

AGRICULTURAL LAND CLASSIFICATION

LAND AT TINGLEY, LEEDS

Report Commissioned by
RPS - CLOUSTON
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AGRICULTURAL LAND CLASSIFICATION REPORT ON LAND AT TINGLEY, LEEDS

1. INTRODUCTION

1.1 SITE LOCATION AND DEFINITION OF AGRICULTURAL LAND GRADES

The site is located around National Grid Reference SE 286267 about 6 km south of Leeds city centre, immediately north east of junction 28 on the M62 motorway. It covers an area of 43.4 hectares most of which is used for vegetable and cereal cropping. Agricultural Land Classification (ALC) survey work was carried out in July 1990 when soils were examined by hand auger borings to a maximum depth of one metre. Borings were made at points predetermined by the National Grid at a density of one boring per hectare.

Land quality assessments were made using the revised guidelines published by the Ministry of Agriculture, Fisheries and Food (MAFF) in 1988. Definitions of all terms used in this report can be found in this publication. Brief descriptions of the 5 land quality grades defined by MAFF are given below:-

Grade 1 - excellent quality agricultural land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 - very good quality agricultural land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.



Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a - good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b - moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 - poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 - very poor quality agricultural land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

1.2 CLIMATE AND RELIEF

Average annual rainfall at Tingley is approximately 705 mm and the accumulated temperature above 0°C (January to June) is 1279 day °C. The field capacity period (ie maximum wetness) in the area is about 168 days a year. The above rainfall and temperature figures impose an overall climatic limitation of Grade 2 on all agricultural land in the Tingley area. Although moisture deficits in the area are relatively small, droughtiness is limiting wherever rock lies close to the surface.

The central and southern parts of the site are gently undulating with slopes of no more than 2-3°. Moderate and occasionally strong slopes occur along the western and north eastern boundaries where gradients of 4-7° are common. The dismantled railways which cross the centre of the area from west to east are a distinct physical feature, especially in the east where they run in deep rock cuttings.

1.3 GEOLOGY AND SOILS

Carboniferous sandstones, the Thornhill Rock of the Middle Coal Measures, lie close to the surface across the whole site. The resulting soils are all light textured and consist mainly of fine and medium slightly stony sandy loam topsoils 30 cm in thickness over thin similarly textured subsoils. These pass into weathering sandstone bedrock, usually between 40-60 cm from the surface. On the more strongly sloping land near the western and north eastern boundaries this stony topsoils often lie directly over weathering sandstone. Droughtiness calculations suggest that soils with a total top and subsoil thickness of less than about 50 cm will be droughty to some extent in summer for crops such as wheat and potatoes. The degree of droughtiness will of course be greatest on the thinnest soils with a low available water capacity¹.

Soils near the dismantled sewage works are much darker coloured than elsewhere on the site, indicating that sludge or night soil may have been spread in this area. It is possible that this material may contain high levels of toxic metals. Analyses to determine the exact levels would be advisable before any of the soil is used or sold for agricultural purposes.



All soils on the site are well drained with no ground water or slowly permeable² layers and thus fall within Soil Wetness Class I.

¹ Available water capacity is a measure of the amount of water held in a soil which can be used by plants.

² Slowly permeable layer - poorly structural clayey or heavy textured layer through which water passes very slowly and so causes waterlogging in the soil above.

1.4 LAND USE

Most of the agricultural land is used for vegetable and cereal crops. Vegetable crops include cabbage, lettuce, potatoes and rhubarb which are produced for sale on Leeds market. Grassland occupies only a few small areas in the north eastern and southern parts of the site.

One of the more striking features of the area is the large amount of derelict land consisting of abandoned railways and sewage works. These are used as unofficial tips by the local population who also trespass on the surrounding farm land creating severe 'urban fringe' problems.

2. AGRICULTURAL LAND CLASSIFICATION

The ALC grades occurring on the site are as follows:-

Grade	Area	% of agricultural land use area	% of total land area
2	11.0	36.7%	25%
3a	14.9	49.7%	34%
3b	2.6	8.6%	6%
Agricultural Buildings	0.3	1.0%	1%
Horticultural Nursery	1.2	4.0%	3%
Non Agricultural	5.5	-	13%
Urban	<u>7.9</u>	<u>-</u>	<u>18%</u>
Totals	43.4	100%	100%

2.1 Grade 2

Grade 2 land is widespread in the northern and eastern parts of the site. Soils consist of fine or medium sandy loam topsoils over similar subsoils which pass into weathering sandstone at about 50 cm from the surface. These soils are well drained (Wetness Class I), easily cultivated and capable of growing a wide range of crops. The presence of rock below about 50 cm, however, imposes a slight summer droughtiness limitation. Slight droughtiness and the overall climatic limitation are the main restrictions on ALC grade. The potential of this land could be improved with irrigation.

2.2 Subgrade 3a

This subgrade occurs south of the dismantled railway and on sloping ground in the west and north east. Soils are similar to those on the grade 2 land except that rock occurs between 30-50 cm from the surface. This increases the drought risk and is the main reason for restricting these areas to subgrade 3a.

2.3 Subgrade 3b

Subgrade 3b land occurs on the western and north eastern boundaries of the site. In all of these areas stony sandy loam topsoils rest almost directly on weathering bedrock. Soils of this type are very droughty and for this reason are limited to subgrade 3b. Slopes of 8-9° are also limiting at a few places in the west immediately north of the abandoned railway.

2.4 Farm Buildings

This category consists of the rhubarb growing sheds near the motorway and Dunningley Farm and the nursery adjoining the A654.

2.5 Non Agricultural Land

This includes the area around the old sewage works and a small area of woodland by the motorway junction in the south west.



2.6 Urban Land

Urban land is defined as land which cannot be returned to agriculture without considerable capital expenditure. On this site it includes the partially fly-tipped derelict railways and depots adjoining the A653/M62 motorway intersection. Trespass from the railway appears to be the source of considerable vandalism and other urban fringe problems on the surrounding farmland. It is ~~different~~ *difficult* to see how this can be controlled in the present circumstances.

MAPS



APPENDIX

SCHEDULE OF SOIL AUGER BORINGS

Glossary of abbreviations used.

lms	loamy medium sand
lfs	loamy fine sand
msl	medium sandy loam
fsl	fine sandy loam
mcl	medium clay loam
scl	sandy clay loam
sst	sandstone

Soil textures are defined according to the MAFF Agricultural Land Classification system.

All soil colour (eg 10YR3/2) are defined according to the Munsell soil colour system (Munsell Color Company Inc, Baltimore, Maryland, 21218, USA)

TINGLEY, SCHEDULE OF SOIL AUGER BORINGS

BORING	DEPTH	TEXTURE (cm)	COLOUR	MOTTLES		
				ABUND	COLOUR	CONTRAST
001	0-30	fsl	10YR32	-		
	30-45	msl	10YR44	-		
002	0-30	fsl	10YR32	-		
	30-40	msl	10YR56	-		
	40+	sst				
003	0-25	fsl	10YR32	-		
	25+	sst				
004	0-30	fsl	10YR32	-		
	30-40	msl	10YR33	-		
	40+	sst				
005	0-30	fsl	10YR32	-		
	30-50	fsl	10YR33	-		
	50-62	msl	10YR56	-		
	62+	sst				
006	0-30	fsl	10YR32	-		
	30-50	fsl	10YR33	-		
	50-80	msl	10YR58	-		
	80+	sst				
007	0-30	fsl	10YR32	-		
	30-40	msl	10YR56	-		
	40-60	mcl	10YR66	G	F	F
008	0-30	fsl	10YR32	-		
	30-40	lfs	10YR64	-		
	40+	sst				

BORING	DEPTH	TEXTURE (cm)	COLOUR	MOTTLES	
				COLOUR	CONTRAST
009	0-25	msl	10YR33	-	
	25-28	lms	10YR64	-	
	28+	sst			
010	0-30	fsl	10YR32	-	
	30-40	fsl	10YR34	-	
	40+	sst			
011	0-30	fsl	10YR32	-	
	30-45	fsl	10YR58	-	
	45+	sst			
012	0-30	fsl	10YR32	-	
	30-80	fsl	10YR56	-	
	80+	sst			
013	0-30	fsl	10YR32	-	
	30-65	fsl	10YR44	-	
	65+				
014	0-3	fsl	10YR33	-	
	3-50	fsl	10YR66	-	
	50-65	fsl	10YR74	-	
	65+	sst			
015	0-30	msl	10YR33	-	
	30-40	lms	10YR66	-	
	40+	sst			
016	0-30	fsl	10YR33	-	
	30-65	msl	10YR44	-	
	65+	sst			

BORING	DEPTH	TEXTURE (cm)	COLOUR	MOTTLES	
				ABUND COLOUR	CONTRAST
017	URBAN				
018	0-30	fsl	10YR32	-	
	30-40	fsl	10YR33	-	
	40+	sst			
019	0-24	fsl	10YR32	-	
	24+	sst			
020	NON.AG				
021	0-30	fsl	10YR32	-	
	30+	sst			
022	URBAN				
023	0-25	fsl	10YR32	-	
	25-45	fsl	10YR44	-	
	45-50	lms	10YR64	-	
	50+	sst			
024	0-35	fsl	10YR32	-	
	35-50	fsl	10YR56	-	
	50+	sst			
025	0-35	fsl	10YR32	-	
	35-60	fsl	10YR34	-	
	60-80	lms	10YR56	-	
	80+	sst			
026	0-30	fsl	10YR32	-	
	30-40	fsl	10YR33	-	
	40+	sst			

BORING	DEPTH	TEXTURE (cm)	COLOUR	MOTTLES		
				ABUND	COLOUR	CONTRAST
027	0-35	fsl	10YR32	-		
	35-45	fsl	10YR56	-		
	45+	sst				
028	URBAN					
029	URBAN					
030	0-35	mcl	10YR32	-		
	35-100	mcl	10YR31	-		
	100+	sst				
031	0-25	fsl	10YR42	-		
	25-40	fsl	10YR44	-		
	40+	sst				
034	0-25	fsl	10YR42	OG	C	D
	25-52	fsl	10YR44		-	
	52+	sst				
035	0-35	scl	10YR42		-	
	35+	sst				
036	0-25	scl	10YR31		-	
	25-100	fsl	75YR44	O	C	D
	100+	sst				
037	ORNAMENTAL NURSERY					
038	NON.AG					

BORING	DEPTH	TEXTURE (cm)	COLOUR	MOTTLES		
				ABUND	COLOUR	CONTRAST
039	0-30	mcl	10YR31	-		
	30-60	scl	75YR54	-		
	60+	sst				
040	URBAN					
041	NON.AG					
042	NON.AG					
043	NON.AG					
044	NON.AG					
045	0-25	fsl	10YR42	0	C	D
	25-45	fls	75YR44		-	
046	0-35	scl	10YR42	0	C	D
	35+	sst				