

**SOIL RESOURCES AND
AGRICULTURAL USE & QUALITY OF
LAND OFF PINCET LANE,
NORTH KILWORTH**

Report 1144/1

6th August 2015

**SOIL RESOURCES AND AGRICULTURAL USE & QUALITY
OF LAND OFF PINCET LANE, NORTH KILWORTH**

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Report 1144/1

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6th August 2015

SUMMARY

A survey of 42.7 ha of agricultural land to the west of Pincet Lane, Kilworth in Leicestershire has shown that much of the land has heavy soils over slowly permeable clay subsoils. Loamier soils with moderately permeable upper subsoil are common across the remainder of the site. Seasonal wetness is the principal limitation to agricultural use, and the majority of the land is of sub-grade 3b quality. Where there are more permeable soils the land is of sub-grade 3a quality.

Six soil resources have been identified. These include three topsoils, heavy, medium and light-textured, and a similar range of subsoils.

1.0 Introduction

- 1.1 This report provides information on the soil resources and agricultural quality and use of an area of 42.7 ha of land west of Pincet Lane, North Kilworth in Leicestershire. The land is proposed for a quarry. The report is based on a soil and agricultural desk study, and a survey of the land in August 2015.

SITE ENVIRONMENT

- 1.2 The land lies to the north of Bosworth Road and is bounded in the east by Pincet Lane. The other site limits are marked mainly by tracks and field boundaries.
- 1.3 The land has gently undulating topography and rises from about 154m AOD in the south and east to about 168 m AOD in the north and west.

AGRICULTURAL USE

- 1.4 Most of the land is in arable use, with eight fields cropped with winter wheat at the time of the survey. The land is subject to an Entry Level Environmental Stewardship agreement, as part of a 284 ha contract.

PUBLISHED INFORMATION

- 1.5 The 1:50,000 BGS geological information shows the basal geology as Dyrum Formation Siltstone and Mudstone in the north-west, and Blue Lias and Charmouth Mudstone in the south-east. The whole site is covered by a superficial deposit of Chalky Till.
- 1.6 The national soil map¹, at 1:250,000 scale, shows the land as in the Ragdale Soil Association, comprising slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils.
- 1.7 Most of the land is covered by semi-detailed agricultural land classification (ALC) mapping based on the post-1988 guidelines and carried out in the 1990's. This shows the land in the west to be of sub-grade 3b quality and the land in east as sub-grade 3a quality. Earlier reconnaissance mapping from the 1970's shows the rest of the land as grade 3.

¹ Ragg, J M (*et al*) 1984. *Soils and their Use in Midland and Western England* Soil Survey of England and Wales Bulletin No. 12

2.0 Soils

- 2.1 National Planning Practice Guidance states that the planning system should protect and enhance valued soils and prevent the adverse effects of unacceptable levels of pollution. This is because soil is an essential finite resource that provides important ecosystem services, for example as a growing medium for food, timber and other crops, as a store for carbon and water, as a reservoir of biodiversity and buffer against pollution.
- 2.2 A detailed soil resource and agricultural quality survey was carried out in August 2015. It was based on observations at intersects of a 100 m grid, giving a sampling density of one observation per hectare. Some observations were moved slightly because of access restraints imposed by standing crops. During the survey soils were examined by a combination of pits and augerings to a maximum depth of 1.2 m. A log of the sampling points and a map (Map 3) showing their location is in an appendix to this report.
- 2.3 The survey shows that much of the area has heavy textured soils developed in clay, though in parts of the east of the site are lighter-textured soils.

Heavy soils

- 2.4 The topsoil is most often heavy clay loam or heavy silty clay loam in texture with a few flint stones, and around 28-30 cm thick. The subsoil is slowly permeable clay, predominantly greyish in colour, with ochreous mottling indicating seasonal wetness. The lower subsoils often become calcareous and have small chalk stones in the clay matrix.
- 2.5 An example profile from SP62678 86397 (Map 4) is described below:
- | | |
|------------|---|
| 0-24 cm | Dark greyish brown (2.5Y 4/2) heavy clay loam with a few yellowish red (5YR 4/6) mottles; 1% small angular and subangular flint stones; weakly developed medium subangular blocky structure; friable to firm; 1% fine macropores; many very fine fibrous roots; sharp smooth boundary to: |
| 24-62 cm | Greyish brown (10YR 5/2) clay with many yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) mottles; a few small angular and subangular flint stones; weakly developed coarse prismatic structure; firm; 0.5% fine macropores; common fibrous roots; merging to: |
| 62-100+ cm | Grey (10YR 5/1) and greyish brown (10YR 5/2) calcareous clay with many yellowish brown (10YR 5/8) mottles; a few small rounded chalk stones and angular and subangular flints; structureless, massive; firm; 1% fine pores; common very fine fibrous roots near the top of the layer, less below. |
- 2.6 These soils are slowly permeable (wetness class IV) and hence lie wet from the late autumn to spring. They are limited in the range of food and fibre production they can support, being mainly restricted to autumn sown crops

and grass, and have a poor capacity to absorb excess winter rainfall. They provide moist, neutral habitats for plant communities.

Medium loamy over clayey soils

2.7 These soils are most common on the fields bordering Pincet Lane in the east of the site. The topsoil is medium clay loam or sandy clay loam, usually 28-30 cm thick and with a few small flint stones. It overlies an upper subsoil of medium or heavy clay loam, or sandy clay loam extending to 40-50 cm depth, and usually brown coloured with no or subdued mottling, indicating less seasonal wetness than the heavier soils on the site. The lower subsoil is slowly permeable clay or heavy clay loam, greyish brown and mottled.

2.8 An example profile from observation 23 (Map 4) is described below:

| | |
|-----------|---|
| 0-29 cm | Brown to dark brown (10YR 4/3) medium clay loam; 1% small angular and subangular flint stones; moderately developed medium subangular blocky structure; friable; 5% fine macropores; many very fine fibrous roots; sharp smooth boundary to: |
| 29-51 cm | Yellowish brown (10YR 5/4) medium clay loam with a few yellowish red (5YR 5/6) mottles; 2% small angular and subangular flint stones; weakly developed medium subangular blocky structure; friable; 3% fine macropores; many very fine fibrous roots; clear smooth boundary to: |
| 51-65 cm | Brown (10YR 5/3) heavy clay loam with many yellowish red (5YR 5/6) mottles; 1% small angular and subangular flint stones; weakly developed medium prismatic structure; firm; 1% fine pores; common very fine fibrous down ped faces; merging to: |
| 65-100 cm | Light brownish grey (10YR 6/2) clay and heavy clay loam with many yellowish red (5YR 5/6) mottles; 2% small angular and subangular flint stones; structureless, massive; firm; 0.1% fine pores; a few very fine fibrous roots. |

2.9 These soils are moderately permeable in the upper layers but water perches on the slowly permeable clay lower layers to produce some seasonal wetness (wetness class III). They are capable of a moderate range of food and fibre production, and have a moderate capacity to absorb excess winter rainfall. They provide moist, neutral habitats for plant communities.

Light loamy soils

2.10 In the south-easternmost field of the site are soils with medium sandy loam topsoil and upper subsoil, brown in colour and with little sign of seasonal wetness. At 40-50 cm depth are dense very stony layers, impenetrable by auger in the dry conditions of the time of the survey.

2.11 An example profile from observation 41 (Map 4) is described below:

| | |
|----------|--|
| 0-28 cm | Brown to dark brown (10YR 4/3) medium sandy loam; 3% small angular and subangular flint stones; moderately developed medium subangular blocky structure; friable; many macropores; many very fine fibrous roots; sharp smooth boundary to: |
| 28-50 cm | Yellowish brown (10YR 5/4) medium sandy loam; many small angular and subangular flint stones; moderately developed medium subangular blocky |

structure; friable; no visible macropores; many very fine fibrous roots; sharp smooth boundary to:

50+ cm Very stony layer.

- 2.12 These soils are permeable (wetness class I or II). They are capable of a wide range of food and fibre production but limitation in rooting depth over very stony layers will limit productivity due to soil moisture deficit. They have a good capacity to absorb excess winter rainfall, and provide slightly moist, neutral habitats for plant communities.
- 2.13 The soil resources are shown on Maps 1 and 2.

3.0 Agricultural Quality

3.1 To assist in assessing land quality, the Ministry of Agriculture, Fisheries and Food (MAFF) developed a method for classifying agricultural land by grade according to the extent to which physical or chemical characteristics impose long-term limitations on agricultural use for food production. The MAFF Agricultural Land Classification (ALC) system classifies land into five grades numbered 1 to 5, with grade 3 divided into two sub-grades (3a and 3b). The system was devised and introduced in the 1960s and revised in 1988.

3.2 The agricultural climate is an important factor in assessing the agricultural quality of land and has been calculated using the Climatological Data for Agricultural Land Classification². The relevant site data for an average elevation of 163 m is given below, and shows a relatively moist and cool agricultural climate.

- Average annual rainfall: 685 mm
- January-June accumulated temperature >0°C 1290 day°
- Field capacity period 154 days
(when the soils are fully replete with water) mid Nov – mid April
- Summer moisture deficits for: wheat: 92 mm
potatoes: 79 mm

3.3 The survey described in the previous section was used in conjunction with the agroclimatic data above to classify the site using the revised guidelines for agricultural land classification issued in 1988 by the Ministry of Agriculture, Fisheries and Food³.

SURVEY RESULTS

3.4 The agricultural quality in most of the survey area is determined by wetness caused by slow drainage over slowly permeable subsoils, but droughtiness limits the quality on some soil types. Land of grade 3 agricultural quality exists on the site.

² *Climatological Data for Agricultural Land Classification*. Meteorological Office, 1989

³ *Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land*. MAFF, 1988.

Sub-grade 3a

- 3.5 There are approximately 12 ha of sub-grade 3a land on the site. On land with soils similar to those described in paragraphs 2.7-2.9, moderate seasonal wetness caused by water ponding over slowly permeable lower subsoils limits the workability in winter and early spring. On land where the soils are similar to those described in paragraphs 2.10-2.12, limited rooting depth limits the soil moisture available for crop growth, and yields are reduced particularly in dry summers.

Sub-grade 3b

- 3.6 There are approximately 30 ha of subgrade 3b land where soils similar to those described in paragraphs 2.4-2.6 lie wet in winter and spring because of slowly permeable clay subsoils, thereby limiting cultivation and cropping options.

Other land

- 3.7 This includes small areas of woodland, and land around farm buildings and cottages.

Grade areas

- 3.8 The boundaries between the different grades of land are shown on Map 3 and the areas occupied by each are shown below.

Table 1. Areas within the survey area occupied by the different land grades

| <i>Grade/sub-grade</i> | <i>Area (ha)</i> | <i>% of total area</i> | <i>% of agricultural land</i> |
|-------------------------------|-------------------------|-------------------------------|--------------------------------------|
| Sub-grade 3a | 11.8 | 27.6 | 28.4 |
| Sub-grade 3b | 29.7 | 69.6 | 71.6 |
| Other land | 1.2 | 2.8 | |
| Total | 42.7 | 100 | 100 |

4.0 Soil resources and their use

4.1 Government policy as outlined in the Defra Soil Strategy for England and Department of Communities and Local Government's National Planning Policy Framework (paragraphs 109 and 143) is to protect valuable soil resources from loss or damage during land disturbance and ensure that stripped soils are used to either for land reinstatement after quarrying or other beneficial use off-site.

4.2 There are six soil resource units, three topsoils and three subsoils, which are described below and shown on Maps 1 and 2.

Topsoil T1

4.3 This is a heavy topsoil primarily associated with sub-grade 3b land. It needs careful handling to retain its structure and should be stripped when as dry as possible. Most of the topsoils are around 280-300 mm-thick, giving an estimated potential yield of 86,100 m³.

Topsoil T2

4.4 This is a medium loam topsoil mainly associated with sub-grade 3a land. It is of medium clay loam or sandy clay loam texture, and also needs careful handling to retain its structure and should be stripped when as dry as possible. The mean topsoil depth is 280 mm giving an estimated potential yield of 28,670 m³.

Topsoil T3

4.5 There is a small area of light-textured topsoil, principally medium sandy loam or sandy clay loam, in the south-easternmost field of the site, and this should be stripped and stored separately. It is a more resilient resource than the other two topsoils but also requires careful handling to maintain structure. The mean topsoil depth is 289 mm giving a potential yield of 4,300 m³.

Subsoil S1

4.6 This is the heavy subsoil of clay or heavy clay loam which lies directly under Topsoil T1 in the soils of the subgrade 3b land and under Subsoil S2 in the sub-grade 3a land. At depth it passes into a chalky till, but all can be considered as a single resource. It is easily damaged by mishandling and should be stripped when as dry as possible. The mean thickness of the resource could not be accurately estimated in this auger survey, because it continued below 1200 mm depth so beyond auger reach.

Subsoil S2

- 4.7 The upper subsoil of the sub-grade 3a land is a moderately permeable medium or sandy clay loam that should be stripped separately. This subsoil requires careful handling to retain its structure and permeability. The mean thickness of this resource is 180 mm giving a potential yield of 18,430 m³. This resource is over subsoil resource S1.

Subsoil S3

- 4.8 The light loamy soils in the south east of the site have a similar textured stony subsoil, and this should be retained. It is around 200 mm thick giving a potential yield of 3,000 m³.

Soil Handling and Restoration

- 4.9 All soil resources are easily damaged by being stripped or moved when wet. Consequently, stripping should only take place in the driest parts of the year, using the excavator and dumper method as described by Sheet 1 in the MAFF Good Practice Guide for Handling Soils⁴.
- 4.10 If direct placement of stripped soils onto areas being restored is not possible, the resources should be stripped and stored separately in low bunds (no more than 3 m high for topsoil). Topsoil should be stripped from areas designated for storing subsoil. The bunds should be constructed either by excavator or bulldozer (Sheets 2 and 14 in the MAFF Good Practice Guide) avoiding over-compaction. They should be sown with grass to help maintain biological activity and prevent water erosion.
- 4.11 The soils should be removed from storage (Sheet 3 in the MAFF Good Practice Guide) and replaced by excavator during the summer using the loose tipping technique (Sheet 4 in MAFF Good Practice Guide), which avoids traffic on the restored surfaces.
- 4.12 Restoration of land to best and most versatile quality in sub-grade 3a will require placement of topsoil resources T2 or T3 over upper subsoil resources S2 or S3 to give a combined thickness of 410 mm over a slowly permeable subsoil S1. Use of the heavy topsoil T1 will produce land of sub-grade 3b quality.

⁴ MAFF Good Practice Guide for Handling Soils, (www.defra.gov.uk/farm/environment/land-use/soilguid/)

5.0 Conclusions

- 5.1 A survey of 42.7 ha of agricultural land to the west of Pincet Lane, Kilworth in Leicestershire has shown that
- Much of the land has heavy soils over slowly permeable clay subsoils. Loamier soils with moderately permeable upper subsoil are common across the remainder of the site.
 - Seasonal wetness is the principal limitation to agricultural land quality. The majority of the land is of moderate quality in sub-grade 3b, but where there are more permeable soils the land is in best and most versatile quality in sub-grade 3a.
 - Six soil resources have been identified. These include three topsoils heavy, medium and light, and a similar range of subsoils.

APPENDIX
MAPS AND DETAILS OF OBSERVATIONS

Pincet Lane Quarry, North Kilworth: ALC and soil resources survey August 2015 - Details of observations at each sampling point

| Obs No | Topsoil | | | Upper subsoil | | | Lower subsoil | | | Slope (°) | Wetness Class | Agricultural quality | |
|--------|------------|---------|------------|----------------|------------|----------|------------------|----------------------------------|-------------|-----------|---------------|----------------------|-----------------|
| | Depth (cm) | Texture | Stones (%) | Depth (cm) | Texture | Mottling | Depth (cm) | Texture | Mottling | | | Grade | Main limitation |
| 1 | 0-28 | HCL | 3 | 28-70 | HCL-SCL | xxx | 70-110 | C | xxx | 0 | III | 3b | W |
| 2 | 0-28 | MCL | 2 | 28-40 | MCL | xxx | 40-120 | HCL | xxx | <1 | III/IV | 3a/3b | W |
| 3 | 0-26 | MCL | 2 | 26-45 | MCL | xxx | 45-110 | C | xxx | 1 | III | 3a | W |
| 4 | 0-28 | MCL | 3 | 28-45 45-55 | MCL HCL | x xxx | 55-70 90+ | C stopped on stone | xxx | <1 | III | 3a | W |
| 5 | 0-28 | MCL | 3 | 28-55 | HCL | xxx | 55-70 70-120 | br C gr C | xxx xxxx | 0 | III/IV | 3a/3b | W |
| 6 | 0-28 | HZCL | 3 | 28-110 | C | xxx | | | | 0 | IV | 3b | W |
| 7 | 0-27 | HZCL | 1 | 27-70 | C | xxx | 70-110 | C+chk stones | xxx | 0 | IV | 3b | W |
| 8 | 0-28 | M-HCL | 1 | 28-60 | C | xxx | 60-90 90+ | ca C stopped on stones | xxxx | <1 | IV | 3b | |
| 9 | 0-30 | MCL | 3 | 30-45 | C | xxx | 45-110 | C+chk stones | xxxx | 0 | IV | 3b | W |
| 10 | 0-28 | HCL | 1 | 28-38 | HCL | xx | 38-60 | C | xxx | <1 | III/IV | 3b | W |
| 11 | 0-28 | HCL | 1 | 28-65 | C | xxx | 65-110 | C+chk stones | xxx | 0 | IV | 3b | W |
| 12 | 0-30 | HCL | 2 | 30-110 | C | xxx | | | xxx | 1 | IV | 3b | W |
| 13 | 0-28 | HZCL | 2 | 28-55 | C | xxx | 55-110 | C+chk stones | xxxx | 0 | IV | 3b | W |
| 14 | 0-27 | HZCL | 3 | 27-110 | C | xxx | | | | 0 | IV | 3b | W |
| 15 | 0-28 | HCL | 1 | 28-70 | C | xxx | 70-110 | C+chk stones | xxx | 0 | IV | 3b | W |
| 16 | 0-30 | HCL | 1 | 30-55 | C | xxx | 55-110 | C+chk stones | xxxx | <1 | IV | 3b | W |
| 17 | 0-30 | HCL | 1 | 30-60 | C | xxx | 60-110 | C+chk stones | xxxx | 1 | IV | 3b | W |
| 18 | 0-30 | HCL | 2 | 30-50 | ca C | xx | 50-110 | ca C | xxx | 1 | III | 3b | W |
| 19 | 0-25 | MCL | 2 | 25-45 | MCL | x | 45-60 60+ | HCL stopped on stone | xxx | 1 | III | 3a | W |
| 20 | 0-27 | HCL | 0 | 27-60 | C | xxx | 60-110 | C | xxxx | 1 | IV | 3b | W |
| 21 | 0-28 | HCL | 1 | 28-50 | C | xxx | 50-70 70+ | C+chk stones stopped on stone | xxxx | 1 | IV | 3b | W |
| 22 | 0-30 | HCL | 2 | 30-50 | C | xxx | 50-110 | C+chk stones | xxxx | 0 | IV | 3b | W |
| 23 | 0-29 | MCL | 3 | 29-51 | MCL | xx | 51-65 65-100 | HCL HCL+C | xxx | <1 | III | 3a | W |
| 24 | 0-30 | MCL | 1 | 30-50 | HCL | x | 50-70 70-110 | HCL HCL+C | xxx | 0 | III | 3a | W |
| 25 | 0-35 | HCL | 3 | 35-90 | C | xxx | 90-120 | C | xxxx | <1 | IV | 3b | W |
| 26 | 0-28 | HCL | 2 | 28-45 | C | x | 45-65 65-110 | C C+chk stones | xxx | 1 | III | 3b | W |
| 27 | 0-30 | HZCL | 1 | 30-50 | HCL | x | 50-90 90+ | HCL | xxx | 0 | III | 3a/3b | W |
| 28 | 0-28 | MCL | 2 | 28-50 | MCL | x | 50+ | stopped on stone | | 0 | II | 2/3a | W,D |
| 29 | 0-26 | SCL | 1 | 26-40 | SCL | o | 40-70 70-100+ | HCL st C | x xxx | <1 | II | 2 | W |
| 30 | 0-33 | HCL | 1 | 33-70 | C | xxx | 70-90 90+ | C+chk stones stopped on stone | xxxx | 0 | IV | 3b | W |
| 31 | 0-28 | HCL | 1 | 28-60 | C | xxx | 60-75 75+ | C+chk stones | xxx | 0 | IV | 3b | W |
| 32 | 0-30 | HZCL | 1 | 30-45 | br HCL | x | 45-110 | C | xxx | 0 | III | 3b | W |
| 33 | 0-30 | HCL | 2 | 30-110 | br C | xx | | | | 0 | III | 3b | W |

| Obs No | Topsoil | | | Upper subsoil | | | Lower subsoil | | | Slope (°) | Wetness Class | Agricultural quality | |
|--------|------------|---------|------------|---------------|------------|----------|---------------|------------------|----------|-----------|---------------|----------------------|-----------------|
| | Depth (cm) | Texture | Stones (%) | Depth (cm) | Texture | Mottling | Depth (cm) | Texture | Mottling | | | Grade | Main limitation |
| 34 | 0-28 | SCL | 3 | 28-45 | st MSL | x | 45+ | stopped on stone | x | 1 | II | 4A | D |
| 35 | 0-25 | MCL | 4 | 35 | MCL | o | 35-45 | HCL | x | 1 | III | 3a | W |
| 36 | 0-30 | HCL | 1 | 30-55 | C | xxx | 55-110 | C | xxxx | 0 | IV | 3b | W |
| 37 | 0-28 | HCL | 2 | 28-80 | C | xxx | 80-110 | C+chk stones | xxxx | 1 | IV | 3b | W |
| 38 | 0-30 | HCL | 2 | 30-60 | C | xxx | 60-110 | C+chk stones | xxxx | 1 | IV | 3b | W |
| 39 | 0-24 | HCL | 2 | 24-70 | C | xxx | 70-110 | C+chk stones | xxxx | 1 | IV | 3b | W |
| 40 | 0-28 | SCL | 3 | 28-50 | SCL | x | 50-70+ | C | xxx | 1 | III | 3a | W |
| 41 | 0-28 | MSL | 3 | 28-50 | st MSL | o | 50+ | stopped on stone | | 1 | I | 3a | D |
| 42 | 0-30 | SCL | 4 | 30-50 | st SCL-MSL | x | 50+ | stopped on stone | | 1 | II | 3a | D |

Key to table

Mottle intensity:

- o unmottled
- x few to common rusty root mottles (topsoils) or a few ochreous mottles (subsoils)
- xx common to many ochreous mottles and/or dull structure faces
- xxx common to many greyish or pale mottles (gleyed horizon)
- xxxx dominantly grey, often with some ochreous mottles (gleyed horizon)

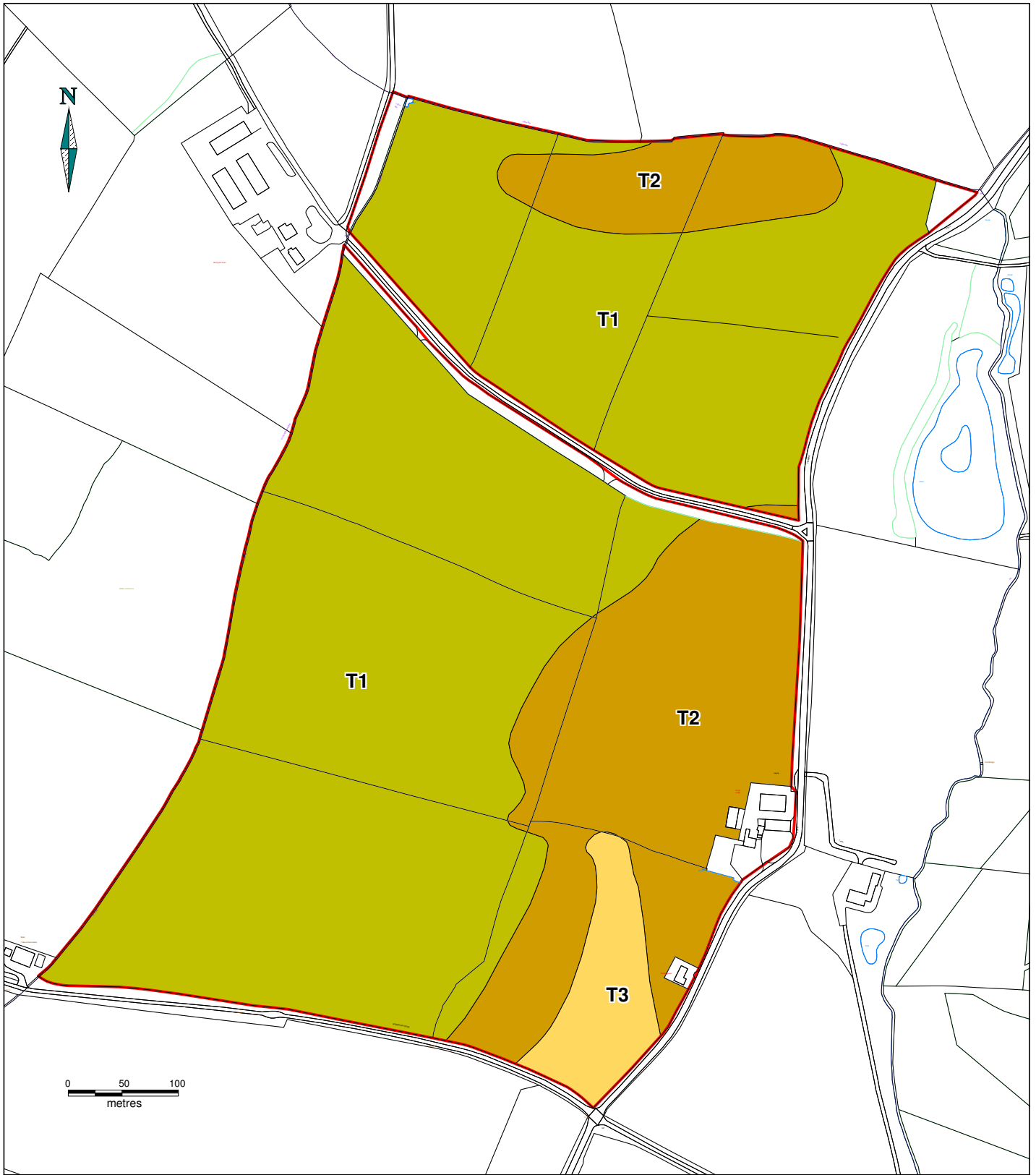
Texture:

- C - clay
- ZC - silty clay
- SC - sandy clay
- CL - clay loam (H-heavy, M-medium)
- ZCL - silty clay loam (H-heavy, M-medium)
- SCL - sandy clay loam
- SZL - sandy silt loam (F-fine, M-medium, C-coarse)
- SL - sandy loam (F-fine, M-medium, C-coarse)
- LS - loamy sand (F-fine, M-medium, C-coarse)
- S - sand (F-fine, M-medium, C-coarse)
- P - peat (H-humified, SF-semi-fibrous, F-fibrous)
- LP - loamy peat; PL - peaty loam

Limitations:

- W - wetness/workability
 - D - droughtiness
 - De - depth
 - St - stoniness
 - Sl - slope
 - F - flooding
 - T - topography/microrelief
- Texture suffixes & prefixes:*
ca - calcareous: x-extremely, v-very, sl-slightly
(ca) - marginally calcareous
st - stony; v st - very stony
chk - chalky
gr - greyish, br - brownish, r - reddish

a depth underlined (e.g. 50) indicates the top of a slowly permeable layer



Client

MICK GEORGE 





Project

**Pincet Lane Quarry
North Kilworth**

Map

**Map 1
Topsoil resource**

KEY

-  **T1** Heavy loam topsoil
-  **T2** Medium loamy topsoil
-  **T3** Light loamy topsoil
-  Survey area

Scale

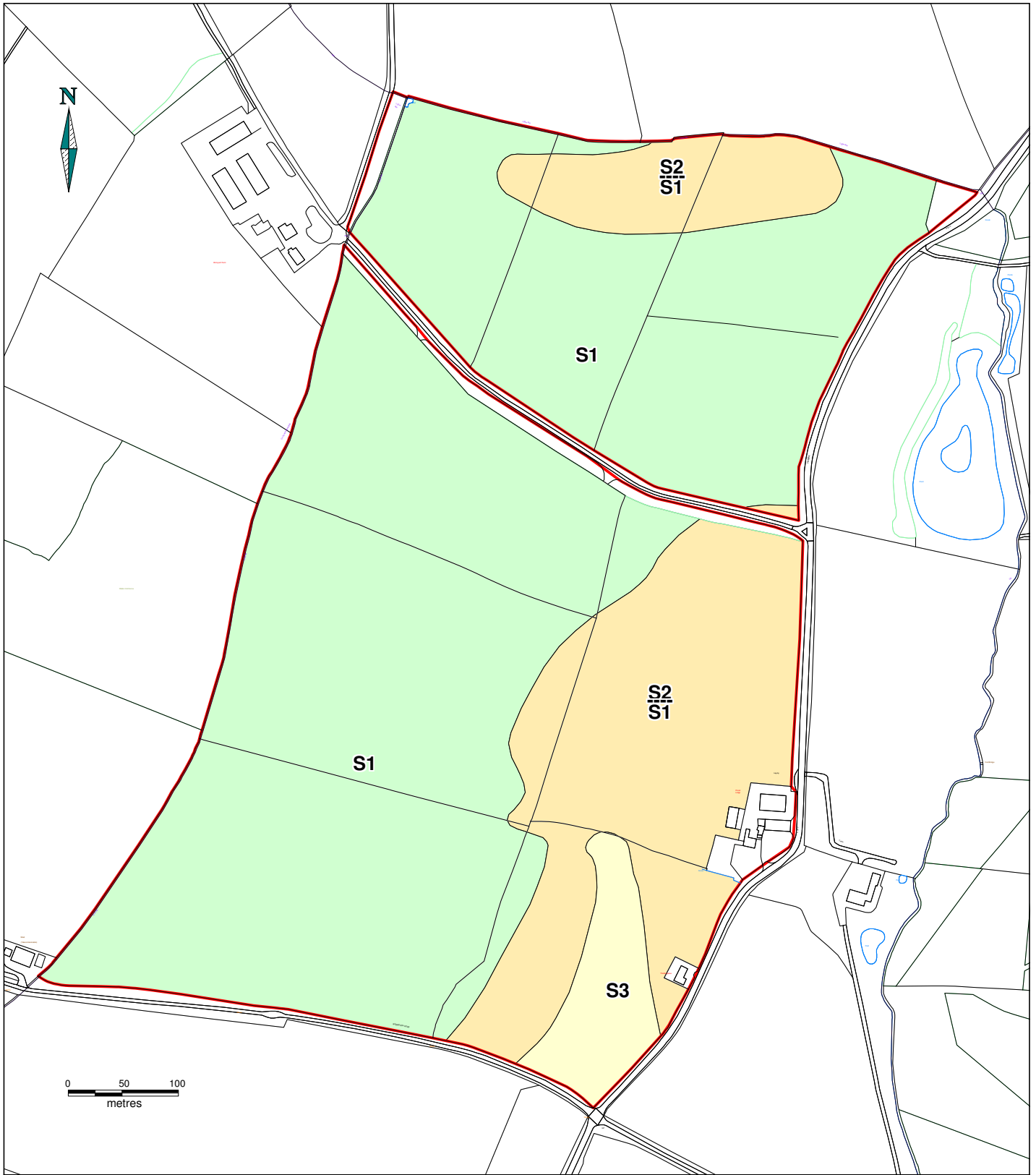
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Date

5/8/2015

**Land
Research**
ASSOCIATES

Lockington Hall
Lockington
Derby DE74 2RH
Tel: 01509 670470



Client

MICK GEORGE 





Project

**Pincet Lane Quarry
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Map

**Map 2
Subsoil resource**

KEY

-  **S1** Clay subsoil
-  **S2** Medium loamy subsoil
-  **S3** Light loamy subsoil
-  Survey area

Scale

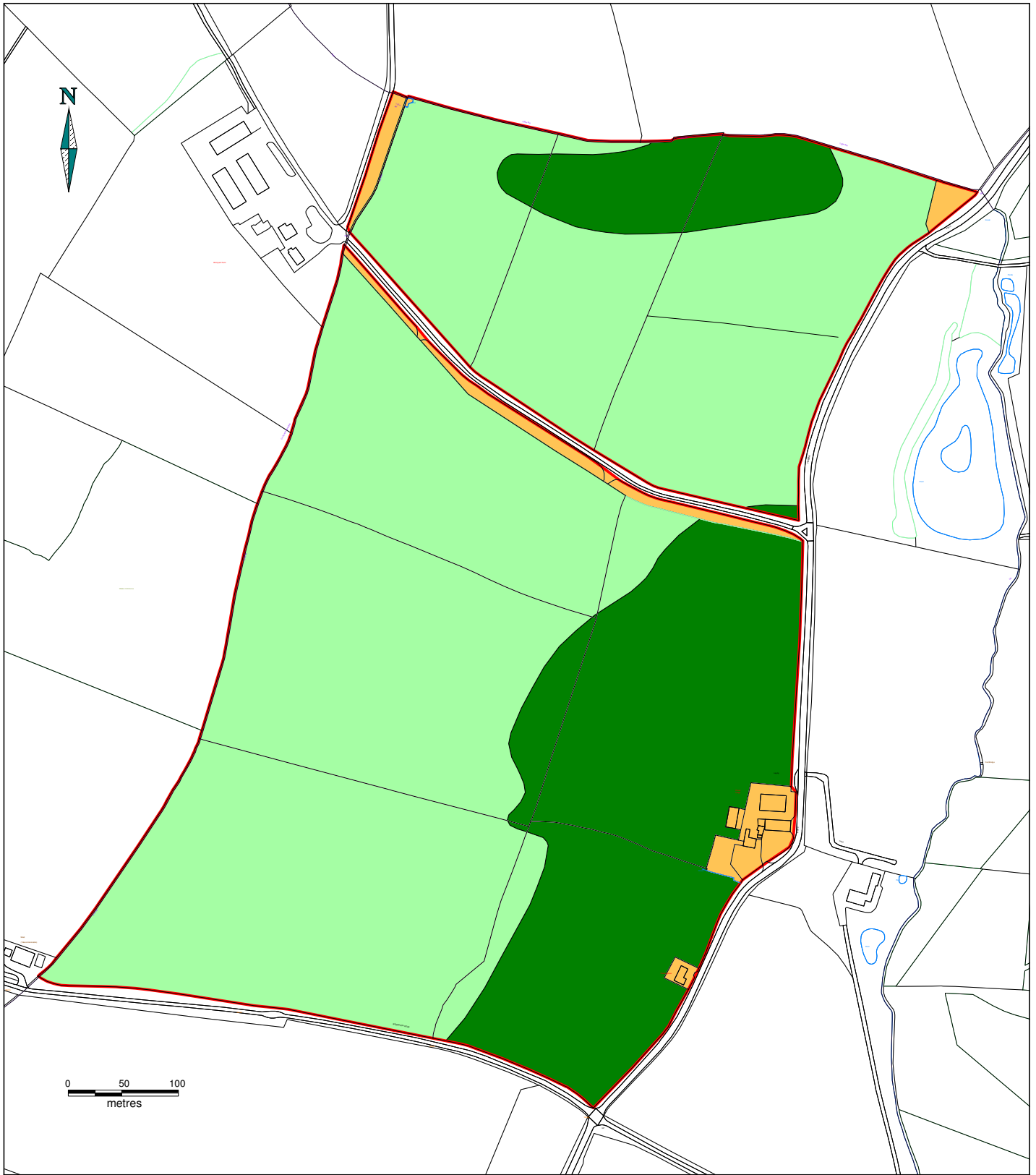
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**Pincet Lane Quarry
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Map

**Map 3
Agricultural Land Quality**

KEY

-  Sub-grade 3a (11.8 ha)
-  Sub-grade 3b (29.7 ha)
-  Other Land (1.2 ha)
-  Survey area

Scale

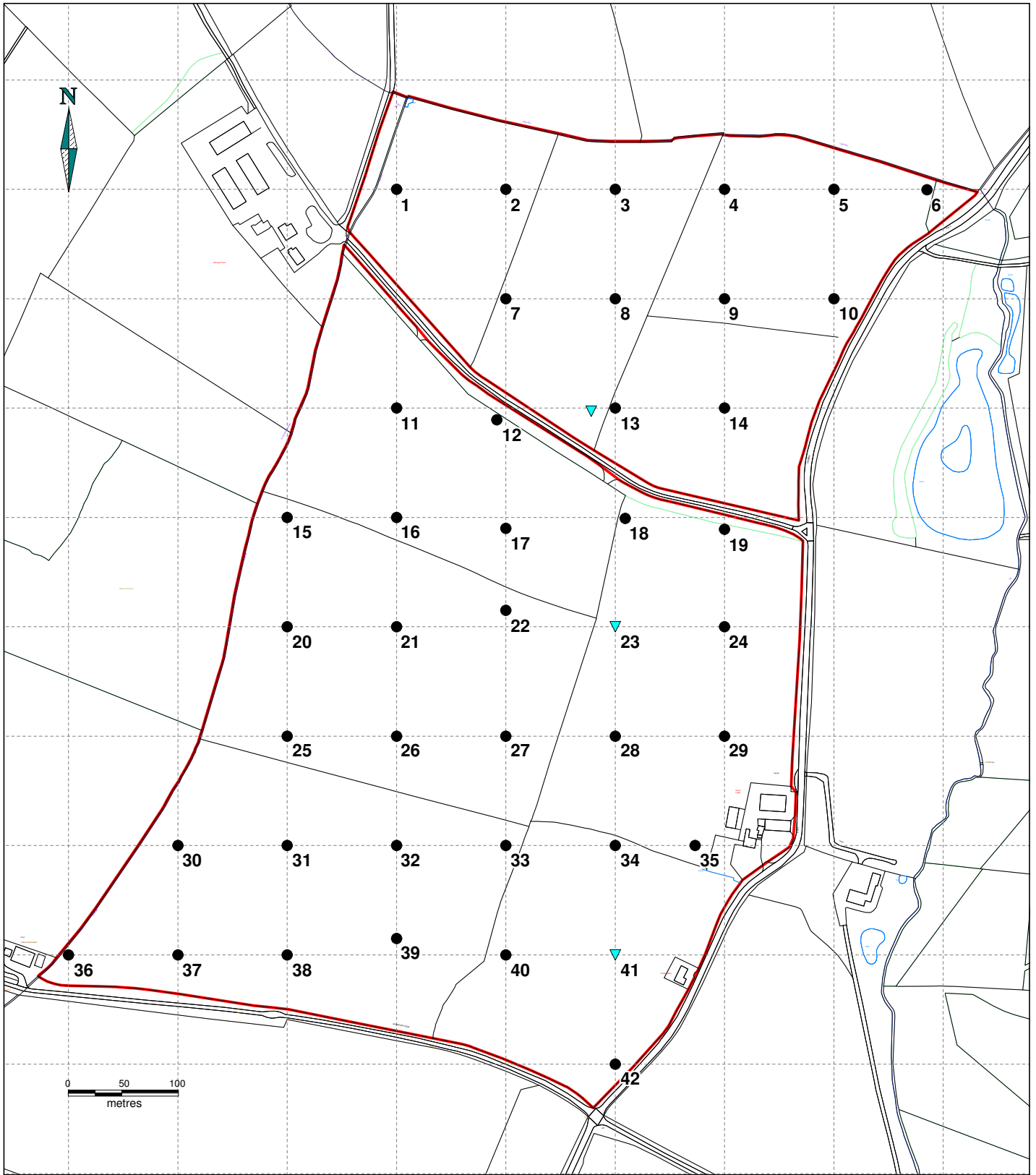
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Project

**Pincet Lane Quarry
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Map

**Map 4
Location of the
observations**

KEY

- Auger observation
- ▼ Soil description pit
- Survey area

Scale

1:5,000 at A4

Date

5/8/2015

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