MESEC

URGENT

TYPING TIME SLIP

FILENAME : She - pls rch to Seek Tamar. P40

DATE	TIME	DATE	TIME	DATE	TIME
20/7/94	11/2				
✓	30				
21/7	10				

AGRICULTURAL LAND CLASSIFICATION AND SOIL PHYSICAL CHARACTERISTICS

WARREN VILLAS, SANDY, BEDFORDSHIRE

1.0 BACKGROUND

1.1 The site covering an area of hectares is the subject of an application for the extraction of sand and gravel. ADAS Statutory Resource Planning Team surveyed the site in July 1994 to assess the agricultural land quality at an auger boring density of approximately 1 boring per hectare. These borings were supplemented by local soil pit information to assess subsoil conditions.

1.2 A survey was carried out in September 1989 by RPS. However, due to adverse field conditions their assessment of ALC grade is based "very heavily" on published soil information and the geological borehole data. The current MAFF survey identifies slightly more grade 2 than RPS and this has occurred because detailed fieldwork by MAFF shows that actual profile depths to gravel are deeper than that surmised by RPS using the borehole data. However in paragraph 4.5 of the RPS report the consultant accepts that soils may be deeper than his estimates made from the borehole data.

1.3 At the time of the survey, most of the land was under an onion crop although a small area of land in the south of the site was not under cultivation.

1.4 The published Provisional 1:63,360 scale Agricultural Land Classification map Sheet 147 (MAFF, 1971) shows the whole site as grade 1 land. As these maps are of a reconnaissance nature, designed primarily for strategic planning purposes, the current survey was undertaken to provide detailed information on land quality in the survey area.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Climate data for the site was extrapolated from data in the published agricultural climatic dataset (Meteorological Office, 1989). This indicates that for an average site altitude of 25 m AOD the average annual rainfall is 546 mm (21.5"). This data

also indicates that the field capacity days are 93, with moisture deficits of 121 mm for wheat and 117 mm for potatoes. These climate characteristics do not impose any climatic limitation on the ALC grade of the survey site.

Altitude and Relief

2.2 The survey area lies on gently sloping land between the A1 road and the River Ivel. The land falls gently northeastwards from 26 m AOD adjacent to the A1 road to 24 m AOD at the edge of the River Ivel floodplain. Neither gradient nor altitude impose a limitation to the ALC grade.

Geology and Soils

2.3 The published 1:50,000 scale Drift edition geology map, sheet 204, Biggleswade (Geological Survey of Great Britain, 1976) shows the survey area to comprise first and second terrace river gravel deposits.

2.4 The Soil Survey of England and Wales (1987) have mapped this area at a small scale of 1:25,000. This map shows the site to comprise mainly soils of the Sonning Soil Series (*1), while over a small area to the east the Waterstock Soil Series (*2) is shown. The current detailed survey findings broadly agreed with the published soils map.

2.5 During the current survey one main soil type was identified. The soils on site typically comprise* slightly stony medium sandy loam or occasionally medium clay loam topsoils over medium sandy loam or sandy clay loam upper subsoils. Below 45 cm profiles tend to become more stony (10-15%) before merging to gravelly material below 60/70 cm. The gravelly material comprises 50% small and very small flints in a medium sandy loam matrix.

(*1) Sonning Soil Series - permeable, flinty, light loams with a reddish subsoils over flint gravel at 40 to 80 cm depth.

(*2) Waterstock Soil Series - deep, permeable, slightly mottled medium loams with few or common flint stones throughout.

(*) To the east slightly heavier textured soils were noted, typically being deep medium clay loams over clay at depth. However, this soil type covers too small an area to be delineated separately. Further fieldwork eastwards may delineate a significant area of better bodied soils.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The definitions of the Agricultural Land Classification (ALC) grades are included in Appendix 2.

3.2 The table below shows the breakdown of ALC grades for the survey area.

AGRICULTURAL LAND CLASSIFICATION

GRADE	Hectares	%
2	8.2	92.1
3a	0.4	4.5
Non-Agricultural	0.2	2.2
Woodland	0.1	1.1
Open Water	0.03	0.1
TOTAL	8.93	100

Irrigation

3.3 The site can be irrigated which significantly enhances the potential of the gravelly soils which characterise the site. The ALC grade assigned to the survey area takes into account the reduction in drought risk afforded by irrigation.

Grade 2

3.4 The majority of the site has been graded 2. The soils comprise freely draining coarse loams of moderate depth over gravely material below 60/70 cm. The light textures and the presence of profile stone impose a moderate limitation on the potential for these soils to retain water in this low rainfall area. With the reduction in drought risk afforded by irrigation these soils are slightly droughty. This minor droughtiness limitation combines with slight topsoil stone to restrict the land to grade 2 (very good quality agricultural land).

Subgrade 3a

3.5 At the southern edge of the site total topsoil stone content ranges from 15-18% (of this, stones greater than 2 cm in size range from 11-13%). These stony topsoils have the potential to damage seedlings and the cultivation/harvesting machinery. Consequently the flexibility of the land is slightly reduced. Profiles are moderately

droughty and although irrigation alleviates the droughtiness imperfection, the topsoil stone content (greater than 2 cm in size) restricts this land to subgrade 3a (good quality agricultural land).

Non-Agricultural

3.6 In the northeast of the site some scrub has been mapped as non-agricultural.

Woodland

3.7 A small area of woodland occurs in the northwest of the site.

Open Water

3.8 A seepage pond is present in the northeast of the site.

July 1994

R TARRANT
ADAS Resource Planning Team
Huntingdon Statutory Centre

REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN (ENGLAND AND WALES), 1976. Drift edition, sheet 204, Biggleswade, 1:50,000 scale.

MAFF, 1971. Provisional ALC, sheet 147, 1:63,360 scale.

MAFF, 1988. Agricultural Land Classification of England and Wales (Revised Guidelines and criteria for grading the quality of agricultural land). Alnwick.

METEOROLOGICAL OFFICE, 1989. Climatic data extracted from the published agricultural climatic dataset.

SOIL SURVEY OF ENGLAND AND WALES, 1987. Sheet TL14, Biggleswade, 1:25,000 scale. Soils in Bedfordshire I, Soil Survey Record Number 112.

Appendix 1

STATEMENT OF SOIL PHYSICAL CHARACTERISTICS

Topsoil	Texture	:	medium sandy loam (occasionally medium clay loam).
	Stone content	:	7-18% small and medium flints (typically 7-10%).
	Depth	:	35 cm
Upper Subsoil	Texture	:	medium sandy loam or sandy clay loam
	Stone content	:	5-8% small and medium flints
	Structure	:	moderately developed coarse subangular blocky.
	Consistence	:	friable
	Depth	:	45/50 cm
Lower subsoil	Texture	:	medium sandy loam or sandy clay loam
	Stone content	:	10-15% small and medium flints
	Structure	:	weakly developed medium subangular blocky.
	Consistence	:	friable
	Depth	:	60/70 cm
Gravelly material		:	50% small and very small flints in a medium sandy loam matrix.

Additional Information

Calcium carbonate: profiles are non calcareous.

Rooting: rooting is evident throughout the profile.

Drainage status: freely draining.

Appendix 2

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 include 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 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 levels of yields. It is mainly suited to grass with occasional arable crops (eg. cereals and forage crops) the yield of which are variable. In most 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.