Ecological Impact Assessment
Standby Diesel Scheme
New Farm, Tutbury, Staffordshire

Principal Author: James Towers

Address:

ADAS UK Ltd, 16 Eastway Business Village,

Oliver's Place, Fulwood, Preston PR2 9WT

Date: July 2016

Commissioned For:

New Farm Energy Limited

Quality Assurance

Author	Checked	Approved
James Towers BSc (Hons) MCIEEM*	Rob Nicholson BSc (Hons) MCIEEM*	Rob Nicholson BSc (Hons) MCIEEM*

*Denotes full membership of CIEEM

Disclaimer

Revision History

Revision	Date	Amendment

1 Summary

ADAS UK Ltd were commissioned to undertake an Extended Phase 1 Habitat survey and protected species assessment to accompany a planning application on the site of a proposed new standby diesel generator scheme at New Farm, Tutbury in Staffordshire.

A desk study was also carried out to identify any designated nature conservation sites and known records of protected and other notable species in the vicinity of the proposed development site.

The purposes of the desk study, survey and assessment were to identify any designated sites and habitats of ecological value and assess the potential for any protected or notable species to be affected by the proposed development.

The proposed scheme footprint is approximately 0.4 hectares (ha) in size, essentially comprising a small part of a large, poor semi-improved grass field of negligible ecological value, with a new access road running along the southern side of a species-poor intact hedgerow.

It is considered that there is no possibility of any designated nature conservation sites or their qualifying features being affected by the development.

Provided the recommendations set out in this report are implemented in full, the proposed development is not anticipated to result in any significant residual ecological impacts apart from the predicted loss of a small number of mature Hawthorn shrubs within the scheme footprint.

Taking into account the recommendations for mitigation and compensation, the proposed development is considered to be compliant with relevant development plan policies and wildlife legislation and will not result in any significant loss of biodiversity. Indeed, a net gain in biodiversity could be achieved by the planting of new screening hedgerows around its perimeter, as suggested.

2 Introduction

2.1 Background and Survey Objectives

ADAS UK Ltd was commissioned to undertake an Extended Phase 1 Habitat survey and protected species assessment to accompany a planning application on the site of a proposed new standby diesel scheme at New Farm, Tutbury in East Staffordshire (National Grid Reference: SK 218 281).

The purposes of the survey and assessment were to identify any designated sites and habitats of ecological value and assess the potential for any protected or notable species to be affected by the proposed development.

The potential impacts of the proposed development on ecological receptors are assessed and appropriate recommendations for mitigation and additional surveys are made where required.

This report has been prepared by James Towers BSc (Hons) MCIEEM, an experienced Ecology Consultant with ADAS UK Ltd, following Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Report Writing (CIEEM, 2015).

2.2 Site Description

The proposed development site is approximately 0.4 hectares in size and essentially comprises a small part of a large, poor semi-improved grass field, with a new access road bounded along its northern side by a hedgerow.

The land use to the north, south and east comprises arable farmland, improved grassland and poor semi-improved grassland respectively, bounded by a network of hedgerows with scattered field boundary trees (Figure 1).

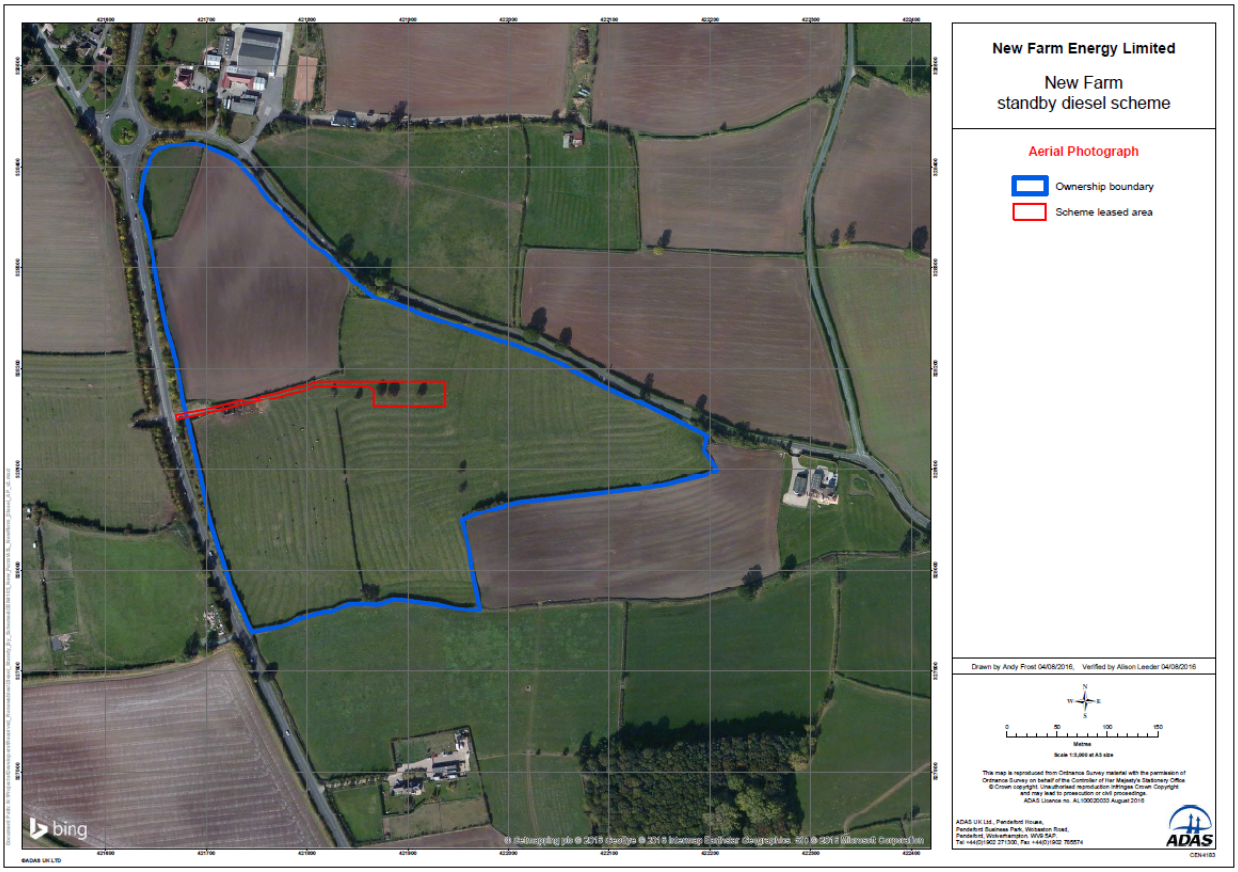


Figure 1 – Application Site (Red Line) in Context of Wider Landscape.

3 Planning Policy and Legislation

3.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) of March 2012 replaced the previous planning policy for biodiversity conservation; Planning Policy Statement 9 (PPS9). Paragraph 117 of the NPPF states that to minimise impacts on biodiversity, planning policies should:

- *Plan for biodiversity at the landscape scale, across local authority boundaries*
- *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, and identify suitable indicators for monitoring biodiversity in the plan*

When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles (paragraph 118):

- *Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted*

- *Opportunities to incorporate biodiversity in and around developments should be encouraged.*

3.2 Local Planning Policy

The relevant strategic policy for biodiversity and geodiversity from the East Staffordshire Borough Council Local Plan (2012 to 2031)[1] is outlined in Table 1.

Table 1 – Strategic Policy for Biodiversity and Geodiversity.

STRATEGIC POLICY 29 **Biodiversity and Geodiversity**
In considering proposals for development the Council will seek to protect, maintain and enhance the biodiversity and geodiversity of the Borough through the following measures: • Ensuring that development retains, protects and enhances features of biological or geological interest, and provides for the appropriate management of these features • Ensuring that development produces a net gain in biodiversity in line with UK and/or Staffordshire Biodiversity Action Plan species, and biodiversity opportunities • Supporting proposals which improve the environment by reclaiming and improving derelict, contaminated, vacant or unsightly land for biodiversity value • Supporting developments with multi-functional benefits, particularly those relating to health, education, social inclusion and environmental protection • Ensuring development does not disturb or damage soils of high environmental value and, where development is proposed, soil resources are conserved and managed in a sustainable way Development proposals that would have a direct or indirect adverse effect on European, national or local designated sites, non-statutory sites or Priority habitats and species will not be permitted unless: • They cannot be located on alternative sites that would cause less or no harm; and • The benefits of the development clearly outweigh the impacts on the feature and the wider habitat network; and • Prevention, mitigation and compensation measures of a comparable or enhanced value are provided.

Table 2 provides the relevant detailed policies for Tree Protection and European Sites from the Local Plan.

[1] http://www.eaststaffsbc.gov.uk/planning/planning-policy/local-plan-2012-2031

Table 2 – Relevant Detailed Policies from Local Plan.

Detailed Policy	Actions
DP8 Tree Protection	**Protected trees** Felling of protected trees will only be granted consent where either: • the tree is in poor health and/or has lost its intrinsic visual amenity value; or • the tree is causing demonstrable harm/damage to the structural integrity of a building or other built form, and the harm cannot be remedied by other reasonable means. Following felling of protected trees replacement planting will be required unless there are exceptional circumstances which justify waiving this requirement. Works to protected trees will only be granted consent where the tree is of public visual amenity value and the works would not adversely affect the appearance of the tree and the contribution it makes to the visual amenity of the locality. Development will not be permitted that would directly or indirectly damage existing mature or ancient woodland, veteran trees or ancient or species-rich hedgerows **Trees within development sites** Proposals where there are existing trees of value on site must ensure that new developments or extensions to existing developments are designed to: • Retain as many existing trees and other natural features as possible; • Minimise harm to existing trees and other natural features either in the short or long term; • Minimise conflict between trees and buildings in the future through the design, layout and construction of the development
DP11 European Sites	Development will only be permitted where it can be demonstrated that it will not lead (directly or indirectly) to an adverse effect upon the integrity of a European Site, alone or in combination with other plans or projects. Cannock Chase Special Area of Conservation (SAC) All development that results in a net increase in dwellings within 15km of Cannock Chase SAC will be required to mitigate any adverse impacts upon

	the SAC in line with ongoing work by partner authorities to develop a Mitigation and Implementation Strategy. This may include contributions to access management and visitor infrastructure; publicity; education and awareness raising; The effective avoidance and/or mitigation of any identified adverse effects must be demonstrated and secured (e.g. by legal agreement) prior to approval of the development.

3.3 Relevant Legislation

3.3.1 Natural Environment & Rural Communities Act 2006

Section 40 of the NERC Act 2006 places a duty upon all local authorities in England to promote and enhance biodiversity in all of their functions. Section 41 lists habitats and species of principal importance to the conservation of biodiversity. Fifty-six habitats and 943 species of Principal Importance for Conservation are included on the Section 41 list.

These are all the habitats and species in England that have been identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and are a material consideration in the planning process.

3.3.2 Hedgerows

Some hedgerows are protected by the Hedgerows Regulations 1997 against damage or destruction. It is illegal to intentionally or recklessly remove a hedgerow as described under the Hedgerow Regulations 1997 without permission from the Local Planning Authority.

3.3.3 Great Crested Newt

Great Crested Newts are protected under the Wildlife and Countryside Act 1981 (as amended) and the EC Habitats Directive, implemented in the UK by the Conservation of Habitats and Species Regulations 2010 (as amended). It is illegal to kill, injure or disturb Great Crested Newts and to damage or destroy their breeding and resting places.

3.3.4 Birds

Wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). It is illegal to take or harm them, their nests (whilst in use or being built) or their eggs.

Additionally for some species listed in Schedule 1 of the Act it is an offence to intentionally or recklessly disturb the adults while they are in and around their nest or intentionally or recklessly disturb their dependent young.

4 Methodology

4.1 Scope of the Assessment

The following ecological features / resources were considered during the assessment:

- *Designated sites for nature conservation*
- *Habitats of principal importance for conservation of biodiversity*
- *Other habitats of ecological value, e.g. Staffordshire Biodiversity Action Plan Priority Habitats*
- *Protected species*
- *Species of principal importance for conservation of biodiversity*
- *Other notable species, e.g. Red Data Book (RDB), Staffordshire Biodiversity Action Plan Priority Species, Birds of Conservation Concern.*

However, no consultations have taken place in relation to determining the scope of the assessment.

4.2 Desk study

A desk study was carried out in July 2016 to identify statutory and non-statutory designated sites of nature conservation importance, together with known records of protected and other notable species, within a 2-km radius of the proposed development.

MAGIC (Multi-Agency Geographic Information for the Countryside[2]) was used to derive information relating to the location of statutory designated sites and priority habitats.

Staffordshire Ecological Record[3] and the Derbyshire Biological Records Centre (hosted by the Derbyshire Wildlife Trust[4]) provided details of non-statutory designated sites of nature conservation importance and records of protected and other notable species. However, other organisations in the county that may hold relevant ecological data were not consulted.

It is important to note that most species are greatly under-recorded and therefore a lack of records for a location should not be taken as an absence of the species concerned. Furthermore, a record for a particular habitat or species does not necessarily confirm its current presence.

4.3 Field survey

The field survey area was essentially defined to include the footprint of the development and adjacent field parcels, together with the proposed access from the A511. However, for the purposes of assessing

[2] http://www.magic.defra.gov.uk
[3] http://www.staffs-ecology.org.uk
[4] http://www.derbyshirewildlifetrust.org.uk/

potential impacts on Great Crested Newts (*Triturus cristatus*), the location of ponds within 500 m of the proposed development site boundary was also taken into consideration.

A Phase 1 Habitat survey was conducted on 8th July 2016 by James Towers BSc (Hons) MCIEEM, based on the techniques and methodologies described in the Handbook for Phase 1 Habitat Survey (JNCC, 2010) and using standard nomenclature (Stace, 2010). The habitats present on the development site and in adjacent field parcels were recorded on a field map with written target notes providing supplementary information on, for example, species composition, structure and management. This was extended to include notes on fauna and habitats which could potentially support protected species, an approach commonly referred to as an Extended Phase 1 Habitat Survey.

The presence of, or potential for, protected species was noted on the field map and in the written target notes during the survey. The suitability of any trees and built structures for use by roosting bats was also assessed following good practice guidelines (Collins (ed.), 2016).

In addition, a Great Crested Newt environmental DNA survey was undertaken for each pond within 500 m (where accessible) of the proposed development following the standard methodologies (Biggs et al., 2014) with field water samples collected on 27th June 2016 by Robert Dyche, a fully trained and suitably experienced consultant with ADAS UK Ltd, who undertook the work as an accredited agent under a senior colleague's[5] Natural England Class Licence for surveying Great Crested Newts.

A Great Crested Newt Habitat Suitability Index (HSI) was also derived for each pond, based on a field assessment undertaken on 30th June 2016 by Robert Dyche. Using the method refined by Oldham *et al.* (2000), the waterbodies were visually assessed for the following factors that affect Great Crested Newts:

- Pond area
- Drying (years per decade - local and ecological evidence)
- Water quality
- Perimeter shading
- Waterfowl presence
- Fish presence
- Number of ponds within 1 km
- Quality of terrestrial habitat

[5] Rob Nicholson, Senior Ecology Consultant, ADAS UK Ltd.

- Macrophyte cover in pond

Each of these factors is awarded an individual score which is then inserted into a calculation, weighting each factor according to its relative importance for Great Crested Newts. An overall score for the waterbody, or HSI score, can then be obtained. The method is supported by the critical assessment of a qualified and experienced ecologist, in order to ensure that a combination of factors does not produce an incorrectly weighted score.

Of the two ponds identified within 500 m of the proposed development as shown in Figure 2, it was not possible to gain access to Pond 002 to undertake the eDNA survey or HSI assessment.

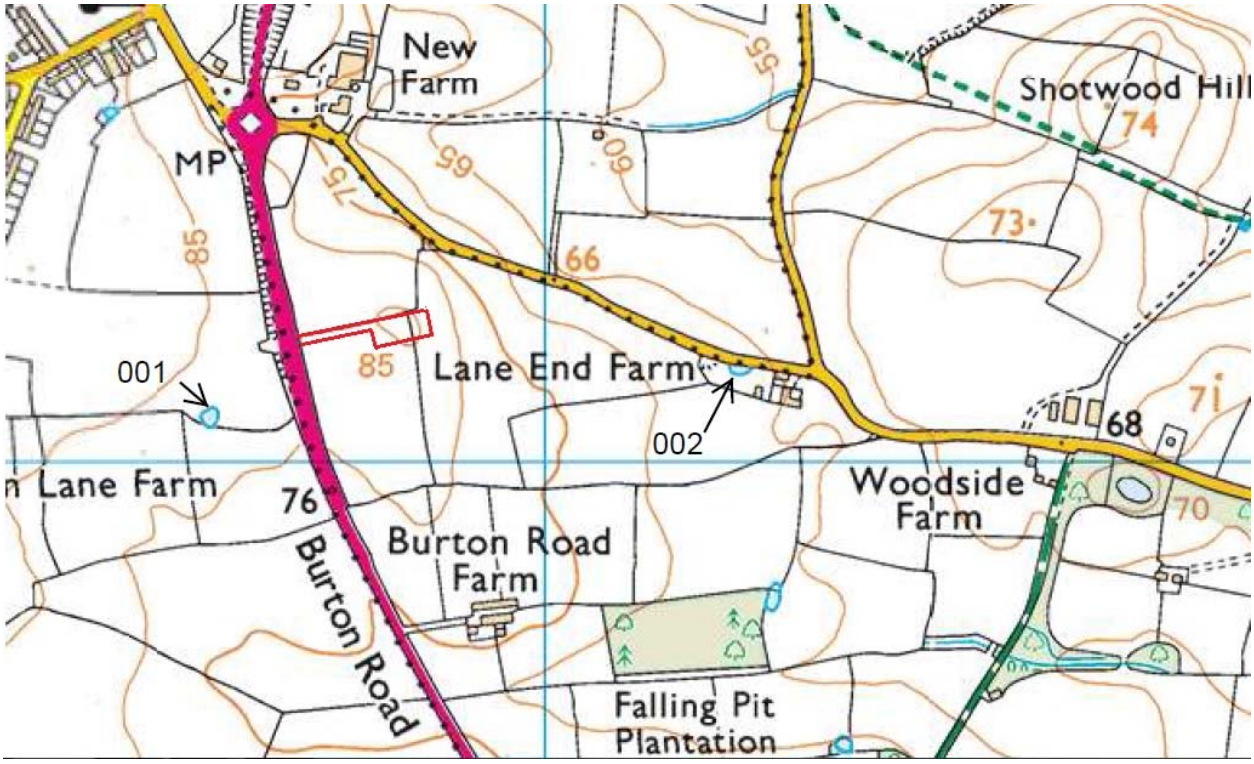


Figure 2 – Location of Ponds (red line depicts scheme footprint).

The field survey was conducted in warm, dry and sunny conditions with a moderate breeze, broadly following standard methodologies and survey protocols.

Although the survey was carried out during a period when some early spring-flowering plant species are not evident, given the common and widespread nature of the broad habitat types present on and adjacent to the development site, it is considered highly unlikely that any rare or notable species would have been missed.

The survey effort, methodology and hence results are likely to provide an accurate account of broad habitat types, and the potential presence or absence of protected species.

The wildlife value of a site can change. This report is based on field surveys and assessments undertaken in June and July 2016. Any appreciable delay to the commencement of the works may result in the requirement for an update of this survey to be carried out at the appropriate time of year.

4.4 Assessment

Evaluation of habitats and species value was based on the criteria set out in the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment (2006), as summarised in the table in Appendix 5.

Reference was also made to the UK Biodiversity Action Plan (UK BAP) and the Staffordshire Biodiversity Action Plan (SBAP)[6].

The SBAP now incorporates 14 'Ecosystem Action Plans (EAPs) and 1 Rivers Action Plan, with the aim of prioritising conservation management at a landscape level, and in doing so, securing greatest benefit for ecological networks, habitats and species. The site of the proposed development is within the Central Farmland EAP where the priority habitats for conservation include hedgerows, arable field margins and rivers.

5 Baseline Ecological Conditions

A map showing the locations of designated nature conservations sites and protected species records within 2 km of the centre of the proposed development is provided in Appendix 1, whilst a Phase 1 Habitat Survey Map, Target Notes and Photographs can be found in Appendices 3, 4 and 6 respectively.

5.1 Designated sites

The only statutory designated site of nature conservation importance within 2 km of the proposed development is the Old River Dove, Marston-on-Dove Site of Special Scientific Interest (SSSI), about 1.8 km to the east, and comprising a meander cut-off from the present course of the river and a nationally important site for aquatic flora and fauna.

Although non-statutory, Sites of Biological Importance / Biodiversity Alert Sites (Staffordshire) and Local Wildlife Sites (Derbyshire) are afforded protection through local planning, and are considered to be of county importance (Table 3).

[6] www.sbap.org.uk

Table 3 – Non statutory designations within 2 km of the proposed development.

Ref.	Name	Status	Main Interest	Distance from Site (km)
22/19/13	Tutbury Mill Fleam	BAS	Mill fleam with emergent vegetation; secondary broadleaved woodland	1.1
22/26/18	Alder Moor and Lount Bank	SBI	Fishing pool; wet woodland; semi-improved grassland	1.3
SD248/3	Hatton Railway Pond	-	Not known	1.5
SD298	Marston Crossing Oxbow	LWS	Secondary broadleaved wet woodland	1.5
22/37/34	Brook Hollows Spinney	BAS	Man-made lake surrounded by broadleaved woodland	1.6
SD296	Marston on Dove Church Oxbow	LWS	Standing open water – open vegetation	1.7
SD295	River Dove	LWS	Flowing water rivers and streams	1.8

BAS = Biodiversity Alert Site (Staffordshire)
SBI = Site of Biological Importance (Staffordshire)
LWS = Local Wildlife Site (Derbyshire)

5.2 Habitats

The desk study[7] identified several areas of non-designated priority habitat within 2 km of the proposed development, including a large area of coastal and floodplain grassland associated with the River Dove (c. 1.35 km to E), and scattered blocks of lowland deciduous woodland (the nearest being about 0.46 km to SE). These habitats are likely to have ecological value at the district / borough or county level.

The proposed development area and associated access would occupy a relatively small part of a large agricultural field comprising poor semi-improved grassland, possibly being managed as a hay meadow at the time of the survey.

[7] http://magic.defra.gov.uk/MagicMap.aspx

There are a few mature Hawthorn (*Crataegus monogyna*) shrubs within the scheme footprint (TN9), the likely remnants of a previous hedgerow.

A species-poor intact hedgerow, about 2 m tall by 2 m wide with abundant Hawthorn and Elder (*Sambucus nigra*), effectively forms the northern boundary of proposed access route (TN6). An adjacent 2-metre cross-compliance margin runs along its northern side with abundant False Oat-grass (*Arrhenatherum elatius*), Common Nettle (*Urtica dioica*) and Cleavers (*Galium aparine*), together with frequent Cow Parsley (*Anthriscus sylvestris*) and Hogweed (*Heracleum sphondylium*).

The land use to the north, south and east comprises arable farmland, improved grassland and poor semi-improved grassland respectively, bounded by a network of predominantly species-poor intact hedgerows with widely scattered mature field boundary trees (Appendices 3 & 4).

Using the criteria in Appendix 5, the improved and poor semi-improved grass fields incorporating the scheme footprint and access route are considered to have negligible ecological value *per se* due to their low grade and widespread nature, with the mature Hawthorn shrubs having some local value. Although the hedgerow forming the northern boundary of the proposed access route, together with those in the wider vicinity, are species-poor and unlikely to satisfy the ecological criteria required to be classed as 'important' under The Hedgerows Regulations 1997, a more detailed assessment would be required to fully determine their eligibility. Nevertheless, hedgerows are listed as a *Habitat of Principal Importance* under the NERC Act 2006 and a priority habitat in the Staffordshire Biodiversity Action Plan. Therefore, the hedgerow is of value at the parish / neighbourhood level, although it is not anticipated that it will be affected by the proposed scheme.

5.3 Species and Species Groups

5.3.1 Non-native invasive plants

There were no non-native invasive plant species within the area of the proposed development or its vicinity.

5.3.2 Other notable plants

Although the survey was carried out during a period when some early spring-flowering plant species are not evident, given the common and widespread nature of the broad habitat types present on and adjacent to the development site, it is considered highly unlikely that any rare or notable species would have been missed.

5.3.3 Invertebrates

Given the common and widespread nature of the broad habitat types present on and adjacent to the development site, it is considered highly unlikely that any rare or notable species of invertebrate would be present.

5.3.4 White-clawed Crayfish

There was no suitable habitat for this species within or adjacent to the proposed development site or access route.

5.3.5 Amphibians

There are no records of Great Crested Newt from within 2 km with the only pond in the vicinity of the proposed development being rather small (no more than 100 m^2), quite heavily shaded by an adjacent mature boundary hedge and considered likely to dry out annually with a water depth of only about 0.10 m at the time of the visit. The main A511 road is also considered to constitute a significant barrier to movement of newts between this pond and the proposed development site.

Table 4 – Suitability of ponds within 500 m for Great Crested Newts.

Pond No.	Distance from Site	HSI Score	Suitability	eDNA Survey Result
001	330 m to SW	0.61	Average	Indeterminate[1]
002[2]	330 m to E	-	-	-

[1] Likely to be due to water level being low and relatively high volume of sediment in sample.
[2] Unable to gain access for survey.

Much of the proposed development site itself is considered to be of low suitability for Great Crested Newts during the terrestrial phase of their lifecycle, comprising improved and poor semi-improved grassland, at least some of which is grazed by sheep and subject to a relatively high level of disturbance.

Although the hedgerows in proximity to the site all provide suitable habitats for foraging and shelter both during their active and hibernation periods, as well as corridors for movement through the wider landscape, given the absence of records from any of the nearby ponds, it is considered highly unlikely that Great Crested Newts would be present.

However, these hedgerows do provide potentially suitable habitats for relatively common and widespread amphibian species, such as Common Frog (*Rana temporaria*) and Common Toad (*Bufo bufo*).

5.3.6 Reptiles

There are no records of reptiles from within 2 km of the proposed development with the intensively managed agricultural landscape in which it would be situated considered to unsuitable for them.

5.3.7 Birds

There are numerous records of bird species afforded special protection under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) from within the search area, including Barn Owl (*Tyto alba*) and Kingfisher (*Alcedo atthis*). However, there are no potentially suitable nesting habitats for these species within or in close proximity to the proposed development site.

The proposed development site comprises improved and poor semi-improved grassland and is considered highly unlikely to support nesting birds. However, the small number of mature Hawthorn shrubs within the footprint of the scheme have the potential to support nesting birds during the breeding season (March – August inclusive), although the lack of surrounding cover would be expected to preclude their presence.

Although the associated hedgerows in proximity to the proposed development also have the potential to support farmland nesting birds, such as House Sparrow (*Passer domesticus*), Dunnock (*Prunella modularis ssp. occidentalis*) and Yellowhammer (*Emberiza citronella*), it is not anticipated that any of them will be adversely affected by the proposed development.

5.3.9 Bats

Although there are numerous records of bats from within the 2-km search area (mainly from the small urban conurbations of Tutbury and Rollaston-on-Dove), there are no potentially suitable roost sites in the form of trees or buildings in proximity to the proposed development.

Whilst the nearby hedgerows provide potentially suitable foraging opportunities and potential commuting routes to and from any roost sites that might be present in the wider locality, it is not anticipated that any of them will be adversely affected by the proposed development.

5.3.10 Otter

Although there are several records of Otter (*Luta lutra*) from within the 2-km of the search area (with the nearest being from the River Dove approximately 1.5 km to the north-west), there is no suitable habitat for this species within or adjacent to the proposed development site or access route.

5.3.11 Water Vole

There was only a single record of Water Vole (*Arvicola amphibius*) from within the 2-km search area (approximately 1.2 km to the east), with no suitable habitat for this species within or adjacent to the proposed development site or access route.

6 Description of the Proposed Development

The proposed development area (scheme footprint) is approximately 0.4 ha in size and would occupy just a small part of a large poor semi-improved grass field.

Access will be gained off the A511 through an existing gateway with a permanent track to the site of the generator to be laid along the southern side of a species-poor intact hedgerow.

7 Assessment of Effects and Mitigation Measures.

7.1 Designated Sites

Although a number of designated sites of nature conservation importance have been identified within the desk study search area, it is considered that there is no possibility of any such sites being affected by the proposed development.

7.1 Habitats

The proposed development will result in the loss of a small area (up to 0.4 ha) of improved and poor semi-improved grassland of negligible ecological value to the footprint of the scheme. Some of this area is already used for access.

A small number of mature Hawthorn shrubs will have to be removed to accommodate the proposed scheme, an impact of significance at the parish / neighbourhood level which cannot be mitigated.

However, it is not anticipated that any hedgerows or other habitats will be adversely affected by the proposed development.

7.2 Species & Species Groups

Without appropriate mitigation, removal of the mature Hawthorn shrubs within the footprint of the scheme could result in direct harm to active birds' nests and their eggs or young, although the probability of their presence is considered to be low given the lack of surrounding cover.

Consequently, the following recommendations are made and should be followed:

- Removal of these shrubs (and, if required, any other woody vegetation) should be undertaken outside the bird nesting season (typically March – August inclusive).
- If this cannot be achieved, their clearance should be immediately preceded by a detailed inspection for nests by a suitably experienced person. Any active nests that were found would have to be left undisturbed until no longer in use.

Otherwise, it is considered that there will be no impacts from the scheme on any other protected or other notable species, and that no further mitigation is required.

8 Cumulative Effects

There are no other known projects which could give rise to a significant cumulative effect.

9 Compensation

It is suggested that planting new hedgerows around the perimeter of the proposed development and along the southern side of the associated access route would more than adequately compensate for any habitat loss to the proposed scheme and provide additional functional linkage between existing hedges.

10 Enhancement

There appear to be limited opportunities for biodiversity enhancement within the proposed development area, although planting new hedges around its perimeter, as suggested, and allowing the existing adjacent field boundary hedgerows to grow up a little more would provide additional screening and possibly enhance their value as nesting habitats for birds.

11 Monitoring

Apart from the predicted loss of a few mature shrubs, the proposed development is not predicted to result in any significant residual effects, and no monitoring surveys are considered necessary.

12 Conclusions

It is concluded that provided the recommendations set out in this report are implemented in full, the proposed scheme is not anticipated to result in any significant residual ecological impacts apart from the predicted loss of a few mature shrubs. However, it is suggested that this could be more than adequately compensated by the planting of new hedgerows around the perimeter of the proposed development and along the southern side of the associated access route.

Therefore, taking into account the recommendations for mitigation and compensation, the proposed development is considered to be compliant with relevant development plan policies and wildlife legislation and will not result in any significant loss of biodiversity. Indeed, a net gain in biodiversity could be achieved by the planting of new hedgerows around its perimeter.

13 References

Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, R.A., Foster, J., Wilkinson, J., Arnett, A., Williams, P. and Dunn, F. (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford.

Chartered Institute of Ecology and Environmental Management (2015). *Guidelines for Ecological Report Writing*. Technical Guidance Series www.cieem.net

Chartered Institute of Ecology and Environmental Management (2006). *Guidelines for Ecological Impact Assessment in the United Kingdom* (version 7 July 2006). www.cieem.net/ecia-guidelines-terrestrial-

Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

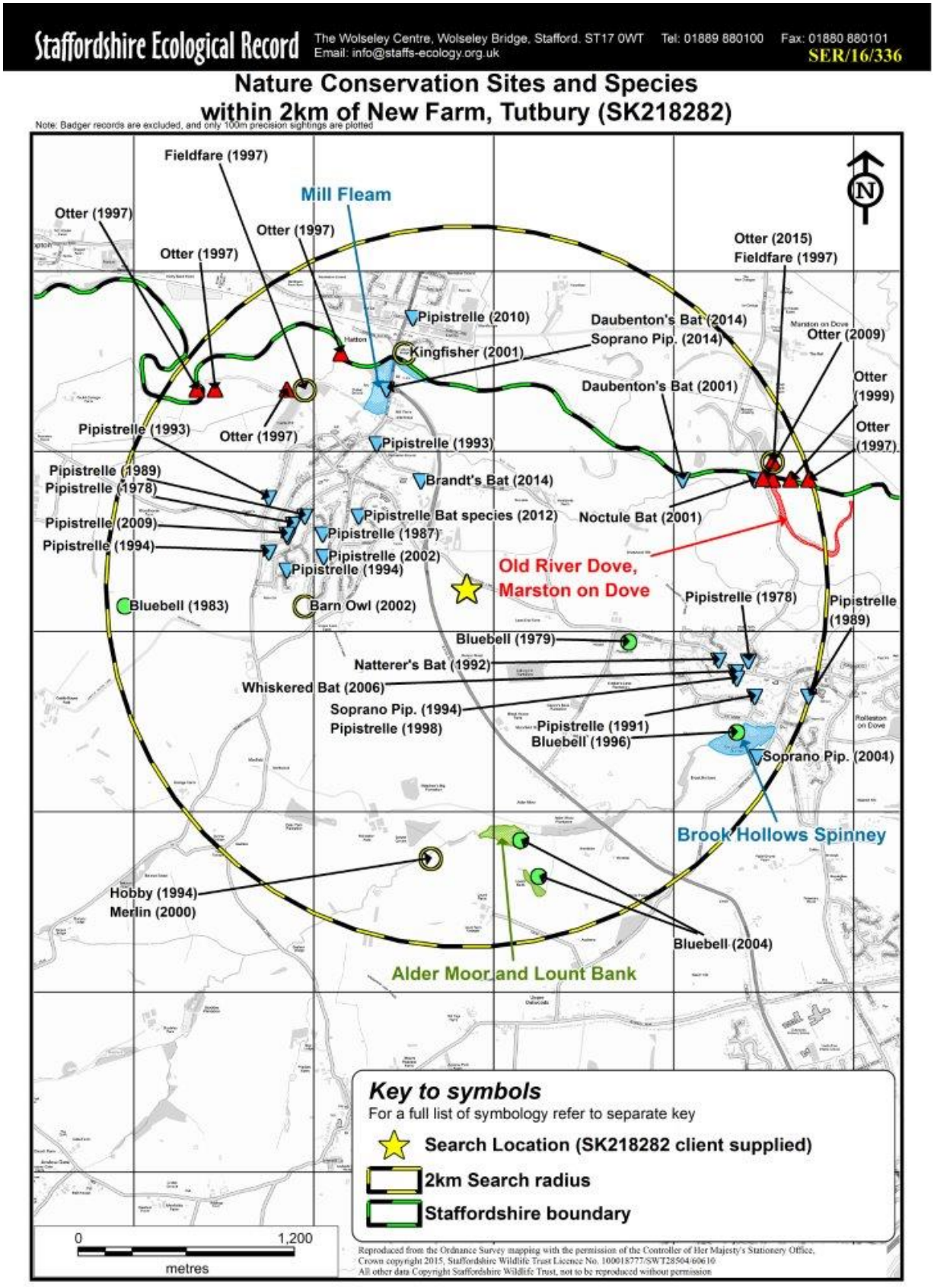
Environment Agency (2007). Pollution Prevention Guidelines PPG5 October 2007

JNCC (2010). Handbook for Phase 1 Habitat Survey. A technique for environmental audit (reprint). Joint Nature Conservation Committee, Peterborough.

Oldham, R.S., Keeble, J., Swan, M.J.S. & Jeffcote, M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal*, **10**: 43-155.

Stace. C. (2010). New British Flora of the British Isles. 2nd Edition. Cambridge University Press.

Appendix 1: Ecological Desk Study Map (Staffordshire)



Appendix 2: Key to Ecological Desk Study Map (Staffordshire)

See following page.

Staffordshire Ecological Record
The Wolseley Centre, Wolseley Bridge,
Stafford. ST17 0WT
Tel: 01889 880100 Fax: 01889 880101
Email: info@staffs-ecology.org.uk

A legend to the map showing Nature Conservation Sites and Species

Introduction

These colours are used on the site alert mapping within the SWT GIS, but SER cannot guarantee the same colours are used in any other mapping system, particularly those based on ArcView.

Statutory Designations from Natural England's web-site

- National Nature Reserves
- Sites of Special Scientific Interest
- Local Nature Reserves
- NNR (boundary not available owing to OS restrictions)
- SSSI (boundary not available owing to OS restrictions)
- LNR (boundary not available owing to OS restrictions)

Non-statutory Designations from the Staffordshire Grading System (1995 onwards)

- Site of Biological Importance (ex Grade 1 SBI) equivalent to "Local Wildlife Site"
- Biodiversity Alert Site (ex Grade 2 SBI)
- Proposed/potential Site of Biological Importance

Geological Sites

- Regionally Important Geological/geomorphological Site (= Local Geological Site)

Staffordshire Wildlife Trust Sites

- SWT Nature Reserves

Other Nature Reserves

- Royal Society for the Protection of Birds

Ancient Woodland Inventory

- Ancient & Semi-natural Woodland
- Ancient Replanted Woodland

Species Information

- Mammals excluding those listed below
- Otter (Lutra lutra)
- Badger (Meles meles) - not normally supplied
- Water Vole (Arvicola terrestris)
- All bat species
- All bird species
- Any other protected species (precise to 100m)
- All Protected Species Records (precise to 1km)
- Amphibians and reptiles excluding those below
- Great Crested Newt (Triturus cristatus)
- Native Crayfish (Austropotamobius pallipes)
- Flowering plants except those below
- Bluebell (Hyacinthoides non-scripta)
- Butterflies and Moths
- BAP Species Records (precise to 100m)
- BAP Species Records (precise to 1km)

Notes:

The Local Nature Reserve and other nature reserve boundaries can overlay the current grading when both layers are actively visible

Where there are multiple species records for the same grid reference the dot for one species may obscure the dots for other species - all species records will be displayed in the accompanying spreadsheet

Not all the above categories may be present on the accompanying map

Version 2.0 July 2011

Appendix 3: Phase 1 Habitat Survey Map

See following page

New Farm Energy Limited

New Farm standby diesel scheme

Phase 1 Habitat Survey

- Ownership boundary
- Scheme leased area
- Diesel generator enclosure
- Access
- Broadleaved woodland
- Broadleaved plantation
- SI — Semi-improved neutral grassland
- I — Improved grassland
- SI — Poor semi-improved grassland
- A — Arable
- Species-rich intact hedgerow
- Species-poor intact hedgerow
- Fence
- Mature hedgerow trees
- Scattered scrub
- Target note

Drawn by Andy Frost 04/08/2016, Verified by James Towers 04/08/2016

N W E S

0 50 100 150

Metres

Scale 1:3,000 at A3 size

ADAS UK Ltd., Pendeford House,
Pendeford Business Park, Wobaston Road,
Pendeford, Wolverhampton. WV9 5AP.
Tel +44(0)1902 271300, Fax +44(0)1902 785574

CEN4183

Appendix 4: Target Notes

Target Note No.	Description
1	**Species-poor intact hedge** **E**ntirely dominated by Hawthorn (*Crataegus monogyna*) with abundant Bramble (*Rubus fruticosus* agg.), and about 1.75 m tall. The ground flora is species-poor with abundant Common Nettle (*Urtica dioica*) and Cleavers (*Galium aparine*), probably reflecting the influence of fertilisers and herbicides on the adjacent crop.
2	**Species-poor intact hedge** **D**ominated by Hawthorn (*Crataegus monogyna*) with Elder (*Sambucus nigra*) present only rarely and about 1.75 m tall. The ground flora is species-poor with abundant Common Nettle and Cleavers, together with frequent Hogweed (*Heracleum sphondylium*), probably reflecting the influence of fertilisers and herbicides on the adjacent crop.
3	**Species-poor intact hedge** Elder and Bramble both abundant with occasional Hawthorn. Blackthorn (*Prunus spinosa*) and Hazel (*Corylus avellana*) also present but only rarely. Adjacent 2-metre margin with abundant False Oat-grass, Common Nettle and Cleavers, together with frequent Hogweed.
4	**Species-rich intact hedge** Hawthorn and Elder both frequent with occasional Blackthorn, Field Maple (*Acer campestre*) and Dog-rose (*Rosa canina* agg.). Hazel also present but only rarely. With two mature hedgerow trees, both with features suitable for roosting bats in the form of ivy cladding.
5	**Species-poor intact hedge** Species-poor hedgerow, about 2 m tall by 2 m wide, along eastern boundary of arable field with abundant Elder and frequent Hawthorn. Again, the ground flora is species-poor with abundant Common Nettle and Cleavers, together with frequent Hogweed.
6	**Species-poor intact hedge** Species-poor hedgerow, about 2 m tall by 2 m wide, effectively comprising northern boundary of proposed development with abundant Hawthorn and Elder. Adjacent 2-metre cross-compliance margin along northern side with abundant False Oat-grass, Common Nettle and Cleavers, together with frequent Cow Parsley and Hogweed.

7	**Species-poor intact hedge** Species-poor hedgerow, about 2 m tall by 2 m wide and regularly trimmed, with abundant Hawthorn and frequent Hazel.
8	**Scattered scrub** Two mature Hawthorn shrubs about 0.25 m diameter at breast height.
9	**Scattered scrub** A small number of mature Hawthorn shrubs about 0.25 m diameter at breast height, possibly indicating line of a former hedge.
10	**Species-poor intact hedge** About 3 m tall by 3 m wide, with abundant Hawthorn and Elder, together with frequent Bramble. Again, the ground flora is species-poor with abundant Common Nettle and Cleavers.
11	**Species-poor intact hedge** Dominated Hawthorn with ground flora including abundant Common Nettle and Cleavers.

Appendix 5: Definitions of the Level of Habitat Value

Geographic level of Value	Examples
International value	Ramsar Sites, Special Protection Areas, Biosphere Reserves, Special Areas of Conservation. Sites supporting populations of internationally important species.
National value	SSSIs or non-designated Sites meeting SSSI selection criteria, NNRs, Marine Nature Reserves, NCR Grade 1 Sites. Sites containing viable areas of key habitats identified in the UK Biodiversity Action Plan.
Regional value	Sites containing viable areas of threatened habitats listed in a Regional BAP (or some Natural Areas), comfortably exceeding SINC criteria, but not exceeding SSSI criteria.
County / Metropolitan	Sites meeting the criteria for county or metropolitan designation (SINC, CWS, etc.). Ancient semi-natural woodland, LNRs or viable areas of key habitat types listed in county BAPs/Natural Areas.
District / Borough	Undesignated Sites or features considered to appreciably enrich the habitat resource in the District or Borough.
Local	Undesignated Sites or features which appreciably enrich the habitat resource within the local area.
Negligible value	Low grade and widespread habitats.

Appendix 6: Photographs

Photo 1: Access off main road through gateway to right.

Photo 2: Looking towards proposed development site from west with access alongside this side of hedgerow.

Photo 3: Proposed access route (viewed from east) with hedgerow effectively forming its northern boundary.

Photo 4: Mature Hawthorn shrubs within proposed development area (TN9).

Photo 5: Northern side of species-poor intact hedge forming northern boundary of proposed access route (TN6).

Photo 6: Pond 001.