (IS1).
- Kateridden Beck immediately downstream of the proposed haul road crossing (IS2).
- Hagg Beck downstream of any potentially impacting activities (IS).

4.107 Lockwood Beck is typically 2-4m wide, with depths ranging between 0.05-0.2m and with a moderate to fast pace over a series of riffles and pools. The stream bed is a mixture of gravel, stones and cobbles with more rarely occurring silt sections. Some large in-stream boulders are present. The stream is locally shaded by the densely wooded stream corridor. This sample site had a BMWP score of 83 and an Average Score Per Taxon (ASPT) of 5.2. A BMWP score of 83 would typically indicate a stream with good water quality (range often stated as 70-100 for ‘good’ category).

4.108 Kateridden Beck is a small stream which is typically 0.5-1m wide and 0.02-0.1m deep. The stream bed is predominantly a mixture of gravel and silt with occasional larger stones and sections over bedrock. The stream is relatively unshaded by trees although it does have locally dense streamside
vegetation. This sample site had a BMWP score of 97 and ASPT of 5.1 and is therefore at the upper end of the ‘good’ category. Downstream of the sample site, the stream enters a very steep valley with a series of waterfall sections. This provides an unusual habitat in its own right which was sampled separately as part of the wider invertebrate survey.

4.109 Hagg Beck is a more substantial stream, approximately 5-8m wide with water depths ranging from 0.1-0.4m. The stream has a moderate pace with stream and riffle sections. The stream bed typically comprises of stones and cobbles with occasional gravel and silt patches. The stream lies within Hagg Wood although is only rarely heavily shaded. This sample site had a BMWP score of 98 and ASPT of 5.44 and is therefore at the upper end of the ‘good’ category.

Other Species

Brown Hare was recorded rarely during the course of the other field surveys, particularly from the arable fields to the east of Millers Lane. Other fauna recorded during the survey are listed in Appendix B11.
5. **Tockett’s Lythe Intermediate Access Point**

**Desk Study**

5.1 The desk study did not identify any key rare or legally protected species records from the proposed site or immediate surrounding area. In the wider local area there are records for the specially protected Great Crested Newt from ponds approximately 1.5km to the west north-west. These are associated with the Carlin Howe Farm LWS.

5.2 In relation to key habitats, the desk study identified the adjacent Waterfall Gill as being within a Local Wildlife Site and being largely classified as ancient and semi-natural woodland.

**Statutory Nature Conservation Sites**

5.3 No part of this site lies within a designated European Site, i.e. Special Area of Conservation (SAC) or Special Protection Area (SPA). In the wider local area, Guisborough Moor falls within the wider North York Moors SAC and North York Moors SPA and is approximately 2.3km to the south. The basis for this designation is as previously described for the Lady Cross site.

5.4 No part of the site lies within a designated Site of Special Scientific Interest (SSSI). Sharing the same boundary as the North York Moors SAC/SPA this is therefore approximately 2.3km to the south. The basis for this designation is as previously described for the Lady Cross site.

**Non-Statutory Nature Conservation Sites**

5.5 The northern boundary of the site lies adjacent to Waterfall Gill which lies within the Skelton Beck Complex Local Wildlife Site (LWS) with the boundary of the site extending into the site at two locations (Target Notes 12 and 13). This site is designated on the basis of providing examples of ancient, ancient replanted and broadleaf woodland.

**Ancient Woodland**

5.6 Much of the woodland associated with Waterfall Gill is included on the Ancient Woodland Inventory as ‘ancient and semi-natural woodland’ with one small section east of Plantation Farm which is classified as ‘ancient replanted woodland’. Those parts of the LWS within the site are not included on the Ancient Woodland Inventory.
Habitats and Plants

General Habitat Description

Introduction

5.7 This intermediate access point is located in fields to the south of Plantation Farm, approximately 1km north-east of the town of Guisborough. The site is accessed off the A173 Guisborough to Skelton road.

5.8 More detailed target note descriptions are provided for habitats encountered in both the site and its immediate surrounds in Appendix C1. A photographic record is provided in Appendix C2. These habitats are described in more general terms below.

Arable Farmland

5.9 Virtually the entire proposed site is used for arable farming (Target Notes 1, 9, 14, 16 and 26). Fields are often large, intensively farmed and with virtually no associated flora. Field margins support a typical range of commonly occurring arable weeds. These include species such as locally frequent Annual Meadow-grass Poa annua, Pineappleweed Matricaria discoidea, Scented Mayweed Matricaria chamomilla, Scentless Mayweed Tripleurospermum inodorum and White Clover Trifolium repens. More occasional or rarely occurring species include Broad-leaved Dock Rumex obtusifolius, Field Forget-me-not Myosotis arvensis, Groundsel Senecio vulgaris, Knotgrass Polygonum aviculare, Prickly Sow-thistle Sonchus asper, Soft-brome Bromus hordeaceus subsp. hordeaceus and Shepherd's-purse Capsella bursa-pastoris.

Semi Improved Grassland

5.10 Permanent pasture is rare within the study area and restricted to a single field to the north of the proposed site (Target Note 3). This field is used for horse grazing and is variable. Large sections are species-poor and dominated by grasses, particularly Perennial Rye-grass Lolium perenne and Yorkshire-fog Holcus lanatus. These sections could arguably be classified as 'improved' although they are probably best classified as 'poor semi-improved.' Locally, the grassland is more species-rich with other grasses which include very locally abundant Red Fescue Festuca rubra sens. lat. along with occasional Crested Dog's-tail Cynosurus cristatus and more rarely occurring Smaller Cat's-tail Phleum bertolonii and Sweet Vernal-grass Anthoxanthum odoratum. Forbs remain typically rare throughout and include very locally abundant Common Nettle Urtica dioica along with more rarely occurring

5.11 Other grasslands are particularly associated with wide grassy field margins which are a feature of the site, particularly the eastern boundary (Target Note 17). These are nutrient enriched and often occur as a mosaic of tall grasses and ruderals. Characteristic grasses are represented by locally abundant False Oat-grass *Arrhenatherum elatius*, Perennial Rye-grass and Yorkshire-fog, along with locally frequent Cock’s-foot *Dactylis glomerata* and more rarely occurring Meadow Foxtail *Alopecurus pratensis*, Rough Meadow-grass *Poa trivialis* and Timothy *Phleum pratense*. Forbs include locally frequent White Clover along with occasional Meadow Vetchling *Lathyrus pratensis* and more rarely Common Ragwort *Senecio jacobaea* and Red Bartsia *Odontites vernus*.

**Hedgerows**

5.12 Thirteen hedgerows are present within or on the boundary of the proposed site (Target Notes 2, 4, 5, 6, 7, 8, 10, 11 12, 19, 20, 21, and 22). In addition, three further hedgerows are impacted as a result of the access provisions to the site (Target Notes 23, 24 and 25).

5.13 A number of these hedgerows are of mixed composition and are species-rich. Typical canopy species included Ash *Fraxinus excelsior*, Blackthorn *Prunus spinosa*, Dog-rose *Rosa canina*, Elder *Sambucus nigra*, Field Maple *Acer campestre*, Hawthorn *Crataegus monogyna*, Hazel *Corylus avellana*, Holly *Ilex aquifolium* and Wild Plum *Prunus domestica*. More rarely occurring species included English Elm *Ulmus procera*, Goat Willow *Salix caprea*, Grey Willow *Salix cinerea subsp. cinerea*, Pedunculate Oak *Quercus robur*, Sessile Oak *Quercus petraea* and Wych Elm *Ulmus glabra*. Several of the hedgerows incorporate these species as mature standards with several substantial mature Ash and Pedunculate Oak present.

5.14 More rarely, the hedgerows are species-poor and typically dominated by Hawthorn with a much reduced range of associated shrub species.

5.15 Despite the often diverse species composition, the majority of the hedgerows are regularly maintained and of only average structure. More rarely, the hedgerows have a poor structure with significant gaps. With regard to other features associated with hedgerows, these were typically absent. Very occasionally, hedgerows did, however, incorporate low banks or defunct ditches. Relatively wide field margins are left at a number of locations and although never botanically species-rich, probably do enhance the corridor
function of the hedgerow. Other hedgerows are associated with tracksides and support an adjacent verge.

5.16 The associated ground flora is typically species poor. The hedgerow network is typically bounded by arable farmland or more rarely pasture and has a nutrient enriched ground flora characterised by species such as Cleavers *Galium aparine*, Common Nettle, Common Couch *Elytrigia repens*, Cow Parsley *Anthriscus sylvestris* and Hogweed *Heracleum sphondylium*. More typical hedgerow species are encountered occasionally, particularly Bracken *Pteridium aquilinum*, Greater Stitchwort *Stellaria holostea*, and Upright Hedge-parsley *Torilis japonica*. More typical woodland species such as Dog's Mercury *Mercurialis perennis* was recorded only rarely.

5.17 In terms of the survey completed in accordance with the Hedgerows Regulations 1997, three of the hedgerows are classified as important when assessed using the ecological criteria. These were the hedgerows referred to in Target Notes 2, 5 and 6. They classify as important primarily on the basis of a diverse range of species as opposed to other qualifying criteria.

5.18 Under the arguably more useful Hedgerows Evaluation and Grading System (HEGS) methodology, a number of hedgerows were identified as being of conservation priority. The results of this survey are provided in Appendix C5 and summarised in the table below.

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<thead>
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<th>HEGS GRADE</th>
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<td>Target Note 10</td>
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<tr>
<td>4</td>
<td>Target Note 22</td>
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</tbody>
</table>
5.19 The HEGS survey therefore establishes ten of the hedgerows within the moderately high to high value (i.e. 2-, 2 and 2+) category and one hedgerow within the high to very high value (i.e. 1-, 1 and 1+) category. In relation to the grade 1- hedgerow referred to in Target Note 8, this was a particularly species-rich hedgerow with some ten canopy species. This is a high diversity for North-east Yorkshire. It did not qualify as important when using the Hedgerows Regulations ecological criteria as it was the hedgerow in its entirety as opposed to the individual 30m samples which attained a high species diversity.

Other Boundaries

5.20 Whilst virtually all field boundaries are associated with hedgerows, more rarely these include other habitats (Target Notes 13 and 15). Target Note 13 relates to a narrow band of predominantly mature Crack-willow *Salix x fragilis* within an associated central ditch/minor stream which was typically dry throughout the survey period. There is an adjacent wide strip of tall ruderal dominated vegetation between the tree line and adjacent arable field which grasses and tall ruderals with locally dominant patches of Bramble *Rubus fruticosus agg.*, Common Nettle and Creeping Thistle, locally abundant Yorkshire-fog and frequent Broad-leaved Dock and Cleavers.

5.21 Target Note 15 refers to a recently cleared field boundary ditch with an associated margin which supports frequent Cock’s-foot, Creeping Thistle, False Oat-grass and Yorkshire-fog, with more occasional Field Horsetail, Hogweed, Meadowsweet *Filipendula ulmaria* and Tufted Vetch *Vicia cracca*. Rarely occurring Ash, Dog-rose, Goat Willow and Sweet Chestnut *Castanea sativa* are present as a 10m extension to the adjacent woodland at the north-easterm end.

Other Habitats

5.22 A limited range of other habitat types are present locally within the study area. These include small sections which are dominated by tall ruderal species often as single species stands, for example, habitats dominated by Common Nettle or Creeping Thistle. Such habitats typically occur as mosaics within field margins or on trackside verges. More rarely they occur as discrete patches within pasture.
5.23 Other habitats include those associated with bare and disturbed ground on farm tracks and at field entrances. These areas support a similar range of species to those found along the arable field margins.

Adjacent Habitats

5.24 The dominant habitat in the adjacent area is the extensive woodland associated with Waterfall Gill (Target Note 27). This woodland extends along the entire eastern boundary of the proposed site. Whilst most of the woodland is included on the Ancient Woodland Inventory as Ancient and Semi-Natural Woodland, much of it appears to have been replanted. Notwithstanding this, it is a mature and predominantly broadleaf woodland which supports a diverse and characteristic woodland ground flora. Canopy species are variable with individual woodland sections dominated by a particular species. These include sections with dominant or abundant Ash, Beech *Fagus sylvatica*, Pedunculate Oak, Sycamore and Wych Elm. Rarely, the planted blocks are dominated by coniferous species, particularly Sitka Spruce *Picea sitchensis*. Alder *Alnus glutinosa* is typically the dominant streamside canopy tree. Other more rarely occurring canopy species include Aspen *Populus tremula*, Scots Pine *Pinus sylvestris*, Sessile Oak and Yew *Taxus baccata*. The shrub layer is variable although often well developed with locally frequent Ash, Sycamore and Wych Elm. Occasional or more rarely occurring species include Blackthorn, Guelder-rose *Viburnum opulus*, Hawthorn and Hazel.

5.26 Other habitats found adjacent to the site include a large plantation woodland (Target Note 28). This is one of several such plantations in the wider local area. The plantation is mature, even-aged and with a canopy which comprises of stands of Scots Pine, Sitka Spruce and Sycamore. Ash is rare in the canopy. The shrub layer is very sparse and includes rarely occurring Elder and Sycamore. The ground flora is generally species poor with locally dominant Bramble, frequent Herb-Robert *Geranium robertianum*, locally frequent Common Nettle and more occasional or rarely occurring Cock's-foot, Creeping Thistle, Hairy-brome *Bromopsis ramosa*, Hedge Woundwort, and Honeysuckle *Lonicera periclymenum*. Of particular note was the presence of several plants of Broad-leaved Helleborine *Epipactis helleborine* which were present along the southern woodland edge.

**National Vegetation Classification (NVC)**

5.27 There were no habitats within the proposed site which were considered to be of sufficient actual or potential interest to merit more detailed quadrat analysis. The most diverse habitats within the site are associated with the hedgerows which have been subject to more detailed surveys.

5.28 With much of the proposed site used for arable farming purposes, there are few areas that can be considered under the NVC approach.

5.29 With regard to the single pasture, this has greatest affinities with the MG6 *Lolium perenne-Cynosurus cristatus* grassland. Some variation is evident across the field according to topographical variations but all probably fits within this broad NVC grassland type.

5.30 Other grassland habitats are particularly associated with hedgerow, trackside and field margins. With an abundance of False Oat-grass, these typically fall within the MG1 *Arrhenatherum elatius* grassland type. These habitats are, however, rarely uniform and typically occur as a mosaic with tall ruderals. Where these become locally prominent, they are probably representative of a distinct NVC community type, with localised patches sharing affinities with the OV23 *Lolium perenne-Dactylis glomerata*, OV24 *Urtica dioica-Galium aparine*, OV25 *Urtica dioica-Cirsium arvense* and OV27 *Epilobium angustifolium* communities. Occasionally, Bramble scrub is a feature of this mosaic and where this is the case, it is representative of the W24 *Rubus fruticosus-Holcus lanatus* underscrub habitat type.

5.31 Lower growing poor ruderal dominated habitats, particularly associated with arable field margins and also on tracks include stands with affinities to the OV10 *Poa annua-Senecio vulgaris*, OV12 *Poa annua-Myosotis arvensis*,
OV13 *Stellaria media-Capsella bursa-pastoris* and OV21 *Poa annua-Plantago major* communities.

5.32 With regard to the adjacent woodland associated with Waterfall Gill, with much of this woodland having been replanted, it is difficult to consider the woodland under the NVC. Notwithstanding this, some general observations indicate that sections which have apparently not been replanted have frequent Ash as the main canopy species. Oak is present more rarely but appears to be more typically associated with the replanted sections. Similar to many woods locally, parts of the woodland are somewhat transitional, with the canopy displaying affinities with the W8 *Fraxinus excelsior-Acer campestre-Mercurialis perennis* and W10 *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland type. Damper sections are present throughout the stream section as well as in the form of regular spring/seepage type sections. Here, the woodland is more characteristic and typical of the W7 *Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum* woodland type.

**Rare and Noteworthy Species**

5.33 The survey yielded almost 190 species of vascular plant, virtually all of which are common or relatively common species which are typical of the habitats encountered. No nationally rare, nationally scarce or regionally rare species were recorded from within the site. In the wider local area, of particular note was the presence of the Nationally Scarce Wood Barley *Hordelymus europaeus* from the adjacent woodland associated with Waterfall Gill. Broad-leaved Helleborine, a rare species in North-east Yorkshire, was also recorded from the edge of the plantation woodland described in Target Note 28.

**Invasive Species**

5.34 Japanese Rose *Rosa rugosa*, was recorded from two hedgerows (Target Notes 11 and 23. This species is listed under Schedule 9 of The Wildlife and Countryside Act (1981, as amended). In the wider local area, Indian Balsam *Impatiens glandulifera* is locally abundant along Waterfall Beck. It is also present in an area used for timber storage near to Waterfall Farm immediately to the south of the proposed site. No plants were, however, found within the site itself.
Breeding Birds

General Habitat Description

5.35 The Tockett’s Lythe site provides a relatively limited range of breeding bird habitats. These essentially fall within the broad habitat types of arable farmland and hedgerows. The majority of breeding records were associated with the adjacent woodland habitats, as well as adjacent buildings, particularly the habitats around Plantation Farm.

5.36 With regard to the site itself, breeding records from the fields were limited to a single Skylark *Alauda arvensis* territory. Additional territories were also present in adjacent arable fields.

5.37 Other birds that were recorded from within the site were associated with the field boundary habitats as well as the narrow section of poor willow dominated woodland (Target Note 13). Species recorded from such habitats within or on the site boundary were Blackbird *Turdus merula* (4 territories), Blue Tit *Cyanistes caeruleus* (2 territories), Bullfinch *Pyrrhula pyrrhula* (1 territory), Chaffinch *Fringilla coelebs* (6 territories), Chiffchaff *Phylloscopus collybita* (1 territory), Dunnock (7 territories), Great Spotted Woodpecker *Dendrocopos major* (1 territory), Great Tit *Parus major* (3 territories), Greenfinch *Carduelis chloris* (2 territories), Robin *Erithacus rubecula* (1 territory), Song Thrush *Turdus philomelos* (2 territories), Tree Sparrow *Passer montanus* (1 territory), Whitethroat *Sylvia communis* (2 territories), Willow Warbler *Phylloscopus trochilus* (1 territory), Woodpigeon *Columba palumbus* (3 territories) and Wren *Troglodytes troglodytes* (2 territories). Both Pheasant *Phasianus colchicus* and Red-legged Partridge *Alectoris rufa* were recorded from field margins within the site where they were presumed to be breeding.

5.38 With regard to the adjacent habitats, other field boundaries, plantation woodland blocks to the west and the main woodland associated with Waterfall Gill provided further breeding habitat.

5.39 Characteristic farmland species recorded from habitat to the west of the proposed site included additional records of Skylark (2 territories), Tree Sparrow (1 territory), Whitethroat (3 territories) and Yellowhammer (1 territory).

5.40 Whilst the woodland associated with Waterfall Gill yielded the most records, several species were present in a variety of habitats including adjacent field boundaries and plantations. Of these, the most frequently encountered species was Wren (31 territories), with other commonly occurring species
such as Blackbird (15 territories), Blue Tit (15 territories), Robin (15 territories) and Song Thrush (11 territories). Commonly occurring species which were more typically restricted to woodland, albeit not necessarily the large woodland associated with Waterfall Gill, included Blackcap (12 territories), Chaffinch (24 territories), Coal Tit *Periparus ater* (10 territories) and Woodpigeon (13 territories).

5.41 Species which were restricted to the woodland associated with Waterfall Gill included several noteworthy species. These included nationally declining species such as Spotted Flycatcher and Marsh Tit as well as locally rare breeding species such as Buzzard. The stream habitat within Waterfall Gill provided records of Dipper *Cinclus cinclus* (1 pair).

5.42 In terms other woodland species, the specially protected Common Crossbill was recorded as small feeding flocks during the April survey and may have bred in coniferous plantations locally.

5.43 Other adjacent habitats include that provided by Plantation Farm and its surrounding buildings. This habitat supported a number of notable breeding species including particularly the specially protected Barn Owl as well as nationally declining species such as House Sparrow, Starling and Swallow.

**Rare or Noteworthy Species**

5.44 A number of species recorded as breeding within or adjacent to the proposed site are rare or noteworthy on the basis of low or rapidly declining breeding numbers. Such species are summarised in the table below.

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<th>Species/Conservation Status</th>
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<tr>
<td>Barn Owl Tyto alba</td>
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<td>Common Crossbill Loxia curvirostra</td>
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<td>Marsh Tit</td>
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<td>Skylark Alauda arvensis</td>
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<td>Spotted Flycatcher Muscicapa striata</td>
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<td>Tree Sparrow Passer montanus</td>
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<td>Woodcock</td>
<td><em>Scolopax rusticola</em></td>
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</table>

### Badger

**5.45** Very limited evidence of Badger activity was found in the proposed site or wider surrounding area. The results of this survey are provided as a separate confidential Appendix to this main baseline report.

### Bats

**Roost Sites**

**Buildings**

**5.46** There are no buildings within the proposed site and potential roost sites are therefore limited to mature trees.

**Trees**

**5.47** A small number of trees were identified which were considered to offer higher roost potential than others. These were typically associated with mature boundaries and were all associated with the site boundary. The locations of those trees which offered higher roosting potential is shown on Figure C4, and can be summarised as follows:

- **T1**: Mature Pedunculate Oak in field boundary TN8. In good condition but with a dense cover of Ivy. Assessed as being of low potential. No evidence of roosting and relatively isolated. No bats recorded from this part of the site in the early dusk period.
- **T2**: Mature Pedunculate Oak in field boundary TN19. In good condition but with dense cover of Ivy. Assessed as being of low potential. No evidence of roosting and isolated. No bats recorded from this part of the site in the early dusk period with very few bats recorded from this boundary during the entire survey period.
- **T3**: Mature Ash in field boundary TN19. In good condition but with dense cover of Ivy. Assessed as being of low potential. No evidence of roosting and isolated. No bats recorded from this part of the site in the early dusk period with very few bats recorded from this boundary during the entire survey period.
- **T4**: Mature Ash in field boundary TN19. In good condition but with dense cover of Ivy. Assessed as being of low potential. No evidence of roosting and isolated. No bats recorded from this part of the site in the early dusk period.
period with very few bats recorded from this boundary during the entire survey period.

- T5: Mature Ash in field boundary TN19. In good condition but with dense cover of Ivy. Assessed as being of low potential. No evidence of roosting and isolated. No bats recorded from this part of the site in the early dusk period with very few bats recorded from this boundary during the entire survey period.

- T6: Mature two stemmed Pedunculate Oak in field boundary TN6. In good condition but with dense cover of Ivy. Rarely occurring cracked/flaking bark. Assessed as being of low potential. No evidence of roosting and isolated. Occasional bats using this boundary although none recorded in the early dusk period.

- T7: This refers to the band of mature Crack-willow described in TN13. Whilst not typically of sufficient maturity to support roosting bats, several are in poor conditions with cracked and flaking bark. Assessed as being of low potential. No evidence of roosting.


5.49 In terms of the origins of this bat activity, dusk observations at Plantation Farm confirmed Common Pipistrelle roosting activity within several of the outbuildings to the farm. There were apparently at least two (potentially
three) individual roosts involving 20-24 individual bats in total. Bats exiting these roosts flew to the south-east towards the woodland plantation TN28 and particularly along the track which borders the plantation on its western side and which links with the foraging habitat described in B1.

5.50 To the south of the proposed site, whilst the buildings around Waterfall Farm appeared to offer potential roosting habitat, no bats were encountered within the southern part of the proposed site in the early dusk period. Whilst this does not mean that bats do not roost at Waterfall Farm, the foraging surveys indicate that the proposed site is not an important habitat for any such bats.

**Water Vole**

5.51 The proposed site provides no potential habitat for Water Vole. Minor ditches as found within the central part of Target Note Area 13 and in Target Note Area 15 are either too shaded or have very limited water. Precautionary surveys of these habitats yielded negative results. In the wider local area, field signs were routinely searched for whilst completing the Otter survey of Waterfall Beck. This also yielded negative results.

**Otter**

5.52 Whilst there is no suitable Otter habitat within the proposed site, in order to inform the assessment of potential indirect impacts, the adjacent Waterfall Beck was surveyed for Otter. The survey section extended over approximately 1.3km of the watercourse where it lies to the east of the proposed site.

5.53 The survey found very limited evidence of Otter. This was limited to two old spraints (see Figure C4, O1-O2). The key limiting factor is likely to be that of food supply with the stream unlikely to be able to support Otter on anything other than an occasional and temporary basis.

5.54 In terms of other field signs, whilst no holt sites were found, the stream does provide dense bankside vegetation as well as accumulated tree debris, much of which could be used as a temporary resting site.

5.55 In the wider local area Waterfall Beck is a tributary of Skelton Ellers Beck which was surveyed as part of previous ecological surveys associated with the previous pipeline proposal. Approximately 500m downstream of the downstream limit of this survey, Skelton Ellers Beck is a more substantial watercourse which yielded higher levels of Otter activity including several potential holt sites.
5.56 Whilst Waterfall Beck is unlikely to provide a viable Otter food source throughout much of the year, Skelton Ellers Beck supports a small run of Sea Trout *Salmo trutta* along with very rarely occurring Atlantic Salmon *Salmo salar*. Whilst Waterfall Beck is unlikely to be of sufficient size to be used by Atlantic Salmon, it is possible that Sea Trout could use this stream for spawning. If so, it is possible that the stream provides a more attractive habitat for Otter at certain times. The main runs of Sea Trout are typically in the autumn period.

**Amphibians**

**Desk Study**

5.57 Great Crested Newt is an uncommon species in the Guisborough district which does, however, have one of its core local breeding populations approximately 1.5km to the west north-west, based around the Carlin Howe Farm Local Wildlife Site. Other populations are associated with Margrove Ponds LWS, approximately 1.8km to the east south-east.

5.58 Specific to the site itself, there are no ponds within the site. In the immediate wider local area there is a pond shown on the relevant OS map at NZ 63083 16515. This has, however, been infilled and lies within an arable field. A pond is present within the woodland known as ‘the Duck’ at NZ 62328 16945. This is a moderately sized shaded pond within woodland which is used as a duck shoot. It is 380m west of the site at its closest point and therefore of no relevance to the proposed access site.

5.59 With no ponds within the site or wider potential zone of influence, no detailed pond surveys were required at this site.

**Reptiles**

5.60 The intensively farmed landscape is a typically hostile habitat for reptiles which is a species-group which is rare within Cleveland. On the basis of the initial walkover survey, no optimum potential habitat was identified. Sub-optimal habitat were present very rarely, for example, the grass and ruderal dominated margin (Target Note 13). Precautionary surveys of this area yielded negative results.
Invertebrates

General Habitat Description

5.61 The initial walkover survey did not identify any potentially high quality invertebrate habitat. In particular, the arable fields which dominate the majority of the site are habitats of very limited value for invertebrates. Whilst there are occasionally wide field margins and hedgerow verges, these do not support a high botanical diversity and this limits the invertebrate assemblage. Although not meriting more detailed survey, for completeness a species list was compiled and is provided in Appendix C8. This confirms the site as supporting a typical range of common species. No rare or nationally scarce taxa were recorded.

Other Habitats – Waterfall Beck

5.62 In order to enable consideration of the potential indirect effects of the proposed site, Waterfall Beck was subject to a Biological Monitoring Working Party (BMWP) survey. A sample site was selected which was immediately downstream of any potentially impacting activities. This is shown on Figure C4, IS1.

5.63 The stream at the sample site is approximately 3.5-5m wide, shallow with depths ranging between 0.1-0.3m. The stream has a moderate pace with a stream bed which comprises of gravels and small stones with occasional larger cobbles. Occasional submerged roots are evident. The stream is partly shaded by surrounding woodland. The sample site had a BMWP score of 84 and an Average Score per Taxon (ASPT) of 4.94. A BMWP score of 84 would typically indicate a stream with good water quality (range often stated as 70-100 for ‘good’ category).

Other Species

5.64 Brown Hare was recorded rarely during the course of the other field surveys, particularly from the large arable field margin (Target Note 17).
6. CONCLUSIONS & RECOMMENDATIONS

6.1 Given that the surveys were completed within optimum survey windows and in good survey conditions, there are no specific additional survey recommendations.

6.2 Notwithstanding the above, in the event that there were any significant delay between the submission of the survey results and start of any construction period, it will be important to review the continued validity of the baseline. This would be particularly the case in the event that there was any particular change in land use at any of the three proposed sites.
REFERENCES


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