



**Wakerley Quarry
Nr. Wakerley, Northamptonshire**

Environmental Assessment

Ecology and Nature Conservation Chapter

undertaken by

ECO TECH

on behalf of

The Burghley Estate

- June 2007 -

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1 INTRODUCTION

1.1 General

This part of the assessment considers the likely ecological and nature conservation impacts of the proposed quarry development near Wakerley, Northamptonshire.

The ecology of the proposed development area is reviewed. Species and habitats are evaluated on a national and county basis. Potential sources of nature conservation impact are outlined and predicted effects of the proposed development are described. The significance of the predicted effects is evaluated and mitigation measures are discussed. Any residual effects following mitigation are identified.

English names of plant and animal species are used throughout the text with the Latin name given (where appropriate) in appendix 1. Vascular plant names follow Stace, 1991.

1.2 Scope of survey

Figures 1 and 2 show the area subject to detailed survey as part of this assessment. Figure 1 primarily corresponds to the area required for the proposed extraction including stand-offs and storage areas. Figure 2 shows the habitats along the route of the proposed extraction/haul road.

The level of survey (and the collection of existing information) was agreed in writing with English Nature (with the agreement and in the knowledge of Northamptonshire County Council) giving due regard to the long timescale over which the proposed development is to be phased (see appendix 1).

The ecological survey comprised:

- standard Phase 1 habitat survey with target notes (methodology following NCC 1990);
- an indication of the National Vegetation Classification (NVC) communities present within the application area (see target notes);
- a comprehensive list of vascular plants within each major Phase 1 habitat directly affected by the proposed development, with frequency noted using the DAFOR scale;
- protected species survey as follows:
 - badgers - outline search for setts and any signs of activity;
 - bats - daytime visual survey for obvious signs of roosts and an outline survey for potential roost sites (but not including use of a detector or ladders);
 - reptiles - incidental records only and an assessment of habitat suitability;
 - great crested newt - two visits in April and May including egg search, netting, torch survey and bottle traps (under licence).
- a list of incidental records of other fauna species observed whilst undertaking the habitat survey (eg: birds, butterflies).

Survey work was undertaken as follows:

1999 (June) - Phase 1 habitat survey, vascular plant species list, incidental fauna records;
2000 (July) - Phase 1 habitat survey, vascular plant species list, incidental fauna records;
2002 (April) - great crested newt survey, badger, bat, reptile, bird and incidental fauna records;
2005 (September) - update of Phase 1 habitat survey, vascular plant species list, badger, bat, amphibian, reptile, bird and incidental fauna records.

Information on statutory and non-statutory sites in the vicinity was obtained from English Nature (now Natural England) and Northamptonshire County Council. The Wildlife Trust for Northamptonshire (WTN) provided additional information on statutory and non-statutory sites as well as existing records for birds (breeding and wintering), reptiles, amphibians and glow worms.

1.3 Method of ecological evaluation

The nature conservation value of habitats and species are evaluated on a national (UK) and county (Northamptonshire) basis using the widely recognised evaluation criteria set out below.

These criteria were outlined by the Nature Conservancy Council (now Natural England) for the assessment of the nature conservation value of habitats and species (NCC, 1989). They comprise:

- the extent of the habitat or size of a plant/animal population;
- the rarity of a habitat or plant/animal species on an international, national and regional basis;
- the presence of legally protected species, especially those protected under the Wildlife and Countryside Act 1981 (and amendments);
- the diversity of habitats present and their individual species-richness. In general, the greater the number of habitats or species the higher the conservation interest;
- the naturalness of a habitat. A lack of features which indicate gross or recent human modification is considered to increase the nature conservation interest of an area;
- the fragility and sensitivity of the habitat or species and its ability to recover from disturbance.

The list of habitat types and species of principal importance in England detailed in the Defra Circular 01/2005 was also taken into consideration.

1.4 Identification of potential impacts

During site preparation, operation and subsequent restoration, ecological and nature conservation impacts may arise from loss of, damage to, or disturbance of a habitat and/or species within the working area or adjacent to it as a result of:

- landtake for the proposed development and associated landscaping works;
- noise, dust, drainage, effluents and/or effects on groundwater;
- traffic and pedestrian activity;
- restoration works and associated new land use practices.

1.5 Method of impact prediction

In order to predict and evaluate the potential ecological and nature conservation impact of the proposed development, the plans of the working scheme were compared to the Phase 1 habitat and protected species maps (Figures 1 & 2) and information collected on species. In addition, potential effects off site on habitats and species adjacent to the proposed development area are considered.

The magnitude of the ecological impact of a development is related to:

- the proportions of the habitat(s) and/or species populations directly and/or indirectly affected;
- the duration of the disturbance;
- the success of best site practice and mitigation/compensation measures.

The overall significance of the ecological impact of a development depends on both the magnitude of the impact and the ecological importance of the habitats and/or species directly and/or indirectly affected. It can be described as major, minor or negligible (Table 1 below).

TABLE 1: EVALUATION OF IMPACT SIGNIFICANCE

Magnitude of impact	Conservation importance of feature affected	Significance of impact
Negligibly small	High or low	Negligible
Large or small	Negligibly low	Negligible
Large	High	Major or moderate
Small to Moderate	High	Moderate or minor

After English Nature, 1994.

2 BASELINE ECOLOGICAL DESCRIPTION

2.1 Sources of information

The information contained within the assessment of baseline conditions and used in preparing this chapter has been obtained from the following sources:

- the ecological survey conducted for this environmental assessment;
- discussions with and information provided by:
 - English Nature (now Natural England);
 - Northamptonshire County Council;
 - The Wildlife Trust for Northamptonshire (including information from a local contact on birds and glow worms).

2.2 General Ecological Context

The survey area is situated in a flat to gently undulating agricultural landscape of large arable fields bound by hedges. Part of the survey area includes a disused airfield. To the north is the village of Wakerley. To the south and east is a large woodland known as Wakerley Great Wood, most of which has been replanted with conifers but parts appear to be subject to restoration to deciduous woodland. To the west the land is predominantly agricultural.

The proposed haul road skirts the northern point of Wakerley Great Wood and runs along several arable field margins and across a disused railway (at an existing crossing point for agricultural vehicles) to join up with a minor road some 1.5km to the east of the proposed extraction area.

2.3 Habitats

Eight main Phase 1 habitats were identified within the application area.

Figures 1 and 2 shows the location and extent of habitats within the application area.

Table 2 gives a list of Phase 1 habitats identified. Each is subsequently described.

TABLE 2 INVENTORY OF HABITATS PRESENT

Habitat
Broadleaved semi-natural woodland
Dense scrub
Unimproved neutral grassland
Improved grassland
Standing water - pool
Arable
Species-poor hedge - intact
Species-poor hedge - defunct

TARGET NOTES

- (1) Unimproved neutral grassland. Rather rank, dominated by Yorkshire-fog, false oat-grass, tufted hair-grass and wood small-reed. Frequent dicots include white clover, self-heal and hop trefoil with occasional (to very locally frequent) bird's-foot-trefoil, smooth tare, selfheal, lesser trefoil, broad-leaved dock, hard rush, common knapweed and smooth hawk's-beard (not well classified by the NVC but probably closest to the MG1 community).
- (2) Dense scrub. Largely comprises a mixture of silver birch, grey and goat willows and hawthorn (not well classified by the NVC). The scrub includes small (unmapped) patches of rank grassland dominated by tufted hair-grass with some hard rush and glaucous sedge (NVC MG9 community).
- (3) Unimproved neutral grassland. Rather rank and dominated by tufted hair-grass with locally frequent hard and soft-rush and occasional common ragwort and greater bird's-foot-trefoil (NVC MG9 community).
- (4) Dense scrub. Largely comprises blackthorn with a little hawthorn (NVC W22 community).
- (5) Dense scrub here comprising hawthorn, blackthorn and bramble with much bare ground below along with patchy false-oat grass and common nettle (predominantly NVC W21 community).
- (6) Species-poor defunct 'hedge' comprising an irregular line of grey willow and birch.
- (7) Standing open water (pool) with no aquatic vegetation other than occasional small pondweed.
- (8) Tall (3m), thick (4m) hedge of mainly hawthorn and blackthorn with adjacent dry ditch (unmapped).
- (9) Species-poor intact hedge, some 2m tall and 1m wide comprising mainly hawthorn with some local blackthorn and elder. Beneath the hedge the vegetation comprises mainly common nettle, barren brome, cleavers and hogweed.
- (10) Species-poor defunct hedge which is tall (to 4m) and narrow (to 1m). The main shrub species are hawthorn and blackthorn.
- (11) Intact species-poor hedge some 3m tall x 1.5m wide dominated by English elm. There is little beneath the hedge other than barren brome, common nettle and cleavers.
- (12) Improved grassland, appears recently sown with perennial rye-grass and rough meadow-grass. Other plant species tend to be occasional or patchily frequent, these include creeping thistle, false oat-grass, Yorkshire-fog and common ragwort (NVC MG7 community).
- (13) Species-poor intact hedge some 1.5m tall and 1.5m wide comprising mainly hawthorn with much bramble in places and some sycamore. Beneath the hedge the vegetation is primarily cleavers and common nettle. The adjacent verge is a rather tall rank sward with frequent false oat-grass, hogweed, tor-grass, greater knapweed, hedge bedstraw, cock's-foot and field scabious. There are numerous occasional species including meadow crane's-bill, black horehound, hedge woundwort, common nettle, lady's bedstraw, red fescue and tufted vetch.

2.3 Habitats (cont.)

Broadleaved semi-natural woodland

A small area of this habitat occurs within the application area (but not within the proposed extraction area). The canopy is dominated by ash (relict coppice) with occasional pedunculate oak with a rather sparse shrub layer of hazel, field maple and elder. The field layer includes frequent dog's mercury, bramble, wood dock and locally frequent to occasional yellow archangel, ivy, enchanters nightshade, rough meadow-grass and common nettle (NVC W8 community).

Dense scrub

Several blocks of dense scrub occur. See target notes (2), (4) and (5).

Unimproved neutral grassland

Several blocks and strips of this type of grassland occur. The species composition varies as described under target notes (1) and (3) but most areas are generally rank and species-poor.

Improved grassland

A small area on the route of the proposed haul road supports this habitat. See target note (12) for details.

Standing water - pool

There is one small pool at the south of the site. Aquatic vegetation here is limited to a little submerged small pondweed. See target note (7).

Arable

All but one of the fields within the application area are arable, supporting crops of wheat and peas or set-aside at the time of survey with ruderal weeds in cropped fields sparse. Typical species included locally frequent creeping thistle, common couch, black-bindweed, barren brome, cleavers, field forget-me-not, scentless mayweed, ivy-leaved speedwell, shepherd's-purse and common field-speedwell.

Species-poor hedge - intact and defunct

The hedges vary in terms of the size and species composition. See also target notes (6), (8), (9), (10), (11) and (13).

2.4 Species

Species lists are included in appendix 2.

Vascular plant species

Over 170 species of vascular plant have been recorded.

Butterfly species

10 species of butterfly were recorded incidentally during the habitat surveys.

Amphibian species

Common frog (including tadpoles) and smooth newt were recorded in the small pool. No evidence for the presence of great crested newt was observed.

Reptile species

No reptiles were observed. Some of the unimproved neutral grassland habitat is considered suitable for common lizard.

Bird species

21 species of bird were recorded incidentally (on or over the application area) during the habitat surveys.

Bat species

No obvious signs of roosts were observed. Moreover, no trees/structures considered likely to support roosts were recorded.

Badger

Two small, probably outlier, setts were recorded (see Figure 1). Badgers are considered likely to

use the proposed development area for foraging and to access other foraging areas.

2.4 Species (cont.)

Other mammal species

Evidence of four other mammal species (muntjac deer, fox, grey squirrel and rabbit) was recorded incidentally during the habitat surveys.

2.5 Statutory and non-statutory sites in the locality of the application area

Statutory sites (Sites of Special Scientific Interest - SSSI)

The only nearby SSSI appears to be Wakerley Spinney situated some 700m to the east of the boundary of the proposed extraction area and some 280m at the closest point to the route of the proposed haul road (see Figure L2 in the Landscape section of the Environmental Statement). This site is described in the SSSI citation as a small strip of native broadleaved woodland and semi-natural grassland among extensive softwood plantations.

Non-statutory sites

County Wildlife Sites - CWS:

There appear to be fourteen county wildlife sites in the locality, of which five lie immediately adjacent to, or partially within, the application site (see Figure L2 in the Landscape section of the Environmental Statement).

A summary description (received from The Wildlife Trust for Northamptonshire in 2004) for each of the sites that lie immediately adjacent to the proposed development is provided below.

Short Wood

"A strip of remnant semi-natural ancient woodland now separated from the bulk of Wakerley Woods." This site lies immediately adjacent to the south-west corner of the proposed extraction area.

Wakerley Oaks

"A patch of semi-natural ancient woodland, apparently not replanted.....Appears to have declined in its {sic} botanical interest since the previous survey in 1986 and could be said to be one of the less botanically diverse Ancient Semi Natural Woodlands in the Rockingham Forest Area. It however offers valuable habitat for birds, mammals and invertebrates due to its {sic} structure - dense shrub layer and large amounts of fallen dead wood."

This wildlife site lies immediately adjacent to part of the proposed haul road.

Wakerley Oaks Disused Railway Line

"A stretch of disused railway cutting with varied scrub and areas of calcareous grassland.....The site offers an extension of the Wakerley Railway Line habitat corridor, and provides cover for birds, mammals and invertebrates."

This wildlife site would be crossed by the proposed haul road at a point where there is an existing farm/field access track.

Wakerley Verge

"Grassy verges with a record of a glow-worm in 1992. Previously recorded as having some calcareous grassland interest - but the most recent visits suggest this has been replaced by coarse grassland, probably through a change in management."

This wildlife site is immediately adjacent to the end of the proposed haul road where it meets an unclassified road. This wildlife site also forms part of a protected verge (see below).

2.5 Statutory and non-statutory sites in the locality of the application area (cont.)

Non-statutory sites (cont.)

County Wildlife Sites - CWS: (cont.)

Wakerley Woods

"A very large area of replanted ancient woodland, with lots of managed rides, a variety of conifer and broadleaved compartments and several FC trails, walks etc.....The chief value of this site is as a very large pool of ancient woodland ride and ground flora, including several rarities. It offers a varied bird and butterfly habitat, and houses badgers, deer and other mammals, possibly including dormice."

Includes the Long Wood, Wood Hollow and Wakerley Great Woods sub-sites, detailed below:

- Long Wood
"A strip of broadleaved woodland, isolated from the rest of Wakerley Wood but close enough to share flora and fauna."
The northern and western edges of this sub-site lie adjacent to the proposed extraction area.
- Wakerley Great Wood
"The largest part of Wakerley Woods, and the most important for both flora and fauna....Past surveys have also revealed a thriving reptile population.....number of county rarities on site including: Great Wood-rush (*Luzula sylvatica*), Wood spurge (*Euphorbia amygdaloides*) and Wild Service Tree (*Sorbus torminalis*). This is therefore the heart of one of the most important woodland wildlife sites in the county..."
The north-western edge of this sub-site lies adjacent to part of the proposed extraction area and part of the proposed haul road.
- Wood Hollow
"A replanted area of Mixed oak and conifers, noted by the FC as of high potential for conservation management. The RSPB have also noted this as a sparrowhawk site."
The sub-site lies immediately adjacent to the south-west corner of the proposed extraction area.

Protected verges:

There appear to be two such verges in the immediate vicinity of the proposed development. One appears to include the point where the proposed haul road crosses the unclassified road at the northern tip of Wakerley Great Wood (NGR SP958990). The other includes the point at which the proposed haul road joins the unclassified road.

3 EVALUATION

3.1 Site, habitat & species evaluation

The statutory and non-statutory sites, habitats and species present were evaluated using the criteria outlined in paragraph 1.3 above.

3.2 Statutory and non-statutory sites

Wakerley Spinney SSSI, to the east of the application site, forms part of a national series of sites notified under the Wildlife and Countryside Act 1981 (as amended) as being of special nature conservation interest. SSSIs are considered to be of value for nature conservation in a national context.

County Wildlife Sites are considered to be of county significance for nature conservation (eg: by Northamptonshire County Council and The Wildlife Trust for Northamptonshire). They often receive protection under local authority policies but have no legislative status. Small areas of habitat designated County Wildlife Site occur within the application site or immediately adjacent to it.

According to NCC, "Protected Wildflower Verges (PWVs) are roadside verges rich in wildlife. Although they can be designated as Sites of Special Scientific Interest (SSSIs) or County Wildlife Sites, a verge does not need to meet these more rigorous criteria to be designated as a PWV." (Northamptonshire County Council *pers. comm.*). Small areas designated PWV occur within the application site.

3.3 Habitats

Other than very small areas of the application area that are designated Protected Wildflower Verge or County Wildlife Site, the habitats are considered to be of negligible nature conservation value, primarily because they are relatively common and widespread (eg; scrub), are of recent origin (eg: arable), are of relatively low diversity (eg: rank species-poor grassland) or are present in only small areas (eg: open standing water). Moreover, none are listed in the Defra Circular 01/2005.

None of the hedges within the application area appear to meet the criteria for "important" hedges as described in The Hedgerow Regulations, 1997. All are relatively poor in terms of the number of woody species present.

3.4 Species

Of the vascular plant species recorded, none are considered to be notable in a national context (Stewart A *et al.*, 1994, Cheffings CM, Farrell L (eds), 2005). One species, knotted hedge-parsley, is considered to be rare on a county basis, ie: a native species recorded in only 3-15 sites in the county (after Gent *et. al*, 1995).

None of the butterflies recorded is considered to be of note.

The records for common frog and smooth newt are not considered to be of note.

Of the bird species recorded none are red data book species (Batten *et. al*, 1990). Two, skylark and grasshopper warbler are "red list" species (high conservation concern), having rapidly declined as a breeding species by over 50% in the 25 years since 2002. A further four (kestrel, dunnock, green woodpecker and willow warbler) are on the "amber list" (medium conservation concern) for a variety of reasons (after Gregory *et. al*, 2002). However, given the small number of individuals of these species likely to be present compared to national populations, the bird interest at this site is not considered to be significant.

Of the five mammal species recorded, badger is specially protected under existing legislation. The remaining four species are not considered to be of note.

No evidence for the presence of specially protected species other than badger was recorded.

Habitat suitable for common lizard is present but no lizards were recorded.

4 POTENTIAL AND PREDICTED IMPACTS

4.1 General

This sub-section considers the potential and predicted impacts which may arise from the proposed development in the absence of mitigation. These are divided firstly into direct impacts arising from the proposed development itself and then indirect impacts arising from other associated effects.

4.2 Direct impact on habitats

Note that no habitat of nature conservation value in a national context occurs within the application site and direct impacts on habitats of nature conservation value in a county context (ie: county wildlife sites) have been almost entirely avoided by careful design of the proposed working area and haul route. The proposed haul road crosses the Wakerley Oaks Disused Railway Line County Wildlife Site but at the point of an existing agricultural access. Therefore only a very localised adverse impact is predicted with very limited habitat loss (in the order of 0.01ha). This is considered to represent an impact of negligible or, at most, minor significance.

The proposed haul road also crosses two protected wildflower verges. The small loss of habitat at these points (in the order of 0.01ha) is also considered to represent an impact of negligible or, at most, minor significance.

Although the habitats currently present within the proposed working area would be lost to landtake over the working life of the site, the predicted impact is considered to be negligible since these habitats are considered to be of negligible nature conservation interest.

4.3 Direct impact on species

Vascular plant species

All of the vascular plant species recorded within the survey are considered to be common and widespread nationally. Knotted hedge-parsley, is the only species recorded which is considered to be notable on a county basis (county rarity). This species is known as an arable weed and recorded from other bare and cultivated habitats in the locality (Gent et. al, 1995). As such it seems unlikely that the species would be lost from the locality as a result of the proposed development. Indeed it may well increase as a result of soil disturbance in the absence of herbicide use.

Thus the predicted impact on vascular plant species is considered likely to be negligible.

Butterfly species

None of the butterfly species recorded is considered to be of note. Therefore the predicted impact on these species (and butterflies generally) is considered to be negligible.

Amphibian species

The amphibians recorded are not considered to be of note and there is no evidence that the protected species great crested newt occurs. Therefore the predicted impact on amphibians is considered to be negligible.

Bird species

The bird interest recorded is not considered to be of significant nature conservation interest. Thus, though some territories and foraging areas would be lost from the area of working, the predicted impact on bird populations in the locality is considered to be negligible.

4.3 Direct impact on species (cont.)

Badger

Two setts (probably outliers) have been recorded within the proposed development area and these would be lost as a result of the proposed development. Setts are protected by law and therefore loss of a sett or setts is considered to constitute a significant adverse impact.

As agreed with English Nature (now Natural England) (see appendix 1), detailed assessment of the size of the local badger population and the importance of the application area for foraging was not assessed at this stage since the location of setts and levels of badger activity are highly likely to change prior to the commencement of development and during the working life of the site.

It is therefore not possible to assess the magnitude of the predicted adverse impact on badger with certainty but it is considered likely to be minor to moderate given that there does not appear to be a main sett within the application site. Nevertheless, given the special protection afforded to badgers, comprehensive mitigation is considered necessary to minimise impacts and to meet legal obligations.

Other species

No other notable or protected species have been recorded as present or likely to be present other than common lizard which might inhabit areas of unimproved neutral grassland. Therefore the predicted impact on other species is considered to be negligible, including on common lizard, since suitable habitat will be present throughout the phased working.

4.4 Indirect impact on habitats & species

Dust

It is understood that dust production arising from the proposals should be minimal (see appropriate section of the Environmental Statement). Good site practice should ensure that this is the case and consequently no significant ecological impact is anticipated..

Noise

No significant ecological effects from noise are anticipated and good site practice including monitoring of plant and appropriate conditions should ensure that this continues to be the case. See also appropriate section of the Environmental Statement on noise.

Hydrological effects

The hydrological effects of the proposed development are detailed in another section of the Environmental Statement. It appears that no significant adverse effects on features of nature conservation interest are expected in relation to hydrological changes resulting from the proposed development.

4.5 Indirect impact in ecological features in adjacent areas

It is understood that dust, noise and hydrological effects are considered highly unlikely to affect the nearby SSSI or other features of nature conservation interest in the locality including the adjacent County Wildlife Sites (see also appropriate sections of the Environmental Statement).

5 PROPOSED MITIGATION AND ENHANCEMENT

5.1 Habitats

The significance of the predicted impact on habitats is considered likely to be negligible or, at most minor where the haul road crosses a County Wildlife Site and protected wildflower verges. Even so, the proposed phased restoration scheme (see below and the restoration proposals in the landscape section of the Environmental Statement) is designed to significantly enhance the nature conservation interest of the locality.

Restoration summary

The nature conservation interest of the locality will be enhanced by progressive restoration of the site and by creation of habitats that are potentially of greater nature conservation interest than those lost. This will include:

- Expanding the area of broadleaved woodland (some 28ha proposed) through planting of site-native species of local provenance (where available). Appropriate aftercare will be provided. Situated immediately adjacent to, and linking, existing ancient woodland, this 'new native woodland' will be of particular nature conservation value and is in keeping with the Habitat Action Plan for the county.
- Creation of unimproved species-rich calcareous and neutral grassland (some 20ha proposed). Native species of local provenance (where available) will be used. Techniques are likely to include seeding and/or the use of green hay and local seed. Appropriate aftercare will be provided and long term management will be low intensity grazing and/or cutting with restricted use of fertilisers and herbicides.
- Creation of conservation headlands.
6m wide conservation headlands will be established at the periphery of each field under the Environmental Stewardship (ES) scheme. The composition and management of these areas will be defined by the chosen ES option employed in each field. These are likely to include field corner management and uncropped cultivated margins as well as conservation headlands
- Creation of scrub habitat (some 3ha proposed).
- Creation of standing open water (a permanent pool) and ephemeral wet areas:
 - natural colonisation of the permanent pool with some marginal planting of site-native species;
 - contouring to give shallow margins shelving to deeper areas, a wavy margin and islands, spits or bars;
 - any planted species in the wet areas will be site-native and of local provenance where possible.
- Creation of new hedges (some 6.6km proposed). Use of site-native species of local provenance will be used (where available). Appropriate aftercare will be provided and losses replaced. It is also proposed that a number of Plot's Elm cuttings be taken from the Laxton area and propagated for introduction as hedgerow trees (as per one of the aims for the Natural Area).

5.2 Species

Other than for badger species, all predicted impacts on species are considered to be of negligible significance.

The following measures are also proposed to minimise negative impacts and to comply with legislation:

Bird species

The removal of hedges and any soil stripping should be restricted to the period between September and March inclusive in order to minimise any disturbance to breeding birds.

Badger

In order to offset the predicted negative impacts on badger, and to comply with legislation, detailed survey and a phased, comprehensive mitigation package are required. Since badger activity will vary over time, and the proposed works are phased over an approximately 60 year period and are unlikely to commence for several years post any permission, it is proposed that detailed survey and production of an agreed mitigation plan are made a condition of any permission with implementation undertaken 2 years prior to each phase of working. Works which will affect a sett will require a development licence (currently administered by Natural England).

Mitigation is likely to include:

- creation of artificial setts and relocation of badgers from any setts which will be lost from the area of working;
- supplementary feeding.

As restoration progresses, it is anticipated that the site will provide habitats of equal or increased value to badgers compared to those currently present.

Other notable and protected species

No other notable or protected species have been recorded as present within the application area. However, given that the proposed works are phased over an approximately 60 year period and are unlikely to commence for several years post any permission, it is recommended that additional survey for notable and protected species is undertaken prior to each phase of working with comprehensive mitigation undertaken as required.

5.3 Residual impacts

After mitigation measures and restoration have been implemented, no significant adverse residual impacts are predicted. Overall, there should be a significant increase in the nature conservation interest of the area following restoration.

6 REFERENCES

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APPENDIX 1 - Copy of letter to/from English Nature (now Natural England) regarding scope of survey and mitigation

Ms N Orchard
English Nature
Ham Lane House
Ham Lane
Nene Park
Orton Waterville
Peterborough
PE2 5UR

21 March 2002

Dear Ms Orchard

The Town and Country Planning (EIA) Regulations 1999, Regulations 10 and 12 Scoping Opinion, Extraction of limestone, Wakerley, Northamptonshire.

With reference to your letter of the 10 January 2002 to Northamptonshire County Council (NCC) and my conversation with yourself and Mr D Denman yesterday, I write to clarify the level of survey required with regard to protected species.

Since the proposed extraction is not scheduled to start until 2012, the following level of survey was considered in our discussion to be acceptable for the EIA (likely to be submitted this year):

- Badgers: It was clarified that setts are present. Given this, no further survey is required for the EIA but mitigation should be outlined.
- Bats: Mature trees to be affected to receive a daytime visual survey for obvious signs of roosts and an assessment of the likelihood of roosts (but without the use of ladders). Mitigation to be outlined.
- Birds (including Schedule 1 spp.): Incidental survey only along with any records from local birdwatchers/ornithological societies. Mitigation to be outlined.
- Grass snakes, adders and common lizards: Incidental survey only along with the identification of likely habitat. Mitigation to be outlined.
- Great Crested Newt: Only one possible breeding site present - a small pool in an arable landscape. 2 visits were agreed in April or May and to include egg search, netting, torch survey and bottle traps.

In all cases re-survey a year or two prior to any works and detailed mitigation proposals could be a condition of any permission.

Please confirm if this is an accurate description of what was verbally agreed. Since the survey season is fast approaching, a prompt reply would be much appreciated. Many thanks.

Yours sincerely

Robert Mileto

PS: I have sought agreement with Mr P Watson of NCC that it is appropriate to contact you directly on this matter and he agreed as long as the correspondence is copied to him.

cc. Mr P Watson, Northamptonshire County Council
Mr M Oldridge, Mineral Surveying Services



Bedfordshire, Cambridgeshire & Northamptonshire Team

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Mr R Mileto
Eco Tech Ecological Consultancy
"Starlings"
61 Copthorne Road
Shrewsbury
Shropshire
SY3 8NW

Our ref: EL.CON.01

26 March 2002

Dear Mr Mileto

**TOWN AND COUNTRY PLANNING (EIA) REGULATIONS 1999
REGULATIONS 10 AND 12 SCOPING OPINION
EXTRACTION OF LIMESTONE, WAKERLEY, NORTHAMPTONSHIRE**

Thank you for your letter of 21 March 2002 clarifying the level of survey required with regard to protected species. We note that proposed extraction is not scheduled to start until 2012.

We have the following comments on the proposed levels of survey for protected species.

Badgers: English Nature is satisfied with the outlined proposals

Bats: English Nature is satisfied with the outlined proposals

Birds (inc Schedule 1 spp.): English Nature is satisfied with the outlined proposals

Grass snakes, adders, common lizards: English Nature is satisfied with the outlined proposals

Great crested Newts: English Nature is satisfied with survey techniques outlined however we ask that mitigation proposals should also be included in the Environmental Statement.

We would prefer to see a full survey included with the submitted Environmental Statement. However given that the proposed extraction is not scheduled until 2012 we accept that a baseline survey carried out at present followed by a full survey and detailed mitigation 1-2 years before work commences is a practical approach.



working today for nature tomorrow

I hope that this information may be of use to you.

Yours sincerely

Nicola Orchard

Nicola Orchard
Assistant Conservation Officer

cc. Mr P Watson, Northamptonshire County Council

APPENDIX 2 - SPECIES LISTS

1) Vascular plants

ENGLISH NAME	LATIN NAME	HABITAT					
		(proposed extraction area)			(proposed haul road)		
		SCRUB/ HEDGE	GRASS'D TALL HERB & OTHER	ARABLE	HEDGE	GRASS'D	ARABLE
agrimony	<i>Agrimonia eupatoria</i>		R				
annual meadow-grass	<i>Poa annua</i>			R		R	
ash	<i>Fraxinus excelsior</i>	LD	R	O	LF		
barren brome	<i>Anisantha sterilis</i>	R		A	R		
bird's-foot-trefoil	<i>Lotus corniculatus</i>		F	R			
biting stonecrop	<i>Sedum acre</i>		VLF				
bittersweet	<i>Solanum dulcamara</i>		R				
black bryony	<i>Tamus communis</i>			R	R		
black horehound	<i>Ballota nigra</i>			O		VLF	VLF
black medick	<i>Medicago lupulina</i>		R			VLF	
black-bindweed	<i>Fallopia convolvulus</i>			LF			
black-grass	<i>Alopecurus myosuroides</i>						VLF
blackthorn	<i>Prunus spinosa</i>	O/VLD	R		VLF		
bladder campion	<i>Silene vulgaris</i>		R			R	
bracken	<i>Pteridium aquilinum</i>	R	R		VLF		
bramble	<i>Rubus fruticosus agg.</i>	F	R	O/VLF	A/LD	R	LF
broad-leaved dock	<i>Rumex obtusifolius</i>		R	R		R	R
broad-leaved willowherb	<i>Epilobium montanum</i>						
bush vetch	<i>Vicia sepium</i>	R					
charlock	<i>Sinapis arvensis</i>			R			R
cleavers	<i>Galium aparine</i>	LF		LF	O	R	VLF
cock's-foot	<i>Dactylis glomerata</i>	LF	O	O	O	LF	VLF
colt's-foot	<i>Tussilago farfara</i>		R				
common bent	<i>Agrostis capillaris</i>		LF	LF		R	VLF
common centaury	<i>Centaureum erythraea</i>		R				
common couch	<i>Elytrigia repens</i>		R	O		VLF	VLF
common field-speedwell	<i>Veronica persica</i>			F			
common figwort	<i>Scrophularia nodosa</i>	R					
common fumitory	<i>Fumaria officinalis</i>			R			
common gromwell	<i>Lithospermum officinale</i>						VR
common knapweed	<i>Centaurea nigra</i>		O			VLF	
common mallow	<i>Malva sylvestris</i>			R		VLF	
common mouse-ear	<i>Cerastium fontanum</i>		R	O			
common nettle	<i>Urtica dioica</i>	LF	R	R	LF	VLF	R
common orache	<i>Atriplex patula</i>			R			
common poppy	<i>Papaver rhoeas</i>		R	R			
common ragwort	<i>Senecio jacobaea</i>		O	R		VLF	
common restharrow	<i>Ononis repens</i>		VLF				
common sedge	<i>Carex nigra</i>		R				
cow parsley	<i>Anthriscus sylvestris</i>			O		R	VLF
crab apple	<i>Malus sylvestris</i>			R			
creeping bent	<i>Agrostis stolonifera</i>		R	R		VLF	
creeping buttercup	<i>Ranunculus repens</i>		R	R		O	
creeping cinquefoil	<i>Potentilla reptans</i>		O	R		R	
creeping thistle	<i>Cirsium arvense</i>		R	VLF		VLF	O
crested dog's-tail	<i>Cynosurus cristatus</i>		LF			VLF	
curled dock	<i>Rumex crispus</i>		R	R/O			
cut-leaved crane's-bill	<i>Geranium dissectum</i>		O	O		R	
daisy	<i>Bellis perennis</i>		R				
dandelion	<i>Taraxacum sp.</i>		O				
dog rose	<i>Rosa canina</i>			F	R		
dog's mercury	<i>Mercurialis perennis</i>	R					
dogwood	<i>Cornus sanguinea</i>	O		R	R		VLF
elder	<i>Sambucus nigra</i>	LF	R	F	R		
English elm	<i>Ulmus procera</i>			R		R	VLD
false fox-sedge	<i>Carex otrubae</i>		R				
false oat-grass	<i>Arrhenatherum elatius</i>		LA	A	R	LA	LA
false-brome	<i>Brachypodium sylvaticum</i>	R/O			VLF		
fat-hen	<i>Chenopodium album</i>			O			
field bindweed	<i>Convolvulus arvensis</i>			F		R	R
field forget-me-not	<i>Myosotis arvensis</i>			F			
field maple	<i>Acer campestre</i>	F	R		LF		

APPENDIX 2 - SPECIES LISTS (cont.)

1) Vascular plants (cont.)

ENGLISH NAME	LATIN NAME	HABITAT					
		(proposed extraction area)			(proposed haul road)		
		SCRUB/ HEDGE	GRASS'D TALL HERB & OTHER	ARABLE	HEDGE	GRASS'D	ARABLE
field pansy	<i>Viola arvensis</i>			O			
field penny-cress	<i>Thlaspi arvense</i>			R			
field scabious	<i>Knautia arvensis</i>			R	VLF		
field-rose	<i>Rosa arvensis</i>			R			
garlic mustard	<i>Alliaria petiolata</i>			R			
glaucous sedge	<i>Carex flacca</i>		LF				
goat willow	<i>Salix caprea</i>	LF	R				
goat's-beard	<i>Tragopogon pratensis</i>		R	R		R	
great willowherb	<i>Epilobium hirsutum</i>		R				
greater bird's-foot-trefoil	<i>Lotus pedunculatus</i>		O				
greater knapweed	<i>Centaurea scabiosa</i>				VLF		
greater plantain	<i>Plantago major</i>		R			O	
grey willow	<i>Salix cinerea</i>	LF	R				
ground-ivy	<i>Glechoma hederacea</i>	F		R	VLF	R	VLF
groundsel	<i>Senecio vulgaris</i>			R			
hairy-brome	<i>Bromopsis ramosus</i>	R					
hairy sedge	<i>Carex hirta</i>					R	
hairy St John's-wort	<i>Hypericum hirsutum</i>					R	
hard rush	<i>Juncus inflexus</i>		VLF				
hawthorn	<i>Crataegus monogyna</i>	LD	R		LD		
hazel	<i>Corylus avellana</i>	F	O	O	LF		
hedge bedstraw	<i>Galium mollugo</i>		R	O	VLF		
hedge mustard	<i>Sisymbrium officinale</i>			O			
hedge woundwort	<i>Stachys sylvatica</i>			O	VLF	VLF	
henbit dead-nettle	<i>Lamium amplexicaule</i>			R			
hoary ragwort	<i>Senecio erucifolius</i>		F				
hoary willowherb	<i>Epilobium parviflorum</i>		R				
hogweed	<i>Heracleum sphondylium</i>			F		VLF	LF
honeysuckle	<i>Lonicera periclymenum</i>				R		
hop trefoil	<i>Trifolium campestre</i>		F				
imperforate St John's-wort	<i>Hypericum maculatum</i>	R					
ivy	<i>Hedera helix</i>	R		VR	VLA		LF
ivy-leaved speedwell	<i>Veronica hederifolia</i>			F			
jointed rush	<i>Juncus articulatus</i>		R			R	
knotted hedge-parsley	<i>Torilis nodosa</i>			R			
lady's bedstraw	<i>Galium verum</i>		R		VLF		
lesser burdock	<i>Arctium minus</i>		R	R	R		
lesser stitchwort	<i>Stellaria graminea</i>		R				
lesser trefoil	<i>Trifolium dubium</i>		O				
lords-and-ladies	<i>Arum maculatum</i>	R		R	VLF	O	
male-fern	<i>Dryopteris filix-mas</i>	O			R		
meadow buttercup	<i>Ranunculus acris</i>		O			O	
meadow crane's-bill	<i>Geranium pratense</i>				VLF		
meadow fescue	<i>Festuca pratensis</i>					O	
meadow vetchling	<i>Lathyrus pratensis</i>		O			VLF	
meadowsweet	<i>Filipendula ulmaria</i>	R	R			VLF	
mouse-ear-hawkweed	<i>Pilosella officinarum</i>		VLF				
musk-mallow	<i>Malva moschata</i>			R		R	
nipplewort	<i>Lapsana communis</i>			R	R	R	
oxeye daisy	<i>Leucanthemum vulgare</i>		O				
pedunculate oak	<i>Quercus robur</i>	R	R	R	R		R
perennial rye-grass	<i>Lolium perenne</i>		R	R		LD	
perforate St John's-wort	<i>Hypericum perforatum</i>		R		R		
pineapple-weed	<i>Matricaria discoidea</i>			R			
prickly lettuce	<i>Lactuca serriola</i>			R			
prickly sow-thistle	<i>Sonchus asper</i>			R		R	R
ragged-robin	<i>Lychnis flos-cuculi</i>		R				
red bartsia	<i>Odonites verna</i>		R				
red clover	<i>Trifolium pratense</i>		R	R		R	

APPENDIX 2 - SPECIES LISTS (cont.)
1) Vascular plants (cont.)

ENGLISH NAME	LATIN NAME	HABITAT					
		(proposed extraction area)			(proposed haul road)		
		SCRUB/ HEDGE	GRASS'D TALL HERB & OTHER	ARABLE	HEDGE	GRASS'D	ARABLE
red dead-nettle	<i>Lamium purpureum</i>				F		
red fescue	<i>Festuca rubra</i>		LA	O	O		
redshank	<i>Pericaria maculosa</i>		R				
ribwort plantain	<i>Plantago lanceolata</i>		F	F		O	
rosebay willowherb	<i>Chamerion angustifolium</i>		R				
rough hawkbit	<i>Leontodon hispidus</i>		R				
rough meadow-grass	<i>Poa trivialis</i>	LF	O	F	R	LD	
Russian comfrey	<i>Symphytum x uplandicum</i>			VR			
scarlet pimpernel	<i>Anagallis arvensis</i>			O			
scentless mayweed	<i>Tripleurospermum inodorum</i>			F			O
selfheal	<i>Prunella vulgaris</i>		LF				
shepherd's-purse	<i>Capsella bursa-pastoris</i>			F			
silver birch	<i>Betula pendula</i>	LF	R	R	R		
silverweed	<i>Potentilla anserina</i>		R	R		R	
small-flowered crane's-bill	<i>Geranium pusillum</i>			O			
small pondweed	<i>Potamogeton berchtoldii</i>		VR				
smooth hawk's-beard	<i>Crepis capillaris</i>		O				
smooth sow-thistle	<i>Sonchus oleraceus</i>			R/O			
smooth tare	<i>Vicia tetrasperma</i>		O				
soft-brome	<i>Bromus hordeaceus</i>		LA	O			
soft-rush	<i>Juncus effusus</i>		VLF				
spear thistle	<i>Cirsium vulgare</i>		R	R			
spindle	<i>Euonymus europaeus</i>	R					
squirreltail fescue	<i>Vulpia bromoides</i>		R				
sun spurge	<i>Euphorbia helioscopia</i>			R			
sycamore	<i>Acer pseudoplatanus</i>						O
tall melilot	<i>Melilotus altissima</i>	R					
three-nerved sandwort	<i>Moeringa trinerva</i>	R				R	
timothy	<i>Phleum pratense</i>		O	R		R	
toad rush	<i>Juncus bufonius</i>		R				
tor grass	<i>Bromus pinnatum</i>				VLF	O	
tufted hair-grass	<i>Deschampsia cespitosa</i>	R	VLA		R		
tufted vetch	<i>Vicia cracca</i>				VLF		
upright hedge-parsley	<i>Torilis japonica</i>		R	R			
weld	<i>Reseda luteola</i>		R				
welted thistle	<i>Carduus acanthoides</i>		R	R		R	R
white bryony	<i>Bryonia dioica</i>			R		VLF	
white campion	<i>Silene latifolia</i>			R			
white clover	<i>Trifolium repens</i>		F	R		VLF	
white dead-nettle	<i>Lamium album</i>			F			
white stonecrop	<i>Sedum album</i>		R				
wild angelica	<i>Angelica sylvestris</i>		R				
wild carrot	<i>Daucus carota</i>		R				
wild mignonette	<i>Reseda lutea</i>		R				
wild parsnip	<i>Pastinaca sativa</i>		R				
wild privet	<i>Ligustrum vulgare</i>	R			R		
wild strawberry	<i>Fragaria vesca</i>		R			VLF	
wild teasel	<i>Dipsacus fullonum</i>		R				
wild-oat	<i>Avena fatua</i>			R			
wood avens	<i>Geum urbanum</i>	R			R		
wood small-reed	<i>Calamagrostis epigejos</i>		LA			R	
yarrow	<i>Achillea millefolium</i>		R				
yellow oat-grass	<i>Trisetum flavescens</i>		R				
yellow rattle	<i>Rhinanthus minor</i>		VR				
Yorkshire-fog	<i>Holcus lanatus</i>		LD	R		LF	

KEY TO ABUNDANCE:

D = Dominant A = Abundant F = Frequent O = Occasional R = Rare
L = Locally V = Very Verges are included within the grassland habitat

APPENDIX 2 - SPECIES LISTS

2) Butterflies

common blue
gatekeeper
large skipper
large white
meadow brown
peacock
small heath
small skipper
small tortoiseshell
speckled wood

3) Amphibians

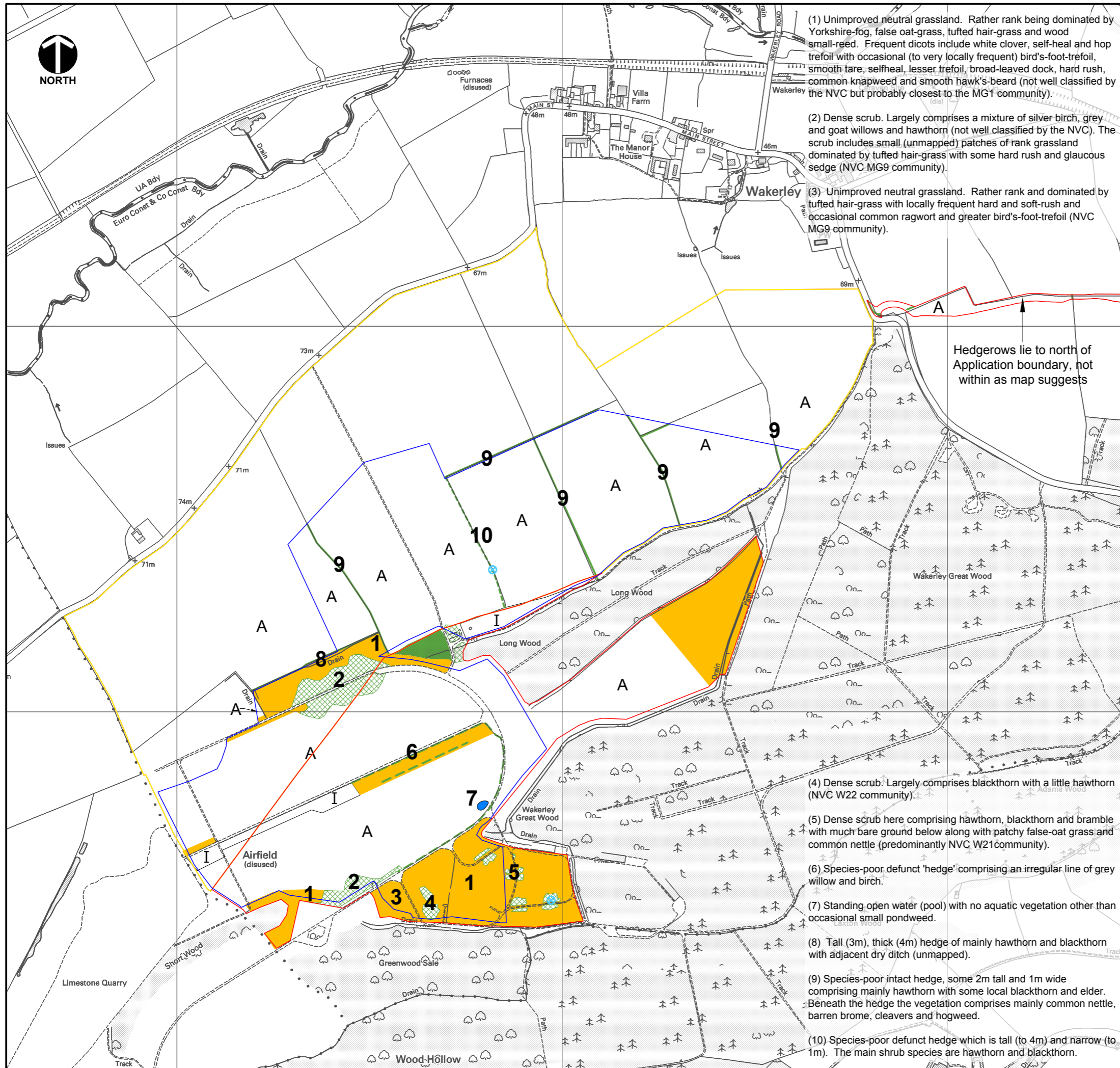
common frog
smooth newt

4) Birds

blackbird
blue tit
buzzard
carrion crow
chaffinch
dunnock
grasshopper warbler
great spotted woodpecker
great tit
green woodpecker
jay
kestrel
magpie
pheasant
red-legged partridge
robin
skylark
whitethroat
willow warbler
wood pigeon
wren

5) Mammals

badger
muntjac deer
fox
grey squirrel
rabbit



(1) Unimproved neutral grassland. Rather rank being dominated by Yorkshire-fog, false oat-grass, tufted hair-grass and wood small-reed. Frequent dicots include white clover, self-heal and hop trefoil with occasional (to very locally frequent) bird's-foot-trefoil, smooth tare, selfheal, lesser trefoil, broad-leaved dock, hard rush, common knapweed and smooth hawk's-beard (not well classified by the NVC but probably closest to the MG1 community).

(2) Dense scrub. Largely comprises a mixture of silver birch, grey and goat willows and hawthorn (not well classified by the NVC). The scrub includes small (unmapped) patches of rank grassland dominated by tufted hair-grass with some hard rush and glaucous sedge (NVC MG9 community).

(3) Unimproved neutral grassland. Rather rank and dominated by tufted hair-grass with locally frequent hard and soft-rush and occasional common ragwort and greater bird's-foot-trefoil (NVC MG9 community).

(4) Dense scrub. Largely comprises blackthorn with a little hawthorn (NVC W22 community).

(5) Dense scrub here comprising hawthorn, blackthorn and bramble with much bare ground below along with patchy false-oat grass and common nettle (predominantly NVC W21 community).

(6) Species-poor defunct 'hedge' comprising an irregular line of grey willow and birch.

(7) Standing open water (pool) with no aquatic vegetation other than occasional small pondweed.

(8) Tall (3m), thick (4m) hedge of mainly hawthorn and blackthorn with adjacent dry ditch (unmapped).

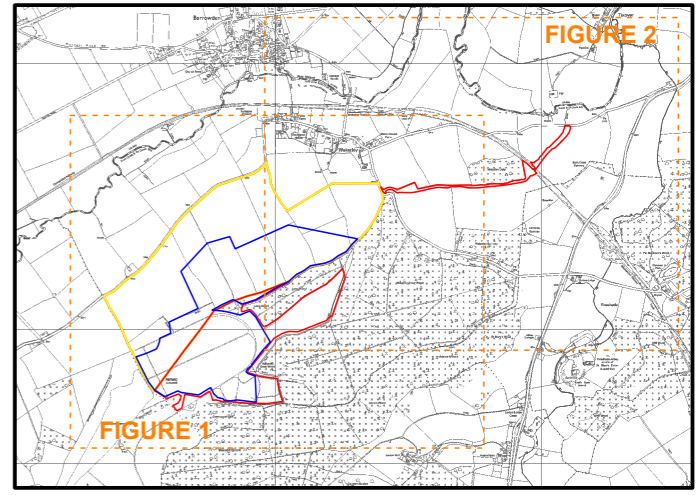
(9) Species-poor intact hedge, some 2m tall and 1m wide comprising mainly hawthorn with some local blackthorn and elder. Beneath the hedge the vegetation comprises mainly common nettle, barren brome, cleavers and hogweed.

(10) Species-poor defunct hedge which is tall (to 4m) and narrow (to 1m). The main shrub species are hawthorn and blackthorn.

Hedgerows lie to north of Application boundary, not within as map suggests

Key

- Broadleaved semi-natural woodland
- Dense scrub
- Unimproved neutral grassland
- Improved grassland
- Standing water
- Arable
- Species poor hedge (intact)
- Species poor hedge (defunct)
- Application boundary
- Existing mining consent
- Edge of Extraction
- Badger Sett



Client: **The Burghley Estate**

Project: **WAKERLEY QUARRY**

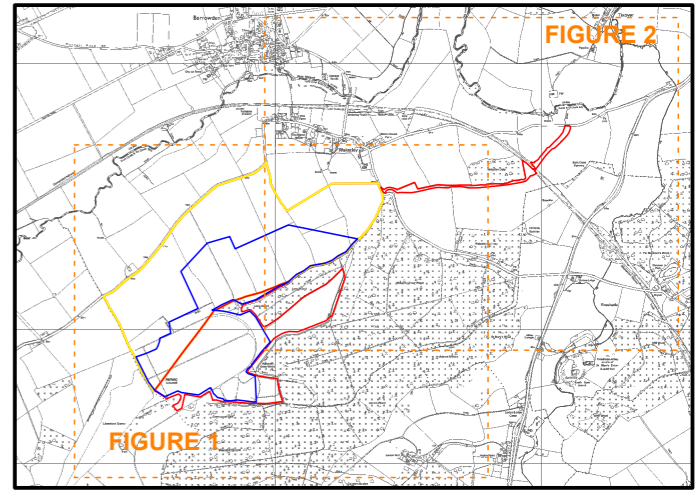
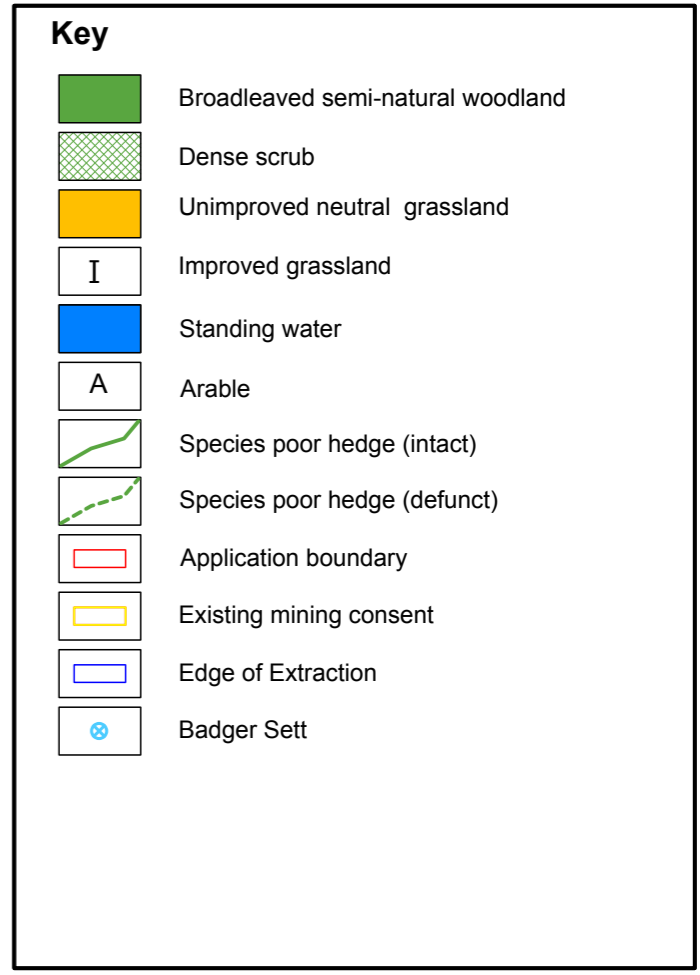
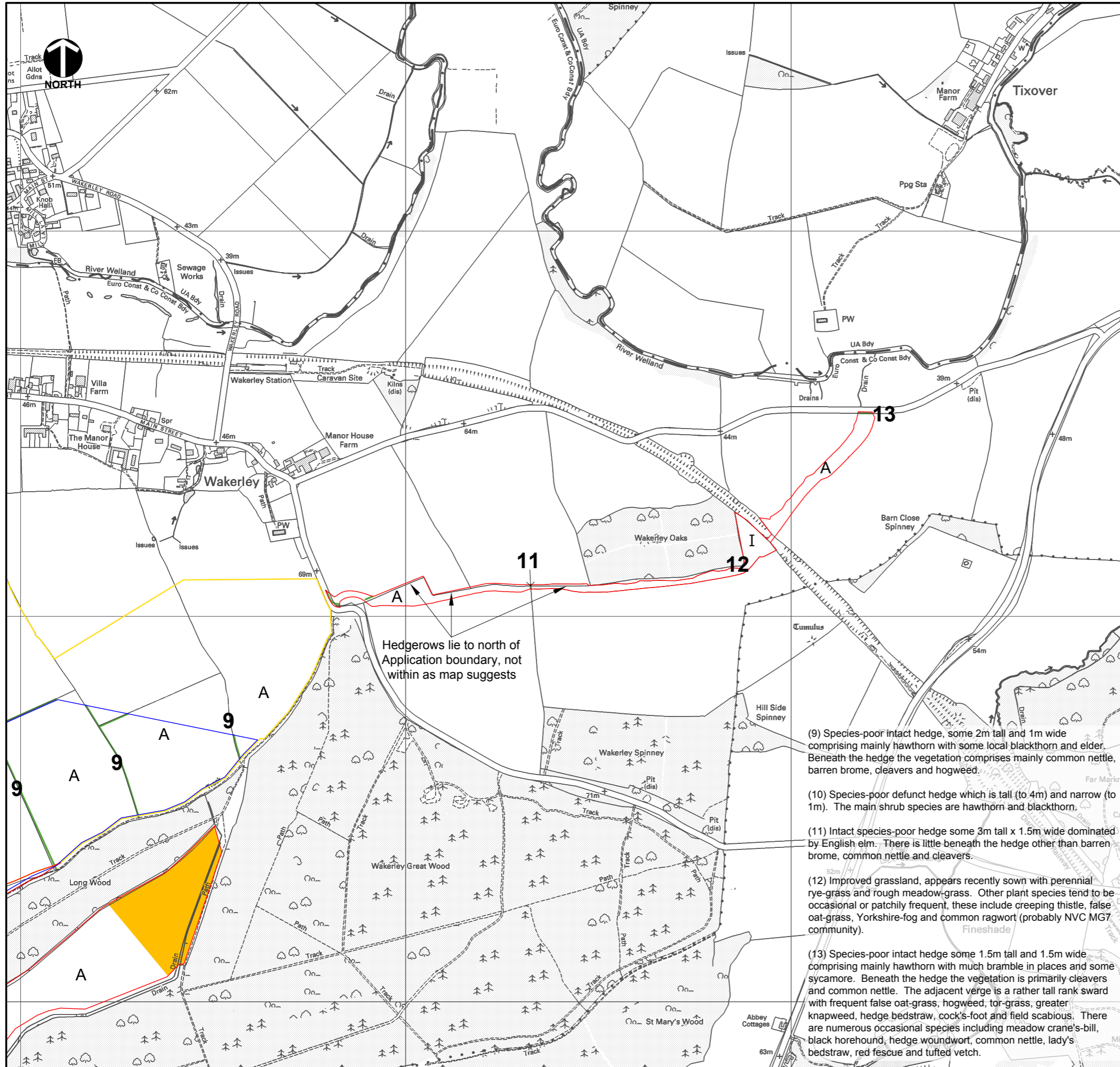
Title: **Phase 1 Habitat Survey and Protected Species**

Pear Tree House
Dovaston
Oswestry
Shropshire, SY10 8DP
Tel 01691 682773

Bright & Associates
Landscape & Environmental Consultants

CAD Ref: WK530-D1v12
Scale: 1:10,000 Date: Mar 08

Figure 1



Hedgerows lie to north of Application boundary, not within as map suggests

(9) Species-poor intact hedge, some 2m tall and 1m wide comprising mainly hawthorn with some local blackthorn and elder. Beneath the hedge the vegetation comprises mainly common nettle, barren brome, cleavers and hogweed.

(10) Species-poor defunct hedge which is tall (to 4m) and narrow (to 1m). The main shrub species are hawthorn and blackthorn.

(11) Intact species-poor hedge some 3m tall x 1.5m wide dominated by English elm. There is little beneath the hedge other than barren brome, common nettle and cleavers.

(12) Improved grassland, appears recently sown with perennial rye-grass and rough meadow-grass. Other plant species tend to be occasional or patchily frequent, these include creeping thistle, false oat-grass, Yorkshire-fog and common ragwort (probably NVC MG7 community).

(13) Species-poor intact hedge some 1.5m tall and 1.5m wide comprising mainly hawthorn with much bramble in places and some sycamore. Beneath the hedge the vegetation is primarily cleavers and common nettle. The adjacent verge is a rather tall rank sward with frequent false oat-grass, hogweed, tor-grass, greater knapweed, hedge bedstraw, cock's-foot and field scabious. There are numerous occasional species including meadow crane's-bill, black horehound, hedge woundwort, common nettle, lady's bedstraw, red fescue and tufted vetch.

Client:

The Burghley Estate

Project:

WAKERLEY QUARRY

Title:

Phase 1 Habitat Survey and Protected Species

Pear Tree House
Dovaston
Oswestry
Shropshire, SY10 8DP
Tel 01691 682773

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Figure 2