

**AGRICULTURAL QUALITY OF LAND
SURROUNDING SETTLEMENTS IN THE
HINCKLEY & BOSWORTH DISTRICT**

Report 1454/2

7th May, 2020

Land
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**AGRICULTURAL QUALITY OF LAND SURROUNDING SETTLEMENTS
IN THE HINCKLEY & BOSWORTH DISTRICT**

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Report 1454/2
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7th May, 2020

1.0 Introduction

1.1 Land Research Associates have been commissioned by the Hinckley and Bosworth Borough Council (HBBC) to provide details on the agricultural quality of land across the District. This study addresses land quality surrounding fourteen settlements in the District (see Map 1 at the end of this Section):

Bagworth	Hinckley
Barlestone	Market Bosworth
Barwell	Markfield
Burbage	Newbold Verdon
Desford	Ratby
Earl Shilton	Stoke Golding
Groby	Thornton

1.2 Information from this report and the desk study (see report 1454/1) will be reviewed in a non-technical report (see report 1454/3).

AGRICULTURAL LAND CLASSIFICATION

1.3 Agricultural Land Classification (ALC) is a system used in England and Wales to grade the quality of land for agricultural use, according to the extent by which physical or chemical characteristics impose long-term limitations. The ALC system¹ classifies land into five grades numbered 1 to 5, with grade 3 divided into two sub-grades (3a and 3b). Best and most versatile (BMV) land is considered land grades 1, 2 and subgrade 3a; this land is of high agricultural quality and protected in National Planning Policy. The system was devised and introduced in the 1960s and revised in 1988.

NATIONAL PLANNING POLICY

1.4 This piece of work will act as an evidence base to allow the Council, where possible, to guide development away from best and most versatile land in line with National Planning Policy. The applicable legislative framework is summarised as follows from the National Planning Policy Framework (NPPF, 2019):

“Planning policies and decisions should contribute to and enhance the natural and local

¹*Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land. MAFF, 1988.*

environment by:

“a) ...protecting and enhancing... soils (in a manner commensurate with their... identified quality in the development plan)

b)...recognising the economic and other benefits of the best and most versatile agricultural land”

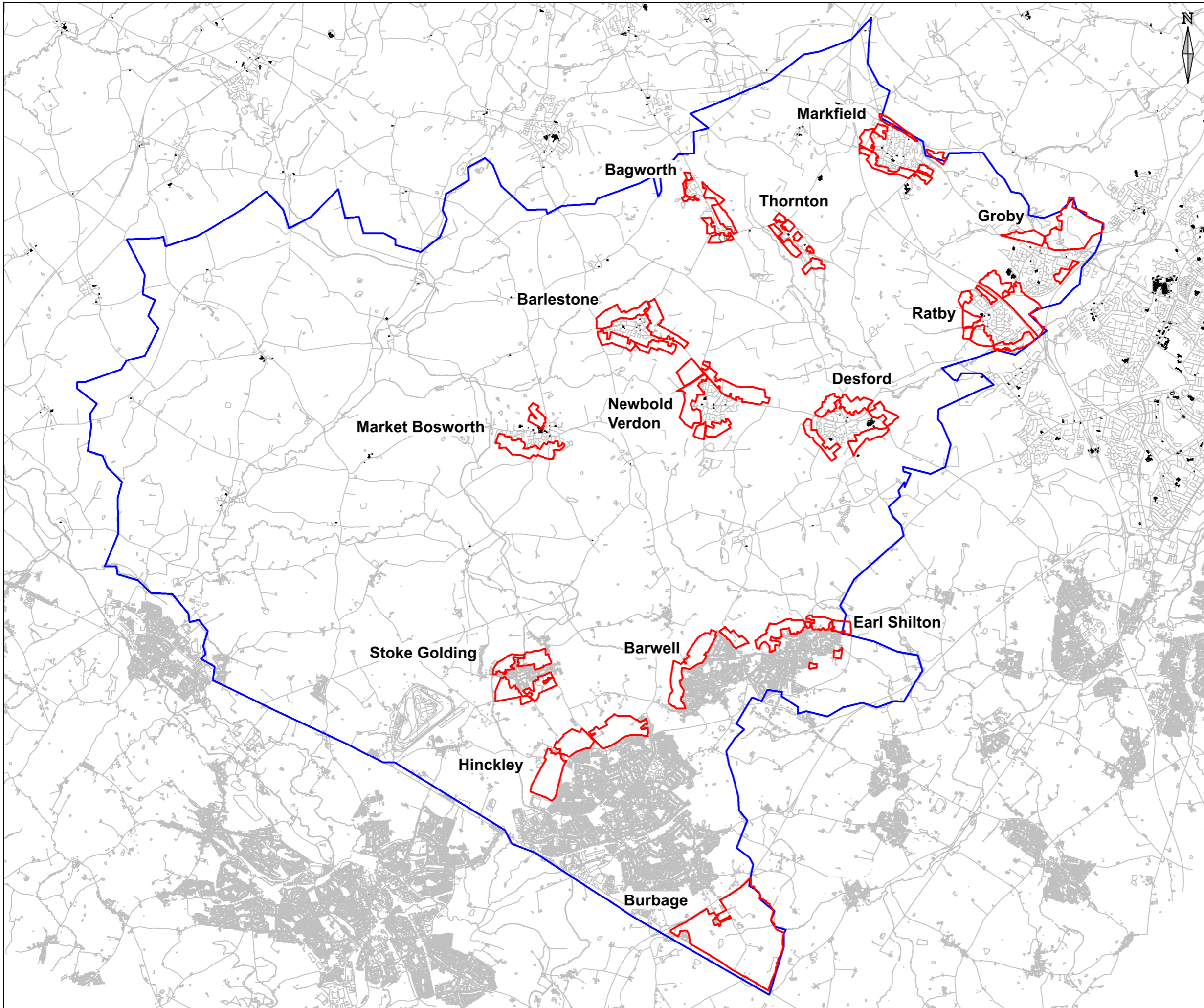
“Plans should:...allocate land with the least environmental...value, where consistent with other policies in this Framework...Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.”

METHODOLOGY

- 1.5** The ALC survey was carried out on foot and based on shallow soil pits and augerings to 1 m depth (where not stopped by impenetrable layers) at each observation point, located using GPS. Observations were conducted at alternate intersects of a 100 m grid, providing a sampling density of one observation every two hectares. Survey was conducted strictly in accordance with the Agricultural Land Classification for England and Wales (1988).
- 1.6** The survey was carried out between October 2018 and March 2019 with the permissions of landowners and tenant farmers for access. Where land access was not obtained (landowner not identified or access not granted), ALC grades were interpolated using nearby observations and published soils and geological information.

LIMITATIONS OF THE SURVEY

- 1.7** The observation density of the ALC survey provides semi-detailed land quality information. While this gives a useful overview of broad land grades for directing development towards lower quality land, Natural England recommend detailed (1 observation per hectare) ALC mapping for LPAs to base their final planning decisions.
- 1.8** Estimated grading should not be assumed to meet the required degree of accuracy required for planning applications and in all cases detailed survey to Natural England guidelines is recommended.



- KEY**
- Survey area
 - Hinckley and Bosworth Borough Council District

Client:



Hinckley & Bosworth
Borough Council

Site:

Hinckley and Bosworth District

Map title:

**Map 1
Survey areas in the
Hinckley and Bosworth District**



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Scale: 1:90,000

Date: 20/05/2019

2.0 Agricultural land quality around Bagworth

SURVEY RESULTS

2.1 The agricultural quality of the land is determined by wetness. Land of grades 1, 2 and 3 have been identified, see Map 2 at the end of this Section for their distribution.

Grade 1

2.2 This land is found to the south-west of the village where medium clay loam topsoils overlie slightly stony sandy loam subsoils. This land has no significant limitations to agricultural use.

Grade 2

2.3 This land dominates to the south of the village, where sand and gravel deposits are mapped. The land has minor wetness limitations and mainly comprises medium or sandy clay loam topsoils over subsoils of the same texture. The moderately high clay content of the topsoils, combined with slight drainage impedence, limits access with machinery during wet winters under the local climate.

Subgrade 3a

2.4 Land of this quality is formed on the boundary where the sand and gravel deposits thin over mudstone. In this area (to the south and west of the village) sandy clay loam topsoils and upper subsoils overlie slowly permeable clay at around 60 cm depth. The impeded drainage and moderately high topsoil clay content cause wetness limitations meaning access with farm machinery for arable cultivation in winter and early spring is not possible in wet years.

Subgrade 3b

2.5 Where no superficial deposits are mapped land of subgrade 3b agricultural quality was encountered. Soils formed over mudstone comprise heavy clay loam topsoils over slowly permeable reddish clay subsoils at shallow depth (30-40 cm). The high clay content topsoil and poorly-draining subsoils restricts access with farm machinery so that arable land use is limited to autumn-sown combinable crops; spring sowing is rarely possible on this land under the local climate.

ESTIMATED LAND GRADES

Estimated Grade 2

2.6 Grade 2 quality land was found to occur over sand and gravel deposits, it is predicted that this land grade continues in the south onto the adjoining land of the same geology.

Estimated Subgrade 3a

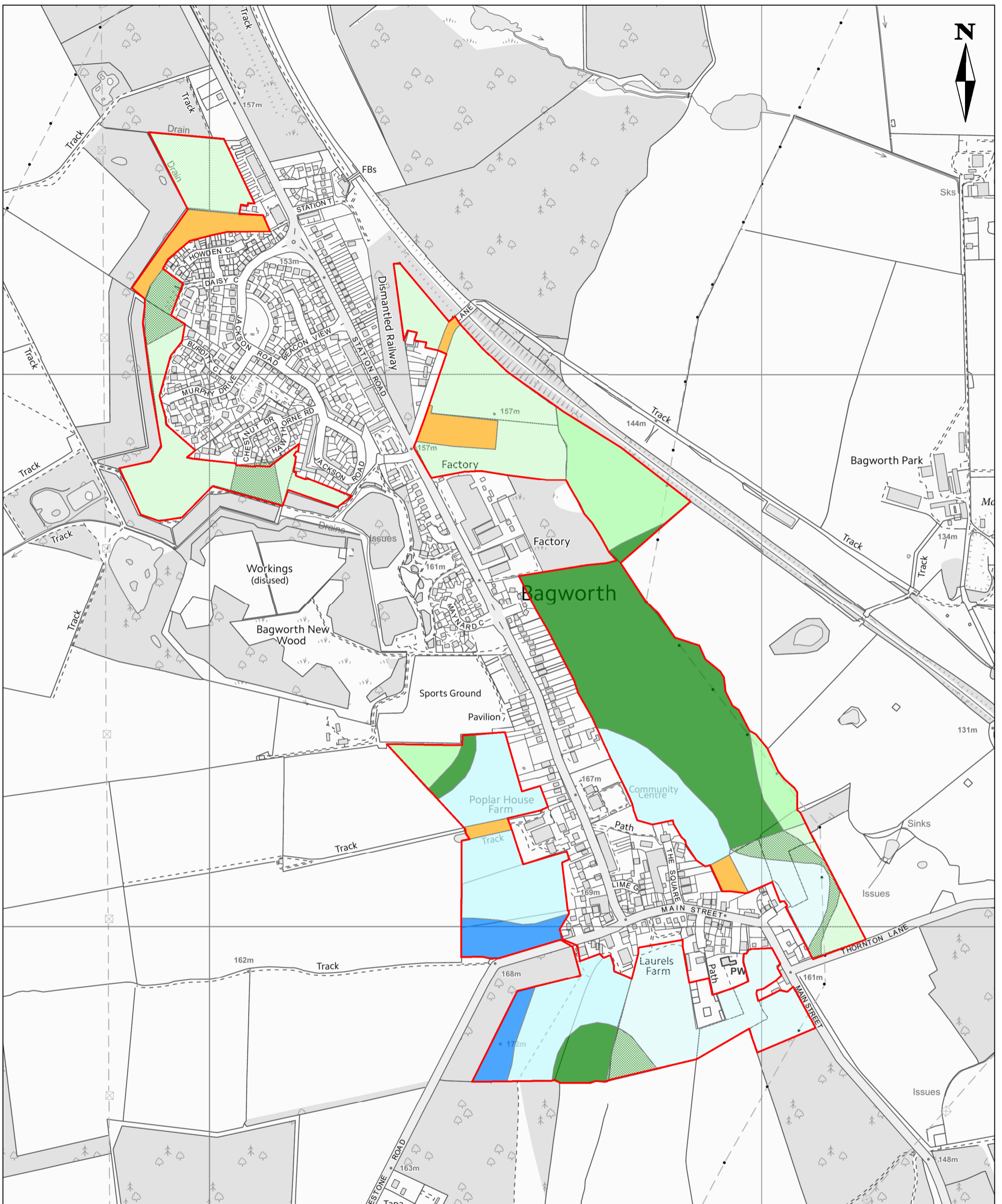
2.7 This land grade was found to be formed where the superficial deposits thin over the mudstone geology in the south-east. In the north, Cotgrave sandstone member geology is predicted to provide similar quality land.

Estimated Subgrade 3b

2.8 In the north and south-east of the village, where there are no superficial deposits it is predicted that land formed in mudstone will be of high clay content and low permeability, giving subgrade 3b quality land.

Table 1: Areas occupied by the different land grades surrounding Bagworth

<i>Grade/subgrade</i>	<i>Area (ha)</i>		<i>% of the land</i>	
	Surveyed land	Surveyed and estimated land	Surveyed land	Surveyed and estimated land
Grade 1	1.8	1.8	7	4
Grade 2	9.1	14.9	34	33
Subgrade 3a	11.5	13.9	43	31
BMV land total	22.4	30.6	84	68
Subgrade 3b	4.2	14.3	16	32
Total land area	26.6	44.9	100	100












Client:

 Hinckley & Bosworth
 Borough Council

Site:
Hinckley and Bosworth District

Map title:
**Map 2
 Bagworth
 Agricultural Land Classification**

KEY

- | | | | |
|---|------------------|---|-----------------------|
|  | Grade 1 |  | Estimated grade 2 |
|  | Grade 2 |  | Estimated subgrade 3a |
|  | Subgrade 3a |  | Estimated subgrade 3b |
|  | Subgrade 3b |  | Survey area |
|  | Non agricultural | | |

Scale: 1:6,500 at A3

Date: 11/3/2019

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3.0 Agricultural land quality around Barlestone

SURVEY RESULTS

- 3.1** The agricultural quality of the land is determined by wetness or droughtiness. Land of grades 2 and 3 has been identified: see Map 3 at the end of this Section for their distribution.

Grade 2

- 3.2** This land dominates in the north and east and west of the surveyed land. Land within this grade includes sandy clay loams with slightly to moderately stony sandy loam subsoils. The stone content of the subsoils restricts the moisture holding capacity of the land, leading to slight droughtiness which reduces crop yield in drier summers.

- 3.3** Where the soil profile is made up of sandy clay loam topsoils and subsoils, land is also equally limited by wetness, as the moderately high clay content of the topsoils, combined with slight drainage impedance, limits access with machinery during wet winters under the local climate.

Subgrade 3a

- 3.4** Land of this quality lies to the north and south of the village and is mainly made up of land with sandy clay loam topsoils and upper subsoils over dense reddish clay at around 50 cm depth. The poorly draining subsoils and moderately high topsoil clay content cause wetness limitations which restrict access with farm machinery for spring cultivation in wet years.

Subgrade 3b

- 3.5** This land is mainly found to the south of the village where fine loamy topsoils overlie dense gleyed clays at shallow depth. The combination of moderately high topsoil clay content and poor subsoil drainage access with machinery is limited due to wetness restrictions. Arable land use is mainly restricted to crops, with spring cropping rarely possible.

ESTIMATED LAND GRADES

Estimated Grade 2

- 3.6** Grade 2 quality land was found to be formed over superficial sand and gravel deposits which provide deep loamy soils. These deposits are mapped in the east of the village, where land is therefore also estimated to be of grade 2 quality.

Estimated Subgrade 3a

- 3.7** This land grade was encountered where Oadby till is mapped and so is also estimated to occur to the east of the village where this geology is also recorded.

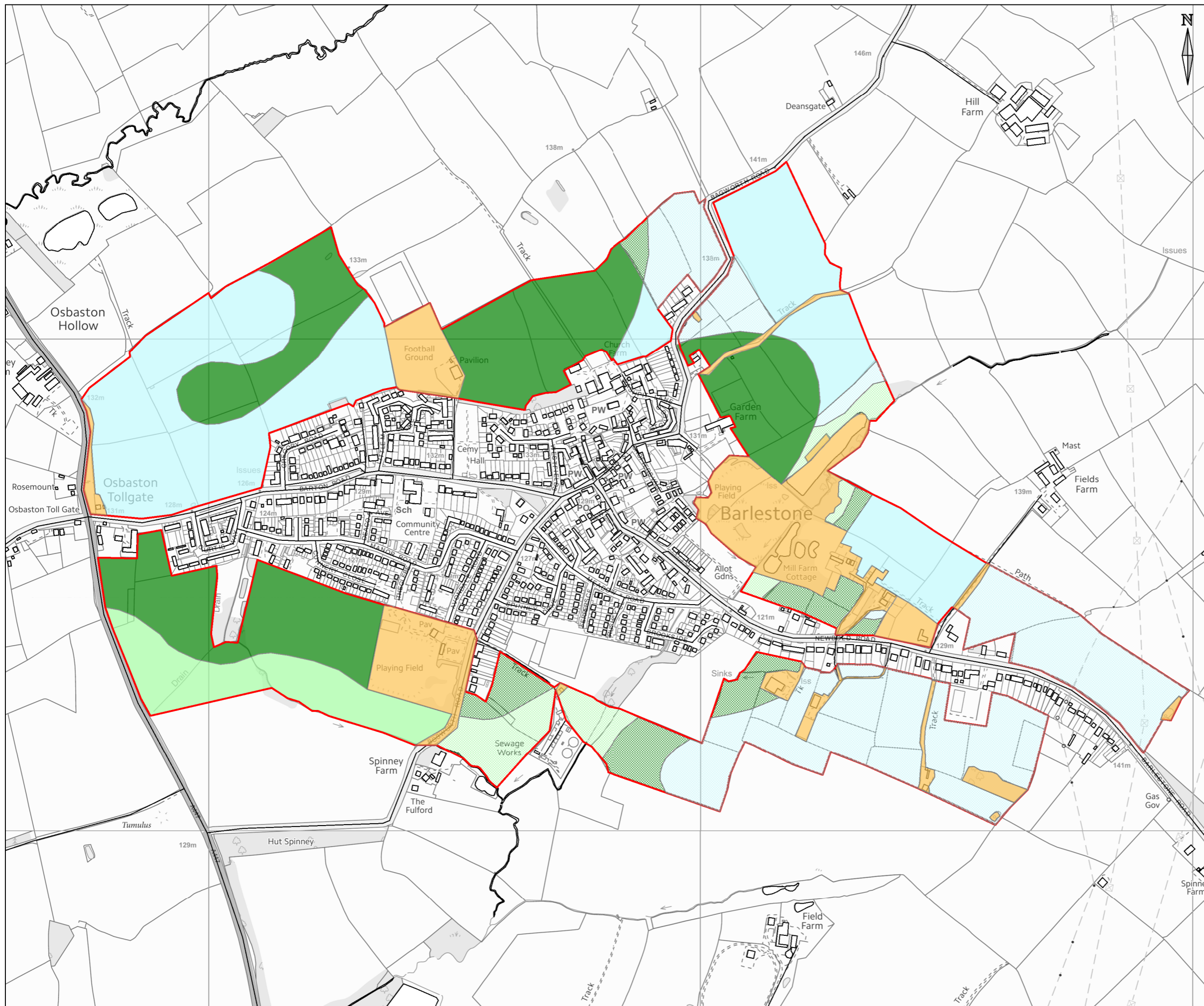
Estimated Subgrade 3b

- 3.8** Subgrade 3b land was found over alluvial deposits providing heavy soils in the south of the

site, this land grade is likely to extend further east towards the sewage works where land is formed in the same material.


Table 2: Areas occupied by the different land grades surrounding Barlestone

<i>Grade/subgrade</i>	<i>Area (ha)</i>		<i>% of the land</i>	
	Surveyed land	Surveyed and estimated land	Surveyed land	Surveyed and estimated land
Grade 1	0	0	0	0
Grade 2	27.6	50.7	46	54
Subgrade 3a	26.1	31.7	44	34
BMV land total	53.7	82.4	90	88
Subgrade 3b	6.2	10.9	10	12
Total land area	59.9	93.3	100	100




KEY

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

Client: 
**Hinckley & Bosworth
 Borough Council**

Site:
Hinckley and Bosworth District

Map title:
**Map 3
 Barlestone
 Agricultural Land Classification**


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Scale: 1:7,500

Date: 11/3/2019

4.0 Agricultural land quality around Barwell

SURVEY RESULTS

- 4.1. The agricultural quality of the land is determined by wetness. Land of grade 3 has been identified: see Map 4 at the end of this Section for their distribution.

Subgrade 3a

- 4.2. This land grade was found in the north-east and north-west of the area. The moderate clay content of the topsoil in combination with the impeded drainage of the lower subsoil restricts machinery access to land in winter and early spring in an average year.

Subgrade 3b

- 4.3. In the north of the area clay loams were found to overlie dense clay at a shallow depth. The combination of moderately high topsoil clay content and poor subsoil drainage access with machinery is limited due to wetness restrictions. Arable land use is mainly restricted to autumn crops, with spring cropping rarely possible.

ESTIMATED LAND GRADES

Estimated Subgrade 3a

- 4.4. This land grade is mapped where a combination of sand and gravel and Oadby till deposits are recorded. These deposits overlie the mudstone geology and typically form medium loamy soils that provide higher quality land with some wetness limitations.

Mixed BMV and subgrade 3b land

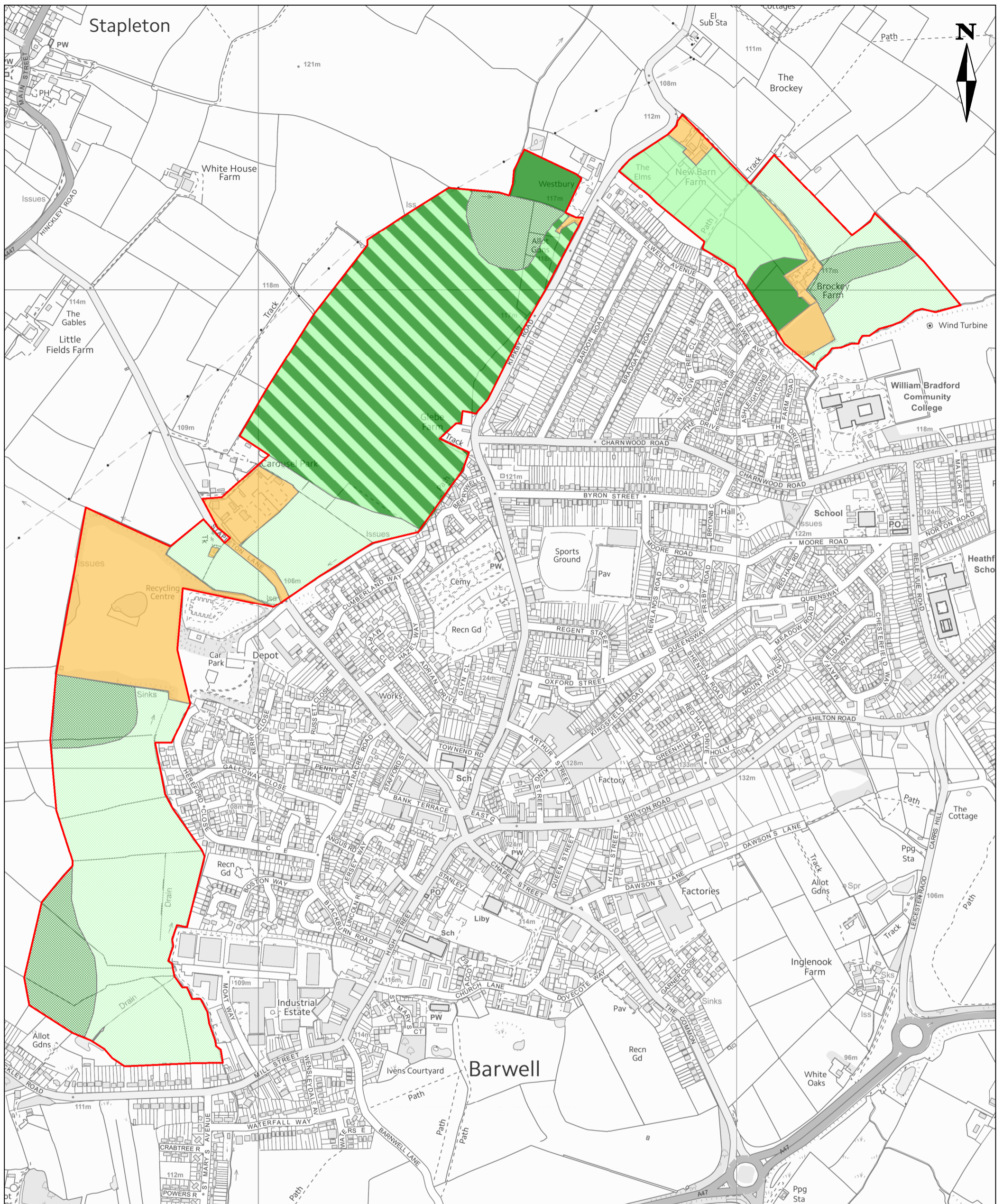
- 4.5. This land is mapped in the north-west of the site where Oadby till is recorded to overlie the mudstone basal geology. This combination typically provides loamy soils slightly limited by wetness giving subgrade 3a land, however where the deposit thins wetness is likely to limit the land to subgrade 3b. These two subgrades could not be accurately separated in this part of the area.

Estimated Subgrade 3b

- 4.6. This land grade has been estimated in areas where Bosworth Clay Member overlies the mudstone geology. This is likely to provide heavy slowly permeable soils with moderate wetness limitations.

Table 3: Areas occupied by the different land grades surrounding Barwell

<i>Grade/subgrade</i>	<i>Area (ha)</i>		<i>% of the land</i>	
	Surveyed land	Surveyed and estimated land	Surveyed land	Surveyed and estimated land
Grade 1	0	0	0	0
Grade 2	0	0	0	0
Subgrade 3a	2.3	26.2	30	37
BMV land total	2.3	26.2	30	37
Subgrade 3b	5.3	45.3	70	63
Total land area	7.6	71.5	100	100



Hinckley & Bosworth
Borough Council

Site:
Hinckley and Bosworth District

Map title:
**Map 4
Barwell
Agricultural Land Classification**

KEY

- Subgrade 3a
- Subgrade 3b
- Estimated mix of subgrade 3a/3b
- Non agricultural
- Survey area
- Estimated subgrade 3a
- Estimated subgrade 3b

Scale: 1:7,500

Date: 11/3/2019

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5.0 Agricultural land quality around Burbage

SURVEY RESULTS

5.1 The agricultural quality of the land is determined by wetness or droughtiness. Land of grades 1, 2 and 3 has been identified: see Map 5 at the end of this Section for their distribution.

Grade 1

5.2 This land is found in the south of the site and comprises deep sandy loams with no significant limitations to agricultural use.

Grade 2

5.3 Land of this quality is found across the area. Where the land grade has medium loamy soil, the moderately high clay content of the topsoils, combined with slight drainage impedence, limits access with machinery during wet winters under the local climate.

5.4 In other areas soils with sandy subsoils form grade 2 land; these are limited by droughtiness, as the subsoils have a limited moisture storage capacity that will lead to reduced crop yields in dry years under the local climate.

Subgrade 3a

5.5 Where sandy clay loams overlies slowly permeable clay at depth (around 50 cm) land is limited by wetness to subgrade 3a. The moderate clay content of the topsoil, in combination with the impeded drainage of the lower subsoil can restrict the access of machinery to land in spring during wet years.

Subgrade 3b

5.6 Land of subgrade 3b agricultural quality is mainly present in the north and east of the site where heavy clay loam topsoil directly overlies slowly permeable clay. The poor drainage and high topsoil clay content of these soils combine to restrict access by farm machinery to autumn, constraining arable land use to combinable autumn sown crops in most years.

ESTIMATED LAND GRADES

Estimated Grade 2

5.7 Grade 2 quality land was found to be formed over superficial sand and gravel deposits which provides deep loamy soils. These deposits are also mapped in inaccessible areas in the north and a small area in the south of the survey area, which are therefore predicted to be of the same quality.

Estimated Subgrade 3a

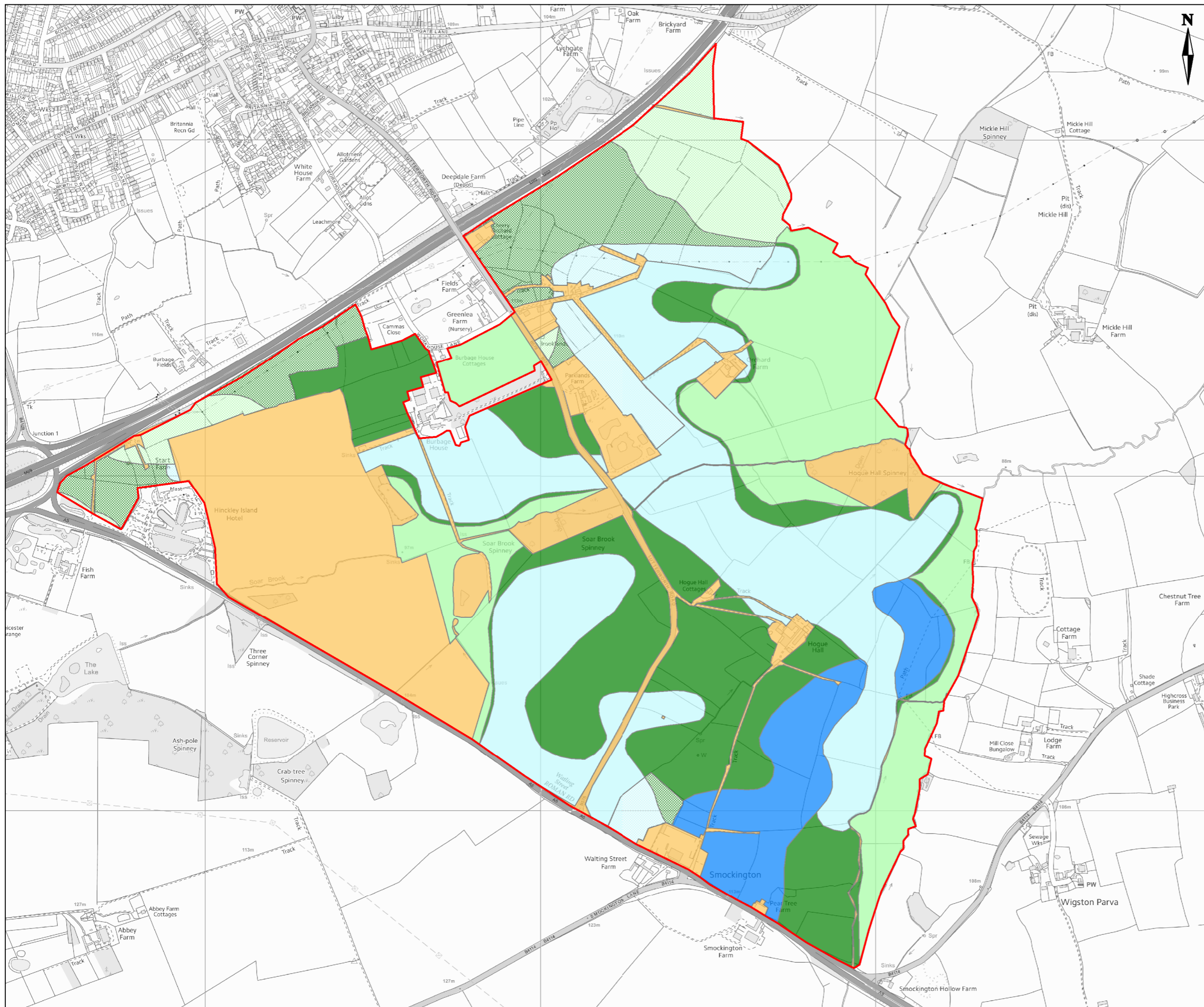
5.8 This land grade was encountered where Oadby till is mapped and is therefore also predicted on unsurveyed areas with this geology. It is also interpolated the boundary between sands and gravel deposits and Bosworth Clay.

Estimated Subgrade 3b

5.17 Subgrade 3b land is predicted over areas of Bosworth Clay Member superficial drift, which typically gives heavy slowly permeable soils with wetness limitations.

Table 4: Areas occupied by the different land grades surrounding Burbage

<i>Grade/subgrade</i>	<i>Area (ha)</i>		<i>% of the land</i>	
	Surveyed land	Surveyed and estimated land	Surveyed land	Surveyed and estimated land
Grade 1	21.6	21.6	10	8
Grade 2	79.2	91.4	36	33
Subgrade 3a	65.1	89.9	29	32
BMV land total	165.9	202.9	75	73
Subgrade 3b	56.2	74.7	25	27
Total land area	222.1	277.6	100	100



KEY

- Grade 1
- Grade 2
- Subgrade 3a
- Subgrade 3b
- Non agricultural
- Estimated grade 2
- Estimated subgrade 3a
- Estimated subgrade 3b
- Survey area



Client:



Hinckley & Bosworth
Borough Council

Site:

Hinckley and Bosworth District

Map title:

**Map 5
Borough
Agricultural Land Classification**



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Scale: 1:11,000

Date: 11/3/2019

6.0 Agricultural land quality around Desford

SURVEY RESULTS

- 6.1** The agricultural quality of the land is determined by wetness or droughtiness. Land of grades 2 and 3 has been identified: see Map 6 at the end of this Section for their distribution.

Grade 2

- 6.2** Land of this quality is located in the south of the site where sandy clay loam or sandy loam soils are located. Where the land grade is made up of sandy clay loams, the moderate clay content of these soils can restrict access with machinery for cultivation of winter crops in wet years.

- 6.3** In other areas where sandy loam soils are located, land is slightly limited by droughtiness as the subsoils have a limited moisture storage capacity that will lead to minor reductions in crop yields in dry years under the local climate.

Subgrade 3a

- 6.4** Where sandy clay loams overlie slowly permeable clay at depth (around 50 cm) land is limited by wetness to subgrade 3a. The moderate clay content of the topsoil in combination with the impeded drainage of the lower subsoil restricts machinery access to land in winter and early spring in an average year.

Subgrade 3b

- 6.5** Land of subgrade 3b agricultural quality is mainly present in the west of the site where heavy clay loam topsoil directly overlies slowly permeable clay. The combination of moderately high topsoil clay content and poor subsoil drainage access with machinery is limited due to wetness restrictions. Arable land use is mainly restricted to autumn crops, with spring cropping rarely possible.

ESTIMATED LAND GRADES

Estimated Grade 2

- 6.6** Grade 2 quality land was found to be formed over superficial sand and gravel deposits which provides deep loamy soils. These deposits are also mapped to the west of the village where land access was not possible and this grade is therefore also predicted.

Estimated Subgrade 3a

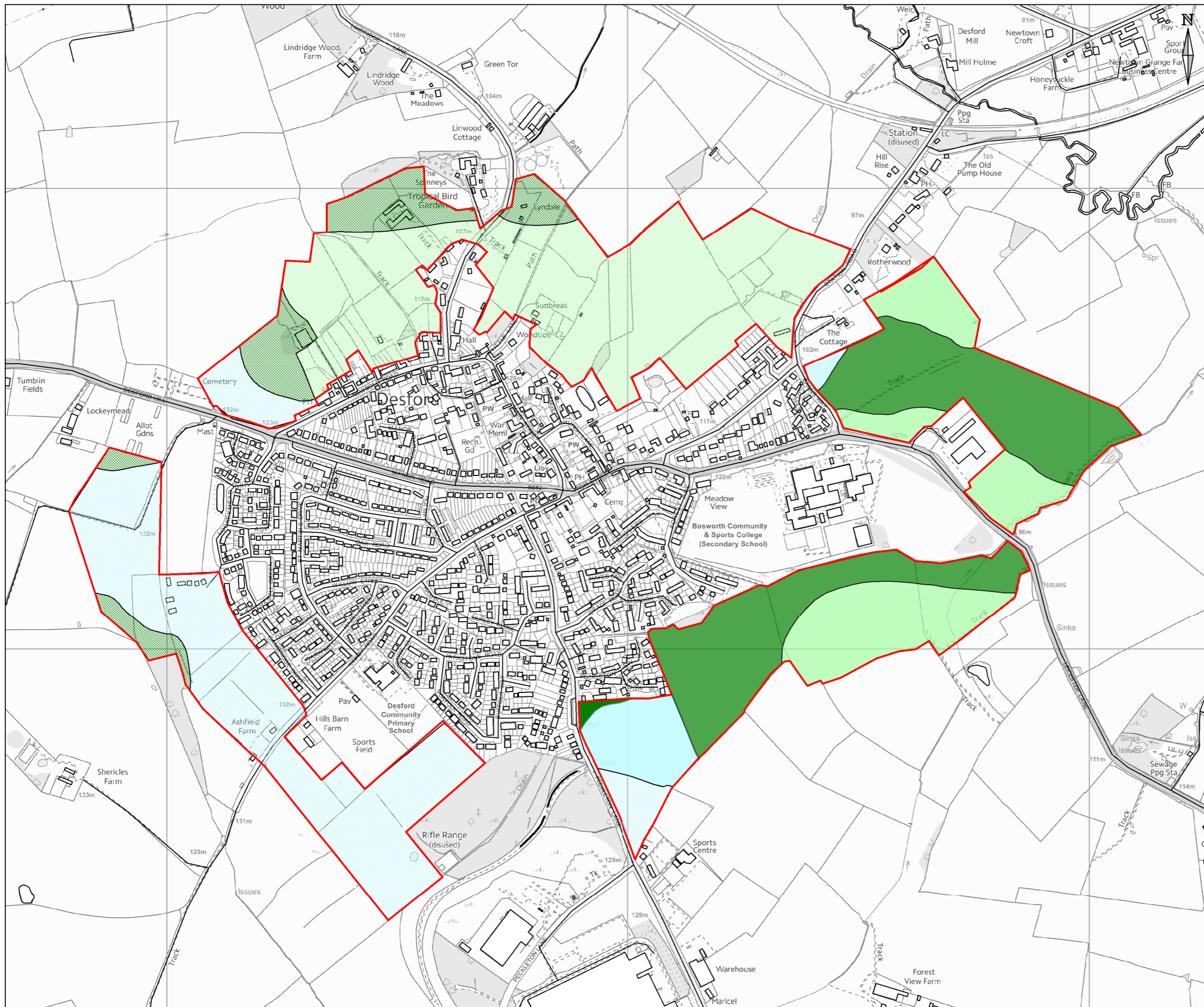
- 6.7** This land grade is predicted where the sand and gravel deposit thins over the mudstone geology, forming the boundary between grade 2 and subgrade 3b land.

Estimated Subgrade 3b








- 6.8** Subgrade 3b land is predicted over mudstone geology to the north of Desford, which gives heavy clay soils with wetness limitations.

Table 5: Areas occupied by the different land grades surrounding Desford

<i>Grade/subgrade</i>	<i>Area (ha)</i>		<i>% of the land</i>	
	Surveyed land	Surveyed and estimated land	Surveyed land	Surveyed and estimated land
Grade 1	0	0	0	0
Grade 2	4	27.3	11	31
Subgrade 3a	20.9	28.2	56	32
BMV land total	24.9	55.5	67	63
Subgrade 3b	12.3	32.3	33	37
Total land area	37.2	87.8	100	100



KEY

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

Client:



**Hinckley & Bosworth
Borough Council**

Site:

Hinckley and Bosworth District

Map title:

**Map 6
Desford
Agricultural Land Classification**



Scale: 1:8,000

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Date: 11/3/2019

7.0 Agricultural land quality around Earl Shilton

SURVEY RESULTS

7.1 The agricultural quality of the land is determined by wetness or droughtiness. Land of grades 2 and 3 has been identified: a map of their distribution can be found at the end of this Section (Map 7).

Grade 2

7.2 Land of this quality is found in the east and south of the survey area where sandy clay loam soils are limited by wetness. The moderately high topsoil clay content of these soils can restrict access with machinery for cultivation of winter crops in wet years.

Subgrade 3a

7.3 This land grade is mainly comprises areas where medium loamy soils overlie clay at depth (around 50 cm) and are limited by wetness. The moderately high clay content of the topsoil in combination with the impeded drainage of the lower subsoil can restricts the access of machinery to land in winter and spring in average years.

7.4 Also included in this land grade is land limited by droughtiness. The sandy subsoils of these areas (formed in sand and gravel deposits) hold limited moisture for crop uptake, which leads to reduced yields in dry years under the local climate.

Subgrade 3b

7.5 Land of subgrade 3b agricultural quality is predominant across the site and comprises heavy clay loams over slowly permeable clay at shallow depth. The combination of high clay content topsoil and impeded drainage means land access with farm machinery is mainly restricted to the autumn cultivation period. Arable use of the land is mainly restricted to autumn-sown crops.

ESTIMATED LAND GRADES

Estimated Grade 2

7.6 Grade 2 quality land was found to be formed over superficial glacial deposits. These deposits are also mapped on land to the east of the village where land access was not possible and this grade is therefore also predicted.

Estimated Subgrade 3a

7.7 This subgrade was found to mainly fringe the town where sand and gravel deposits thin over the mudstone basal geology, and is also predicted similar land where access was unavailable.

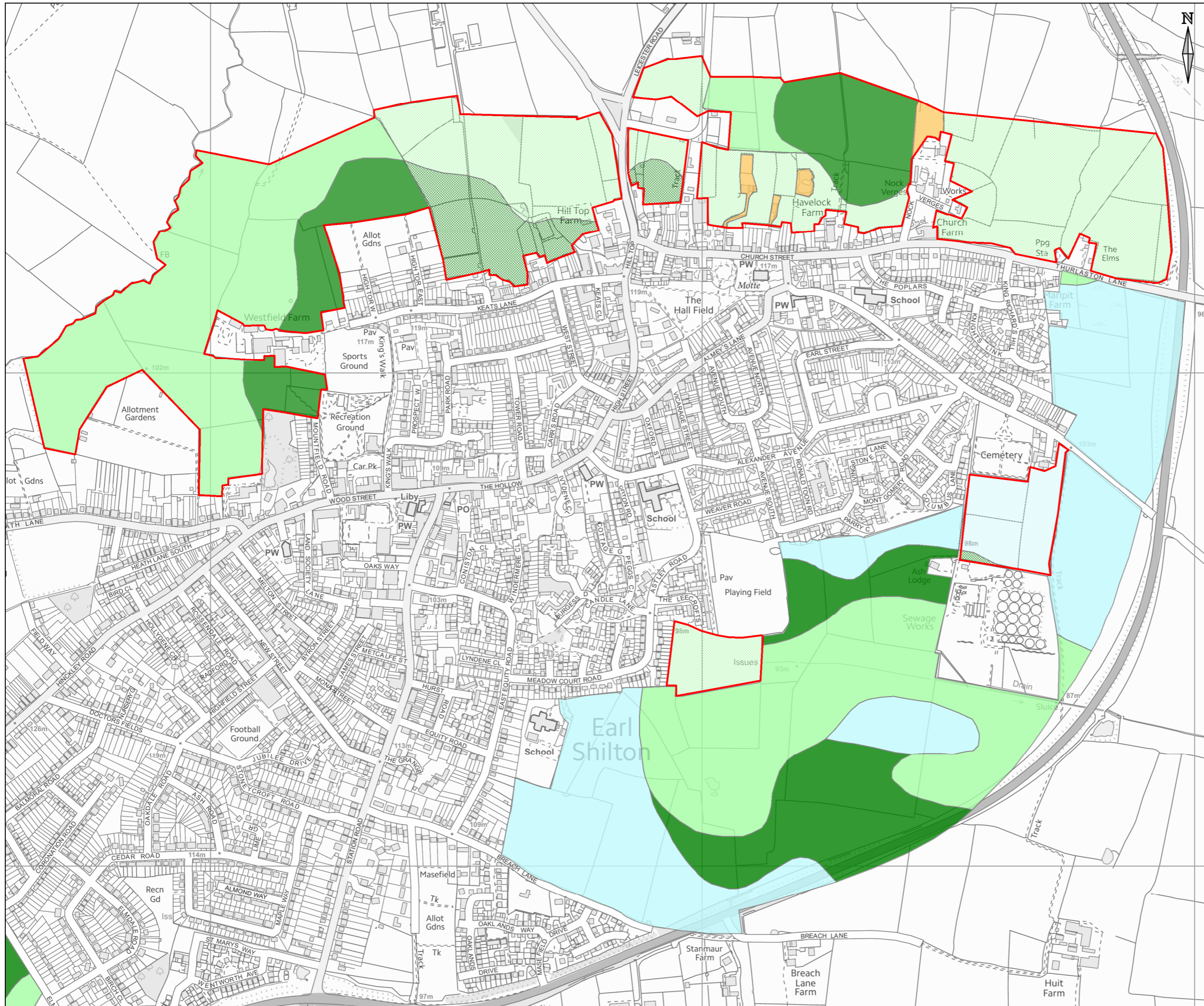
Estimated Subgrade 3b

7.8 Subgrade 3b land is predicted in areas where surface geology is recorded as mudstone,

which has been found to give heavy soils with wetness limitations.

Table 6: Areas occupied by the different land grades surrounding Earl Shilton

<i>Grade/subgrade</i>	<i>Area (ha)</i>		<i>% of the land</i>	
	Surveyed land	Surveyed and estimated land	Surveyed land	Surveyed and estimated land
Grade 1	0	0	0	0
Grade 2	33.2	36.8	27	23
Subgrade 3a	35.0	40.2	29	25
BMV land total	68.2	77.0	56	48
Subgrade 3b	53.7	81.6	44	52
Total land area	121.9	158.6	100	100



- KEY**
- Grade 2
 - Subgrade 3a
 - Subgrade 3b
 - Non agricultural
 - Estimated subgrade 3a
 - Estimated subgrade 3a
 - Estimated subgrade 3b
 - Survey area

Client:



Hinckley & Bosworth
Borough Council

Site:

Hinckley and Bosworth District

Map title:

**Map 7
Earl Shilton
Agricultural Land Classification**



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