

# ECOLOGICAL APPRAISAL

## GRANGE FIELD ROAD STOCKTON



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DRAFT

**CLIENT** Lichfields  
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Unless requested otherwise, the information below will be provided to the Local Environmental Records Centre

Species	Recorder	Date	Location (4 Fig. NGR)	Abundance	Comment
Meadow pipit	E3 Ecology	April 2018	NZ4319	Single	Overflying
Common Pipistrelle	E3 Ecology	June 2018	NZ4319	~3	Flight record

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## A. SUMMARY

E3 Ecology Ltd was commissioned by Lichfields in March 2018 to undertake an Ecological Appraisal (EA) including a single dusk bat activity survey of land off Grangefield Road, Stockton.

It is proposed to develop the site for residential housing, gardens and infrastructure including areas set aside for ecological mitigation comprising SuDS and landscape planting.

Consultation with the MAGIC website<sup>1</sup> indicated that the Teesmouth and Cleveland Coast Ramsar and Special Protection Area (SPA) lies approximately 6.6km to the north east of the site and that Hardwick Dene and Elm Tree Wood, Greenvale and Norton Grange Marsh Local Nature Reserves (LNRs) lie within 2km of the site. It is noted that Natural England have recommended a 6km zone of influence on the coastal designated sites, including the above SPA, within the Stockton-on-Tees draft Local Plan Habitat Regulations Assessment<sup>2</sup>. The proposed development site lies outwith this distance.

The Environmental Records Information Centre North East (ERIC NE) provided records of species including the following: great crested newt, grass snake, slow-worm, bats, common pipistrelle, noctule bat, pipistrelle bat species, eastern grey squirrel, Eurasian badger, European otter, European water vole, West European hedgehog, dingy skipper and grayling butterflies. A number of records of bird species were also returned including lapwing, oystercatcher and little ringed plover.

Ecological Appraisal indicated that the site is dominated by hardstanding and bare ground habitats to the north. Ephemeral short perennial vegetation is developing particularly to the western, northern and eastern peripheries of the site. Plantation broadleaf woodland was recorded to the northern and southern site boundaries and to the north west of the site where it was recorded alongside areas of dense scrub. Semi-improved neutral grassland was recorded alongside the Lustrum Beck to the west. A large industrial building is situated within the southern section of the site with associated hardstanding. To the south and west of this are areas of dense scrub, hardstanding and neutral grassland, often lying side by side in a mosaic of habitat. This area is bordered to the east by plantation broadleaf woodland.

Assessment of the survey results suggest that plantation broadleaf woodland, scattered trees, semi-improved neutral grassland and running water habitats are of parish habitat value. Dense scrub is considered to be of local habitat value whilst ephemeral standing water, hardstanding and bare ground habitats are considered to be of low habitat value. Ephemeral short perennial habitats along with un-improved neutral grassland and scattered scrub together comprise brownfield type habitat. Brownfield is listed as a priority habitat within the Durham Tees Valley BAP and the wider survey area is considered likely to form a network of habitats of up to district value.

The Wildlife and Countryside Act (1981) Schedule 9 listed invasive species Japanese rose and cotoneaster species were recorded across the site.

The storage building near to the site entrance is set to be demolished. This building was considered to have low suitability for roosting bats and was subject to survey in June 2018, with no roosts recorded. The brick wall to the north west of the site is considered to be of negligible to low suitability for roosting bats and is also set for demolition. Trees recorded across both the northern and southern site sections were considered to be of low to negligible suitability for bats and are not considered to require further survey. Habitats in the northern

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<sup>1</sup> MAGIC website: [www.magic.gov.uk](http://www.magic.gov.uk)

<sup>2</sup> Baker Consultants (2017) Stockton-on-Tees Local Plan Draft Habitat Regulations Assessment

section of the site are of low suitability for commuting and foraging bats. Better quality habitat is associated with the northern and western woodland, watercourse and dense scrub habitat areas; these areas of habitat are to be largely retained. Habitats to the southern site section are more developed with vegetation and are considered to be of moderate suitability. Overall, habitats across the site for commuting and foraging bats are considered to be of low suitability, dominated by open and exposed habitats. The areas of retained habitat to the west are considered to be of greater suitability to foraging bats.

Standing water recorded within the main body and to the north west of the site is considered to be unsuitable for breeding great crested newt (GCN) as it lacks aquatic vegetation and is considered likely to be ephemeral in nature. Two small ponds to the north were recorded. Habitat Suitability Index for GCN has been undertaken on these ponds. One pond returned a score of 5.0, indicating that is of poor suitability for GCN and the other pond returned a score of 5.4, indicating that it is of below average suitability. Both ponds were dry in early June and the likelihood of GCN being present on site is considered to be low.

Otter and water vole may be present on the Lustrum Beck, to the north west of the site. However, from initial plans, this area of the site will not be developed and a minimum 30m buffer zone between the beck and the proposed development will be maintained.

The woodland and scrub habitats within the site which are to be retained are considered to be the habitats of greatest value to birds. The main body of the site is open and exposed and may provide some opportunities to ground nesting species, though no evidence was recorded during survey in June 2018.

No badger field signs were recorded. The majority of the site is considered sub-optimal habitat for this species for foraging and sett building due to the presence of extensive areas of hard standing and bare ground habitats. Peripheral woodland and dense scrub habitat to the north and west of the northern section and within the southern section of the site are, however, considered to be more suitable, though due to the location of the site the risk of presence is considered to be low..

Habitat on site is considered to be suitable for reptiles, including debris and rubble/rock piles for use as refugia/hibernacula, bare ground areas for basking and woodland/scrub areas for foraging. It is however considered likely, in such a northerly location, that numbers of reptiles would be low.

Habitat for the priority butterfly species grayling and potentially dingy skipper is considered to be present with bare ground areas for basking and dense shrub areas for roosting recorded. The area of better quality habitat to the north and west of the site is to be retained.

Red squirrel and white-clawed crayfish are considered likely to be absent from site however the priority species hedgehog is considered likely to forage across the site at times.

Site design has sought to retain the north western area which is of highest value such that loss of dense scrub, neutral grassland, woodland and impacts on the watercourse has been minimised or avoided.

Potential impacts of the development are anticipated to include:

- The loss of ephemeral short perennial habitats along with some sections of neutral grassland and scattered scrub which together comprise brownfield type habitat considered to form part of a network of habitats of district value.
- The loss of hardstanding, bare ground and ephemeral standing water habitats of low habitat value.



- The potential spread of The Wildlife and Countryside Act (1981) Schedule 9 listed invasive species Japanese rose and cotoneaster species.
- Loss of a limited number of potential bat roost sites within the building to be demolished.
- Low risk of potential harm/disturbance to roosting bats at the time of works.
- Potential loss/disturbance to commuting and foraging habitat for bats, thought to be of low to moderate suitability.
- Low risk of harm/disturbance of amphibians Potential loss/disturbance to breeding bird habitat primarily associated with hard standing/bare ground habitats, which may be utilised by a narrow range of species.
- Potential harm/disturbance to low numbers of reptile species.
- Loss of habitat potentially utilised by both grayling and dinky skipper.
- Low risk of harm/disturbance to badger which there is considered to be a low risk may build setts/ forage within woodland and scrub habitat.
- Potential restriction of foraging opportunities for the priority species hedgehog.

Key mitigation measures include:

- Highest value habitats to the north and west of the site will be retained as far as is practicable, including: plantation broadleaf woodland, neutral grassland and scattered trees and supplementary planting with a range of native species will be undertaken.
- SUDs areas will be sown with diverse grassland mixes providing habitat suitable for priority invertebrates.
- A butterfly mitigation strategy will be developed for the retained habitats.
- Bird and bat boxes should be installed on a minimum of 10% of new properties.
- High intensity security lights will be avoided as far as practical, and any lighting in areas identified as being important for bats will be low level (2m) and low lumen.
- No lighting will be installed and light spillage will be minimised along the potential bat flyways adjacent to trees, the watercourse or woodland.
- Where security lights are required, these will be of minimum practicable brightness, be set on a short timer and will be motion sensitive only to larger objects.
- Use of closed panel fencing within the new development, likely to restrict the movements of hedgehog using the site, should be restricted or 150mm square gaps provided at the base.
- Vegetation clearance/tree felling will be undertaken outside of the bird nesting season (March to August inclusive) unless a checking survey by a suitably experienced ornithologist confirms the absence of active nests.
- Any excavations left open overnight will have a means of escape for mammals that may become trapped in the form of a ramp at least 300mm in width and angled no greater than 45°.
- Buildings/built structures will be demolished to a precautionary bat method statement.
- The roots and crowns of retained trees will be protected throughout the development through the provision of adequate construction exclusion zones in accordance with the guidance given by BS5837:2012.
- The Wildlife and Countryside Act (1981) Schedule 9 listed invasive species Japanese rose and cotoneaster species will be removed by a specialist contractor in line with current guidance and controlled waste disposal regulations.
- All site works will be undertaken in accordance with a detailed amphibian and reptile method statement.
- A checking survey for badger setts prior to the onset of site works should works be undertaken within 30m of woodland and dense scrub habitats.
- A checking survey for otter and water vole will be undertaken should works be undertaken within 30m of the Lustrum Beck.

The local planning authority is likely to require the means of delivery of the mitigation to be identified. It is recommended that mitigation and enhancement proposals are incorporated into the master-planning documents.

*If you are assessing this report for a local planning authority and have any difficulties interpreting plans and figures from a scanned version of the report, E3 Ecology Ltd would be happy to email a PDF copy to you. Please contact us on 01434 230982.*



## B. INTRODUCTION

E3 Ecology Ltd was commissioned by Lichfields in March 2018 to undertake an Ecological Appraisal (EA) including a dusk activity survey and updating botanical check of land off Grangefield Road, Stockton.

The purpose of this report is:

- To identify and describe all potentially significant ecological effects associated with the proposed development
- To set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects
- To identify how mitigation measures will/could be secured
- To identify appropriate enhancement measures
- To set out any requirements for post-construction monitoring

The site is located in Stockton-on-Tees at an approximate central grid reference of NZ437191. The site location is illustrated in the figure below.

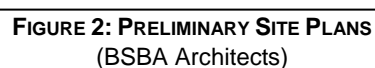


**FIGURE 1: SITE LOCATION**

(OS mapping © Crown copyright and database rights 2016/2017 OS 0100039392)

It is proposed to develop the site for residential housing, gardens and infrastructure including areas set aside for ecological mitigation comprising SuDS and landscape planting. Site layout is detailed below.





## C. PLANNING POLICY AND LEGISLATIVE CONTEXT

### C.1 NATIONAL PLANNING POLICY

The table below details the key paragraphs from the National Planning Policy Framework (NPPF)<sup>3</sup> relating to the natural environment:

TABLE 1: NATIONAL PLANNING POLICY FRAMEWORK: NATURAL ENVIRONMENT	
Statement	Paragraph
The planning system should contribute to and enhance the natural and local environment by: <ul style="list-style-type: none"> <li>Recognising the wider benefits of ecosystem services;</li> <li>Minimising impacts on biodiversity and providing net gains in biodiversity where possible</li> </ul>	109
Planning policies and decisions should encourage the effective use of land by re-using land that has been previously developed (brownfield land), provided that it is not of high environmental value.	111
Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife sites will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks	113
To minimise impacts on biodiversity, planning policies should: <ul style="list-style-type: none"> <li>Promote the preservation, restoration and re-creation of priority habitats ecological networks and the protection and recovery of priority species populations, linked to national and local targets</li> </ul>	117
When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principals: <ul style="list-style-type: none"> <li>If significant harm resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;</li> <li>Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;</li> <li>Opportunities to incorporate biodiversity in and around developments should be encouraged;</li> <li>Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees, found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss</li> </ul>	118
By encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation	125

Section 40 of the Natural Environment and Rural Communities Act 2006, places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity.

Planning Practice Guidance<sup>4</sup> states:

- *'The National Planning Policy Framework is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution' (para. 007).*
- *'Information on biodiversity impacts and opportunities should inform all stages of development .... An ecological survey will be necessary in advance of a planning application if the type and location of development are such that the impact on biodiversity may be significant and existing information is lacking or inadequate' (para. 016).*
- *'Where an Environmental Impact Assessment is not needed it might still be appropriate to undertake an ecological survey, for example, where protected species may be present' (para. 016).*

<sup>3</sup> National Planning Policy Framework (March 2012), Department for Communities and Local Government,

<sup>4</sup> Planning Practice Guidance: Natural Environment ([www.planningguidance.communities.gov](http://www.planningguidance.communities.gov))



- *‘Local planning authorities should only require ecological surveys where clearly justified, for example if they consider there is a reasonable likelihood of a protected species being present and affected by development. Assessments should be proportionate to the nature and scale of development proposed and the likely impact on biodiversity’ (para. 016).*
- *‘Biodiversity enhancement in and around development should be led by a local understanding of ecological networks, and should seek to include:*
  - *habitat restoration, re-creation and expansion;*
  - *improved links between existing sites;*
  - *buffering of existing important sites;*
  - *new biodiversity features within development; and*
  - *securing management for long term enhancement’ (para. 017).*

## C.2 PROTECTED SPECIES LEGISLATION

The table below details the relevant legislation for those protected species that may be present on this site.

TABLE 2: SUMMARISED SPECIES LEGISLATION		
Species	Relevant Legislation	Level of Protection
<b>Bats (All species)</b>	<ul style="list-style-type: none"> <li>• Protection under the Wildlife and Countryside Act (WCA) (1981) (Listed on Schedule 5) - as amended</li> <li>• Classified as European protected species under Conservation of Habitats and Species Regulations 2017</li> <li>• Bats are also protected by the Wild Mammals (Protection) Act 1996</li> </ul>	<p>The WCA (1981) and Conservation of Habitats and Species Regulations 2017 make it an offence to:</p> <ul style="list-style-type: none"> <li>• Intentionally kill, injure, or take any species of bat</li> <li>• Intentionally or recklessly disturb bats</li> <li>• Intentionally or recklessly damage destroy or obstruct access to bat roosts</li> </ul>
<b>Otter</b>	<ul style="list-style-type: none"> <li>• Protection under the Wildlife and Countryside Act (WCA) (1981) (Listed on Schedule 5) - as amended</li> <li>• Classified as European protected species under Conservation of Habitats and Species Regulations 2017</li> <li>• Otters are also protected by the Wild Mammals (Protection) Act 1996</li> </ul>	<p>The WCA (1981) and Conservation of Habitats and Species Regulations 2017 make it an offence to:</p> <ul style="list-style-type: none"> <li>• intentionally kill, injure, or take otters</li> <li>• intentionally or recklessly disturb otters</li> <li>• intentionally or damage destroy or obstruct access to otter holts or any place used by the animal for shelter or protection</li> </ul>
<b>Great Crested Newt</b>	<ul style="list-style-type: none"> <li>• Protection under the Wildlife and Countryside Act (WCA) (1981) (Listed on Schedule 5) - as amended</li> <li>• Classified as European protected species under Conservation of Habitats and Species Regulations 2017</li> </ul>	<p>The WCA (1981) and Conservation of Habitats and Species Regulations 2017 make it an offence to:</p> <ul style="list-style-type: none"> <li>• intentionally kill, injure, or take great crested newts</li> <li>• intentionally or recklessly disturb great crested newts</li> <li>• intentionally or recklessly damage destroy or obstruct access to any place used by the animal for shelter or protection</li> </ul>
<b>Birds</b>	<ul style="list-style-type: none"> <li>• Protection under the Wildlife and Countryside Act (1981) as amended with the exception of some species listed in Schedule 2 of the Act</li> </ul>	<p>The WCA (1981) makes it an offence to (with exceptions for certain species):</p> <ul style="list-style-type: none"> <li>• Intentionally kill, injure or take any wild bird</li> <li>• Intentionally take, damage or destroy nests in use or being built (including ground nesting birds)</li> <li>• Intentionally take, damage or destroy eggs</li> <li>• Species listed on Schedule 1 of the WCA or their dependant young are afforded additional protection from disturbance whilst they are at their nests</li> </ul>

**TABLE 2: SUMMARISED SPECIES LEGISLATION**

Species	Relevant Legislation	Level of Protection
<b>Badger</b>	<ul style="list-style-type: none"> <li>Protection of Badgers Act 1992</li> <li>Badgers are also protected by the Wild Mammals (Protection) Act 1996</li> </ul>	<p>The Protection of Badgers Act (1992) makes it an offence to intentionally or recklessly:</p> <ul style="list-style-type: none"> <li>Damage a badger sett or any part of it</li> <li>Destroy a badger sett</li> <li>Obstruct access to, or any entrance of a badger sett</li> <li>Disturb a badger whilst it is occupying a badger sett</li> </ul>
<b>Water Vole</b>	<ul style="list-style-type: none"> <li>Full protection under the Wildlife and Countryside Act (WCA) (1981) (Listed on Schedule 5) - as amended</li> <li>Water voles are also protected by the Wild Mammals (Protection) Act 1996</li> </ul>	<p>The WCA (1981) makes it an offence to:</p> <ul style="list-style-type: none"> <li>intentionally kill, injure, or take water voles</li> <li>intentionally or recklessly damage destroy or obstruct access to any place used by the animal for shelter or protection or disturb water voles whilst they are using such a place</li> </ul>
<b>Common reptiles (Slow-worm, Adder, Grass Snake, Common Lizard)</b>	<ul style="list-style-type: none"> <li>Partially protected by the Wildlife and Countryside Act</li> </ul>	<p>The WCA (1981) makes it an offence to:</p> <ul style="list-style-type: none"> <li>intentionally kill or injure these animals</li> <li>Sell, offer for sale, advertise for sale, possess or transport for the purposes of selling any live or dead animals or part of these animals</li> </ul>
<p><i>Under the Countryside and Rights of Way Act 2000 (CROW Act) the offence in section 9(4) of the Wildlife and Countryside Act 1981 of damaging a place of shelter or disturbing those species given full protection under the act is extended to cover reckless damage or disturbance.</i></p>		

### C.3 INVASIVE SPECIES LEGISLATION

The table below details the legislation in relation to invasive species and lists those invasive species most likely to be found in this region.

**TABLE 3: SUMMARISED INVASIVE SPECIES LEGISLATION**

Relevant Legislation	Description of Offence	Species (Covered by the Legislation and most likely to be found in this Region)
Listed on Part II of Schedule 9 of the Wildlife and Countryside Act (1981 as amended)	<p>Section 14 of the WCA (1981) states:</p> <ul style="list-style-type: none"> <li>if any person plants or otherwise causes to grow in the wild any plant which is included in Part II of Schedule 9, he shall be guilty of an offence.</li> </ul>	<p>Himalayan balsam Cotoneaster Montbretia Japanese knotweed Giant hogweed Rhododendron</p>

### C.4 PROTECTED SITE LEGISLATION

Details of the legislation surrounding protected sites are provided in the appendices.

### C.5 PRIORITY SPECIES

Although not afforded any legal protection, national priority species (species of principal importance, as listed in Section 41 of the NERC Act (2006)), and local and regional priority species, as detailed within the relevant biodiversity action plans, are material considerations in the planning process and as such have been assessed accordingly within this report.

The table below details the local biodiversity action plan relevant to the area within which this site lies, and the species/species groups and habitats listed as priorities within the plan.

<b>TABLE 4: TEES VALLEY BIODIVERSITY ACTION PLAN</b>					
<b>Species</b>				<b>Habitats</b>	
Barn Owl	Ringed Plover	Grey Partridge	Tree Sparrow	Traditional Orchards	Semi-natural Broadleaved Lowland Woodland
Little Tern	Corn Bunting	Shelduck	Wagtail Yellow	Reedbeds	Rivers & Streams
Bittern	Swift	Purple Milk-vetch	Water Violet	Arable field Margins	Roadside Verges
Globeflower	Pepper saxifrage	Tufted Sedge	Knotted hedge-parsley	Lowland Meadows	Sand Dunes
Yellow Star of Bethlehem	Burnt Orchid	Green Winged Orchid	Strawberry Clover	School Grounds	Maritime Cliffs and Slopes
Flat Sedge	Small Leaved Lime	Black Poplar	Lyme Grass	Grazing Marsh	Hedgerows
Scarlet Wax Cap	White-letter Hairstreak	Grayling	Dingy Skipper	Gardens and Allotments	Saline Lagoons
Blomer's Rivulet	Crescent Striped	Forester	Large Red-Belted Clearwing	Marsh and Saltmarsh	Ponds, Lakes & Reservoirs
Fen Wainscot	Shore Wainscot	Eccentric Grass Snail	Moss Chrysalis Snail	Parks and Recreation Grounds	Lowland Heath
Moss Chrysalis Snail	Bats (except common pipistrelle)	Brown Hare	Harvest Mouse	Brownfields	Churchyards and Cemeteries
Harbour Seal	Water Vole	Common Lizard	Slow Worm		
Great Crested Newt	Bullhead	Salmon	Brown Trout		
European Eel	Brook Lamprey	Sea Lamprey	River Lamprey		

## D. METHODOLOGY

### D.1 SCOPE OF STUDY

The scope of the study, in terms of the survey area and the desk study area, is based on professional judgement. The likely zone of influence of the proposal has been considered, including both potential direct effects such as habitat loss and potential indirect effects such as disturbance. Consideration has been given to potential effects both during the construction and operational phases of the development.

For this site the survey area comprised the red line boundary as defined within Figure 3 with, in addition, a 50m buffer around the periphery appraised where access was available. The desk study included an assessment of land-use in the surrounding area and a data search covering a 2km buffer zone (see below for further detail).

The following types of ecological receptors have been considered:

- Statutorily designated sites for nature conservation.
- Non-statutorily designated sites for nature conservation.
- Species protected by law.
- Species and/or habitats listed under the NERC Act (2009) as being of principal importance for conservation of biodiversity.
- Species and/or habitats listed in relevant local biodiversity action plans.

The figures below illustrate firstly the site boundary and secondly the broad habitats present on site and within an approximate 500m buffer zone.



**FIGURE 3: SITE BOUNDARY**  
(Reproduced under licence from Google Earth Pro.)





**FIGURE 4: SITE AND SETTING**  
(Reproduced under licence from Google Earth Pro.)

## **D.2 DESK STUDY**

Initially, the site was assessed from aerial photographs and 1:25,000 Ordnance Survey maps. Following this, a data search was submitted to the Local Records Centre in April 2018, requesting data relating to protected or otherwise notable species and non-statutory sites for nature conservation within 2km of the survey area. In addition, a search was made of the MAGIC website<sup>5</sup> for all statutorily protected sites for nature conservation within 2km of the survey area.

## **D.3 PRELIMINARY FIELD SURVEY METHODOLOGY**

### **D.3.1 PHASE 1 HABITAT SURVEY**

#### **D.3.1.1 SURVEY METHODS**

The field survey of the proposed site was conducted using the methodology of the Joint Nature Conservation Committee's Phase 1 Habitat Survey, as outlined in their habitat-mapping manual<sup>6</sup>. Each parcel of land was assessed by a trained surveyor and classified as one of ninety habitat types. These were then mapped and the habitat information supplemented by dominant and indicator species codes and target notes where appropriate. Where areas within the study area do not fall into the Phase 1 Habitat Survey classification, alternative methods of classification have been used. The initial site visit was undertaken at a

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<sup>5</sup> MAGIC Website: [www.magic.gov.uk](http://www.magic.gov.uk) [accessed April 2018]

<sup>6</sup> Handbook for Phase 1 habitat survey, A Technique For Environmental Audit, JNCC, 2010

suboptimal time of year for plant identification and as such as second visit was completed in June 2018 in order to ensure a robust assessment.

#### D.3.1.2 SURVEY EQUIPMENT

The following equipment was used during the phase 1 habitat survey:

- Binoculars;
- Digital camera.

#### D.3.2 PRELIMINARY PROTECTED AND PRIORITY SPECIES APPRAISAL

##### D.3.2.1 SURVEY METHODS

Where there is a risk of legally protected species and/or otherwise notable species<sup>7</sup> being present, an initial appraisal was completed to inform the proposals. This appraisal included the following key elements:

- Structures and trees were assessed for the risk of supporting roosting bats (see below).
- Wetlands, where present, were reviewed for their potential use by great crested newt, otter and water voles.
- If present, any trackways regularly used by badger were noted and any badger sett usage assessed by the presence of freshly dug earth or bedding at the entrance.
- The suitability of the suite of habitats present for use by reptiles was assessed.
- Likely use of the site by birds was assessed from the species seen during the survey, and the habitats present.
- Potential use by otherwise notable species was determined based on the broad habitat types present on site, any recent records obtained through the desk study and the geographical distribution of the species. Where specific habitat requirements for notable species have been recorded on site these have been noted, and used as part of this appraisal. The species groups assessed are limited to birds, freshwater fish, amphibians, reptiles, terrestrial mammals, butterflies and dragonflies.

A preliminary assessment, based on inspection from within the site boundary, was made of any trees affected by the proposed development. Trees were inspected and assessed for their potential to support roosting bats and were categorised as negligible, low, moderate or high suitability for roosting bats based on guidelines provided within the Bat Conservation Trust Bat Survey: Good Practice Guidelines<sup>8</sup> and detailed within the table below.

<b>TABLE 5: GUIDELINES FOR ASSESSING THE POTENTIAL SUITABILITY OF PROPOSED DEVELOPMENT SITES FOR BATS, BASED ON PRESENCE OF ROOSTING HABITAT FEATURES (TREES)</b> (TO BE APPLIED USING PROFESSIONAL JUDGEMENT, TABLE 4.1 BAT SURVEY GUIDELINES)	
<b>Suitability</b>	<b>Roosting Habitats</b>
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A tree with one or more potential roost site that are obviously suitable for use by larger numbers of

<sup>7</sup> To include national priority species as listed in Section 41 of the NERC Act (2006) and local or regional priority species as listed within the relevant Biodiversity Action Plan

<sup>8</sup> Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3<sup>rd</sup> Edition). Bat Conservation Trust

	bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
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The assessment is based upon the age and species of the tree, the presence of features with potential to support roosting bats and the location of the tree and habitats present in the surrounding area. Any potential roosting locations and field signs that could indicate bat use, such as droppings, staining and scratch marks were noted.

Where it is considered likely that there is a significant risk of protected or otherwise notable species being affected or where habitats are of particularly high value additional specialist survey work has been recommended. Further survey work may also be recommended where development proposals have the potential to affect statutorily designated sites in the vicinity.

### D.3.3 HABITAT SUITABILITY INDEX (HSI) ASSESSMENT

A Habitat Suitability Index assessment of all of the ponds within the survey area was undertaken, where access was available. The assessment was completed using the methodology produced by Oldham *et al* (2000). It provides a numerical index of between 0 and 1 to aid in assessing habitats in an objective manner, 0 indicating unsuitable habitat and 1 representing optimal habitat. The HSI for the great crested newt incorporates ten factors, all of which are factors thought to affect great crested newts and listed below:

TABLE 6: FACTORS CONSIDERED BY HABITAT SUITABILITY INDEX	
FACTOR	REASONING
Geographic location (SI <sub>1</sub> )	Due to the natural range of the species; lowlands obtain a higher score, uplands a lower score. Scored as A (lowland), B (foothills) and C (uplands).
Pond Area (SI <sub>2</sub> )	Optimal pond size is between 250m <sup>2</sup> and 500m <sup>2</sup> . Ponds become less suitable as they get larger and smaller ponds are unlikely to support viable breeding populations. Scored as a value in m <sup>2</sup> between 50m <sup>2</sup> and 2000m <sup>2</sup> .
Pond permanence (SI <sub>3</sub> )	The optimal frequency of drying out is assumed to be one year per decade, which allows newts to develop but prevents fish populations from persisting. Scored as years out of ten that the pond dries out.
Water quality (SI <sub>4</sub> )	Amphibians require good water quality to persist and breed. Assessed by reviewing invertebrate diversity. Scored as one of 4 classes from poor to excellent.
Pond shading (SI <sub>5</sub> )	Shading caused by tree cover reduces macrophyte cover, increases eutrophication through leaf fall and reduces water temperatures. Scored as a percentage of the perimeter of the pond shaded to at least 1m from shore.
No. of waterfowl (SI <sub>6</sub> )	Large numbers of waterfowl reduce suitability through increased nutrient input and mechanical interference. Scored as the number of waterfowl per 1000m <sup>2</sup> .
Occurrence: of fish (SI <sub>7</sub> )	Fish are predators and can compete with newts for resources. Scored as one of 4 classes from absent to major.
Pond density (SI <sub>8</sub> )	Great crested newts exist in meta-populations, therefore the pond is more suitable if it is part of a network. Scored as the number of ponds within 1km of the pond.
Proportion of "newt friendly habitat" (SI <sub>9</sub> )	Most of the great crested newt's life is spent on land therefore areas of woodland, gardens and unimproved grassland and their connectivity to the pond are important. Scored as good quality habitat within 500m of the pond with barriers to movement taken into account.
Macrophyte Content (SI <sub>10</sub> )	Freshwater plants provide a substrate for egg attachment and cover from predators. Scored as a percentage.

Once field data is collected, the values recorded for each factor are converted to a value between 0 and 1, and the following calculation provides the overall score.

$$HSI = (SI_1 * SI_2 * SI_3 * SI_4 * SI_5 * SI_6 * SI_7 * SI_8 * SI_9 * SI_{10})^{1/10}$$

The result of the above HSI calculation is a single number between 0 and 1. In evaluations of the Habitat Suitability Index the lowest HSI obtained at a site known to support breeding great crested newt was 0.43, the highest 0.96. The following classification has been used to assess the suitability of a pond for the species:

<b>TABLE 7: HABITAT SUITABILITY INDEX CATEGORISATION<sup>9</sup></b>	
<b>HSI SCORE</b>	<b>POND SUITABILITY</b>
< 0.5	Poor
0.5-0.59	Below average
0.6-0.69	Average
0.7-0.79	Good
> 0.8	Excellent

If a pond has a very low HSI score (<0.5) then the chance of great crested newt presence is minimal<sup>10</sup>.

#### D.3.4 ENVIRONMENTAL CONDITIONS

The table below details the environmental conditions during the preliminary ecological appraisal.

<b>TABLE 8: SURVEY CONDITIONS</b>				
<b>Date</b>	<b>Temperature</b>	<b>Cloud Cover</b>	<b>Precipitation</b>	<b>Wind Conditions</b>
05.04.18	7°C	5%	None	F3SE
22.06.18	17°C	5%	None	F1

#### D.3.5 SURVEY CONSTRAINTS

Survey was undertaken during a sub-optimal time of year for the identification of flowering plants, trees and shrubs. In order to overcome this constraint further survey was undertaken in June 2018. Habitats to the far north west of the site were securely fenced and where access was available, dense scrub prevented full access. Habitats in this area were, however, able to be assessed using binoculars from the western bank of the Lustrum Beck.

#### D.3.6 DUSK EMERGENCE ACTIVITY SURVEY

##### D.3.6.1 SURVEY EFFORT

The level of survey effort employed has taken account of the guidance provided by the Bat Conservation Trust (BCT)<sup>11</sup> and summarised within the table below.

<b>TABLE 9: RECOMMENDED NUMBER AND TIMING OF PRESENCE/ABSENCE SURVEY VISITS REQUIRED TO PROVIDE CONFIDENCE IN NEGATIVE PRELIMINARY ROOST ASSESSMENT RESULTS (FROM TABLE 7.1 AND TABLE 7.3 BCT GUIDELINES)</b>			
	<b>Low Roost Suitability*</b>	<b>Moderate Roost Suitability</b>	<b>High Roost Suitability</b>
Recommended minimum number of survey visits for presence/absence survey to give	One survey visit. One dusk emergence or dawn re-entry survey (structures).  For trees with low roost	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey.	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn.

<sup>9</sup> ARG UK Advice Note 5 Great Crested Newt Habitat Suitability Index May 2010

<sup>10</sup> Template for Method Statement to support application for licence under Regulation 53(2)(e) in respect of great crested newts *Triturus cristatus*. Form WML-A14-2 (Version April 13)

<sup>11</sup> Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3<sup>rd</sup> Edition). Bat Conservation Trust



**TABLE 9: RECOMMENDED NUMBER AND TIMING OF PRESENCE/ABSENCE SURVEY VISITS REQUIRED TO PROVIDE CONFIDENCE IN NEGATIVE PRELIMINARY ROOST ASSESSMENT RESULTS (FROM TABLE 7.1 AND TABLE 7.3 BCT GUIDELINES)**

	Low Roost Suitability*	Moderate Roost Suitability	High Roost Suitability
confidence in a negative result	suitability, no further surveys required.		
Recommended timings for presence/absence surveys	May to August	May to September with at least one of the surveys between May and August	May to September with at least two of the surveys between May and August
* If a structure is classified as having low suitability for bats an ecologist should make a professional judgement on how to proceed based on all of the evidence available. If sufficient areas of a structure have been inspected and no evidence found (and is unlikely to have been removed by weather or cleaning or be hidden), then further surveys may not be appropriate.			
<b>Note:</b> Where a roost is confirmed as being present, further surveys may be required to fully characterise the roost			

The recommendations provided above are guidelines and it is recognised by BCT that ‘the number of visits could be adjusted (up or down) if necessary by the ecologist, bearing in mind the site-specific circumstances’.

In this case, from the preliminary daytime inspection, the structures within the site were concluded to have between negligible and low roost suitability. A single dusk emergence survey was undertaken of the low suitability building and an adjacent section of wall which was also considered to be of low suitability.

Activity survey was undertaken on the dates in the table below. Details of timings, and surveyor numbers and names are provided in the appendices.

TABLE 10: ACTIVITY SURVEY	
DATE	DUSK OR DAWN
22.06.18	Dusk

#### D.3.6.2 SURVEY METHODS

Activity surveys were undertaken in suitably mild conditions when bats are active. Surveyor locations sought to box-in the site and give a good degree of confidence as to whether bats were flying into or out of the survey area.

Light levels were recorded at 5 minute intervals, using a light meter, located in an open area and directed upwards to ensure a standard baseline. Light levels generally provide a more reliable indicator of the likely times for bat emergence than minutes past sunset and this approach is recommended by BCT<sup>12</sup>. There is significant variation in emergence times, but hundreds of surveys by E3 in northern England over recent years have indicated that pipistrelles are likely to start emerging around 70 lux, noctule at a similar level or earlier, *Myotis* bats generally start to emerge below 10 lux, with most *Myotis* activity and brown long-eared emergence below 2lux. Bats are rarely recorded above 150 lux, and as light levels go below 0.5 lux bat activity in the vicinity of the roosts tends to decrease as bats disperse across the wider countryside. Bat emergence will start at higher light levels when there is good cover close to the roost. For example *Myotis* bats have been recorded emerging in light conditions above 50 lux when there is a short flight line from the roost site to dense woodland. If a

<sup>12</sup> [http://www.bats.org.uk/pages/recording\\_light\\_level\\_data.html](http://www.bats.org.uk/pages/recording_light_level_data.html)

species is recorded when light levels are close to expected emergence light levels, then the likelihood that a roost is nearby is greatly increased.

Surveyors were positioned to ensure coverage of all high-risk areas of the site, including any potential flight-lines from structures within the site to adjacent cover such as woodland blocks. If bats were recorded within the site before bats were seen in the wider area, or seen flying into the site, it is assumed that roosts are present within the site.

All surveyors used both Batbox Duet bat detectors to listen for bats and Anabat Express detectors, at each surveyor location, to record and better identify bat species. Listening through earphones to both heterodyne and frequency division signals helps ensure that all bat species were detected<sup>13</sup>, whilst recording all bat activity using the Express removes the risk of surveyor error in timings and species ID.

Timings for observations of key bat activity such as emergence, first records of each species and commuting routes were recorded using radio-wave synchronised clocks. All data were recorded using the Anabat Express for future reference and to allow confirmation of species identification through call analysis (using Analook software), and to capture brief echolocation calls that could not be reliably identified in the field<sup>14</sup>. Field survey recorded numbers of bats detected, feeding activity, flight paths, species (as far as is practicable), and social calls.

A total of 4 person-nights work was undertaken. Figures provided within the results section of this report illustrate the approximate location of each surveyor and monitoring point.

#### D.3.6.3 DUSK EMERGENCE SURVEY – ENVIRONMENTAL CONDITIONS

Details of the environmental conditions for the activity survey are provided within the appendices.

#### D.3.6.4 SURVEY EQUIPMENT

- Duet bat detector
- Anabat Express

### D.4 PERSONNEL

The table below details the personnel who undertook the survey work.

TABLE 11: PERSONNEL			
Name	Position	Professional Qualifications	Natural England Survey Licence Numbers
Mark Wilson	Ecologist	BSc MSc	2015-7492-CLS-CLS (GCN*)
Jodi Handley-Bell	Assistant Ecologist	BSc MSc	
*GCN – Great Crested Newt.			

Further details of experience and qualifications are available at [www.e3ecology.co.uk](http://www.e3ecology.co.uk).

### D.5 ASSESSMENT METHODOLOGY

The relative value of the ecological receptors (habitats, species and designated sites) was assessed using a geographical frame of reference. For designated sites this is generally a

<sup>13</sup> Listening to frequency division calls as well as heterodyne significantly increases the detection rate of *Nyctalus* species

<sup>14</sup> Reviewing data recorded by surveyors using Duet detectors and the Anabat data indicated that reliable *Myotis* records increased through Anabat use, particularly once conditions were too dark for visual cues to assist in identification, when there was a lot of bat activity, and with bats in clutter. It also reduces errors where pipistrelles in clutter can be mis-identified as *Myotis* bats.

straightforward process with the assigned designation generally being indicative of a particular value, e.g. Sites of Special Scientific Interest are designated under national legislation and are therefore generally considered to be receptors of national value. The assignment of value to non-designated receptors is less straightforward and as recognised by the Guidelines for Ecological Impact Assessment produced by the Chartered Institute of Ecology and Environmental Management<sup>15</sup>, is a complex and subjective process and requires the application of professional judgement.

When assessing the value of species and habitats, relevant documents and legislation are considered including the lists of species and habitat of principal importance annexed to the NERC Act (2006) and those provided within relevant local Biodiversity Action Plans. Data provided through consultation is also considered. These data sources can provide context at a local, regional and national scale.

The table below provides examples of receptors of value at different geographical scales.

TABLE 12: ECOLOGICAL RECEPTOR VALUATION	
Level of Value	Examples
<b>International</b>	An internationally designated site or candidate site.
	A site meeting criteria for international designation.
	A substantial* area of a habitat listed on Annex I of the EC Habitats Directive or smaller areas of such habitat, which are considered likely to be essential to maintain the functionality of a larger whole.
	The site is of functional importance** to a species population with internationally important numbers (i.e. >1% of the biogeographic population)
<b>National</b>	A nationally designated site.
	A substantial* area of a habitat listed as a Habitat of Principal Importance within Section 41 of the NERC Act (2006) or smaller areas of such habitat, which are considered likely to be essential to maintain the functionality of a larger whole.
	The site is of functional importance** to a species population with nationally important numbers (i.e. >1% of the national population)
<b>Regional</b>	An area of habitat that falls slightly below the criteria necessary for designation as a SSSI but is considered of greater than county value.
	The site is of functional importance** to a species population with regionally important numbers (i.e. >1% of the regional population)
<b>County</b>	A Local Wildlife Site (LWS) or equivalent, designated at a County level
	A substantial* area of a habitat listed within the relevant County Biodiversity Action plan or smaller areas of such habitat, which are considered likely to be essential to maintain the functionality of a larger whole.
	The site is of functional importance** to a species population of county value (i.e. >1% of the county population)
<b>District</b>	A Local Wildlife Site (LWS) or equivalent, designated at a District level
	A substantial* area of a habitat listed within the relevant District Biodiversity Action plan or smaller areas of such habitat, which are considered likely to be essential to maintain the functionality of a larger whole.
	The site is of functional importance** to a species population of district value (i.e. >1% of the district population)
<b>Parish</b>	Area of habitat or species population considered to appreciably enrich the habitat resource within the context of the parish.
	Local Nature Reserves
<b>Local</b>	Habitats and species that contribute to local biodiversity but are not exceptional in the context of the parish.
<b>Low</b>	Habitats that are unexceptional and common to the local area.

<sup>15</sup> Chartered Institute for Ecology and Environmental Management (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater and Coastal



**TABLE 12: ECOLOGICAL RECEPTOR VALUATION**

Level of Value	Examples
*Substantial defined as 'of considerable size or value within that area based on professional judgement, rather than a small, inconsequential area'	
** Functional importance defined as 'a feature which, based on professional judgement, is of importance to the day to day functioning of the population, the loss of which would have a detectable adverse effect on that population',	

## E. RESULTS

### E.1 DESK STUDY

#### E.1.1 PRE-EXISTING INFORMATION

##### ORDNANCE SURVEY MAPPING AND AERIAL PHOTOGRAPHY

The figures in Section B and D show that the general land use in the surrounding area is dominated by urban development associated with the town of Stockton-on-Tees. A corridor of greenspace, associated with the Lustrum Beck, is located to the west of the site and a railway line is located adjacent to the site to the east. The River Tees lies further to the east, approximately 800m from the site.

The most recent aerial photograph of the site (Section D, December 2008) indicates that habitats on site are dominated by bare ground and hard standing with material storage evident. Woodland can be seen to the northern, western and south eastern site peripheries. Historic imagery suggests that the site has remained similar since at least the year 2000.

##### MAGIC WEBSITE<sup>16</sup>

The table below details the internationally and nationally statutorily designated sites within 2km of the survey area (10km for internationally designated sites).

**TABLE 13: DESIGNATED SITES**

Designation	Site Name	Reason for Designation	Distance from Survey Area
Ramsar Site	Teesmouth and Cleveland Coast	Medium-large site encompassing a range of habitats (sand and mudflats, rocky shore, saltmarsh, freshwater marsh and sand dunes) on and around an estuary which has been much-modified by human activities. Together these habitats support internationally important numbers of waterbirds.	6.6km to the north east
Special Protection Area	Teesmouth and Cleveland Coast	Teesmouth and Cleveland Coast SPA is located on the coast of north-east England. It includes a range of coastal habitats – sand- and mud-flats, rocky shore, saltmarsh, freshwater marsh and sand dunes – on and around an estuary which has been considerably modified by human activities. Together these habitats provide feeding and roosting opportunities for important numbers of waterbirds in winter and during passage periods. In summer Little Tern <i>Sterna albifrons</i> breed on beaches within the site, while Sandwich Tern <i>Sterna sandvicensis</i> are abundant on passage.	6.6km to the north east
Local Nature Reserve	Hardwick Dene and	The site consists of four distinct sections	1300m to the north

<sup>16</sup> Multi Agency Geographic Information for the Countryside (MAGIC) [www.magic.gov.uk](http://www.magic.gov.uk)

**TABLE 13: DESIGNATED SITES**

Designation	Site Name	Reason for Designation	Distance from Survey Area
	Elm Tree Wood	– two steep sided wooded valleys, separated by a roughly triangular area of grassland, and a further area of herb-rich, unimproved grassland. Orchids, Ragged Robin and Devil's-bit Scabious are among the many species of wildflower that can be found here. There are 19 species of butterfly, most notable being the White-letter Hairstreak, a Local Biodiversity Action Plan species. Hardwick Dene is an important site for the White-letter Hairstreak butterfly, which gets its name from a white line in the shape of the letter "w" on the underside of the hind wing.	west
	Greenvale	The area comprises unimproved grassland, amenity grassland and small compartments of woodland. Unimproved grassland is a nationally rare and a Local Biodiversity Action Plan habitat and it is particularly unusual to find such a habitat in a built up area. a sub-specie of Lady's Mantle was thought to be extinct in the former county of Cleveland. Other species that are evident include Lady's Smock, Betony, Orchid and Cowslip.	1800m to the west
	Norton Grange Marsh	Comprises a wetland area with a beck that runs through the centre of the site, a wildflower meadow, scrub and long grassland.	1300m to the north

The site lies within a Site of Special Scientific Interest (SSSI) risk zone for any discharge of water or liquid waste of more than 20m<sup>3</sup>/day to ground (i.e. to seep away) or to surface water, such as a beck or stream (NB this does not include discharges to mains sewer which are unlikely to pose a risk at this location).

**TABLE 14: SSSI FOR WHICH THE IMPACT RISK ZONE PERTAINS**

Site of Special Scientific Interest	Tees and Hartlepool Foreshore and Wetlands	Tees and Hartlepool Foreshore and Wetlands comprises several coastal areas which are an integral part of the complex of wetlands, estuarine and maritime sites supporting the internationally important population of wildfowl and waders on the Tees Estuary.	6.6km to the north east
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### E.1.2 CONSULTATION

#### LOCAL RECORD CENTRE

The table below summarises the records of provided by the local records centre. The full data search results can be provided on request.

**TABLE 15: CONSULTATION RECORDS**

Taxon	Species	No. of Records within Search Area	Records of Particular Note
Amphibian	Common Frog	16	-
	Common Toad	15	-

**TABLE 15: CONSULTATION RECORDS**

Taxon	Species	No. of Records within Search Area	Records of Particular Note
	Great Crested Newt	1	Record from 1995
	<i>Lissotriton</i>	7	-
	Smooth Newt	17	-
	Palmate Newt	1	-
Reptiles	Grass Snake	2	Two records from 2001
	Slow-worm	1	Record from the 80s
Bats	Bats	3	-
	Common Pipistrelle	12	-
	Noctule Bat	1	-
	Pipistrelle Bat species	2	-
Terrestrial Mammal	American Mink	1	-
	Brown Hare	5	-
	Eastern Grey Squirrel	30	-
	Eurasian Badger	2	-
	European Otter	11	-
	European Water Vole	27	-
	Harvest Mouse	1	-
	West European Hedgehog	217	-
Butterfly	Dingy Skipper	4	-
	Grayling	19	-
	White-letter Hairstreak	52	-
	Small Heath	25	-
	Wall	51	-

The local records centre provided a number of bird records for the local area, from review of the list the following species are considered to potentially utilise the site on occasion. The full list is available on request.

**TABLE 16: CONSULTATION RECORDS OF BIRDS THAT MAY UTILISE THE SITE**

Blackbird	Grey Wagtail	Magpie	Swallow
Black-headed Gull	Herring Gull	Meadow Pipit	Swift
Blue Tit	House Martin	Oystercatcher	Tawny Owl
Bullfinch	House Sparrow	Pied Wagtail	Tree Sparrow
Carrion Crow	Jackdaw	Reed Bunting	Willow Warbler
Duncock	Kestrel	Sand Martin	Woodpigeon
Goldfinch	Lapwing	Skylark	Wren
Greenfinch	Lesser Black-backed Gull	Song Thrush	Yellowhammer
Grey Heron	Linnet	Starling	
Grey Partridge	Little Ringed Plover	Stock Dove	

In addition, the records centre provided information relating to the following non-statutory designated sites which lie within the search area:

- Norton Grange Marsh Local Nature Reserve (LNR).
- Hardwick Dene and Elm Tree Woods LNR.
- Hardwick Dene Stockton Local Wildlife Site (LWS).
- Greenvale LWS & LNR.
- Bowesfield Pond LWS.
- Harburn Beck LWS.

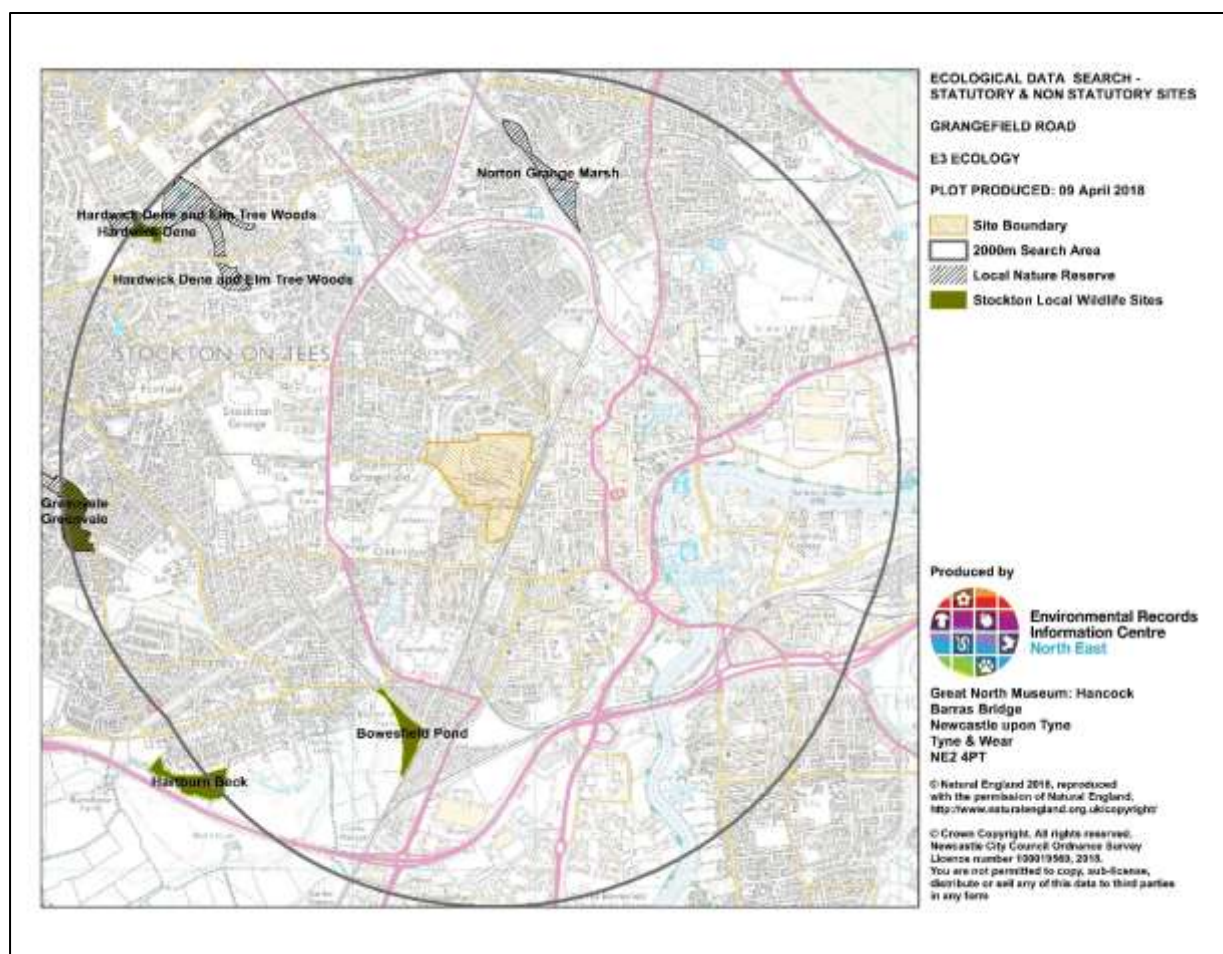


FIGURE 5: NON STATUTORY SITES  
(COURTESY OF ERIC NE)

## E.2 FIELD SURVEY

### E.2.1 HABITATS

The site comprises a large northern central body, formerly used as a scrap yard. A densely vegetated north western section, including grassland both sides of the Lustrum Beck is separated from the northern body of the site by a concrete wall and fences and outwith the proposed development area. The southern section of the site is fenced to its periphery and separated from the northern body of the site by a public right of way.

The site is dominated by hard standing and bare ground habitats to the north. Ephemeral short perennial vegetation is developing particularly to the western, northern and eastern peripheries of the site. Plantation broadleaf woodland was recorded to the northern and southern site peripheries and to the north west of the site where it was recorded alongside areas of dense scrub. Semi improved neutral grassland was recorded alongside the Lustrum Beck to the west. A large industrial building is situated within the southern section of the site with associated hardstanding. To the south and west of this are areas of dense scrub, hardstanding and neutral grassland, often lying side by side in a mosaic of habitat. This area is bordered to the east by plantation broadleaf woodland.

The habitats present within the survey area are illustrated within the figures below and described in more detail below.



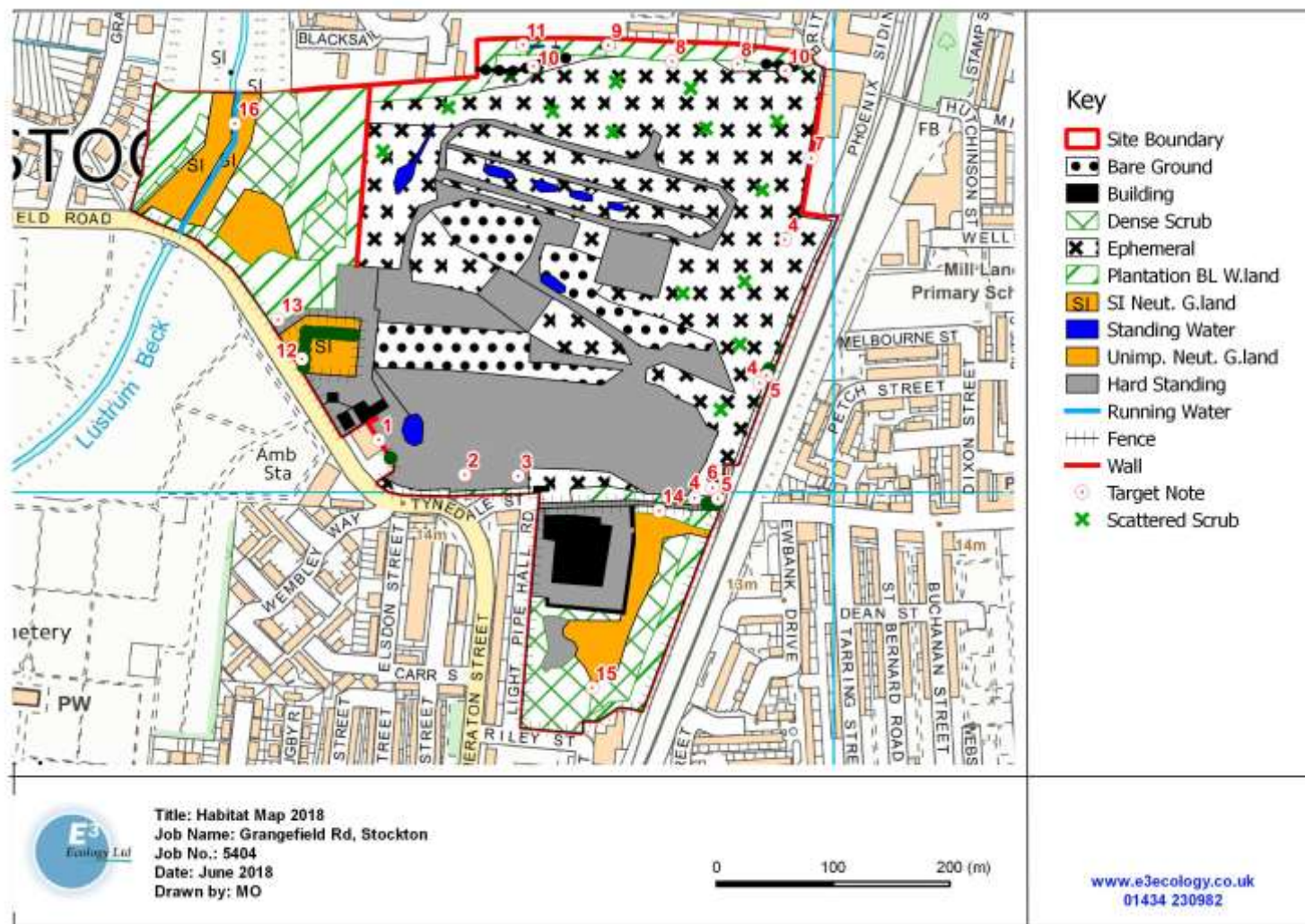


FIGURE 6: HABITAT MAP  
(Reproduced under licence from Google Earth Pro.)

### UNIMPROVED NEUTRAL GRASSLAND

Recorded to the south of the site and considered likely to be present to the north west of the site. An average sward height of 10 cm was recorded with grasses comprising, on average, approximately 70% of the sward. Grass species recorded were red fescue (*Festuca rubra*), Yorkshire fog (*Holcus lanatus*), cock's-foot (*Dactylis glomerata*) and meadow grass (*Poa* sp.). Herbs recorded within the sward were red clover (*Trifolium pratense*), St. John's wort (*Hypericum* sp.), common knapweed (*Centaurea nigra*), fairy flax (*Linum catharticum*) and ribwort plantain (*Plantago lanceolata*). A dead flower of carline thistle (*Carlina vulgaris*) was recorded within this habitat to the south.



Recorded to the north west of the site within the main body of the site and adjacent to the Lustrum Beck. An average sward height of 7cm was recorded with grasses comprising approximately 90% of the sward. Grass species recorded were perennial rye grass (*Lolium perenne*), common bent (*Agrostis capillaris*), fescue (*Festuca* sp.), crested dog's-tail (*Cynosurus cristatus*), Yorkshire fog and cock's-foot. Herbs recorded were creeping buttercup (*Ranunculus repens*), dandelion (*Taraxacum* sp.), cleavers (*Galium aparine*), common mouse-ear (*Cerastium fontanum*), selfheal (*Prunella vulgaris*), spear thistle (*Cirsium vulgare*), broadleaved willowherb (*Epilobium montanum*), meadow buttercup (*Ranunculus acris*) and lesser celandine (*Ficaria verna*) by the Lustrum Beck. Lawn moss (*Rhytidiadelphus squarrosus*) was also recorded within the grassland.



### EPHEMERAL SHORT PERENNIAL VEGETATION

Predominantly recorded to the north and east of the main body of the site vegetation. Coverage varied from 40% vegetation to 60% bare ground up to a 70% vegetation coverage and 30% bare ground in more developed areas of this habitat type. More developed areas were typically found to the eastern and northern fringes of the site and east of the wall to the north of the site. Grasses recorded were creeping bent (*Agrostis stolonifera*), red fescue and Yorkshire fog. Herbs recorded were broad-leaved willowherb, colt's-foot (*Tussilago farfara*), dandelion, common mouse-ear, common whitlow grass (*Erophila verna* s.s.), broad-leaved dock (*Rumex obtusifolius*), groundsel (*Senecio vulgaris*), hairy bittercress (*Cardamine hirsuta*), rosebay willowherb (*Chamerion angustifolium*), herb Robert (*Geranium robertianum*) and common ragwort (*Senecio jacobaea*). In more developed areas St. John's wort, red clover, creeping thistle (*Cirsium arvense*), mugwort (*Artemisia vulgaris*), yarrow (*Achillea millefolium*), mellilot (*Melilotus* sp.), common knapweed, black medick (*Medicago lupulina*), selfheal, rough hawkbit (*Leontodon hispidus*), mullein (*Verbascum* sp.), scentless mayweed (*Tripleurospermum inodorum*), wild carrot (*Daucus carota*) and purple toadflax (*Linaria purpurea*).



### SCATTERED SCRUB

Within ephemeral short perennial habitat areas of scattered scrub were recorded. Shrubs were typically up to 3-4 m height with willow (*Salix* sp.), silver birch (*Betula pendula*), buddleja (*Buddleja* sp.) and ash (*Fraxinus excelsior*) saplings.





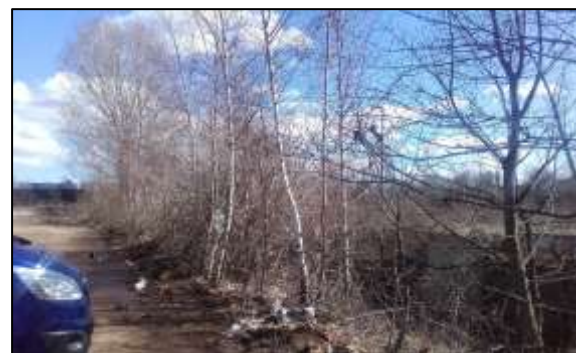
### DENSE SCRUB

Extensive areas of blackthorn (*Prunus spinosa*) dominated dense scrub were recorded to the north west of the site. To the south of the site dense scrub comprising budleja, Japanese rose (*Rosa rugosa*), wall cotoneaster (*Cotoneaster horizontalis*), entire leaved cotoneaster (*Cotoneaster integrifolius*), hollyberry cotoneaster (*Cotoneaster bullatus*), redcurrant (*Ribes rubrum* agg.) bramble (*Rubus fruticosus* agg.), cherry (*Prunus* sp.), ivy (*Hedera helix*), dogwood (*Cornus* sp.) and holly (*Ilex aquifolium*) was recorded.



### PLANTATION BROADLEAF WOODLAND

Recorded to the northern, southern and western periphery of the northern section of the site and to the eastern periphery of the southern section are areas of plantation broadleaf woodland. In some areas, such as to the southern periphery of the northern section, the woodland was recorded as immature comprising immature trees of up to 8m in height. Silver birch, willow, ash, sycamore, elder (*Sambucus nigra*), budleja, dogwood, rose (*Rosa* sp.), bramble and hollyberry cotoneaster were recorded in this area. A species poor grassland field layer of cock's-foot, coltsfoot, false oat grass (*Arrhenatherum elatius*), cleavers, broad-leaved dock and dandelion field layer was recorded.



To the north and west of the northern section and to the east of the southern section immature and semi mature trees were recorded with a height of up to 16m. Frequent semi mature poplar (*Populus* sp.) were recorded along with a similar species mix as that above with the addition of laurel (*Laurus* sp.) shrubs. A species poor grassland field layer was also recorded within these areas of woodland. All trees recorded within woodland areas were considered to be of low to negligible suitability for roosting bats.

### **HARD STANDING**

Extensive areas of hardstanding were recorded within the northern section of the site and some areas were also recorded within the southern section. Both gravel and concrete hardstanding were recorded.



### **BARE GROUND**

Areas of bare ground with little to absent vegetation coverage were recorded within the northern section of the site. These areas comprised rubble, earth and waste material.



### **STANDING WATER**

Areas of standing water were recorded within the hardstanding and bare ground habitats. No aquatic vegetation was recorded within these areas with only occasional creeping bent grass recorded. These areas of standing water are considered likely to be ephemeral in nature. A large expanse of standing water with an associated wet ditch was recorded to the north west of the site, to the east of the concrete wall. Creeping bent grass was again the only vegetation recorded in this area. Standing water in this area measured approximately 30m x 10m at the time of survey. This area of standing water is also considered likely to be ephemeral in nature. Smaller areas of standing water were recorded to the north of the site and are further described within target notes 9 and 11.



### **BROADLEAVED TREES**

Within the northern site section broadleaf trees were recorded to the south east and eastern boundaries. These are further described in target note 5. Mature sycamore trees were also recorded to the south west of the northern section. These trees are set to be retained within current site development plans.



### **WALLS**

The site is bounded to the north and north west by a concrete panel wall. Brick walls were recorded to the south west and the north east of the northern site section. These are further described in target notes 1 and 7.





## BUILDINGS

A two storey brick built structure was recorded to the east of the northern site section adjacent to the site entrance. This structure has a mix of flat and hipped roofs. Pointing was in good condition however gaps at the window sill areas and under bargeboards were present. The building is considered to be of low suitability for roosting bats; however, it is set to be retained.



Also in this area a brick and block walled structure with a pitched corrugated metal roof is present. The building was open to the western elevation and access to rockwool within the roof cavity was possible. This building is considered to be of low suitability for roosting bats and is set to be demolished within current site development plans and has been subject to survey.



To the southern boundary of the northern site section a brick built electricity substation with a well-sealed concrete roof at 3m height was recorded. Some gaps were present under the concrete roof overhang. The building is considered to be of negligible to low suitability for roosting bats; however, it is set to be retained within current site development plans.



Within the southern site section a large industrial building was recorded. This comprised a metal workshop building with a brick built side section. The building is considered to be of negligible to low suitability for roosting bats; however, it is set to be retained within current site development plans.



## E.2.2 SPECIES

### **BATS**

Records of pipistrelle and noctule bats were returned through consultation. The site supports a range of built structures of negligible to low suitability to roosting bats. Dusk survey of the building to be demolished recorded no roosting bats. only very low use of the site by small numbers of common pipistrelle bats.

Trees recorded across both the northern and southern site sections were considered to be of low to negligible suitability for bats and are not likely to require further survey. Habitats are considered to be of low suitability within the main body of the site for commuting and foraging bats with better quality habitat recorded within the areas to be retained.



**FIGURE 7: DUSK ACTIVITY SURVEY RESULTS**  
(Reproduced under licence from Google Earth Pro.)

### **OTTER**

The bank sides of the Lustrum Beck to the north west of the site comprised short sward grassland at the time of survey with dense scrub and woodland habitats set further back on both sides of the beck. Otter could use the beck and create holts/resting up places within adjacent dense scrub/ woodland habitats.

### **GREAT CRESTED NEWT (GCN)**

A single record of GCN, dating to 1995, was returned through consultation. Standing water, recorded within the main body of the northern site section, is considered to be unsuitable for breeding GCN due to it lying over hard standing/rubble substrate, lacking in aquatic vegetation and considered likely to be ephemeral in nature. Standing water recorded to the north east of the northern site section contained some creeping bent grass but is also considered likely to be ephemeral in nature. Two small ponds to the northern site section northern boundary were recorded, though both had dried out when it was attempted to undertake eDNA survey in early June 2018.

### **BIRDS**

A range of common woodland edge and garden bird species were recorded during survey. Woodland and scrub habitats to the north and west of the northern site section and within the southern site section are considered to be the habitats of greatest value to birds. Meadow pipit were recorded overflying the northern site section. Habitats within the northern section of

the site are considered suitable for ground nesting birds such as lapwing and oystercatcher. This area of the site is also considered suitable as nesting habitat for the Wildlife and Countryside Act (1981) Schedule 1 listed bird species little ringed plover. A record of this species within the wider area was returned through consultation.

#### **BADGER**

No badger field signs were recorded. The majority of the site is considered sub-optimal habitat for this species for foraging and sett building due to the presence of extensive areas of hardstanding and bare ground habitats. Ephemeral and grassland habitats within the site are likely to have developed over rubble based substrate and therefore earthworms, a major source of food for badgers, are likely to be absent or present in low numbers. There is, however, potential for this species to forage and build setts within peripheral woodland and dense scrub habitat to the north and west of the northern section and within the southern section of the site, however the location of the site is likely to preclude their presence.

#### **WATER VOLE**

The bank sides of the Lustrum Beck within the site did not appear to offer burrowing potential for this species at the time of survey due to shallow bank sides and the absence of earth faces for digging. The Beck did, however, appear to be in spate.

#### **REPTILES**

The site has optimal habitats for reptiles including debris and rubble/ rock piles for use as refugia/hibernacula, bare ground areas for basking and woodland/ scrub areas for foraging. Reptile species could potentially gain access to the site via corridors associated with the railway line to the east and the Lustrum Beck to the west.

#### **RED SQUIRREL**

No evidence of red squirrel was recorded. Woodland to the north and west of the site may be suitable for this species however it is considered likely in this area that red squirrel has been out competed by grey squirrel and multiple records of grey squirrel, returned through consultation, would seem to support this. Red squirrel are, therefore, considered likely to be absent from site.

#### **INVERTEBRATES**

Records of the priority butterfly species grayling and dingy skipper were returned through consultation and the site, particularly the margins and areas of retained habitat to the north west, is considered to provide a mosaic of suitable habitats to these species.

#### **NATIONAL PRIORITY AND LOCAL BAP SPECIES**

Hedgehog are considered likely to forage within areas of woodland and dense scrub to the north and west of the site and within the southern site section.

### E.2.3 TARGET NOTES

#### **TARGET NOTE 1**

A remnant brick wall recorded to the south west of the northern site section. It measured approximately 4m in height with supporting walls present perpendicular to the wall. Gaps recorded in pointing of the wall and on perpendicular support wall edges. The wall is considered to be of low suitability for roosting bats.



#### **TARGET NOTE 2**

A metal fuel store unit of width 4m, height 4m and length 8m. No bat roosting opportunities recorded on the outward faces of the structure. Access to the interior of the structure is open.



#### **TARGET NOTE 3**

A large pile of brick rubble with potential for use by reptiles as a refugia and basking area. Approximate measurements were length 8m, width 6m and height 4m.



#### **TARGET NOTE 4**

The Wildlife and Countryside Act (1981) Schedule 9 listed invasive species hollyberry cotoneaster was recorded in these locations.





#### TARGET NOTE 5

Three mature poplar trees were recorded to the south east of the northern site section and a single mature poplar to the eastern boundary. The trees were recorded as being of up to 16m in height, however, no discernible features suitable for roosting bats could be seen. The trees are therefore considered to be of low suitability for roosting bats. Two large bird nests were recorded within trees to the south west at 10m height.



#### TARGET NOTE 6

An area of scattered scrub and waste metal, concrete and rubber considered suitable for use as refugia and basking areas for reptiles.



#### TARGET NOTE 7

An old brick wall with defunct pointing in places creating gaps that have the potential to be used by roosting bats. The wall is set to be retained within current development proposals.



#### TARGET NOTE 8

The Wildlife and Countryside Act (1981) Schedule 9 listed invasive species Himalayan cotoneaster (*Cotoneaster simonsii*) and wall cotoneaster were recorded in these locations.



#### **TARGET NOTE 9**

Standing water approximately 10m length by 4m width. Green filamentous algae present within the water. No other aquatic vegetation recorded. Located beneath woodland with approximately 90% of standing water shaded. HSI undertaken on this pond resulted in a score of 5.0, indicating that it is of poor suitability for great crested newts. This feature was dry in June 2018.



#### **TARGET NOTE 10**

Earthen banks approximately 2m in height and 4m wide. Bramble and species poor grassland comprises the vegetation cover.



#### **TARGET NOTE 11**

Standing water approximately 12m long and 3m wide alongside a smaller pool. No green filamentous algae was present within this area of standing water. No aquatic vegetation was recorded. Located beneath woodland with approximately 90% of standing water shaded. HSI undertaken on this pond resulted in a score of 5.4, indicating that it is of below average suitability for great crested newts. This feature was dry in June 2018.



#### **TARGET NOTE 12**

Twelve mature sycamore trees were recorded in this location to the south west of the northern site section. Trees were recorded up to a height of 12m. No discernible features with potential for roosting bats were recorded on any of the trees. They are therefore considered to be of low suitability for roosting bats.

#### **TARGET NOTE 13**

A small pool of standing water was recorded in this locations. No aquatic vegetation was recorded within the pool and the size of the pool was estimated to be 4m in length by 1m width. The pool is considered likely to be ephemeral in nature. This feature was dry in June 2018.



#### TARGET NOTE 14

The Wildlife and Countryside Act (1981) Schedule 9 listed invasive species Japanese rose and small leaved cotoneaster (*Cotoneaster microphyllus*) were recorded in this location.



#### TARGET NOTE 15

The Wildlife and Countryside Act (1981) Schedule 9 listed invasive species entire leaved cotoneaster (*Cotoneaster integrifolius*) was recorded in this location.



#### TARGET NOTE 16

The Lustrum Beck was recorded here as being 4m wide and showing a slow flow of water at the time of survey. Bank side vegetation was of grassland and tall ruderal species. Banks were shallow with no earthen faces.





## **F. SITE ASSESSMENT**

### **F.1 HABITATS**

The site comprises a mosaic of habitats including areas of neutral grassland, bare ground, woodland, scrub and ephemeral short perennial, typical of previously developed land in this area, with areas considered to meet the criteria of Brownfield land, a priority habitat within the Durham Tees Valley BAP. Plantation broadleaf woodland, scattered trees, semi improved neutral grassland and running water habitats are considered to be of parish habitat value, whilst the areas of neutral grassland are considered to be of up to district value. Dense scrub is considered to be of local habitat value whilst ephemeral standing water, hard standing and bare ground habitats, where the majority of development is to be sited are considered to be of low habitat value.

The Wildlife and Countryside Act (1981) Schedule 9 listed invasive species Himalayan, wall. Hollyberry, small leaved and entire leaved cotoneaster and Japanese rose have been recorded across the site. These should be removed by a specialist contractor in line with current guidance and controlled waste disposal regulations.

### **F.2 NOTABLE SPECIES**

Survey of the building and adjacent wall to be demolished were undertaken in June 2018 and recorded no roosting bats and only very low levels of common pipistrelle activity. Overall, habitats across the majority of the site are considered to be of low value for commuting and foraging bats with the area of retained habitat considered to be of greater value..

There is considered to be a low likelihood of great crested newt being present on site, with the recorded waterbodies all being dry in June 2018.

Otter and water vole may be present within the environs of the Lustrum Beck, to the north west of the site, though they are considered likely absent from the development footprint.

Retained woodland and scrub habitats to the north and west of the northern site section and within the southern site section are considered to be the habitats of greatest value to birds, however, the main body of the site to the north is considered to be suitable habitat for a limited suite of ground nesting birds such as lapwing, oystercatcher and potentially the Wildlife and Countryside Act Schedule 1 listed species little ringed plover, though none have been recorded on site. Based on survey to date the site is likely to be of up to parish value.

The site provides some opportunities for badger, however due to the location, the likelihood of the species utilising the site is considered to be low.

Habitat on site is considered to be suitable for reptiles, however it is considered likely, in such a northerly location, that numbers of reptiles would be low.

Habitats on site, particularly those to be retained, are considered suitable for the priority butterfly species grayling and potentially dingy skipper.

Red squirrel and white clawed crayfish are considered likely to be absent from site.

The priority species hedgehog is considered likely to forage across the site.



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### **F.3 LIMITATIONS**

Habitats to the far north west of the site were securely fenced and where access was available, dense scrub prevented full access. Habitats in this area were, however, able to be assessed using binoculars from the western bank of the Lustrum Beck and are to be retained..

## G. IMPACT ASSESSMENT

The likely effects of the proposed development, without appropriate targeted mitigation and/or compensation, are detailed below. Site design has sought to retain the north western area which is of highest value such that loss of dense scrub, neutral grassland, woodland and impacts on the watercourse has been minimised.

### G.1 POTENTIAL IMPACTS AND/OR EFFECTS<sup>17</sup>

#### G.1.1 HABITATS

- The loss of ephemeral short perennial habitats along with some sections of neutral grassland and scattered scrub which together comprise brownfield type habitat considered to form part of a network of habitats of district value.
- The loss of hardstanding, bare ground and ephemeral standing water habitats of low habitat value.
- The potential spread of The Wildlife and Countryside Act (1981) Schedule 9 listed invasive species Japanese rose and cotoneaster species.

#### G.1.2 SPECIES

- Loss of a limited number of potential bat roost sites within the building to be demolished..
- Low risk of potential harm/disturbance to roosting bats at the time of works.
- Potential loss/disturbance to commuting and foraging habitat for bats, thought to be of low to moderate suitability.
- Low risk of harm/disturbance of amphibians
- Potential loss/disturbance to breeding bird habitat primarily associated with hard standing/bare ground habitats, that may be utilised by a narrow range of species.
- Potential harm/disturbance to low numbers of reptile species.
- Loss of habitat potentially utilised by both grayling and dinky skipper.
- Low risk of harm/disturbance to badger which there is considered to be a low risk may build setts/ forage within woodland and scrub habitat.
- Potential restriction of foraging opportunities for the priority species hedgehog.

### G.2 POTENTIAL IMPACTS AND/OR EFFECTS ON STATUTORY AND NON STATUTORY SITES DESIGNATED FOR NATURE CONSERVATION

Due to the distance, greater than 6km<sup>18</sup>, to the coastal designated sites, no impacts are predicted.

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<sup>17</sup> An impact is defined as an action resulting in changes to an ecological feature. For example, construction works removing a hedgerow. An effect is defined as the outcome to an ecological feature from an impact. For example, the effect on a dormouse population of the loss of a hedgerow.

<sup>18</sup> Natural England recommend a zone of influence of 6km when assessing impacts for the Stockton-on-Tees draft Local Plan.

## H. RECOMMENDATIONS

### H.1 MITIGATION AND ENHANCEMENT

The following mitigation is likely to be required in relation to the potential ecological impacts of the proposed development.

#### H.1.1 SITE DESIGN

- Highest value habitats to the north and west of the site will be retained as far as is practicable, including: plantation broadleaf woodland, neutral grassland and scattered trees and supplementary planting with a range of native species will be undertaken.
- SUDs areas will be sown with diverse grassland mixes providing habitat suitable for priority invertebrates.
- A butterfly mitigation strategy will be developed for the retained habitats.
- Bird and bat boxes should be installed on a minimum of 10% of new properties.
- High intensity security lights will be avoided as far as practical, and any lighting in areas identified as being important for bats will be low level (2m) and low lumen.
- No lighting will be installed and light spillage will be minimised along the potential bat flyways adjacent to trees, the watercourse or woodland.
- Where security lights are required, these will be of minimum practicable brightness, be set on a short timer and will be motion sensitive only to larger objects.
- Use of closed panel fencing within the new development, likely to restrict the movements of hedgehog using the site, should be restricted or 150mm square gaps provided at the base.

#### H.1.2 TIMING OF WORKS

- Vegetation clearance/tree felling will be undertaken outside of the bird nesting season (March to August inclusive) unless a checking survey by a suitably experienced ornithologist confirms the absence of active nests.

#### H.1.3 WORKING METHODS AND BEST PRACTICE

- Any excavations left open overnight will have a means of escape for mammals that may become trapped in the form of a ramp at least 300mm in width and angled no greater than 45°.
- Buildings/built structures will be demolished to a precautionary bat method statement.
- The roots and crowns of retained trees will be protected throughout the development through the provision of adequate construction exclusion zones in accordance with the guidance given by BS5837:2012.
- The Wildlife and Countryside Act (1981) Schedule 9 listed invasive species Japanese rose and cotoneaster species will be removed by a specialist contractor in line with current guidance and controlled waste disposal regulations.
- All site works will be undertaken in accordance with an amphibian and reptile method statement.
- A checking survey for badger setts prior to the onset of site works should works be undertaken within woodland and dense scrub habitats should works be undertaken within 30m of this habitat.
- A checking survey for otter and water vole will be undertaken should works be undertaken within 30m of the Lustrum Beck.

The proposed development provides an opportunity for the following enhancement measures to be implemented, contributing to local and/or national conservation targets.

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#### H.1.4 ENHANCEMENT PROPOSALS

- Bat and bird boxes should be installed within retained woodland
- Landscaped areas will be planted with a range of native species, including bird's foot trefoil and a range of fruit and berry bearing shrub species.



## APPENDIX 1. STATUTORILY AND NON-STATUTORILY DESIGNATED SITES

### A1.i Statutorily Designated Sites

#### Ramsar Sites

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. The Convention recognizes wetlands as important ecosystems and includes a range of wetland types from marsh to both fresh and salt water habitats. The wetlands can also include additional areas adjacent to the main water-bodies such as river banks or coastal areas where appropriate.

#### Special Protection Areas (SPAs)

SPAs are classified by the UK Government under the EC Birds Directive and comprise areas which are important for both rare and migratory birds.

#### Special Areas of Conservation

SACs are designated under the EC Habitats Directive and are areas which have been identified as best representing the range and variety of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the Conservation of Habitats and Species Regulations 2017 unless they are offshore.

#### Sites of Special Scientific Interest

SSSIs are designated as sites which are examples of important flora, fauna, or geological or physiographical features. They are notified under the Wildlife and Countryside Act 1981 with improved provisions introduced by the Countryside and Rights of Way Act 2000.

#### National Nature Reserves (NNRs)

NNRs are designated by Natural England under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 and support important ecosystems which are managed for conservation. They may also provide important opportunities for recreation and scientific study.

#### Country Parks

Country Parks are statutorily designated and managed by local authorities in England and Wales under the Countryside Act 1968. They do not necessarily have any nature conservation importance, but provide opportunities for recreation and leisure near urban areas.

### A1.ii Non-Statutorily Designated Sites

#### Local Nature Reserves (LNRs)

LNRs are designated under the National Parks and Access to the Countryside Act 1949 by local authorities in consultation with Natural England. They are managed for nature conservation and used as a recreational and educational resource.

#### Non-Governmental Organisation Property

These are sites of biodiversity importance which are managed as reserves by a range of NGOs. Examples include sites owned by the RSPB, the Woodland Trust and the Wildlife Trusts.

#### Local Wildlife Sites (LWSs)

These are sites defined within the local plans under the Town and Country Planning system and are material considerations of any planning application determination. They are designated by the local authority although criteria for designation can vary between authorities.

## APPENDIX 2: BAT ACTIVITY SURVEY TABLE

Site:	Grangefield Road				Start	Finish		
Start Time:	21:30	End Time:	23:20	Precipitation:	Nil	Nil	Number of Surveyors	4
Sunset Temp °C:	17	End Temp:	15	Wind:	F1	Still	Number of Remotes:	0
Sunset:	21:48			Cloud Cover %:	5	50		
Roosts				Commuting			Foraging	
None				Common pipistrelle			Common pipistrelle	
Time	Light Level (Lux)	Surveyor 1		Surveyor 2		Surveyor 3		Surveyor 4
21:30	1							
21:35	1							
21:40	1							
21:45	1							
21:50	196.3							
21:55	148							
22:00	93.6							
22:05	78							
22:10	42.1							
22:15	23.9							
22:20	17.6							
22:25	11.8							
22:30	7.3							
22:35	4.3							
22:40	3.2							
22:45	2.6							
22:50	1.9	22:52 45 flew into site				22:52 45 commuting		
22:55	1.4							
23:00	1.2							
23:05	0.9	23:07 45 flew out of site 23:09 45 HNS		23:07 45 commuting 23:09 45 HNS		23:07 45 commuting		
23:10								
23:15								
23:20								
	Sunset			Times given above detail emergence/possible emergence & first record of each species for each surveyor				
	Emergence							
	Potential Emergence							
	Foraging/commuting							

Surveyors		Bat Key			
1	J. Bell	Common pipistrelle	45	Daubenton's	Daub
2	J. Dyson	Soprano pipistrelle	55	Noctule	Noc
3	G. Armstrong	Nathusius' pipistrelle	39	Serotine	Ser
4	M. Davies	Natterer's	Nat	Leisler's	Nat
		Whiskered/ Alcathoe'/Brandt's	WAB	Brown Long Eared	BLE
		Unknown	?	Myotis	Myo
Other Species Recorded	None				