A12 Chelmsford to A120 widening scheme

TR010060

6.3 ENVIRONMENTAL STATEMENT APPENDIX 10.2 AGRICULTURAL LAND CLASSIFICATION SURVEY REPORT – PART 1

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Volume 6

~~August~~ April 202~~2~~3

Infrastructure Planning

Planning Act 2008

A12 Chelmsford to A120 widening scheme
Development Consent Order 202[ ]

6.3 ENVIRONMENTAL STATEMENT APPENDIX 10.2 AGRICULTURAL LAND CLASSIFICATION SURVEY REPORT – Part 1

Regulation Reference	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010060
Application Document Reference	TR010060/APP/6.2
Author	A12 Project Team & National Highways

Version	Date	Status of Version
Rev 1	August 2022	DCO Application
Rev 2	April 2023	For Deadline 4

SOILS AND AGRICULTURAL QUALITY OF LAND ADJACENT TO THE A12 BOREHAM TO MARKS TEY

Report 1804/~~1~~

~~15th October,~~

~~2021~~2 13th March,

2023

Land Research ASSOCIATES

SOILS AND AGRICULTURAL QUALITY

OF LAND ADJACENT TO THE A12: BOREHAM TO MARKS TEY

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M. W. Palmer, MSc, PhD

Report 1804/~~1~~2
Land Research Associates Ltd
Lockington Hall,
Lockington,
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~~15th October, 2021~~
www.lra.co.uk

13th March, 2023

SUMMARY

A soil and agricultural land quality survey has been undertaken of ~~465.8~~481.0 ha of land adjacent to the A12, between Boreham and, Marks Tey.

The land has three main soil types: heavy slowly permeable soils over glacial till; deep permeable loamy soils formed in silty drift and medium loams over gravel deposits.

Land quality is mainly of subgrade 3a and 3b quality, with areas of grade 2 locally. The land is limited by either wetness or droughtiness.

1.0 Introduction

1.1 This report provides information on the soils and agricultural quality of ~~465.8~~481.0 ha of land adjacent to the A12 between junction 19, Boreham interchange and junction 25, Marks Tey interchange., Essex. The land is proposed for road widening works, new road accesses and for supporting construction working areas. The report is based on a survey of the land between April and September 2021.

SITE ENVIRONMENT

1.2 The survey area crosses mainly arable fields, with areas of livestock pasture and horse paddocks.

1.3 The site is dominantly gently undulating, with an average elevation of approximately 20 m AOD.

PUBLISHED INFORMATION

1.4 1:50,000 scale BGS information records the basal geology as London Clay Formation. All of the land is recorded to be drift-covered, mainly comprising sand and gravel deposits in the centre, Lowestoft Formation chalky glacial till in the east and west, and areas of brickearth (wind-/blown silts) in the west. Minor areas of glaciolacustrine and alluvial deposits are recorded locally.

1.5 The National Soil Map (published at 1:250,000 scale) records central areas as Efford 1 Association, comprising mainly well drained fine loamy soils often over gravel. Land in the north-eastern and central sections of the route are mapped to be within the Hanslope Association, comprising mainly slowly permeable calcareous clayey soils over chalky glacial till. Towards the western end of the route land is mapped as Hornbeam 3 Association: mainly non-calcareous heavy slowly permeable soils[1].

[1]Hodge C. A. H., *et al*., (1984). *Soils and their use in Eastern England,* Soil Survey of England and Wales. Bulletin No. 13, Harpenden.

2.0 Soils

2.1 A detailed soil resource and agricultural quality survey was carried out in April, July and September 2021. It was based on observations at alternate intersects of a 100 m grid, with a sampling density of at least 1 observation every two hectares. Areas of significant variation in soil ~~typoe~~type and land grade were surveyed at a higher density (one observation per hectare) to accurately determine the boundaries. 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 maps (Map 1-~~17~~14) showing their location is in an appendix to this report.

2.2 Soils at the site were found to vary in texture and drainage. The main soil types are described below ~~and~~, their distribution is shown on ~~Map~~Maps 30-~~42~~44 and full pit descriptions are provided in an appendix to this report.

HEAVY SLOWLY PERMEABLE SOILS

2.3 These soils are typical of the Hanslope and Hornbeam Associations and occur in the east and central areas of the site. They mainly comprise clayey or fine loamy topsoils over dense slowly permeable clay, often with a moderately permeable upper subsoil, but in places directly over clay. The subsoils are gleyed (greyish and pale colours with ochreous mottes), evidence of waterlogging, usually at shallow depth. These soils mainly have a chalky calcareous lower subsoil, but the upper layers vary between calcareous and non-calcareous (depending on the presence or absence of decalcified drift).

~~2.0 An example of a calcareous profile is described below from a pit at observation WO15 (Map 1):~~

~~0-26 cm Dark greyish brown (10YR 4/2) clay; slightly stony (small and medium subangular flints); moderately developed very coarse sub-angular blocky structure; very firm; calcareous; smooth clear boundary to:~~

~~26-38 cm Light yellowish brown (2.5Y 6/4) clay with 10% faint fine light olive brown (2.5Y 6/8) mottles and 2-3% very dark grey (10YR 3/1) ferri-manganiferous concentrations; slightly stony; moderately developed very coarse sub-angular blocky structure; firm; porous; medium packing density; calcareous; smooth gradual boundary to:~~

~~38-120 cm Pale brown (2.5Y 7/4) clay with 25% distinct fine light olive brown (2.5Y 6/8) mottles; moderately stony (small soft chalk); weakly developed very coarse angular blocky structure to structureless (massive); very firm; no roots or macropores (high packing density); calcareous.~~

~~2.1 An example of a decalcified profile is described below from a pit at observation S23 (Map 1):~~

~~0-29 cm Dark greyish brown (10YR 4/2) heavy clay loam; very slightly stony (small subangular flints); moderately developed very coarse sub-angular blocky structure; firm; few fine fibrous roots; smooth clear boundary to:~~

~~29-44 cm Light yellowish brown (2.5Y 6/4) heavy clay loam with 5% distinct fine yellowish brown (10YR 5/6) mottles; very slighty stony; moderately developed medium and coarse sub-angular blocky structure; friable; many fine fissures; medium packing density; few fine fibrous roots; smooth gradual boundary to:~~

~~44-65 cm Light brownish grey (2.5Y 6/2) clay with 10% distinct fine yellowish brown (10YR 5/6) mottles and fine very dark grey (7.5YR 3/1) ferri-manganiferous concentrations; very slightly stony; moderately developed very coarse angular blocky structure; very firm; no roots or macropores (high packing density); very slightly calcareous; smooth diffuse boundary to:~~

~~65-120 cm Light brownish grey (2.5Y 6/2) clay with 20% distinct fine olive yellow (2.5Y 6/8) mottles; moderately stony (small soft chalk); weakly developed very coarse angular blocky structure to structureless (massive); very firm; no roots or macropores (high packing density); calcareous firm.~~

2.4 These soils are imperfectly to moderately ~~-~~freely~~-~~ draining (Soil Wetness Class III to II).

2.5 Example profiles are described in the appendix from pits at observations WO15 and S23.

DEEP PERMEABLE SOILS

~~2.5~~2.6 These soils are found chiefly in western areas of the site (where silty drift deposits form the surface geological layer) as well as in central areas where deep loamy river terrace deposits occur and in some localised alluvial areas. The comprise medium loamy topsoils over fine or medium loamy subsoils. They are permeable but in places gleyed (greyish and pale colours with ochreous mottles) indicating seasonal waterlogging caused by shallow groundwater.

~~2.2 An example of a silty profile is described below from a pit at observation W9 (Map 1):~~

~~0-35 cm Dark greyish brown (10YR 4/2) medium silty clay loam; stoneless; moderately developed coarse sub-angular blocky structure; friable; smooth clear boundary to:~~

~~35-70 cm Brown (7.5Y 5/4) medium silty clay loam with paler brown (7.5Y 5/3) ped faces and 10% faint fine light brown (7.5YR 6/3) mottles; stoneless; weakly developed coarse sub-angular blocky structure; friable; porous; low packing density; calcareous; smooth diffuse boundary to:~~

~~70-120 cm Brown (7.5Y 5/4) heavy silty clay loam with 3-4% fine very dark grey (10YR 3/1) ferri-manganiferous concentrations stoneless; moderately developed very coarse sub-angular blocky structure; firm; porous; no macropores; medium packing density.~~

2.62.7 These soils are freely- to moderately-freely draining (Soil Wetness Class I to II).

2.8 Example profiles are described in the appendix from a pits at observations U6, WO9 and grid reference: 87175,18261.

MEDIUM LOAMS OVER GRAVEL

2.72.9 These soils occur along the route and are typical of the Efford 1 Association. They comprise medium loamy topsoils that are often moderately stony with flints and quartz. The topsoils overlie subsoils of a similar texture, overlying gravel typically at approximately 50 cm depth. BR1

~~2.3 An example of a profile is described below from a pit at observation W9 (Map 1):~~

~~0-32 cm Dark greyish brown (10YR 4/2) medium clay loam; 10-15% small and medium quartz pebbles and subangular flints (5-10% >20 mm); moderately developed coarse and very coarse sub-angular blocky structure; firm; few medium fibrous roots; smooth clear boundary to:~~

~~32-39 cm Pale brown (10YR 6/3) medium clay loam with 20% distinct fine and medium reddish yellow (7.5YR 6/8) mottles; 15-20% stones; moderately developed coarse sub-angular blocky structure; firm (dry); few fibrous roots; medium packing density; smooth gradual boundary to:~~

~~39-62 cm Brown (7.5Y 5/3) coarse sandy loam with 15% yellowish brown (10YR 5/6) mottles; 50-60% small and medium flints and quartz pebbles; weakly developed fine sub-angular blocky structure; very friable; no roots; low packing density; smooth diffuse boundary to:~~

~~48-100 cm+ Greyish brown (10YR 5/2) loamy coarse sand; 60% coarse gravel; single grain; loose; no roots; low packing density.~~

~~2.8~~2.10 These soils are freely to moderately freely-draining (Soil Wetness Class I to II).

2.11 Example profiles are described in the appendix from a pits at observations BR1, BO2 and FR1.

3.0 Agricultural land 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 ALC system classifies land into five grades numbered 1 to 5, with grade 3 divided into two subgrades (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 Classification[2]. The relevant site data for an average elevation of 20 m is given below from central reference point: TL832158. Interpol data was gathered at regular intervals along the route with no significant variation in output.

- Average annual rainfall: 561 mm
- January-June accumulated temperature >0°C 1456 day°C
- Field capacity period (when the soils are fully replete with water) 101 days mid Dec-late Mar
- Summer moisture deficits for: wheat: 128 mm potatoes: 126 mm

3.3 The survey described in the previous section was used in conjunction with the agro-climatic data above to classify the site using the revised guidelines for ALC issued in 1988 by MAFF[3]. There are no climatic limitations in this area.

SURVEY RESULTS

3.4 The agricultural quality of the land is determined by either wetness or droughtiness. Other factors were assessed but were not found to affect the overall land grading. Land of grades 2 and 3 has been identified.

Grade 2

3.5 This land grade is found mostly in the centre and west of the site over deep permeable loamy soils (Soil Wetness Class I/II). This land is slightly limited by ~~droughtiness under the local climate, but can support high yields of a wide variety of crops.~~

[2]Meteorological Office, (1989).*Climatological Data for Agricultural Land Classification*.

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

droughtiness under the local climate, but can support high yields of a wide variety of crops.

Subgrade 3a

3.6 This subgrade includes land with fine loamy soils with slight drainage restrictions (Soil Wetness Class II) or medium loamy soils with moderate drainage restriction (Soil Wetness Class III); also included are fine loamy calcareous soils with moderate drainage restrictions. Access to this land with farm machinery is restricted in winter and early spring, but it can support late spring as well as autumn sowings.

3.7 Also included within this subgrade is land with droughtiness restrictions. Typically this land comprises medium loamy soils with gravel at below 50 cm depth. The high stone content of the subsoils will not store sufficient moisture for crop uptake in dry summers under the local climate, reducing average yields.

Subgrade 3b

3.8 This subgrade includes land with fine loamy slowly permeable soils and imperfect drainage (Soil Wetness Class III). Under the local climate the combination of moderately high topsoil clay content and restricted drainage means this land is usually too wet for spring land access with machinery. Arable cropping is mainly limited to autumn-sown cereal-based rotation.

3.9 Also included are areas where gravel is encountered within 50 cm depth. The soils will store insufficient moisture for summer crop uptake under the local climate, resulting in low average yields.

Estimated land quality

3.10 ~~Land access~~Access to some of the agricultural land within the site was not available and grades for these areas have been interpolated from surveyed areas and published soils and geological information. The grading of this land is provisional.

Grade areas

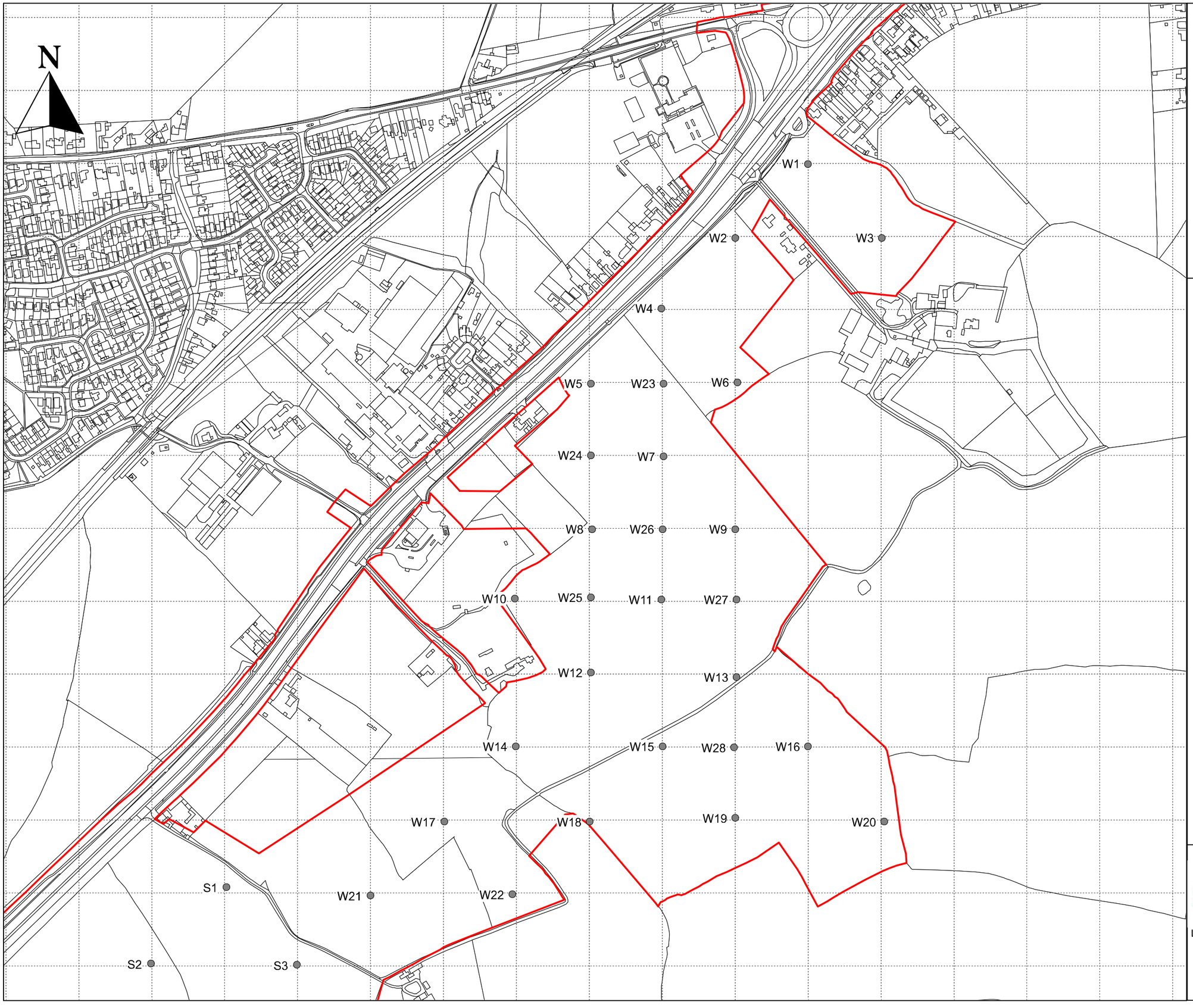
3.11 The boundaries between the different grades of land are shown on ~~Map 2~~Maps 15- 29 and the areas occupied by each are shown below.

Table 1: Areas occupied by the different land grades

	~~surveyed~~Surveyed area		~~estimated~~Estimated grade areas	
Grade/subgrade	***Area (ha)***	***% of the land***	***Estimated grade areas***	***% of the land***
Grade 2	~~85.0~~89.6	~~18~~1 9	11.~~4~~ 8	~~6~~12
Subgrade 3a	~~238.7~~246. 5	51	~~61.0~~ 63.1	~~33~~6 5
Subgrade 3b	~~142.1~~144. 9	~~31~~3 0	~~20~~2 1.9	~~11~~2 2
Total	~~465.8~~481. 0	100	~~93.3~~ 96.8	~~50~~1 00

APPENDIX

MAPS AND DETAILS OF OBSERVATIONS



KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

Map title:

Map 1
Survey Observations

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023

N

W17
S1
W21
S2
S3
S4
S5
S6
S47
S7
S8
S9
S10
S11
S12
S48
S13
S49
S14
S15
S51
S16
S53
S17
S18
S55
S19
S54
S21

KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

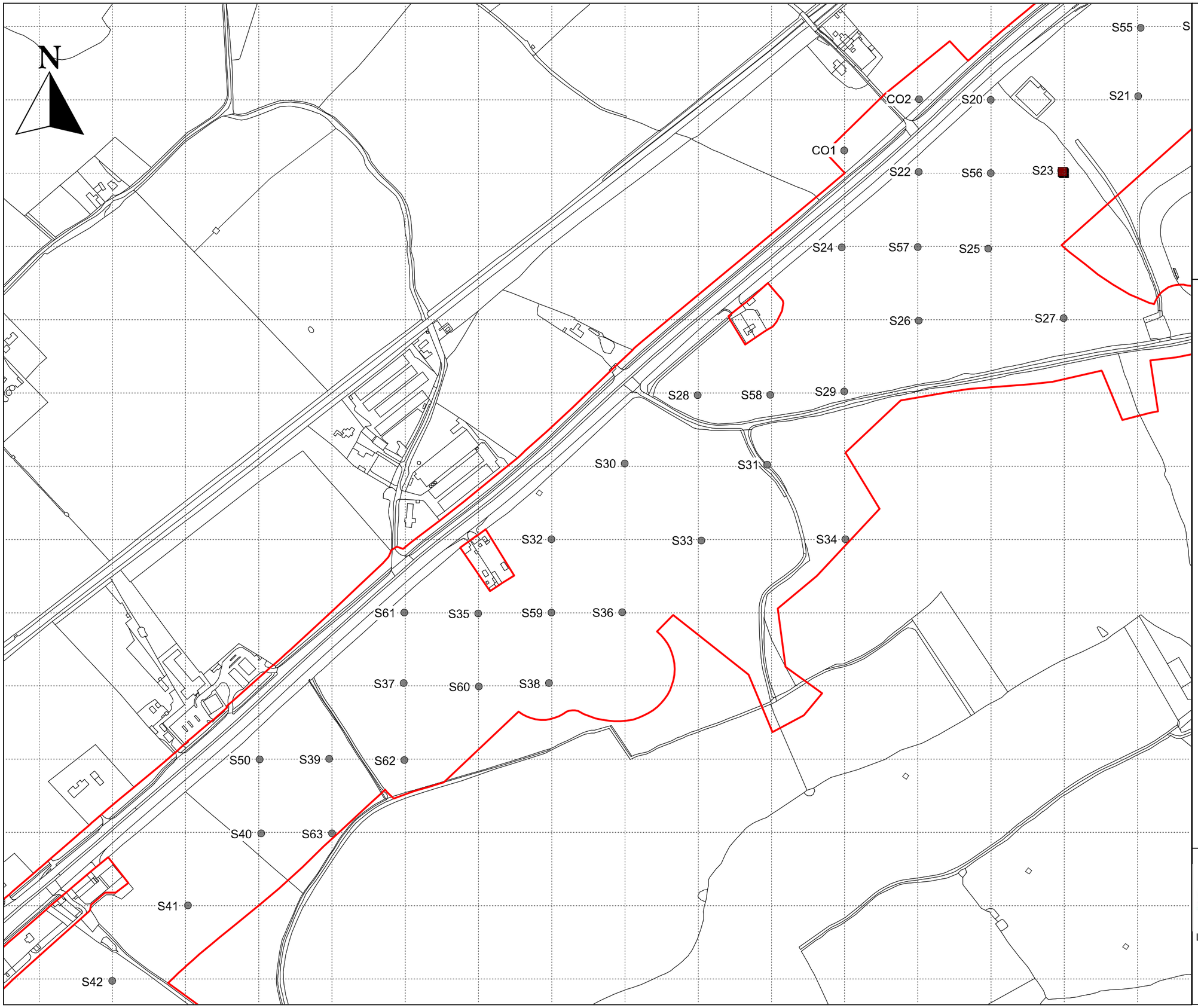
Map title:

Map 2
Survey Observations

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023



KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

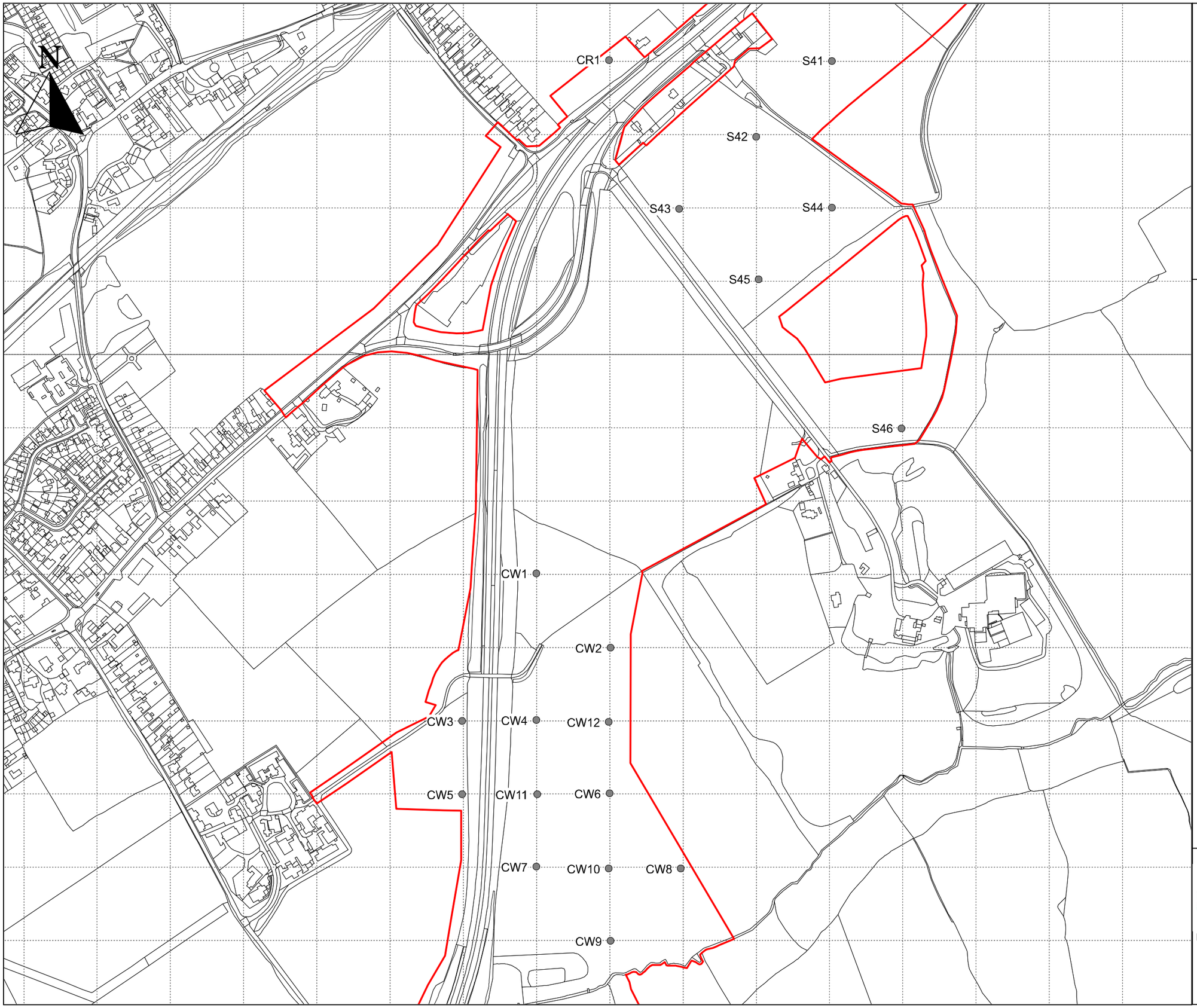
Map title:

Map 3
Survey Observations

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023



KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

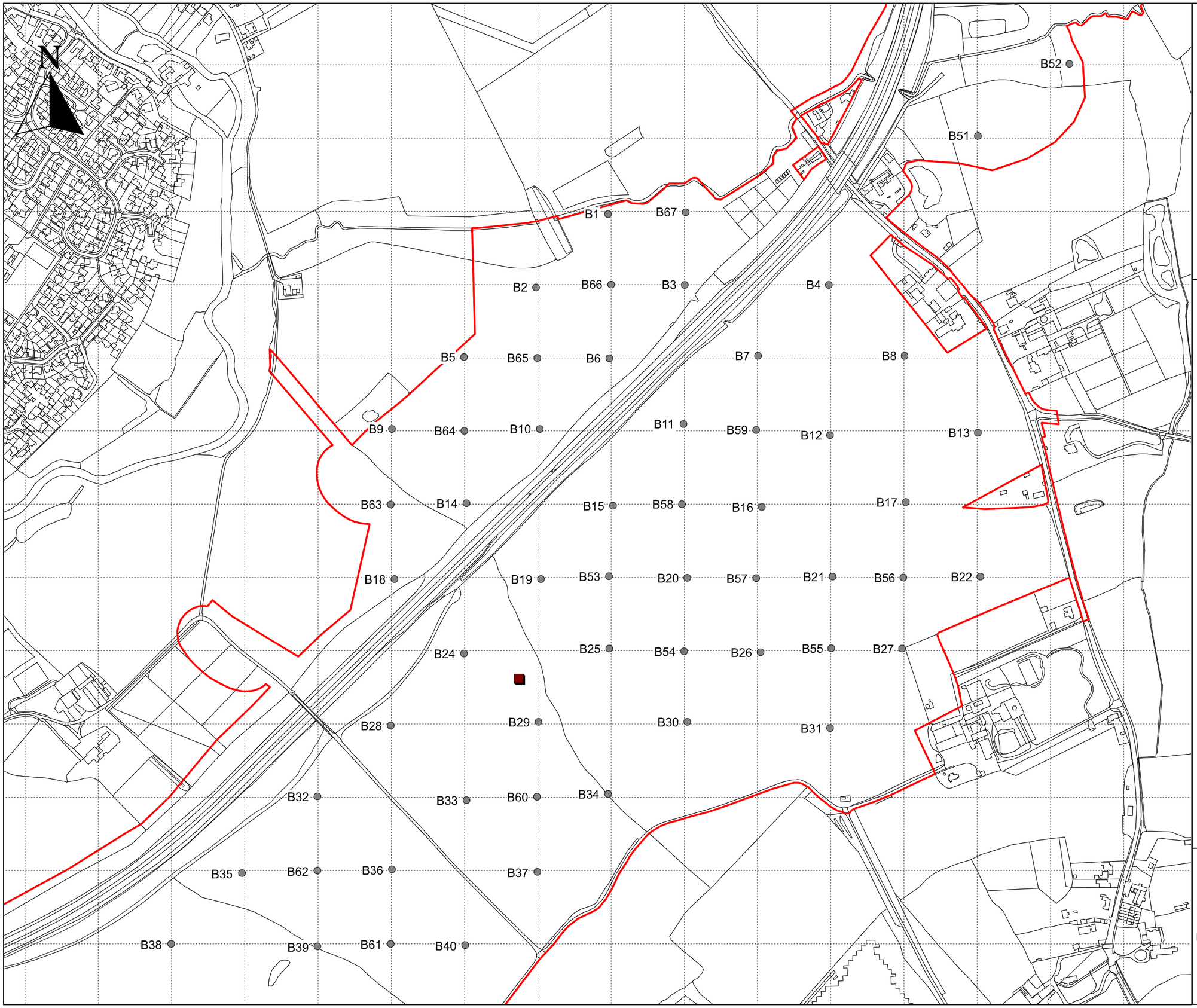
Map title:

Map 4
Survey Observations

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023



KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

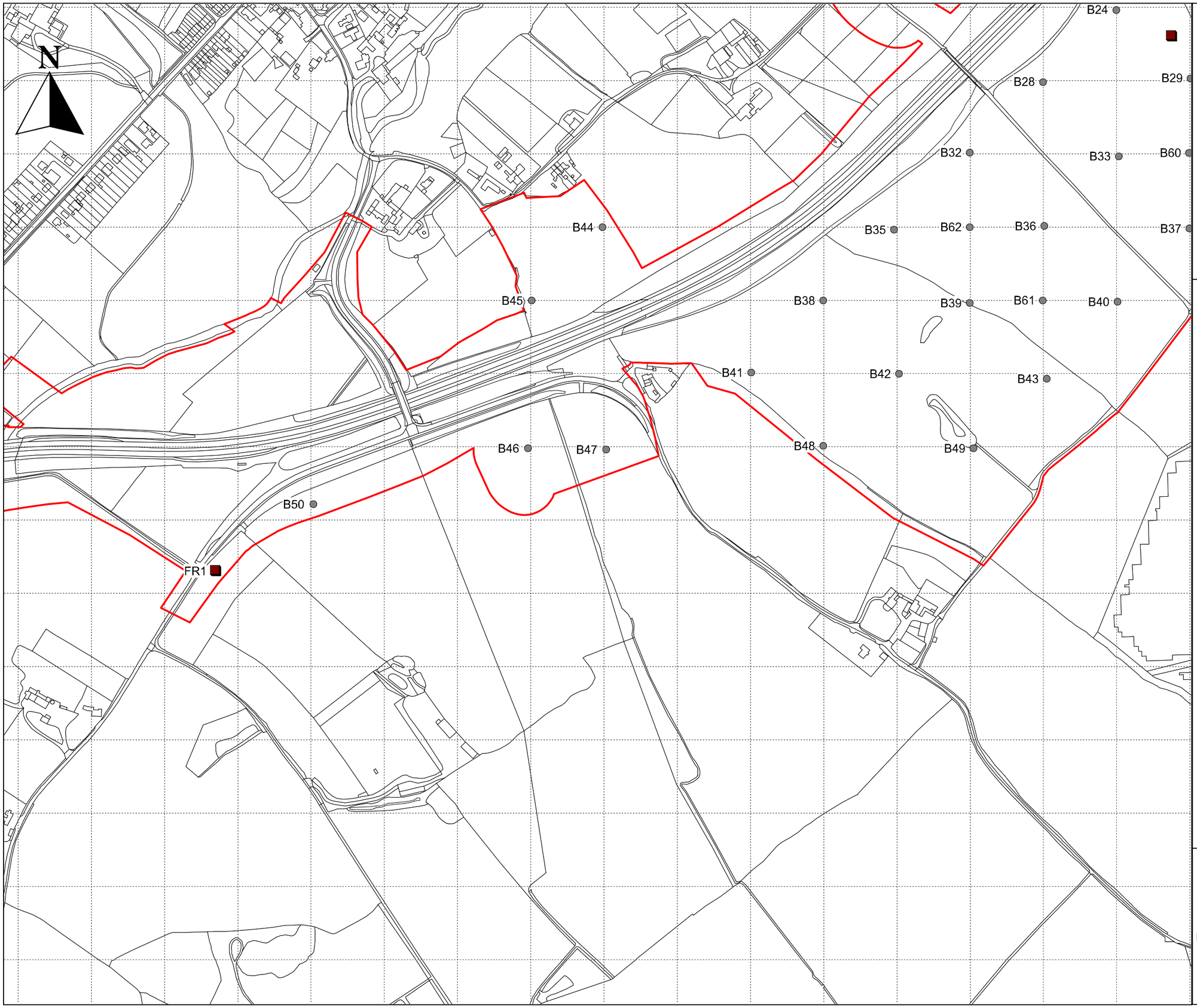
Map title:

Map 5
Survey Observations

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023



KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

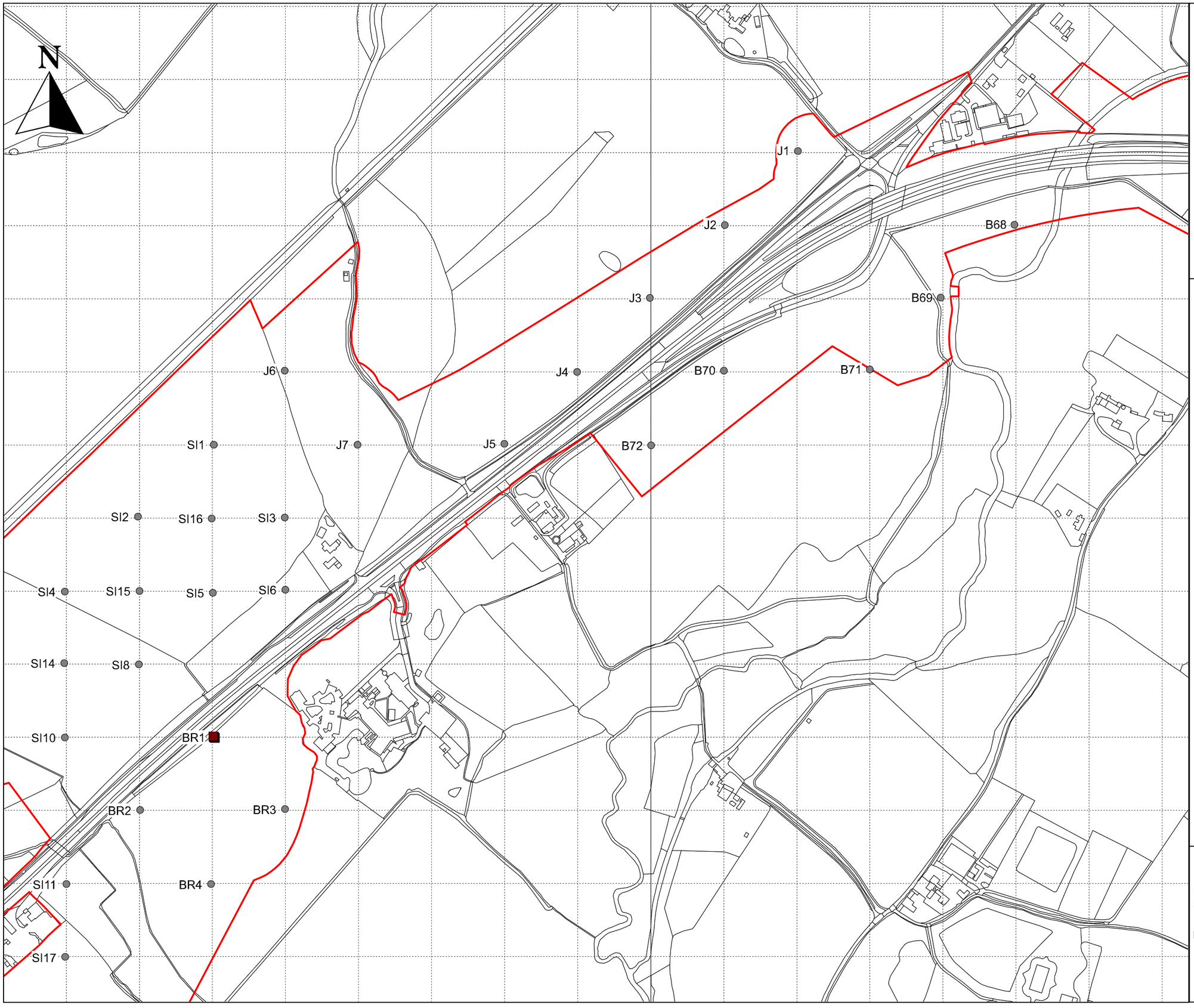
Map title:

Map 6
Survey Observations

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023



KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

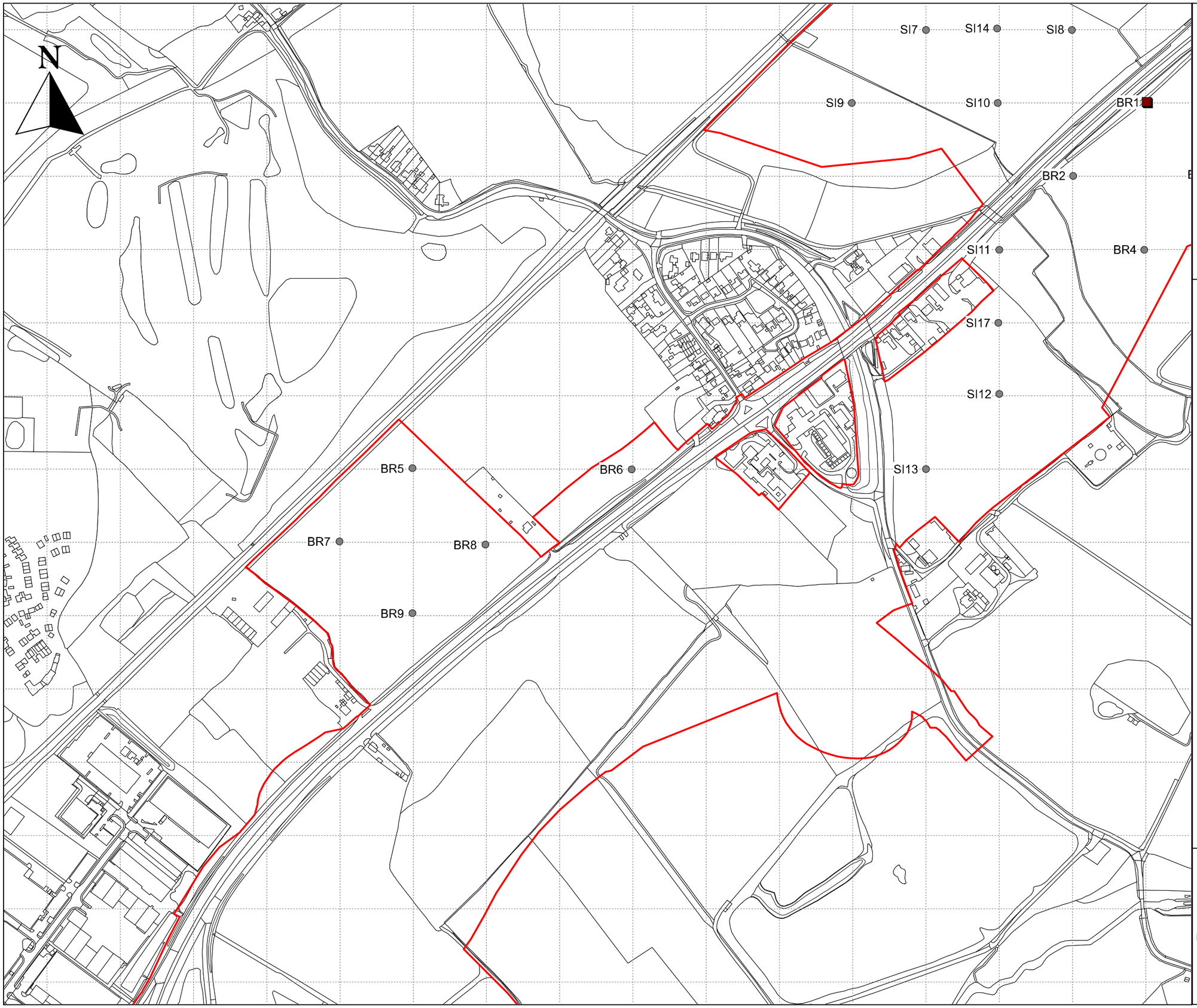
Map title:

Map 7
Survey Observations

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023



KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

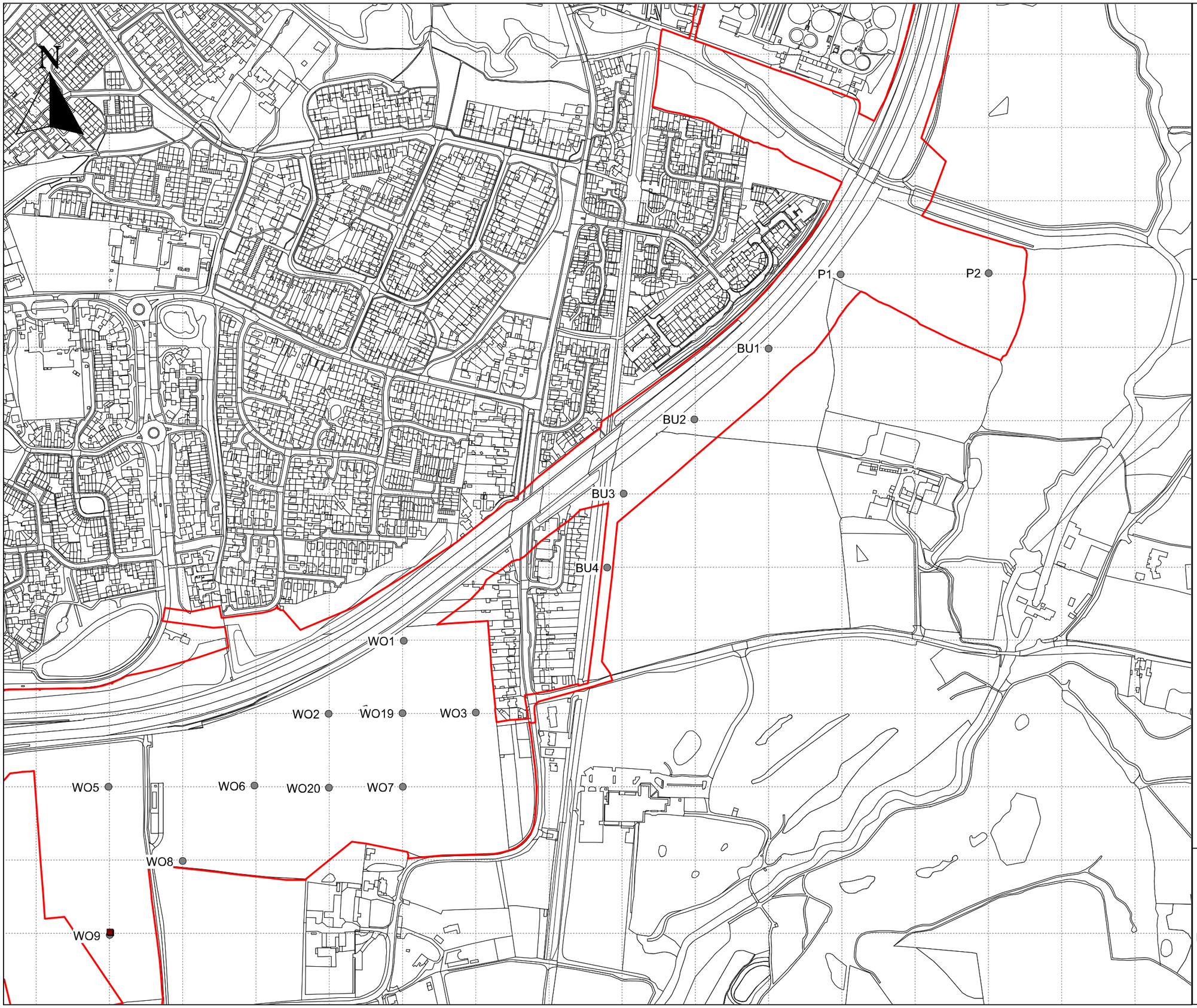
Map title:

Map 8
Survey Observations

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023



KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

Map title:

Map 9
Survey Observations

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023

N

WO4 WO5 WO6

V18 V1 V17 V2

WO8

V16 V3 V15 V4 V14 V5

WO9

WO13 V6 V7 V8 V13 V9 WO10

WO14 WO22 WO15 V10 V11 V12 WO11

WO16 WO21 WO17 WO12

KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

Map title:

Map 10
Survey Observations

Land Research Associates
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Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023

N

RA1
RA2
RA3
RA4
RA34
RA5
RA6
RA7
RA8
RA9
RA35
RA10
RA11
V16
RA12
RA13
RA14
RA15
RA36
RA16
RA37
WO13
V6
RA17
RA18
RA19
RA20
RA21
U1
WO14
WO22
WO15
RA22
RA23
RA25
RA26
U2
WO16
WO21
WO17
RA27
RA28
RA29
U3
U12
U4
U11
U6
U5
WO18
U7
U8
U9
U10

KEY

Auger observation

Soil description pit

Survey area

Site:

A12 Chelmsford

Map title:

Map 11
Survey Observations

Land Research Associates
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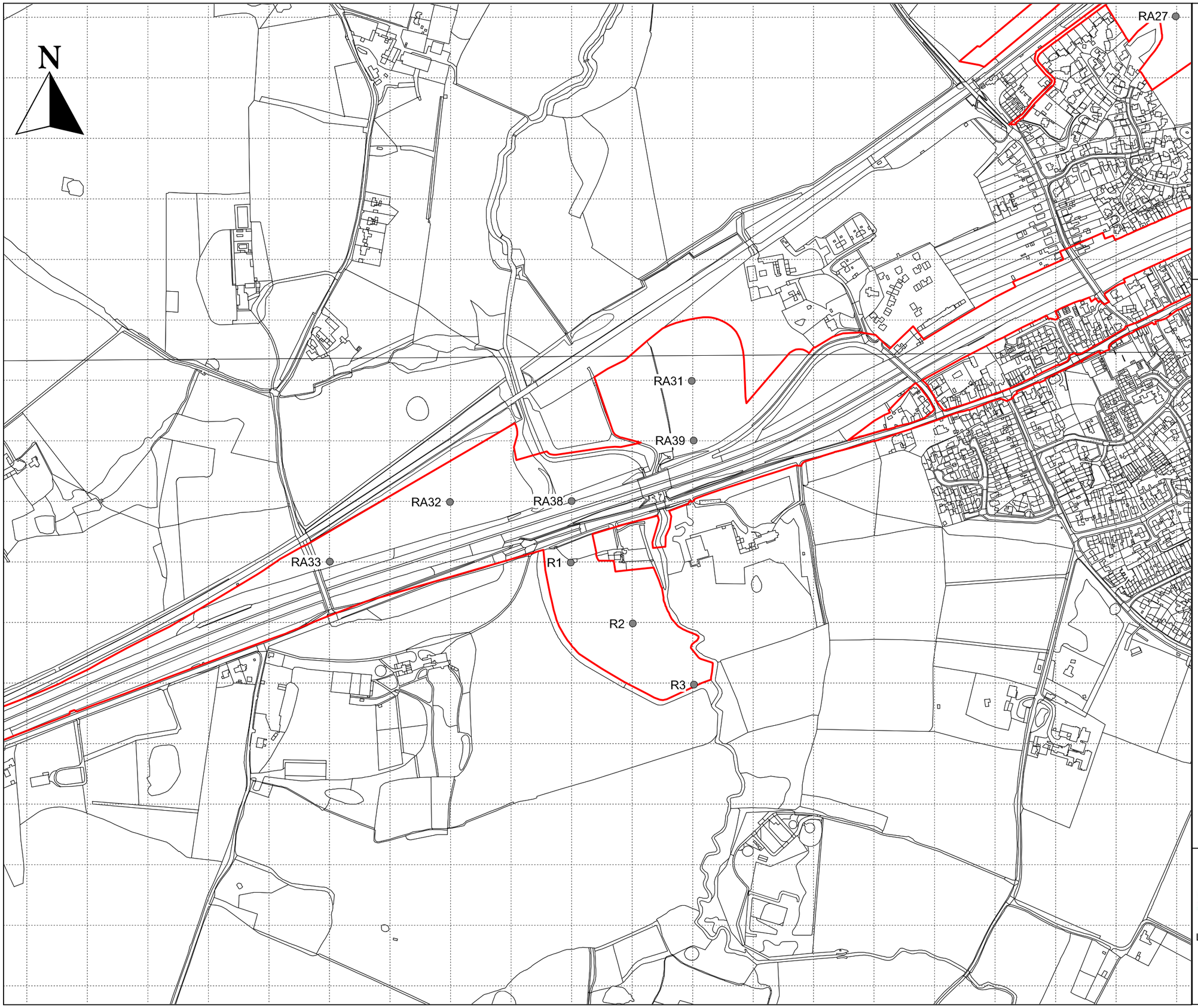
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,500

Date: 24/02/2023



KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

Map title:

Map 12
Survey Observations

Land Research Associates
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Lockington
Derby DE74 2RH
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Scale: 1:5,000

Date: 24/02/2023

N

BO1

BO2

BO16

BO3

B04

BO17

BO5

BO15

BO6

KEY

Auger observation

Soil description pit

Survey area

Site:

A12 Chelmsford

Map title:

Map 13
Survey Observations

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 24/02/2023

N

BO7

BO8

BO10

BO9

BO14

BO11

BO12

BO13

KEY

- Auger observation
- Soil description pit
- Survey area

Site:

A12 Chelmsford

Map title:

Map 14
Survey Observations

Land Research Associates
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Derby DE74 2RH
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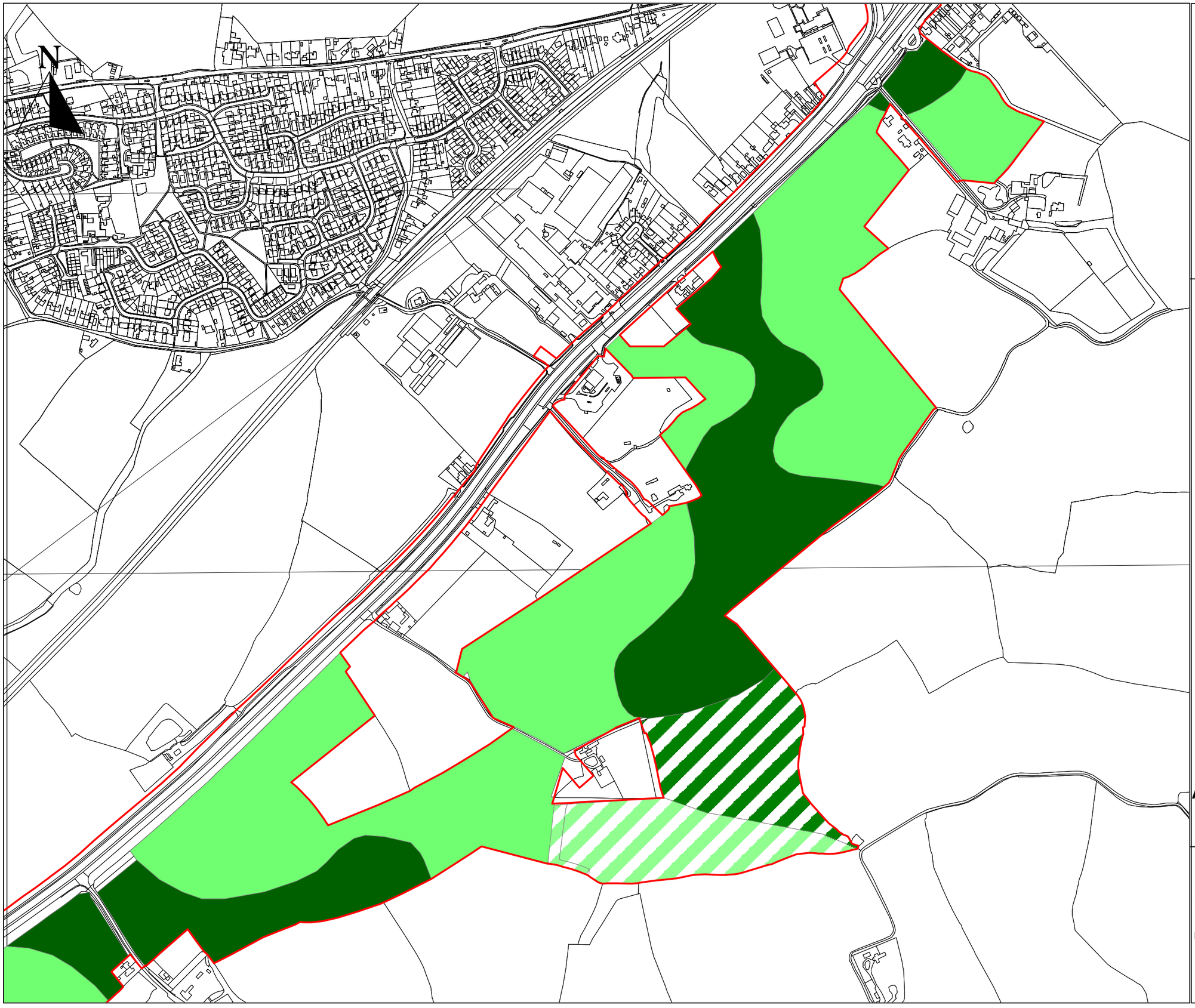
Scale: 1:6,000

Date: 24/02/2023



KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

Map title:

Map 15
Agricultural Land Classification

Land Research Associates
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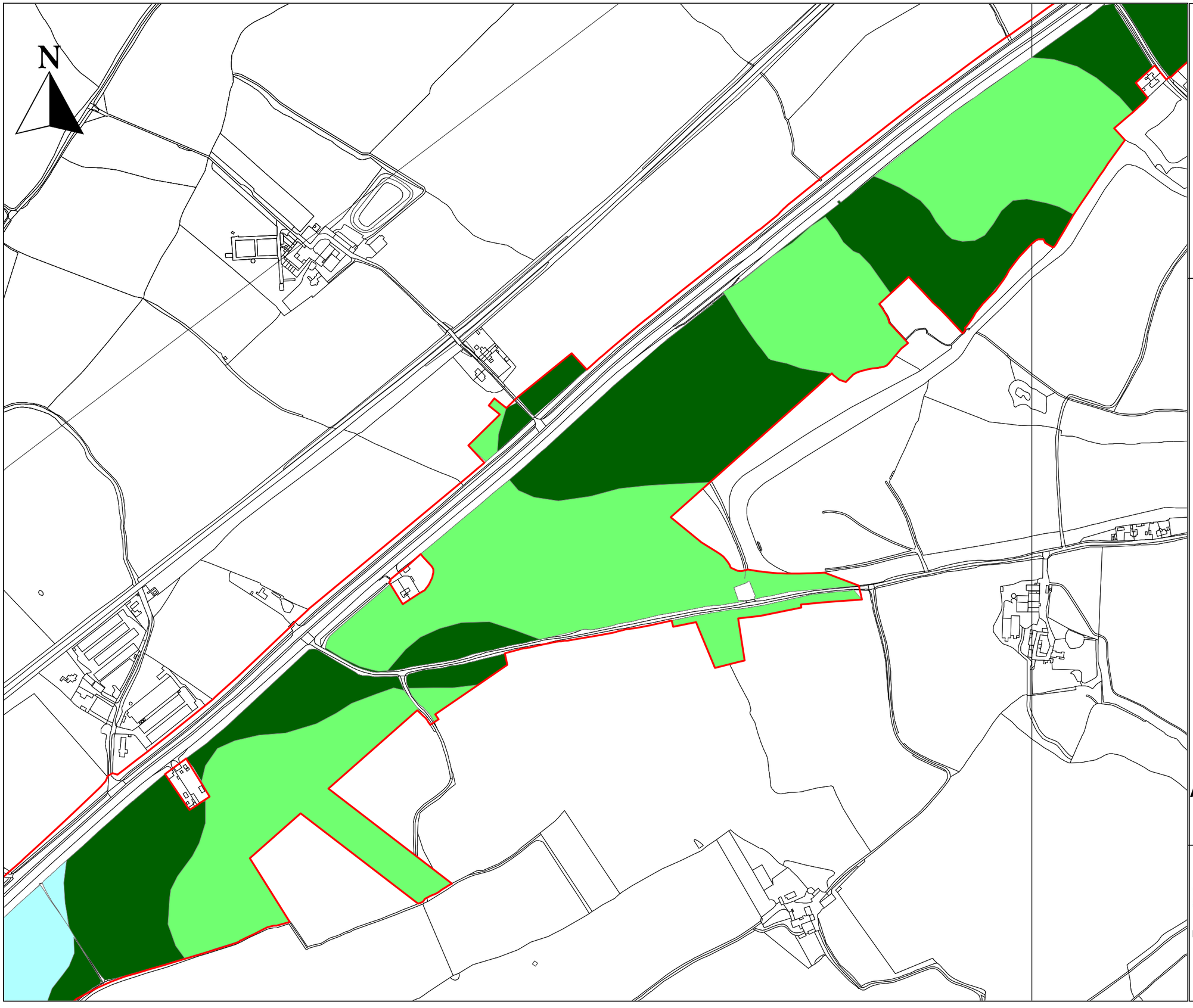
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023



KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

Map title:

Map 16
Agricultural Land Classification

Land Research Associates
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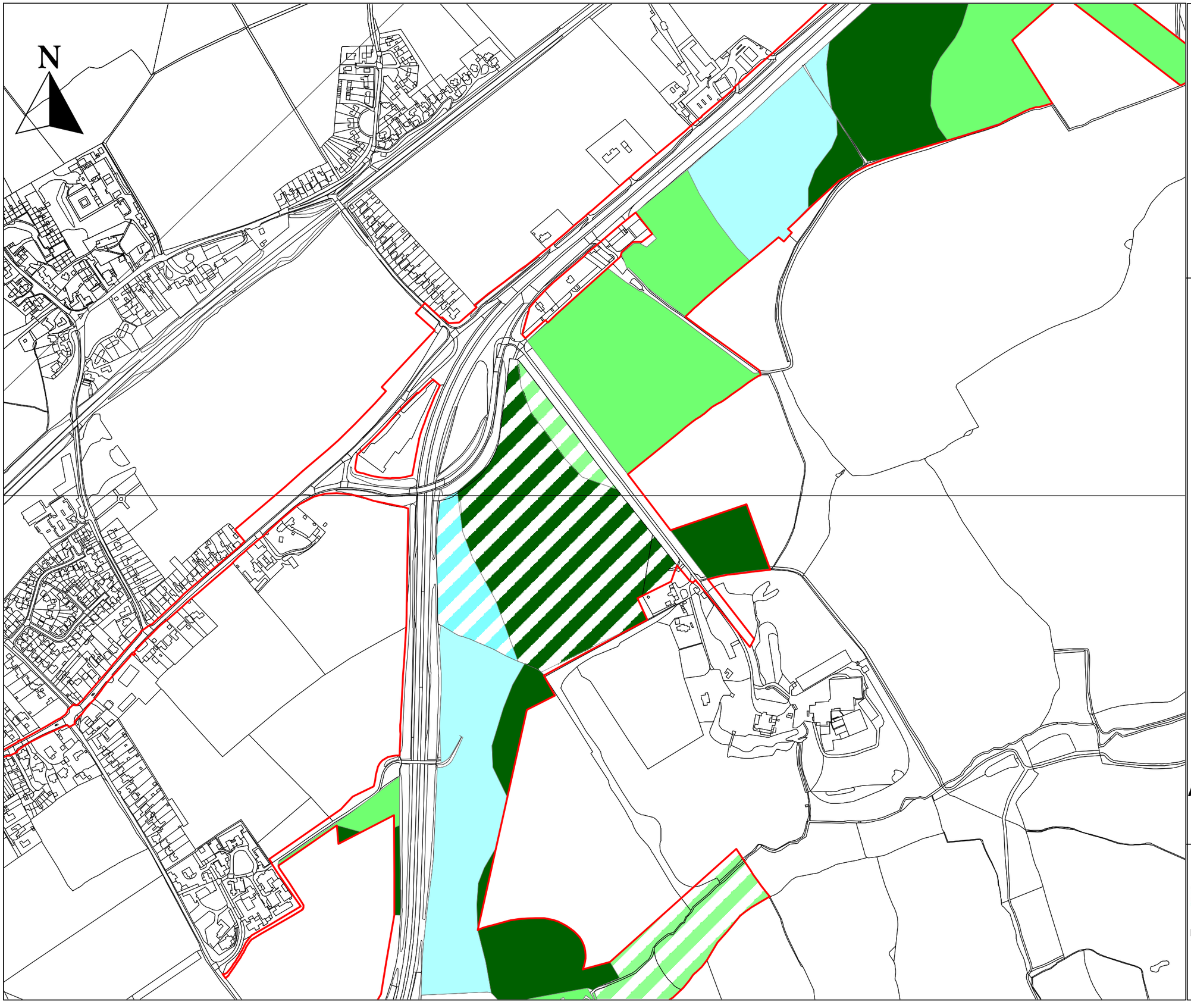
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023



KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

Map title:

Map 17
Agricultural Land Classification

Land Research Associates
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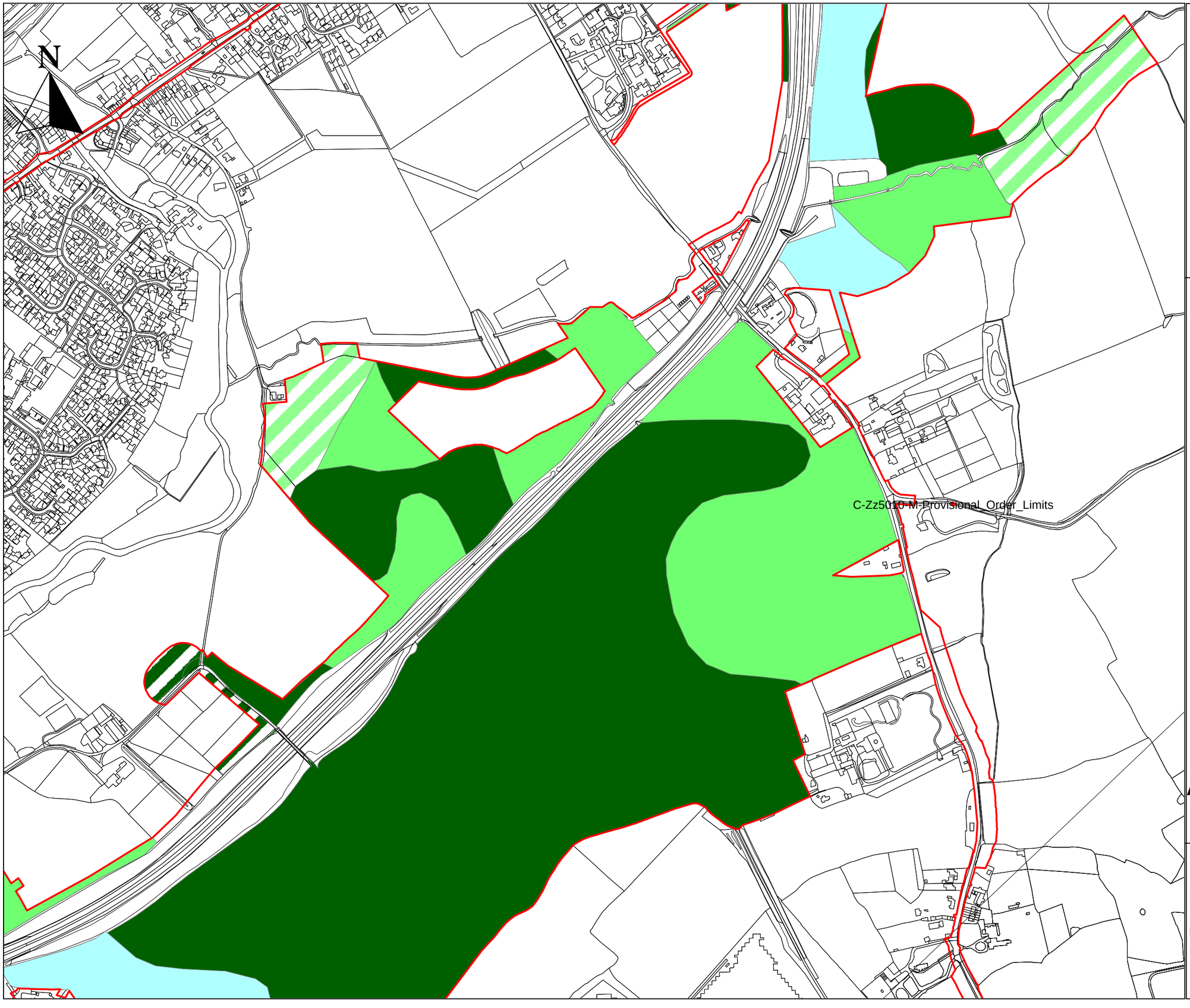
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023



KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

Map title:

Map 18
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023

N

KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

Map title:

Map 19
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023

N

C:\Zz5010-M\Provisional_Order_Limits

KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

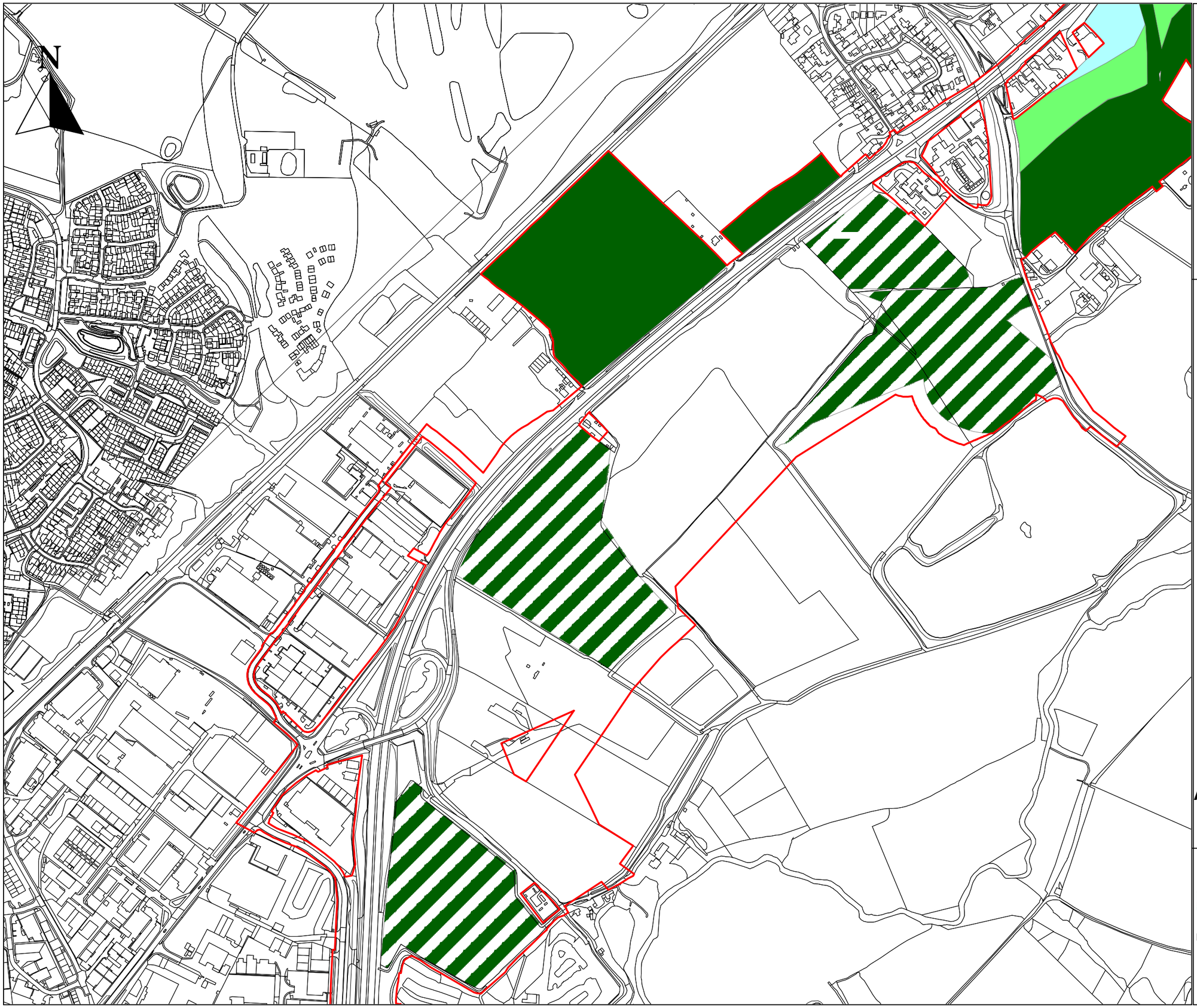
Map title:

Map 20
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023



KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

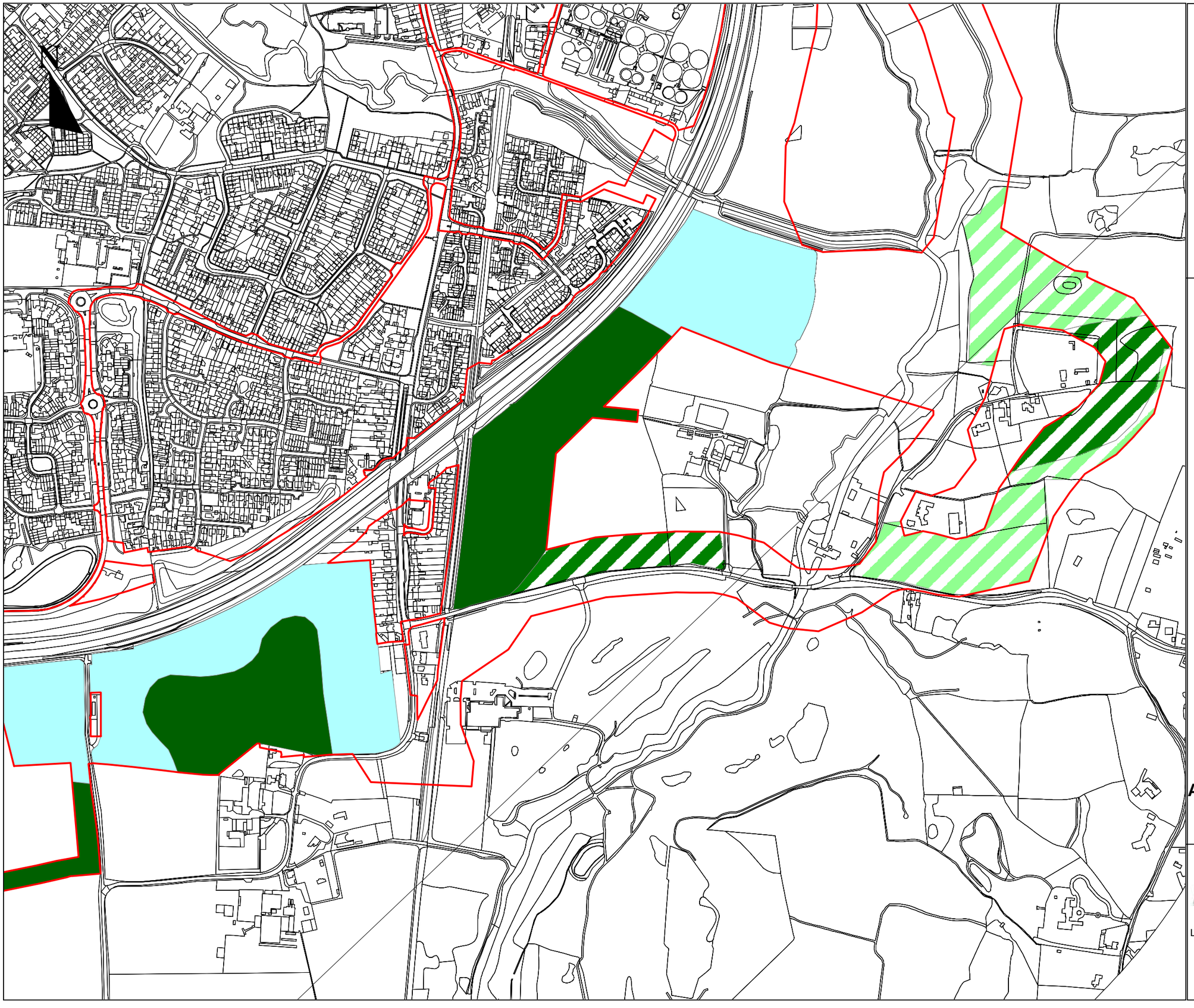
Map title:

Map 21
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023



KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

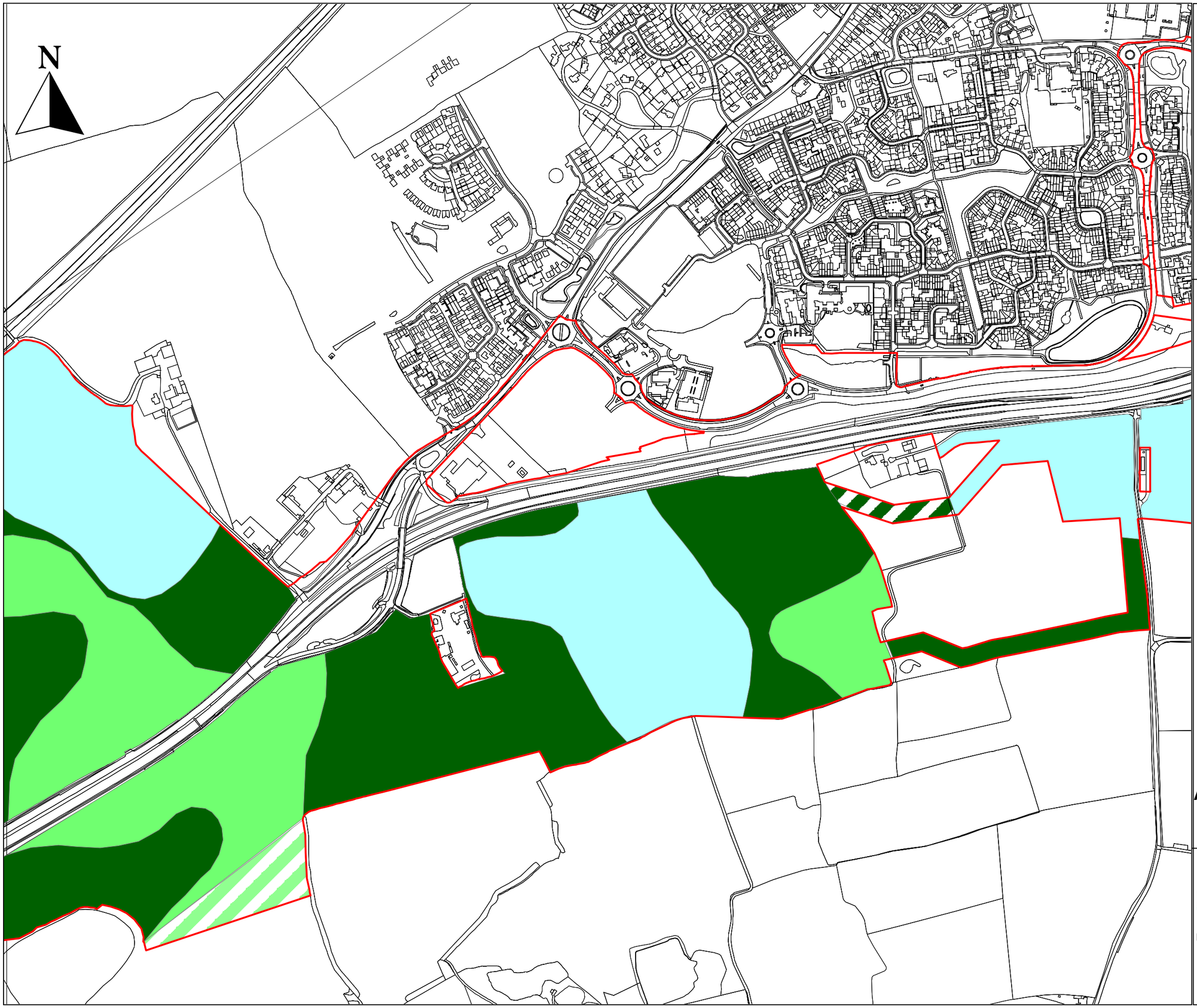
Map title:

Map 22
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023



KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

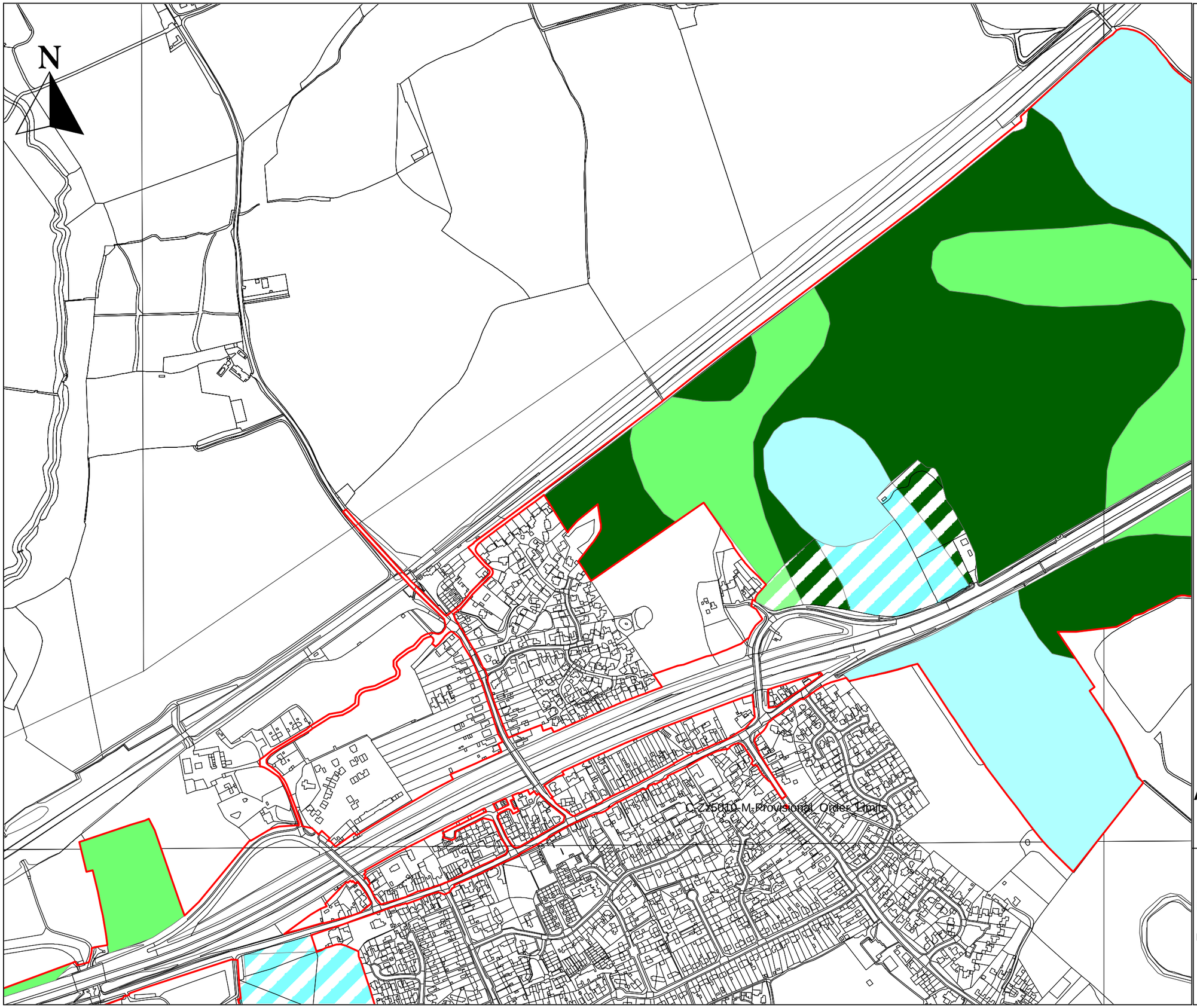
Map title:

Map 23
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023



KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

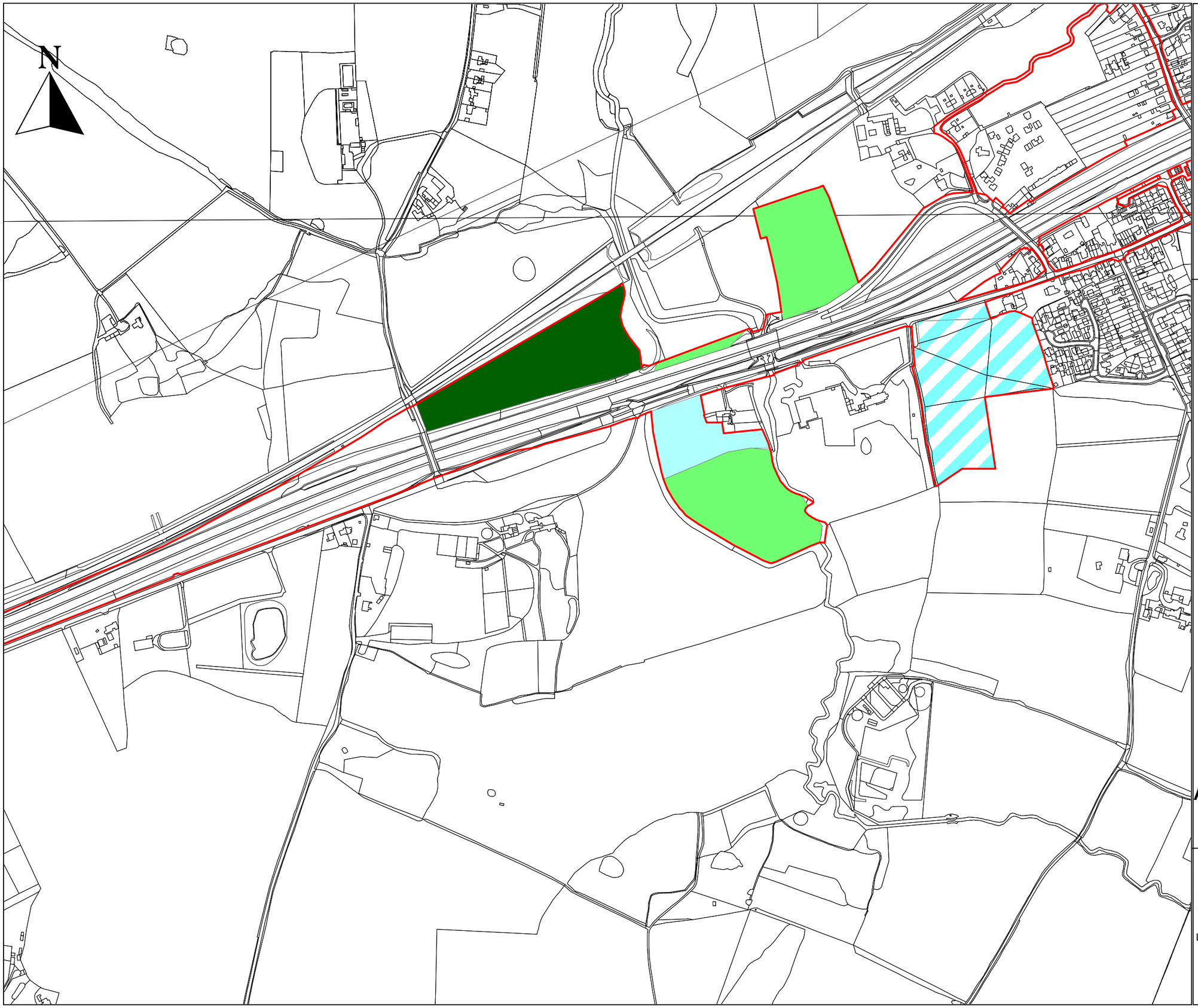
Map title:

Map 24
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023



KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

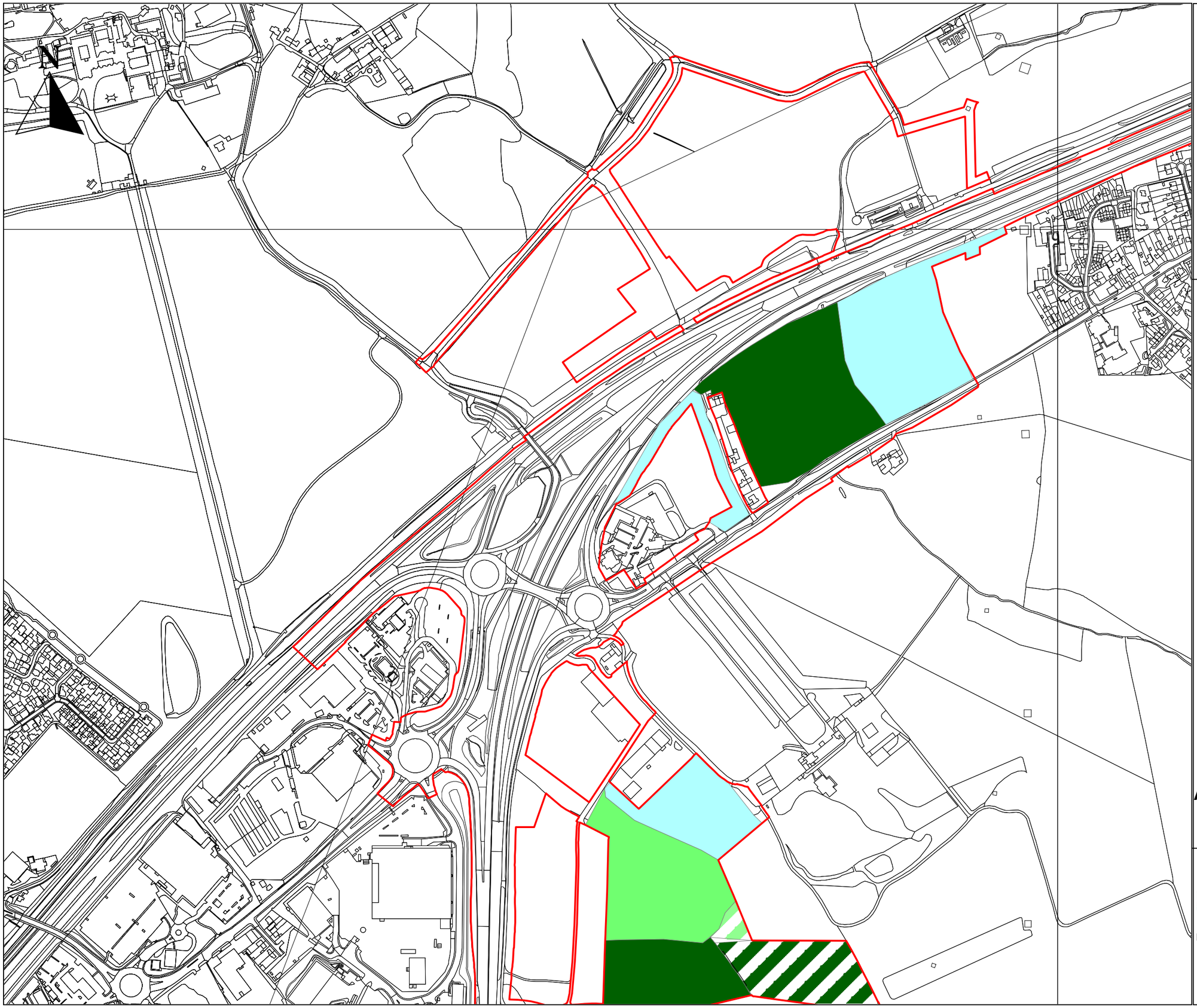
Map title:

Map 25
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023



KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

Map title:

Map 26
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023

KEY

- Grade 2
- Subgrade 3a
- Subgrade 3b
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area

Site:

A12 Chelmsford

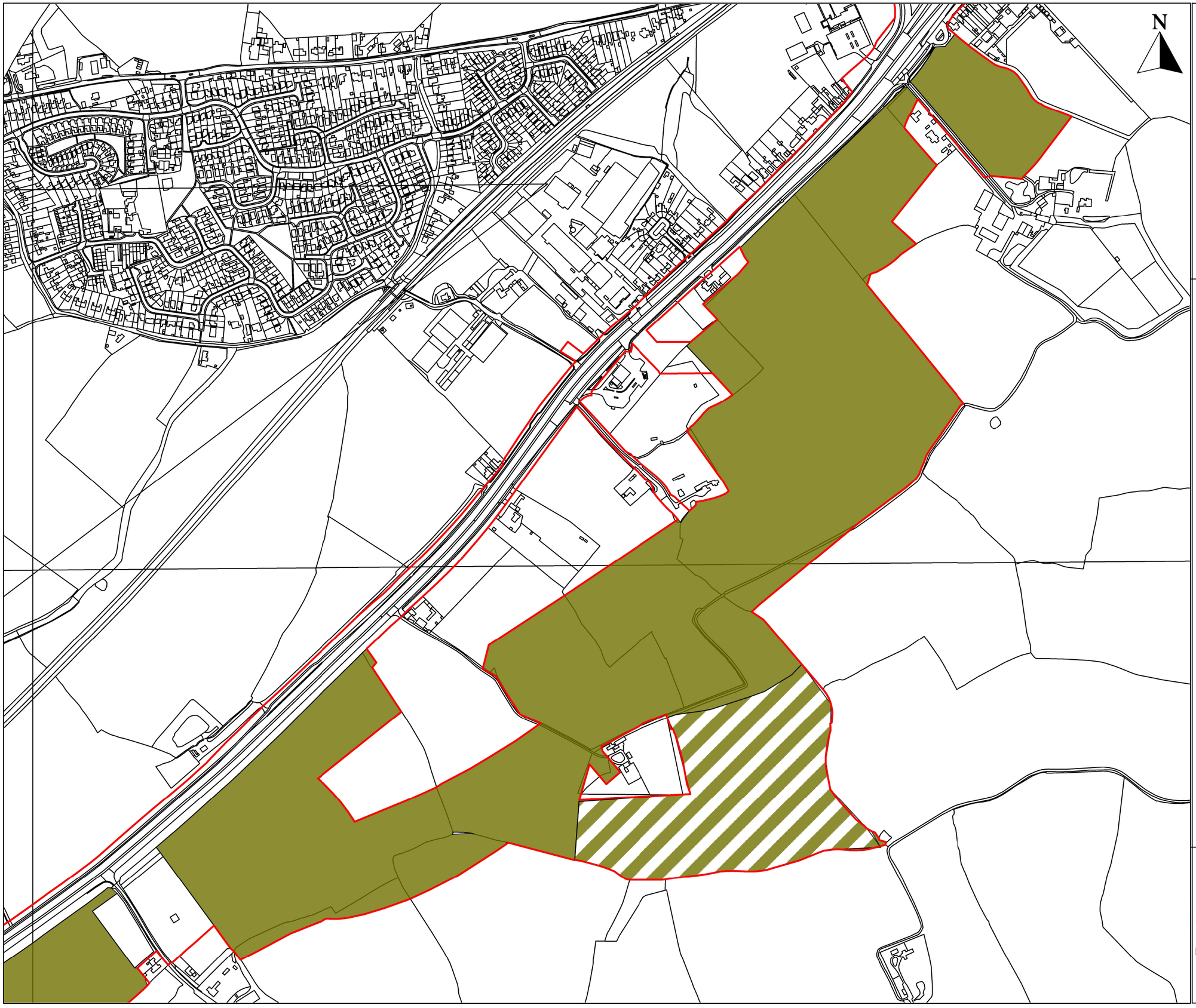
Map title:

Map 27
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 24/02/2023



KEY

- Heavy slowly permeable soils
- Deep permeable soils
- Medium loams over gravel
- Estimated heavy slowly permeable soils
- Estimated deep permeable soils
- Estimated medium loams over gravel
- Survey area

Client:

COSTAIN

Site:

A12 Chelmsford

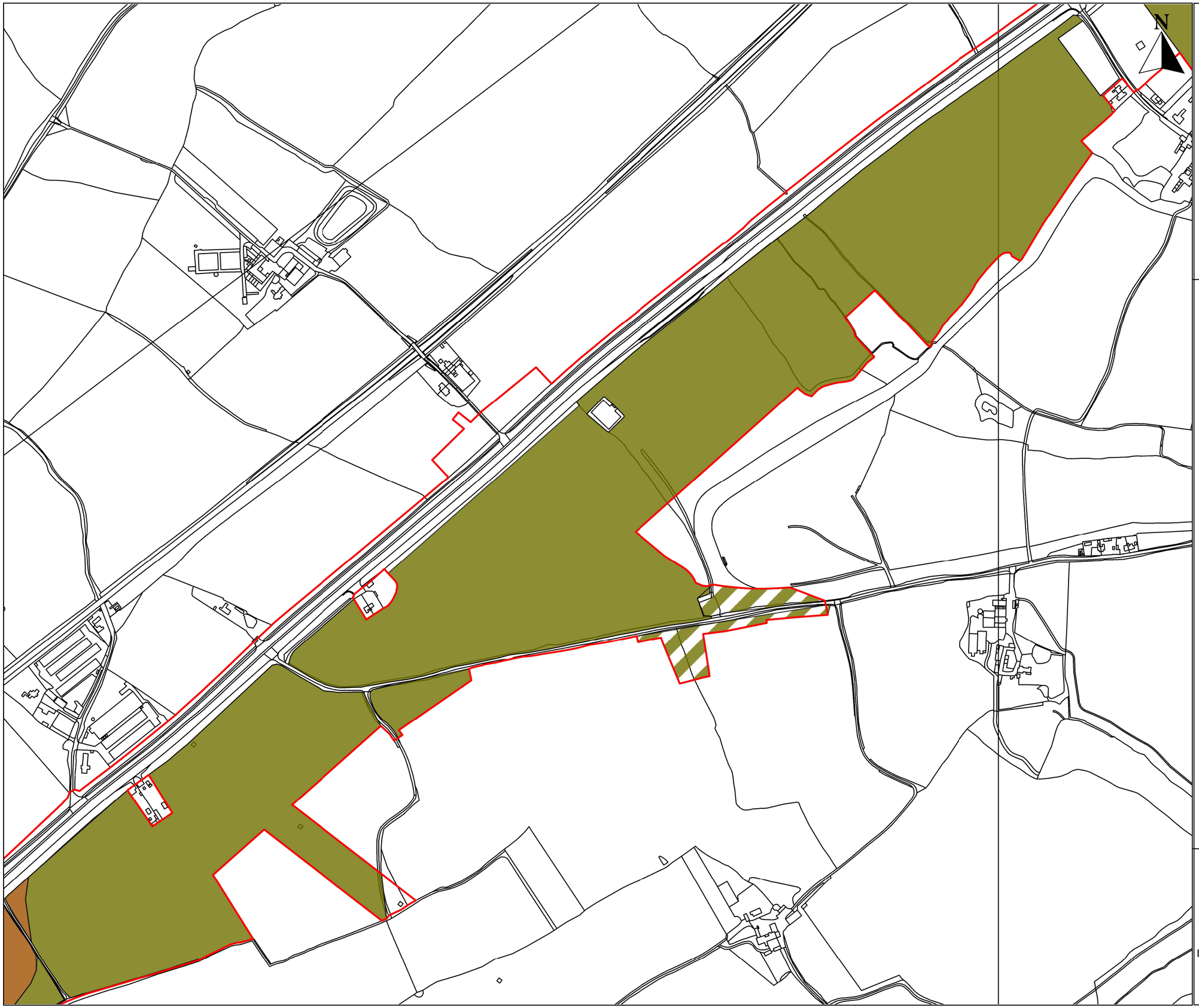
Map title:

Map 30
Soil types

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 18/02/2022



KEY

- Heavy slowly permeable soils
- Deep permeable soils
- Medium loams over gravel
- Estimated heavy slowly permeable soils
- Estimated deep permeable soils
- Estimated medium loams over gravel
- Survey area

Client:

COSTAIN

Site:

A12 Chelmsford

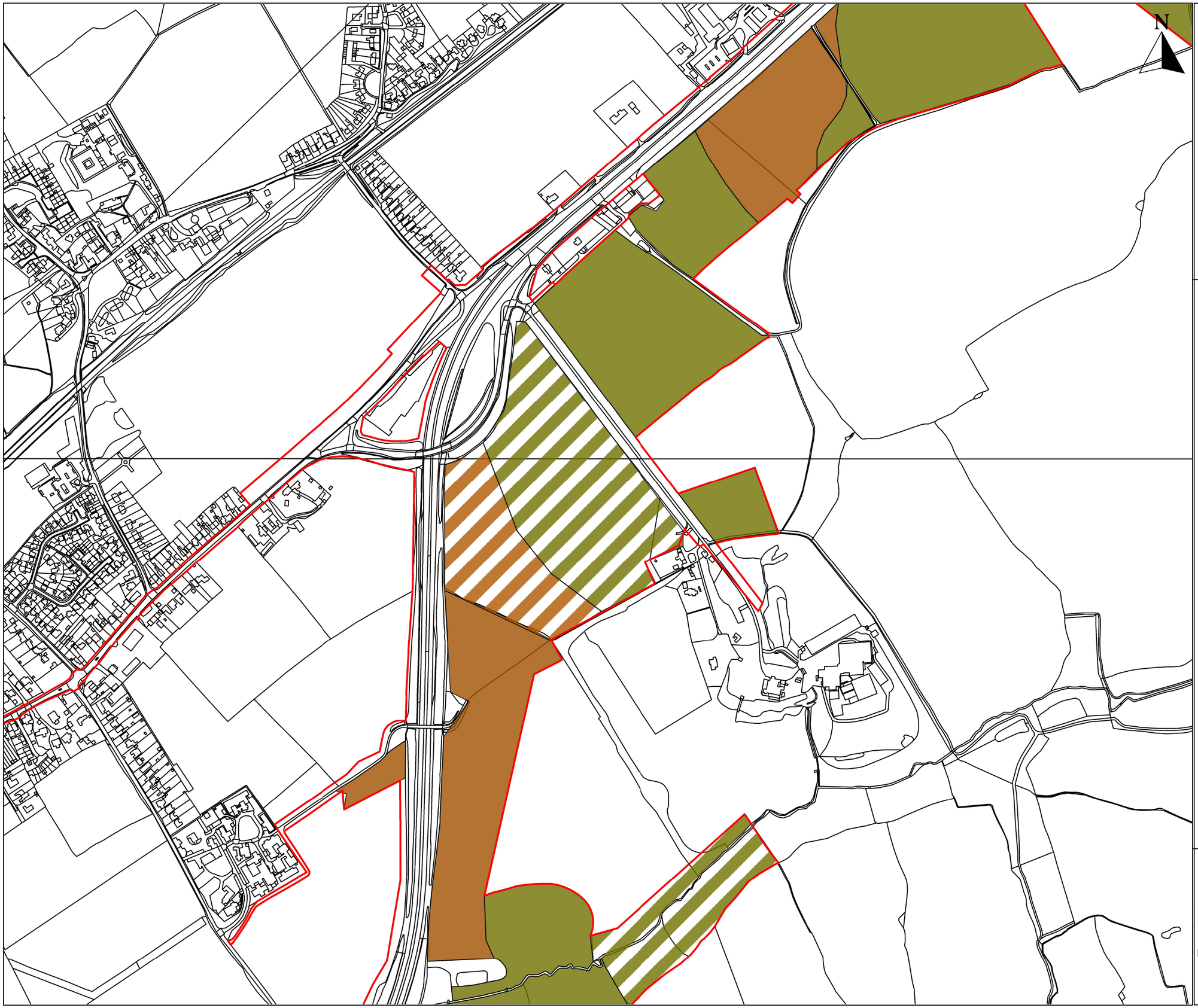
Map title:

Map 31
Soil types

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 18/02/2022



KEY

- Heavy slowly permeable soils
- Deep permeable soils
- Medium loams over gravel
- Estimated heavy slowly permeable soils
- Estimated deep permeable soils
- Estimated medium loams over gravel
- Survey area

Client:

COSTAIN

Site:

A12 Chelmsford

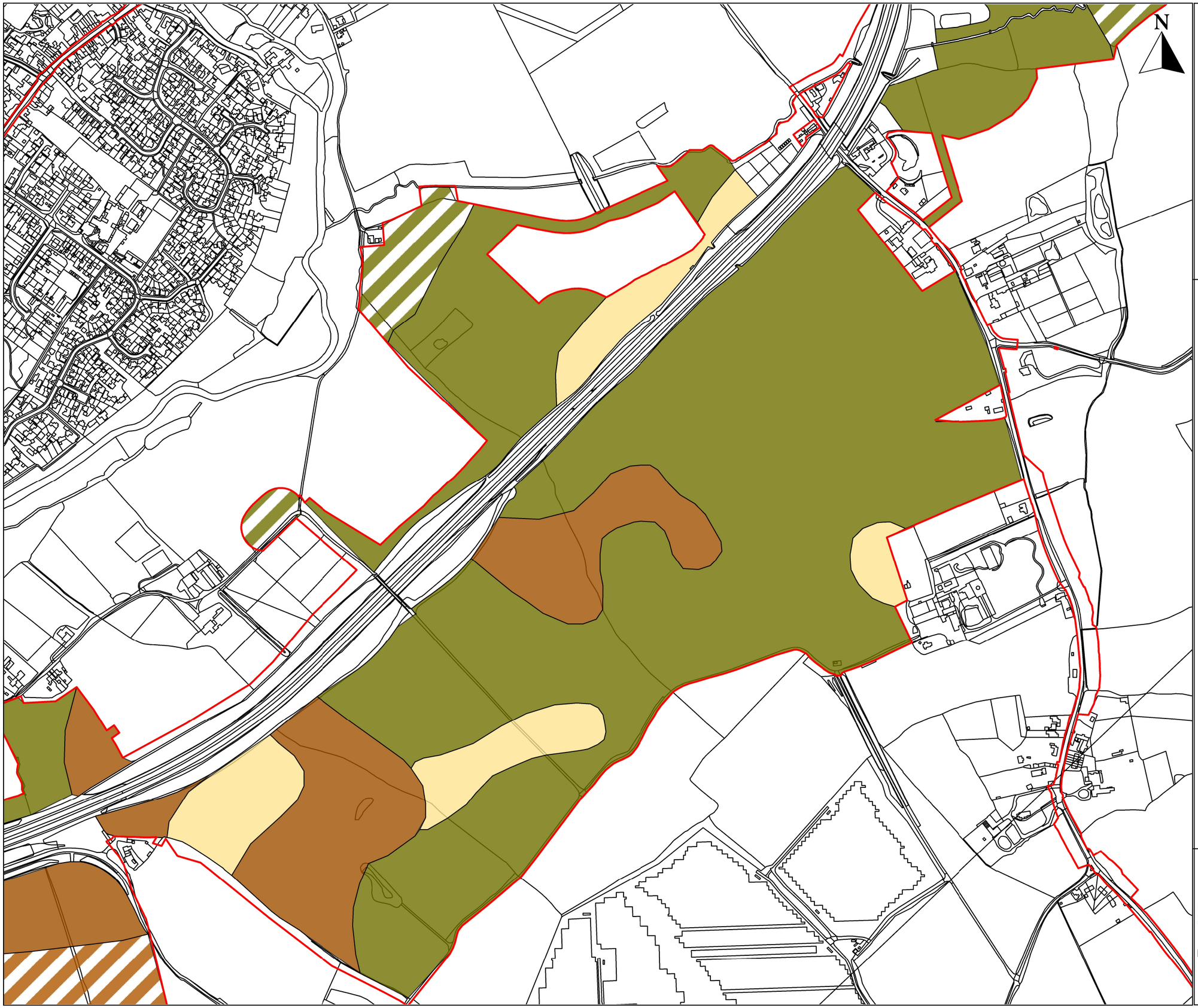
Map title:

Map 32
Soil types

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 18/02/2022



KEY

- Heavy slowly permeable soils
- Deep permeable soils
- Medium loams over gravel
- Estimated heavy slowly permeable soils
- Estimated deep permeable soils
- Estimated medium loams over gravel
- Survey area

Client:

COSTAIN

Site:

A12 Chelmsford

Map title:

Map 33
Soil types

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 18/02/2022

KEY

- Heavy slowly permeable soils
- Deep permeable soils
- Medium loams over gravel
- Estimated heavy slowly permeable soils
- Estimated deep permeable soils
- Estimated medium loams over gravel
- Survey area

Client:

COSTAIN

Site:

A12 Chelmsford

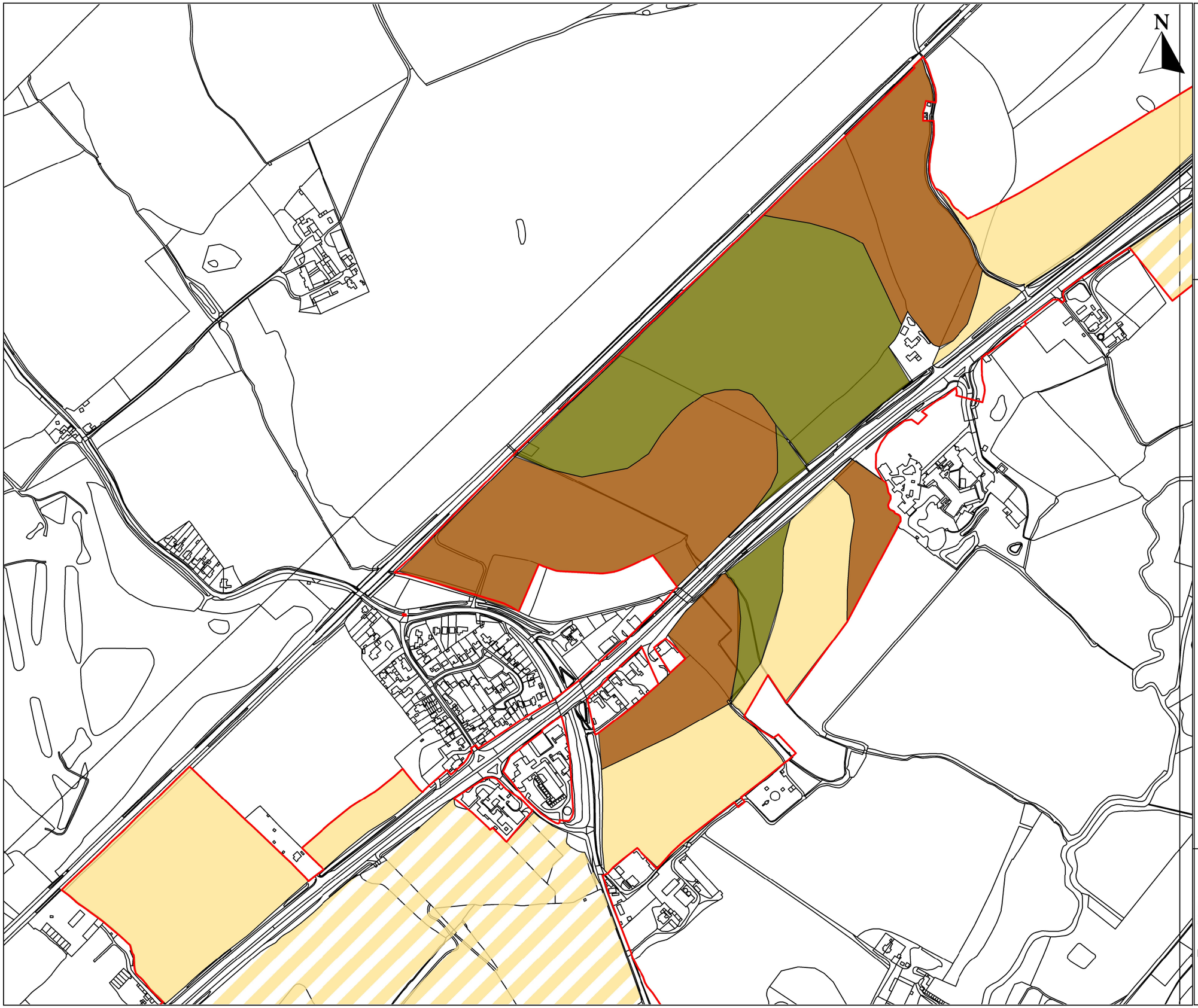
Map title:

Map 34
Soil types

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 18/02/2022



KEY

- Heavy slowly permeable soils
- Deep permeable soils
- Medium loams over gravel
- Estimated heavy slowly permeable soils
- Estimated deep permeable soils
- Estimated medium loams over gravel
- Survey area

Client:

COSTAIN

Site:

A12 Chelmsford

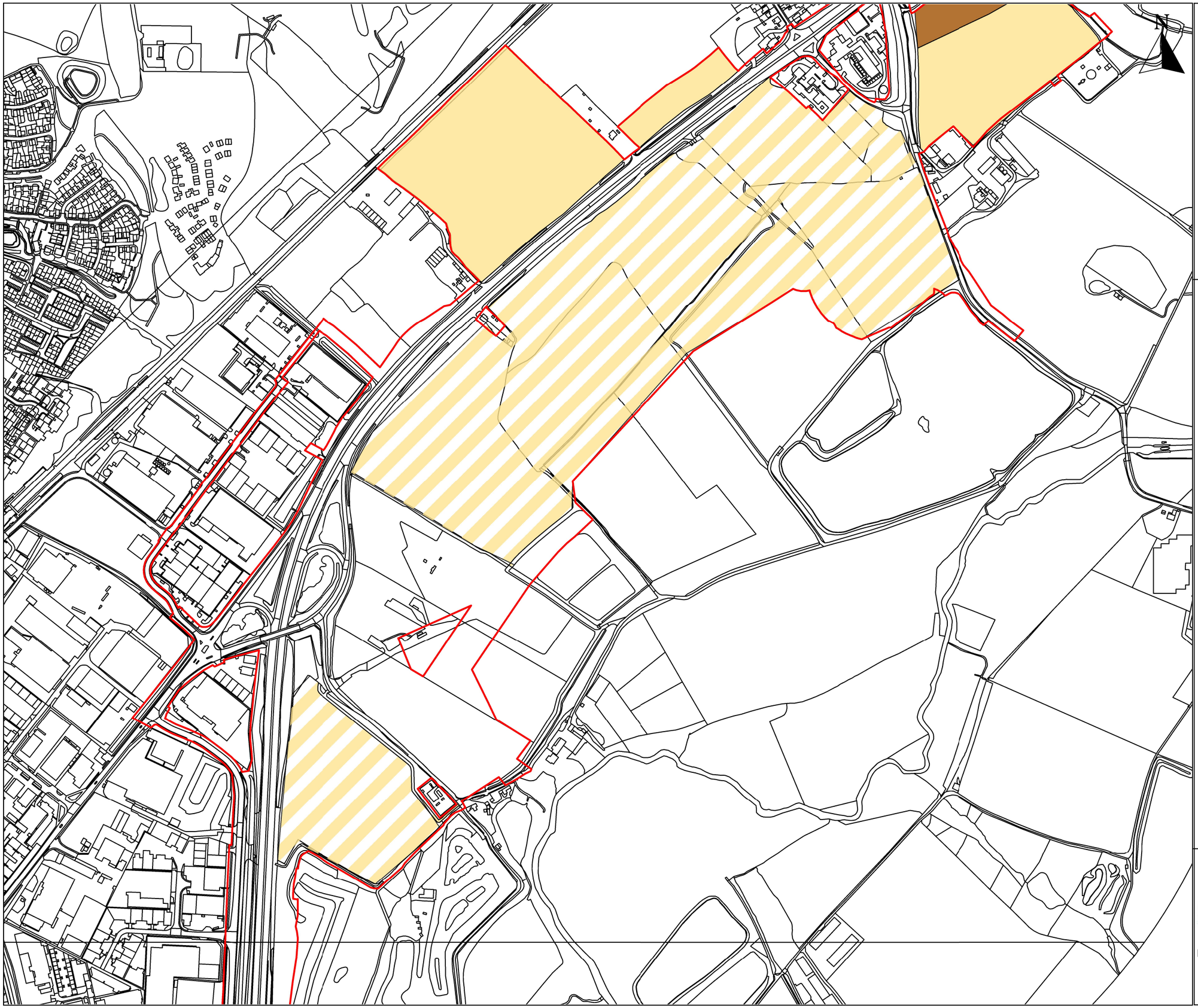
Map title:

Map 35
Soil types

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 18/02/2022



KEY

- Heavy slowly permeable soils
- Deep permeable soils
- Medium loams over gravel
- Estimated heavy slowly permeable soils
- Estimated deep permeable soils
- Estimated medium loams over gravel
- Survey area

Client:

COSTAIN

Site:

A12 Chelmsford

Map title:

Map 36
Soil types

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:6,000

Date: 18/02/2022