Daimler Chrysler site, Wentworth Industrial Park

Tankersley

Ecological impact assessment

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1 Introduction

This report assesses the potential ecological constraints associated with the development of four warehouse units located at Wentworth Industrial Park, Tankersley, Barnsley. The site, known as Plot B, is located within a largely undeveloped section of the Daimler Chrysler commercial vehicle distribution centre. It currently comprises a mixture of woodland and scrub, grassland, disturbed ground and hard standing. The ecological impact assessment is equivalent in scope and level of detail with the requirements of Environmental Impact Assessment (EIA) legislation to assess the predicted effects of the development on flora and fauna.

Scope and structure of document

This document utilises the results of a number of component studies, which were commissioned following an initial assessment of ecological constraints derived from a scoping study (Appendix A). These comprise the following:

Table 1.1: Component documents

	Document reference
Habitat survey	06-009/ Appendix B1
Amphibian survey	06-009/ Appendix B2
Reptile survey	06-009/ Appendix B3
Bird survey	06-009/ Appendix B4
Bat survey	06-009/ Appendix B5
Badger survey	06-009/ Appendix B6

The document first outlines the scope of the ecological impact assessment, defined by the likely impacts of the development proposal, and the sensitivity of the receiving environment. Data obtained from consultations carried out as part of the earlier scoping study are summarised.

Data gathering, field survey and analytical methods are then outlined, and the sites' habitats and fauna are summarised. Component reports provide greater detail, with accompanying plans, and (where appropriate) assessments of mitigation requirements. Key features of nature conservation interest present in the site and its surroundings are evaluated, and an assessment is made of potential direct, indirect and cumulative impacts of the proposed development. Mitigation measures are proposed, and residual impacts predicted following their implementation.

2 Scope of ecological assessment

The ecological impact assessment comprised the following elements:

- Initial scoping study, including consultation with data holders, collation of existing data, and site visit to assess ecological constraints;
- Extended Phase 1 Habitat Survey of proposed development area, and other areas of open space within the Daimler Chrysler site, carried out in accordance with IEMA guidelines (IEA, 1995);
- Amphibian survey, including ponds in the wider vicinity of the site;
- Reptile survey of the development site and suitable reptile habitats in the wider vicinity of the site;
- Badger survey of the site and its surrounds; and
- Breeding bird survey of the Daimler Chrysler site.

The geographical scope of the surveys varied slightly according to the species concerned, in order to better understand the use of the site and its surrounds by protected species. Existing data were collated from a wider area, to include the nearest statutory nature conservation sites, and non-statutory conservation sites / protected species records within a 2km radius of the site.

3 Methods

3.1 Consultation and data collation

The following organisations were consulted to acquire existing ecological data pertaining to the site and its environs:

- English Nature;
- Barnsley Metropolitan Borough Council

In addition, the government Magic website was consulted to investigate the boundaries of environmental designations affecting land in the vicinity of the site, and the English Nature website was consulted to determine the interest features of any statutory sites. A web-based data search was undertaken on the National Biodiversity Network (NBN) gateway website for additional records of protected species in the area.

3.2 Field surveys

Scoping survey

A walkover survey was carried out on 13th January 2006. The location of any features of potential nature conservation interest, including habitats that could support protected species was noted and mapped. A number of photographs were also taken. The survey focused on recording features that could represent potential development constraints, rather than making a comprehensive inventory of habitats present. The area of survey included a field to the west of the site which contains a pond, and an area of land to the south of the site, also containing a pond.

Habitat survey

An extended Phase 1 Habitat Survey of the study area was carried out on 25th April 2006. The site was walked, and habitats mapped on a topographic survey of the site (Met Surveys plan EP106), with component vegetation described in a series of 'target notes', and photographs taken to illustrate habitats present. The survey was conducted in accordance with Institute of Environmental Management and Assessment guidelines for baseline ecological assessment (IEA, 1995), utilising extended Phase 1 Habitat Survey methodology (JNCC, 1991).

The geographical scope of the survey included all accessible areas of vegetation to within the boundaries of the Daimler Chrysler site, including land to the south of the current development proposal, and only excluding some areas of formal open space around the offices in the eastern part of the site. One part of the development site in the north-east was separately fenced and could not be accessed, although it was readily viewed from elevated ground immediately to the west, and mostly comprised bare ground.

Protected species surveys

The initial scoping visit in January 2006 had identified the need for protected species surveys on this site and a full programme of surveys took place during optimal times in spring and summer 2006.

Amphibians

The preliminary survey identified five ponds in close proximity to the site which could sustain Great Crested Newt populations. A sixth pond within the development site was briefly considered though at no time during the survey period did this contain water. Six site visits were carried out and a range of techniques were used. This included bottle trapping, egg searching, torching and netting. The techniques used on any one pond were determined by pond conditions.

Bats

The winter bat survey identified a number of trees on site that have some potential as bat roosts. Survey work started in May 2006. The survey work focused on those trees that were on the development site itself and having cracks and crevices that could form roosts for crevice dwelling species. These consisted largely of a number of mature oak trees that were found within the woodland section of the development site. Batbox III, and Petterson 240D detectors were used to detect and identify bats using the site. Three emergence surveys were carried out, on 15th May, 15th June, and 29th June 2006.

Reptiles

The grassland and scrub around the site afford some opportunities for reptiles. Refugia in the form of sheets of roofing felt ($1m^2$) were placed in potentially optimal habitats around the site. South facing slopes and areas of disturbed ground were chosen along with wetter areas the woodland within the development site. A total of nineteen refugia were left between April and June 2006. They were checked on eight separate occasions and any species found under them were noted.

Badgers

Two setts had been previously identified in the winter survey with both being close to the boundary of the development site. The whole of the development site was walked and searched thoroughly for badger setts, trails, dung pits, tracks and other typical signs. Badger signs were mapped using a hand held GPS and an attempt was made to track backwards towards the setts in order to attempt to understand the social interaction between badgers on this site. The site boundary was thoroughly inspected for signs of movement to and from the site by badgers.

Breeding birds

The site was surveyed on three separate occasions within the bird breeding season: 1st April, 6th May and 11th June 2006. Bird survey methods were based on Common Bird Census (CBC) methodology (Bibby *et al.*, 2000; Gilbert *et al.*, 1998; Marchant, 1983), and had the overall aim of establishing which species of birds were breeding on the site, and their approximate numbers.

4 Description of the site

4.1 Ecological context

Natural Area

The site is located within the Coal Measures Natural Area that is characterised by dense populations centred on a number of towns and cities, which developed largely as a result of underlying coalfields. The topography of the Natural Area is gently undulating and the network of towns and cities is characterised by a matrix of acidic ancient and secondary woodlands, valley wetlands, neutral and acid grasslands, and mixed agriculture. Canals, mill-ponds and natural rivers are also important features.

Local ecological context

Wentworth Industrial Park is adjoined to the southeast by Tankersley and to the north by Pilley. The land between settlements comprises a mixture of woodland and grassland. No statutory sites of international or national conservation interest are present within 5km of the site. Two Natural Heritage Sites, West Wood and Sowell Pond lie to the south of the site. One proposed Natural Heritage Site, Potters Holes Plantation, lies to the east of the site.

The immediate context of the Daimler Chrysler site includes industrial sites with associated landscaping within Tankersley Industrial Park. To the west of the site there is a field containing an area of heathland and acid grassland, and a pond ('Pond 4'); an area of open space to the south with two further ponds (Sowell Pond ('Pond 1'), and 'Pond 2').

Approximately 50% of the Daimler Chrysler site is hard standing and built development. The remaining area supports a range of habitats including mature woodland, acid grassland, neutral grassland, disturbed ground with sparse vegetation, small areas of dry heath and rush pasture as well as a pond ('Pond 3') and a small seasonally flooded area ('Pond 5').

Plot B is located approximately 680m, 440m and 500m from West Wood Country Park, Sowell Pond and Potters Hole Plantation, respectively.

Species records

On the basis of the NBN gateway data search and consultation with Barnsley MBC, potential ecological issues related to protected species include the following:

- **Great Crested newt** – identified as occurring in Sowell Pond by Barnsley Metropolitan Borough Council, several newt populations occurring in the

relevant 10km squares on the NBN database, a priority species under the Barnsley BAP.

- **Bats** – several bat species records including brown long-ears, common pipistrelle, Daubentons and Natter's are present in the relevant 10km grid squares on NBN database, pipistrelle species identified as priority species in the Barnsley BAP;
- **Badger** - several badger records present in relevant 10km grid squares on NBN database; and
- **Reptiles** - several common lizard, grass snake, adder and slowworm records present in the relevant 10km grid squares.

4.2 Nature conservation planning context

Relevant nature conservation planning policies include:

- Planning Policy Statement (PPS 9): Biodiversity and Geological Conservation (ODPM, 2005);
- Barnsley Unitary Development Plan (Barnsley MBC, 2000);
- Barnsley Local Development Framework: Natural Environment Background Paper (Barnsley MBC, 2005); and
- Barnsley Biodiversity Action Plan (Barnsley Biodiversity Partnership, 2002).

PPS 9 sets out planning policies to protect biodiversity and geological conservation throughout the planning system, to be applied to the preparation of Regional Spatial Strategies and Local Development Frameworks.

A number of policies deal with the protection of statutory designated sites of conservation interest, such as Sites of Special Scientific Interest; these are not relevant in the present context, as none are present in the vicinity of the site. Policies dealing with locally designated sites, such as Sowell Pond; protected species; and features of interest in the wider countryside are more relevant. These are reproduced in the text box overleaf.

PPS9 – selected relevant policies

Regional and Local Sites

9. Sites of regional and local biodiversity and geological interest, which include Regionally Important Geological Sites, Local Nature Reserves and Local Sites, have a fundamental role to play in meeting overall national biodiversity targets; contributing to the quality of life and the well-being of the community; and in supporting research and education. Criteria-based policies should be established in local development documents against which proposals for any development on, or affecting, such sites will be judged. These policies should be distinguished from those applied to nationally important sites.

Networks of Natural Habitats

12. Networks of natural habitats provide a valuable resource. They can link sites of biodiversity importance and provide routes or stepping stones for the migration, dispersal and genetic exchange of species in the wider environment. Local authorities should aim to maintain networks by avoiding or repairing the fragmentation and isolation of natural habitats through policies in plans. Such networks should be protected from development, and, where possible, strengthened by or integrated within it. This may be done as part of a wider strategy for the protection and extension of open space and access routes such as canals and rivers, including those within urban areas.

Previously Developed Land

13. The re-use of previously developed land for new development makes a major contribution to sustainable development by reducing the amount of countryside and undeveloped land that needs to be used. However, where such sites have significant biodiversity or geological interest of recognized local importance, local planning authorities, together with developers, should aim to retain this interest or incorporate it into any development of the site.

Biodiversity within Developments

14. Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design.When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where appropriate.

Species protection

16. Other species have been identified as requiring conservation action as species of principal importance for the conservation of biodiversity in England.8 Local authorities should take measures to protect the habitats of these species from further decline through policies in local development documents. Planning authorities should ensure that these species are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result unless the need for, and benefits of, the development clearly outweigh that harm.

Barnsley Unitary Development Plan (UDP) is the current relevant local plan for the site area, although subject to replacement in 2007 by the new Local Development Framework. Relevant policies in the UDP include the following:

- **Policy GS15** deals with the safeguarding of important habitats and species, and the conservation and enhancement of features of conservation interest within development proposals;
- **Policy GS16** addresses the need to avoid impacts on protected sites and species;
- **Policy GS18** addresses the need to avoid or mitigate impacts on locally designated sites, such as Natural Heritage Sites; and
- **Policy GS22** seeks the retention of existing hedgerows, woodlands and trees.

Barnsley Local Development Framework (LDF) will supersede the UDP in 2007. Policies for nature conservation have been revised relative to those in the UDP, and consist of four policies (BIO1-BIO4); they have the overall aim of seeking to maintain the overall abundance and diversity of the area's wildlife by preventing any loss, and encouraging a net gain in biodiversity. Relevant policies include the following:

- **Policy BIO2** addresses the conservation of regional and local sites (Natural Heritage Sites and Local Nature Reserves);
- **Policy BIO3** provides policies for protected species and habitats, and for habitats listed in national, regional and local Biodiversity Action Plans; and
- **Policy BIO4** provides for the protection of trees, woodlands and hedgerows that make a valuable contribution to local character.

4.3 Habitats in the study area

The Habitat Survey Plan (drawing no. ES06-009/02) shows the distribution of habitats within the survey area; more detailed accounts of the vegetation in the survey area are given in a series of 'target notes' appended to the Habitat Survey document.

Habitats within Plot B

The eastern end of the site comprises an area of fenced hard standing fringed by trees and shrubs; this is lower than the rest of the site, from which it is separated by a narrow strip of immature trees and shrubs planted on a bank. To the west of this is a large area of grassland and open ephemeral / short perennial vegetation,

interspersed with young trees and scrub, and small areas of marshy grassland. This is bounded to the north by an immature broadleaved plantation and areas of dense scrub.

Land rises again to the west, with an open bank supporting an area of tall ruderal vegetation and coarse grassland, leading to a large area of bare ground / very sparse vegetation composed of calcareous fill material, and fringed with grassland and ephemeral / short perennial vegetation, and grading to a small area of better-established grassland to the west. The northern fringes of this part of the site support a continuation of the broadleaved plantation and scrub, sloping down to the site boundary to the north. The southern fringes, which slope south down to the vehicle park, support immature broadleaved plantation woodland interspersed with bramble underscrub.

Moving further west is an area of much better vegetated land, supporting a fairly complex mosaic of marshy grassland and inundation communities in hollows, interspersed with young birch-dominated woodland, grassland, and patches of bramble underscrub.

The westernmost end of the site comprises the northern section of a strip of broadleaved semi-natural woodland which runs down the western margins of the site. This strip, which at this point is around 100m wide, is mostly composed of a mature silver birch canopy, with some mature oak trees and a limited shrub layer. The field layer vegetation includes bracken and creeping soft-grass, but also includes extensive patches of bluebells, especially where levels of shading are higher.

Habitats outside Plot B (within Daimler Chrysler site)

Western margins of site

The broadleaved woodland extends down the western margins of the site. Whilst retaining the same open birch – oak canopy of the north-western corner, its structure and species composition varies. There is an open area with dense bracken, giving way to the central section of the woodland, which has a higher proportion of mature oaks in the canopy. Bluebells are less frequent in the field layer in this section; they are absent from the southern section of the wood, which has a denser canopy.

The eastern margins of the woodland are composed of tall, unmanaged grassland, interspersed with stands of bracken, tall herbs, and bramble underscrub.

Southern margins of site

The southern boundary of the site is formed by a bund which supports an immature broadleaved plantation with areas of dense scrub. A narrow band of marshy grassland separates this planting from the adjacent car park, broadening out to the east, where there is a small fragment of a relict hedgerow, an area of neutral grassland, and a pond set in amenity grassland.

4.4 Fauna / Protected species

Great crested newt

The ponds referred to below are shown on drawing no. ES06-009/03.

Pond 1 is Sowell Pond. This is a known great crested newt (GCN) breeding site. The survey work was limited to netting, egg search and bottle trapping as the pond was highly turbid. A number of GCN were found in the bottle traps confirming presence in the pond.

Pond 2 is a newly dug pond on about 5m north of Sowell pond. It has much the same characteristics in terms of vegetative cover and turbidity and once again great crested newt were found to be present.

Pond 3 is a small, deep clear pond with vegetated margins. It is on the Daimler Chrysler site and survey work found that it does not currently support GCN. The presence of fish in the pond could be an important negative indicator.

Pond 4 is in the wet grassland approximately 80m west of the development site. It is a large complex pond with clear water, highly vegetated margins (largely *Typha*), aquatic vegetation (*Potamogeton* spp.) and a diverse invertebrate fauna. It was found to have an excellent population of GCN with an upper population estimate of around 730 individuals.

Pond 5 is a small shallow pond to the south west of the development site. Dry in the later surveys, no evidence of amphibians were found to be associated with the pond.

Reptiles

In the course of the survey period a total of one grass snake was found (close to Pond 3 in the south eastern corner of the site) with another snake being observed off-site to the west. No reptiles were found on the development site itself and much of the site is unsuitable being either hard standing or dry with sparse vegetation.

No evidence was found of any reptile activity in or around the development site itself, though there are reptiles in the grassland to the west and to the south-east. Findings are shown on drawing no. ES06-009/04.

Bats

Assessment of habitat suitability

The assessment of bat habitat suitability carried out in January 2006 covered a section of the woodland in the western section of Plot A that was to be impacted by the development. This section of woodland is mostly composed of birch trees, which were assessed as having a low risk of supporting bat roosts. However, a group of six mature oak trees were identified, which had holes and crevices suitable for roosting bats, and which were therefore targeted for further survey.

Emergence surveys

No bats were detected emerging from any of the mature oak trees during the three survey occasions. Numerous pipistrelles were detected flying around the outside of the trees. These appeared to be coming onto the site from the northeast (in the direction of Pilley), flying around the outside of the cluster of oak trees and heading offsite in a westerly direction. Pipistrelles were also detected foraging up and down the roadside adjacent to the northern boundary of the site, which is close to the cluster of mature oaks.

Badger

Two setts had been previously identified in the winter survey with both being close to the boundary of the development site. These are shown on drawing no. ES06-009/05.

The setts identified in the winter survey were both still active in the summer surveys, and the main sett (sett 1) showed signs of breeding activity in the form of bedding deposited at the sett entrance. There was evidence of a great deal of badger activity across the site with the majority of trails leading east west. Latrines, feeding signs and other signs of badger activity were found across the development and in the wider survey area.

4.5 Birds

A total of 43 species of birds were recorded in the study area. These notably included a breeding pair of little ringed plover (*Charadrius dubius*), which were located in the area of calcareous rubble in the central part of Plot A; little ringed plover receive special protection under the Wildlife and Countryside Act. Other species of particular conservation concern thought to be breeding in the study area included grey partridge, skylark, song thrush and reed bunting.

Species associated with the woodland included tree pipit and willow tit, while birds associated with marginal scrub areas included garden warbler and whitethroat.

5 Evaluation of nature conservation interest

5.1 Approach to evaluation

The valuation of ecological features utilises draft and current guidance produced by Institute for Ecology & Environmental Management (IEEM, 2002, 2005, 2006). This process assesses the geographical scale of importance of habitats and species which may be impacted by the development proposals. It also identifies legal issues, including habitats and species with legal protection, or with a specific requirement for control (e.g. invasive alien species).

The assessment first considers species and habitats subject to legal protection, before considering other ecological features. These include locally designated sites, species and habitats listed under Section 74 of the 2000 Countryside and Rights of Way Act, Priority Species and Habitats in the local Biodiversity Action Plan, and other features of local importance for nature conservation.

5.2 Protected species

Two European protected species, pipistrelle and great crested newt, were recorded in the survey area. Three species present also receive special protection under UK legislation: grass snake, little ringed plover and badger. In addition to species with special protection, the nests and eggs of most birds are protected in UK legislation under the 1981 Wildlife and Countryside Act; the bird survey showed a significant number of bird species confirmed or suspected of breeding on site.

All species of bat, and great crested newt, are protected under Annex IVa of the European Union Habitats Directive (92/43/EEC), and Schedule 5 of the 1981 Wildlife & Countryside Act. While bat activity was detected around the site no bat roosts were found within the development area. A high quality great crested newt pond is found within 80m of the boundary of Plot B, with a further population in Sowell Pond to the south of the Daimler Chrysler site.

Grass snake are protected under Schedule 5 of the 1981 Wildlife and Countryside Act. Extensive sampling did not reveal any evidence of use of Plot B by grass snake, although they were recorded in the southern part of the Daimler Chrysler site, and on land to the west of the site.

Little ringed plover are protected under Schedule 1.1 of the 1981 Wildlife and Countryside Act. Breeding of one pair was confirmed from an area of calcareous hard standing in the central part of Plot B. Little ringed plover are typically associated with such open, ephemeral habitats (e.g. active gravel workings).

Badgers are protected under the 1992 Protection of Badgers Act. A main sett is located on the northern boundary of Plot B with an outlier (sett 2) close to the western site boundary, and there is evidence of foraging over a wider area of the site and its surroundings.

5.3 Natural habitat types of European interest

No natural habitat types of European Community interest, as listed in Romão (1996), were recorded in the survey area or its immediate vicinity.

5.4 Designated sites

There are no statutory designated sites within 2km of the development boundaries; there are two non-statutory Natural Heritage Sites, and one proposed Natural Heritage Site within 2km. The nearest designated site is Sowell Pond, which was thought (prior to the current survey) to support the largest population of great crested newt in the Barnsley area.

West Wood Natural Heritage Site is of interest in supporting ancient semi-natural woodland; its relative proximity to the site may be responsible for the records of bluebells in the woodland in the western part of the survey area.

5.5 'Section 74' habitats and species

Section 74 of the Countryside and Rights of Way Act 2000 places an obligation on the government to conserve biological diversity in accordance with the 1992 UN Convention on Biological Diversity. A list has been published of habitats and species considered to be of principal importance for the conservation of biological diversity in England. The government has a duty under Section 74 to take or promote the taking by others of steps to further the conservation of the listed habitats and species.

The list is based on, but not equivalent to, Priority Species and Habitats in the UK Biodiversity Action Plan (UK Steering Group, 1995; UK Biodiversity Group, 1999).

The following 'section 74' habitat occurs in the survey area:

- Lowland mixed deciduous woodland.

Lowland mixed deciduous woodland is found along the western boundary of the survey area. Although not classed as ancient woodland, it supports one species (bluebell) characteristic of long-established woodland sites. It can therefore be regarded as a valuable ecological interest feature, at least on a local scale of importance.

The following 'section 74' species were recorded in the survey area:

- Grey partridge;
- Skylark;
- Song thrush; and
- Reed bunting.

All of the above species are relatively common and widespread in the wider landscape, but have suffered significant declines in population size in recent decades. Their presence on site is unlikely to be regarded as being of more than local nature conservation interest, as there is no evidence that the site supports significant populations of any of these species that are likely to be important in a wider context.

Other species with legal protection are also listed under Section 74, including great crested newt.

5.6 Local Biodiversity Action Plan habitats and species

The following Local Priority Species occur on site:

- Bluebell; and
- Little ringed plover.

In addition, the other UK BAP / Section 74 species which occur on site are also listed in the local BAP.

Bluebell has been designated as a Flagship Species in the local BAP. It is relatively widespread in Barnsley, occurring in 26.65% of the Borough. The relatively small population in the northern part of the woodland is therefore unlikely to be of more than local importance.

A total of 16 pairs of little ringed plover were believed to breed in Barnsley in 2000, representing 3% of the national population. The main threat identified in the local BAP was from the greening and restoration of the derelict industrial land with which they are associated. Because of the low population numbers involved, the presence of little ringed plover on site could be considered to be of district-level importance for nature conservation.

5.7 Other ecological interest features

Other features with some nature conservation interest include:

- Red Data Book and Nationally Scarce species;

- Red List and Amber List species on the British Trust for Ornithology list of Birds of Conservation Concern; and
- Non-designated features with some biodiversity interest;

Red Data Book / Nationally Scarce species

No Red Data Book or Nationally Scarce species have been recorded on site.

Red and Amber List Birds of Conservation Concern

The following Red and Amber list species of bird were recorded:

Table 5.1: Red and Amber list bird species

Red list species	**Amber list species**
Grey partridge	Kestrel
Skylark	Snipe
Dunnock	Black-headed gull
Song thrush	Swallow
Willow tit	Tree pipit
Starling	Mistle thrush
Reed Bunting	Willow warbler
	Lesser redpoll

Of the above species, most are widespread and still common, but have suffered significant population declines: high (>50% in 25 years) in the case of red list species; moderate (25-49% in 25 years) in the case of amber list species.

Less widespread species which can be regarded as local ecological interest features include willow tit and tree pipit.

Other non-designated features

The development site includes a number of habitats which collectively provide a reasonably high level of habitat and plant species diversity, and could be considered to be of local value for nature conservation. Examples include the marshy grassland and inundation communities, grassland with regenerating birch scrub, and open grassland communities. However, none of these has a high intrinsic value, and all are readily reproduced in situations where vacant land is allowed to naturally regenerate.

5.7 Summary of ecological interest features

The valuation of ecological receptors provided below uses recent IEEM guidance (IEEM, 2002; table in box 3.3), and is based on the preceding identification of features of nature conservation interest.

The valuation of protected species adopted below assesses the importance of the site or its surrounds for the species, not the importance of the designation; for example, although great crested newt has an international level of protection, the population is important in the context of Barnsley, and possible (as what may be the best population in Barnsley) in the wider context of South Yorkshire. It has therefore at most a County level of importance for nature conservation.

The table below summarises the level of value of ecological receptors in the study area:

Table 5.2: Summary of ecological interest features

Level of value	Features (with reason for allocation of value)
International	None
National	None
County	Great crested newt (high population of European protected sp.)
District	Sowell Pond Natural Heritage Site (off-site) West Wood Natural Heritage Site (off-site) Grass snake (UK protected species) Little ringed plover (UK protected species) Bats (European protected species, but no roost on site)
Local (Parish-level)	Lowland mixed deciduous woodland Bluebell Grey partridge Skylark Song thrush Reed bunting (above all S74 habitats / species) Willow tit (Red List species, local distribution) Tree pipit (Amber list species, local distribution) Badger (widespread but legally protected)

6 Ecological impact assessment and mitigation proposals

6.1 Compliance with protected species legislation

The key species to consider are those where individuals and / or their habitats are protected under European and / or English law. This includes species protected under Annex IVa of the Habitats Directive, and Schedule 5 of the 1981 Wildlife and Countryside Act. Great crested newt, grass snake, little ringed plover, pipistrelle bats, and badger are all legally protected species with a positive record of presence on site.

The most important species to consider are those protected under European legislation: great crested newt and bats.

There is no suitable great crested newt pond within the development area but the close proximity of a breeding pond suggests that the woodland section of the site will form a component of the terrestrial habitat for this population. The development will impact upon the population and consequently a Natural England license will be applied for prior to any development work. This will include a full and extensive mitigation plan that included elements of site protection as well as habitat creation and monitoring.

There is no evidence that the proposed development would impact on any bat roosts, or involve any other operations that would result in contravention of legislation for this species. Measures to avoid impacts on bats are given in the Bat Survey report, and outlined in the mitigation section below.

Development of Plot B should not contravene protected species legislation with respect to grass snake. Although there is a population in the wider vicinity of the site, including the southern part of the Daimler Chrysler site, there is no evidence of occupancy of Plot B.

Little ringed plover are protected against disturbance during the breeding season under Schedule 1.1 of the Wildlife and Countryside Act. Any operations carried out during the breeding season in the vicinity of their nest site would require an Natural England license. In addition, most birds, their nests and eggs, with the exception of a few pest species, and game birds outside the close season, are protected under Section 1 of the 1981 Wildlife and Countryside Act. Potential contravention may occur due to destruction of nests, eggs and young during site clearance operations, particularly removal of vegetation and soil stripping on currently vegetated land. It is important to time these initial site clearance works to avoid the bird breeding season (March – July), by carrying out operations between August – February.

It is probable that the develoment will directly impact on two badger setts and consequently a Natural England license will be applied for prior to any development work. This will include a full and extensive mitigation plan that included elements of site protection as well as habitat creation and monitoring. Measures to avoid direct impacts on badger setts, and improve the quality of badger foraging habitat at the western edge of the site, are detailed in the Badger Survey report. These measures should avoid contravention of the 1992 Protection of Badgers Act, as well as complying with general provisions for the avoidance of impacts on protected species contained within PPS9.

6.2 Impacts on ecological interest features

The table below summarises the key impacts potentially occurring on ecological interest features, as defined by the preceding evaluation. A precautionary approach is taken, tabulating all potential impacts, before the formulation and implementation of any mitigation measures.

Table 6.1: Potential impacts on interest features in study area and wider surrounds

Ecological interest features	Potential impact
Great Crested Newt	Loss of some terrestrial habitat
Sowell Pond	No impact: development remote from site
West Wood	No impact: development remote from site
Grass snake	Loss of some potential habitat, no evidence of current use
Little Ringed Plover	Loss of habitat currently supporting 1 breeding pair
Bats	Some loss of foraging habitat, no impact on roosts
Lowland mixed deciduous woodland	Loss of northern part of wood
Bluebell	Loss of majority of population in survey area
Grey partridge	Habitat loss, probably supporting 1 breeding pair
Skylark	Habitat loss, probably supporting 1 breeding pair
Song thrush	Loss of some woodland habitat, suitable habitat will remain
Reed bunting	Loss of some marshy grassland / scrub habitat
Willow tit	Loss of some woodland / scrub habitat
Tree pipit	Loss of some woodland habitat

Badger	Loss of foraging, direct interference impacts

6.3 Impact significance

The significance of ecological impacts is a product of the magnitude of the impact and the sensitivity of the receiving environment (i.e. the importance of valued ecological receptors).

The following decision rules given in IEEM (2002) guidelines provide some guidance in assessing impact significance:

Table 6.2: Assessment of impact significance

	Importance of ecological interest features					
Magnitude	International	National	Regional	County	District	Parish
Major negative	Critical	Critical	Critical - moderate	Major - moderate	Moderate - minor	Minor – mod.
Negative	Major- minor	Major-minor	Major-minor	Major-minor	Moderate - minor	Minor
Neutral	No impact					
Positive	Major - minor	Major-minor	Major-minor	Major-minor	Moderate - minor	Minor
Major positive	Critical	Critical	Critical - moderate	Major - moderate	Moderate - minor	Minor – mod.

The significance of the potential impacts on valued receptors in the study area can then be summarised as follows:

Table 6.3: Significance of impacts on habitats and species (*=protected)

Valued receptor	**Level of value**	**Magnitude of predicted impact**	**Significance**
Great Crested Newt	County	Negative	Moderate - minor
Sowell Pond	District	Neutral	None
West Wood	District	Neutral	None
Grass snake	District	Negative	Minor
Little Ringed Plover	District	Major Negative	Moderate
Bats	District	Negative	Minor
Lowland mixed deciduous woodland	Local	Negative	Minor
Bluebell	Local	Major Negative	Minor

Valued receptor	Level of value	Magnitude of predicted impact	Significance
Grey partridge	Local	Negative	Minor
Skylark	Local	Negative	Minor
Song thrush	Local	Negative	Minor
Reed bunting	Local	Negative	Minor
Willow tit	Local	Negative	Minor
Tree pipit	Local	Negative	Minor
Badger	Local	Negative	Moderate

6.4 Mitigation proposals

Mitigation of predicted negative impacts

The key significant impact identified is the loss of great crested newt terrestrial habitat. Mitigation against this loss is based on site protection, habitat creation in the form of the construction of a new breeding pond and wet grassland and increased site connectivity through woodland planting.

Loss of a little ringed plover breeding site is also significant, given a district population size estimated at 16 pairs in 2000. However, it is not feasible to mitigate this loss in the context of the development proposals. It should be noted that in the longer term, natural succession of vegetation would render the habitat unsuitable for this species, which is dependent on a continuing supply of disturbed, open land.

The presence of badger setts close to the site will require a Natural England license. Mitigation is based on the provision of an artificial sett and temporary exclusion of badgers from existing structures. In addition measures will be taken to improve the quality of bat foraging habitat elsewhere on the site. Mitigation measures for great crested newts are outlined in Fig. ES06-009/01.

The loss of woodland will be compensated for by planting new woodland on land to the west of plot B development area. This will not achieve short or medium term compensation for the loss of mature woodland, but will provide an alternative habitat, which will become increasingly attractive to fauna associated with woodland habitats as it matures.

Avoidance of impacts on other features

Bats

Although no direct impacts on bats have been predicted, there is still a risk that bats could occupy the mature trees that will require felling at some point before the commencement of the development. It is therefore recommended that any mature trees on site that are to be removed should be felled during March - May or September - October to minimise disturbance to roosting bats. A bat emergence and/ or dawn swarming survey should be carried out immediately prior to the felling of mature trees to ensure that roosting bats are not present. Mature trees must be soft-felled (i.e. cutting the tree in sections and gently lowering the sections to the ground). The cut sections should be re-examined for bats immediately prior to removal. If cavities are evident in the trunk or elsewhere, it is important that these should be brought down intact (rather than sawn through).

7 Conclusions and recommendations

7.1 Data quality and limitations of ecological assessment

Survey timings were optimal for each element of the ecological survey, and should provide an adequate understanding of the ecological interest features present on site.

7.2 Recommendations for further action

The following summarises the recommended further actions:

1 Obtain a Natural England great crested newt licence in advance of carrying out works, with appropriate measures agreed to avoid impacts, and implement mitigation measures, including new pond creation to the west of the site.

2 Ensure the timing of any vegetation clearance and construction operations avoid impacts on protected species, with particular reference to breeding birds.

3 Adopt a precautionary approach to the felling of mature oak trees, to avoid contravention of bat protection legislation.

4 Obtain a Natural England badger licence and implement mitigation measures including the provision of an artificial sett to the west of the existing sett 1. In addition implement measures to improve the quality of badger foraging habitat.

5 Carry out new woodland planting, in locations where this does not compromise necessary habitat creation works for protected species.

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